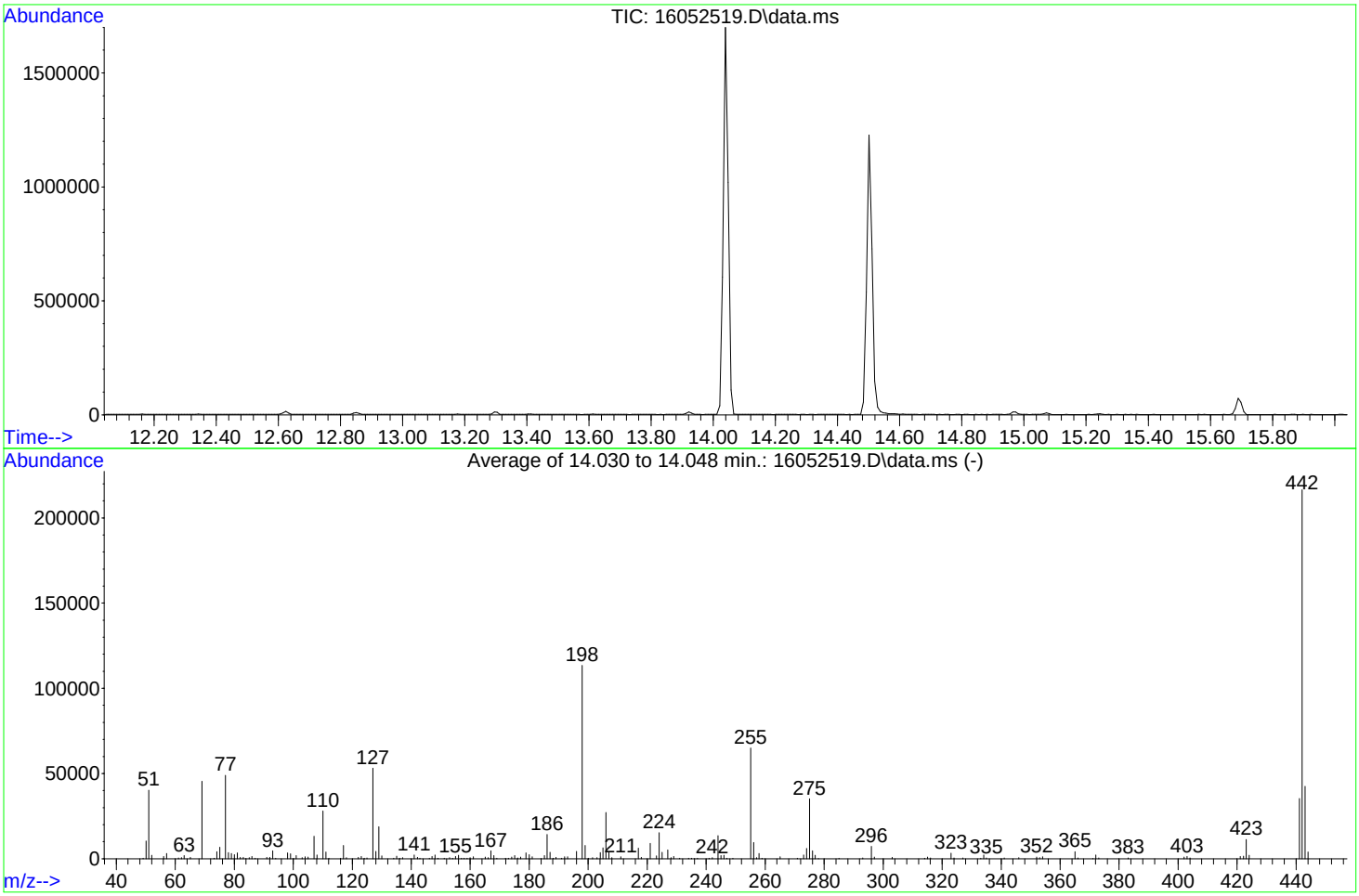
Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052519.D
Acq On : 25 May 2016 8:07 pm
Operator :
Sample : DFTPP2-160525
Misc : TUNE
ALS Vial : 19 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : CLP BNA Calibration - Large Volume Injection
Last Update : Thu Aug 27 07:24:43 2015




AutoFind: Scans 435, 436, 437; Background Corrected with Scan 431

| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 51 | 198 | 10 | 80 | 35.4 | 40180 | PASS |
| 68 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 69 | 198 | 0.00 | 100 | 40.0 | 45389 | PASS |
| 70 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 127 | 198 | 10 | 80 | 46.8 | 53149 | PASS |
| 197 | 198 | 0.00 | 2 | 0.0 | 0 | PASS |
| 198 | 198 | 100 | 100 | 100.0 | 113477 | PASS |
| 199 | 198 | 5 | 9 | 6.8 | 7728 | PASS |
| 275 | 198 | 10 | 60 | 30.9 | 35072 | PASS |
| 365 | 198 | 1 | 200 | 3.6 | 4032 | PASS |
| 441 | 442 | 0.01 | 24 | 16.3 | 35275 | PASS |
| 442 | 198 | 50 | 400 | 190.9 | 216600 | PASS |
| 443 | 442 | 15 | 24 | 19.6 | 42516 | PASS |

REVIEWED BY
By Janice Whitt at 4:22:45 PM, 5/31/2016

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052502.D
Acq On : 25 May 2016 9:31 am
Operator :
Sample : ICV-160525
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 25 15:49:12 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

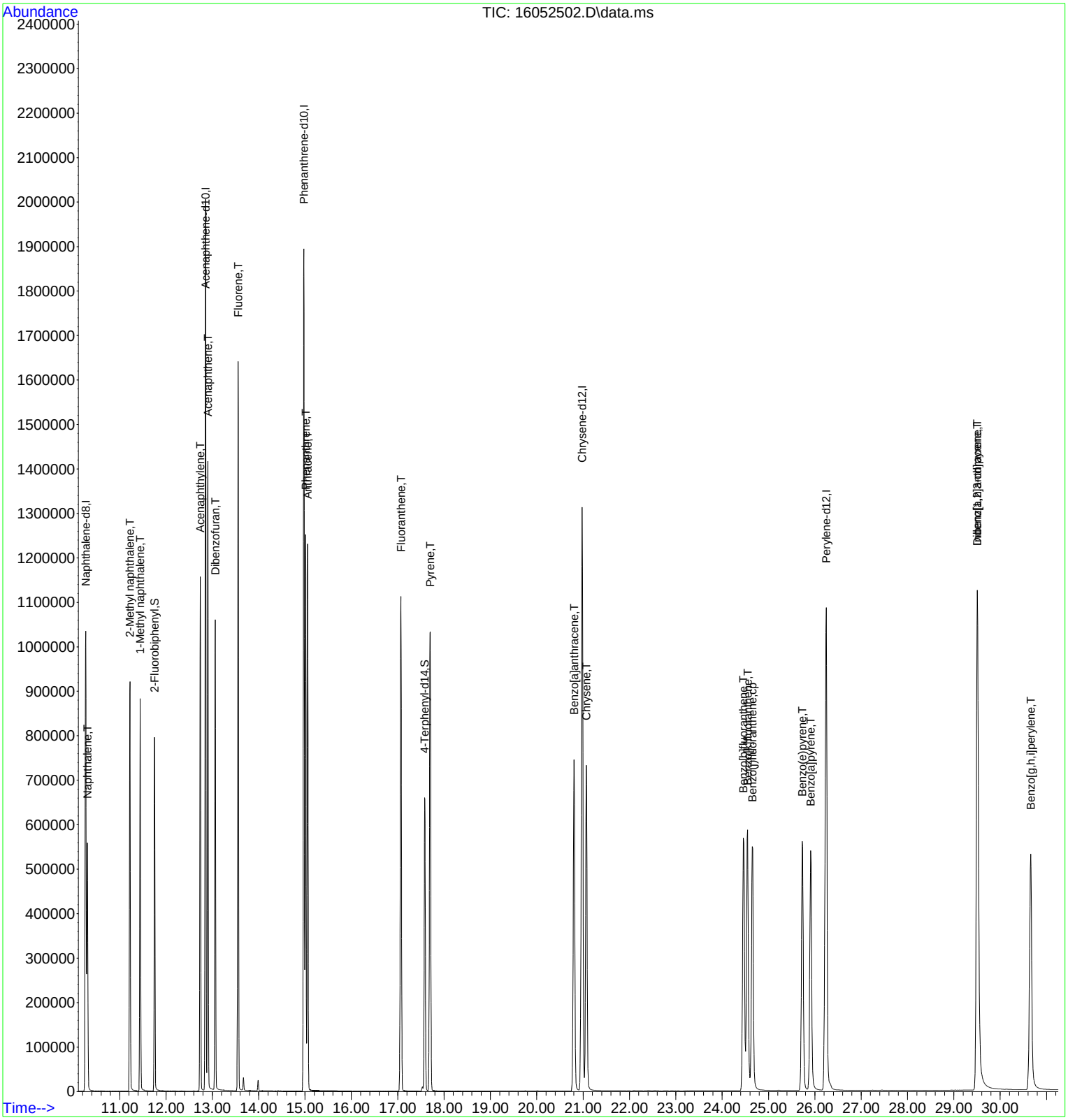
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.267 | 136 | 1461647 | 4000.00 | ug/kg | 90 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1227683 | 4000.00 | ug/kg | 98 |
| 11) Phenanthrene-d10 | 14.974 | 188 | 2343674 | 4000.00 | ug/kg | 80 |
| 16) Chrysene-d12 | 20.980 | 240 | 2251506 | 4000.00 | ug/kg | 83 |
| 20) Perylene-d12 | 26.247 | 264 | 2147295 | 4000.00 | ug/kg | 86 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.752 | 172 | 722975 | 2221.54 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 55.54% | | |
| 17) 4-Terphenyl-d14 | 17.586 | 244 | 926637 | 1944.45 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 48.61%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.304 | 128 | 666393 | 2035.11 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.222 | 142 | 573828 | 2254.25 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.444 | 142 | 524824 | 2178.78 | ug/kg | 99 |
| 7) Acenaphthylene | 12.739 | 152 | 1106441 | 2061.85 | ug/kg | 100 |
| 8) Acenaphthene | 12.905 | 153 | 690106 | 2038.03 | ug/kg | 99 |
| 9) Dibenzofuran | 13.063 | 168 | 1011668 | 1961.27 | ug/kg | 98 |
| 10) Fluorene | 13.554 | 166 | 888356 | 1898.08 | ug/kg | 100 |
| 12) Phenanthrene | 15.012 | 178 | 1207793 | 1872.92 | ug/kg | 100 |
| 13) Anthracene | 15.056 | 178 | 1210578 | 1855.22 | ug/kg | 100 |
| 14) Fluoranthene | 17.067 | 202 | 1271086 | 2067.00 | ug/kg | 99 |
| 15) Pyrene | 17.700 | 202 | 1247644 | 2064.16 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.805 | 228 | 1178703 | 2117.26 | ug/kg | 100 |
| 19) Chrysene | 21.068 | 228 | 1081869 | 2100.98 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.460 | 252 | 1158667 | 2106.28 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.548 | 252 | 1025492 | 2054.91 | ug/kg | 100 |
| 23) Benzo(j)fluoranthene | 24.658 | 252 | 1000503 | 2104.00 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.727 | 252 | 1099003 | 2117.76 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.910 | 252 | 1086115 | 2109.17 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.514 | 276 | 1333492 | 2117.79 | ug/kg | 96 |
| 27) Dibenz[a,h]anthracene | 29.507 | 278 | 1106542 | 2114.74 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.657 | 276 | 1143981 | 2104.66 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052502.D
Acq On : 25 May 2016 9:31 am
Operator :
Sample : ICV-160525
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

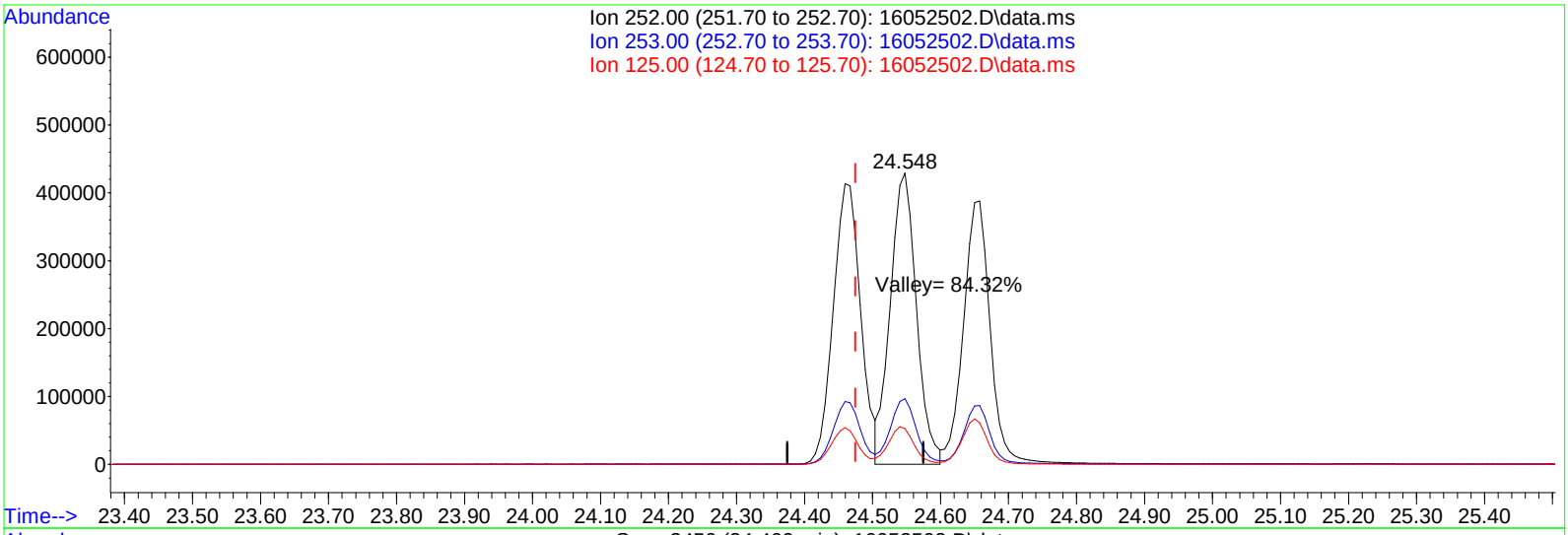
Quant Time: May 25 15:49:12 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

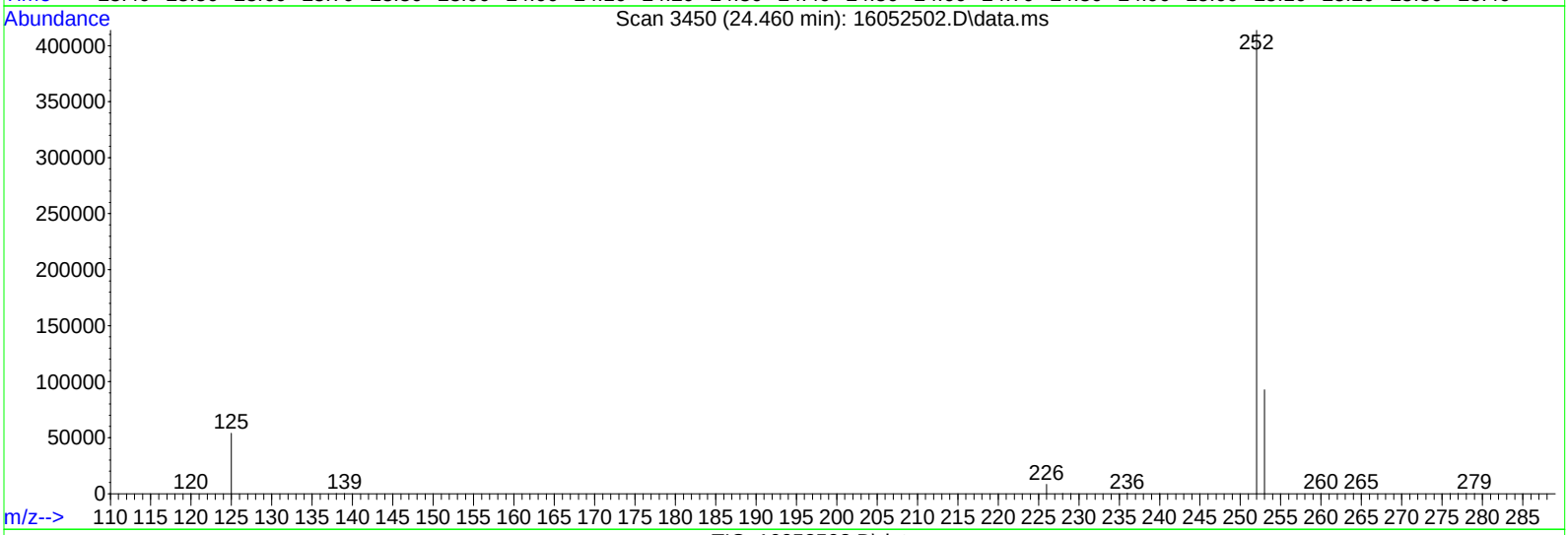


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052502.D
Acq On : 25 May 2016 9:31 am
Operator :
Sample : ICV-160525
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 25 15:49:12 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration




TIC: 16052502.D\data.ms

(21) Benzo[b]fluoranthene (T)

24.460min (-0.015) 2106.28ug/kg

response 1158667

| Ion | Exp% | Act% |
|---|---|---|
| 252.00 | 100 | 100 |
| 253.00 | 22.30 | 22.32 |
| 125.00 | 12.20 | 13.01 |
| 0.00 | 0.00 | 0.00 |

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052503.D
Acq On : 25 May 2016 10:11 am
Operator :
Sample : LCS-75241
Misc : LCS
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 25 16:01:14 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

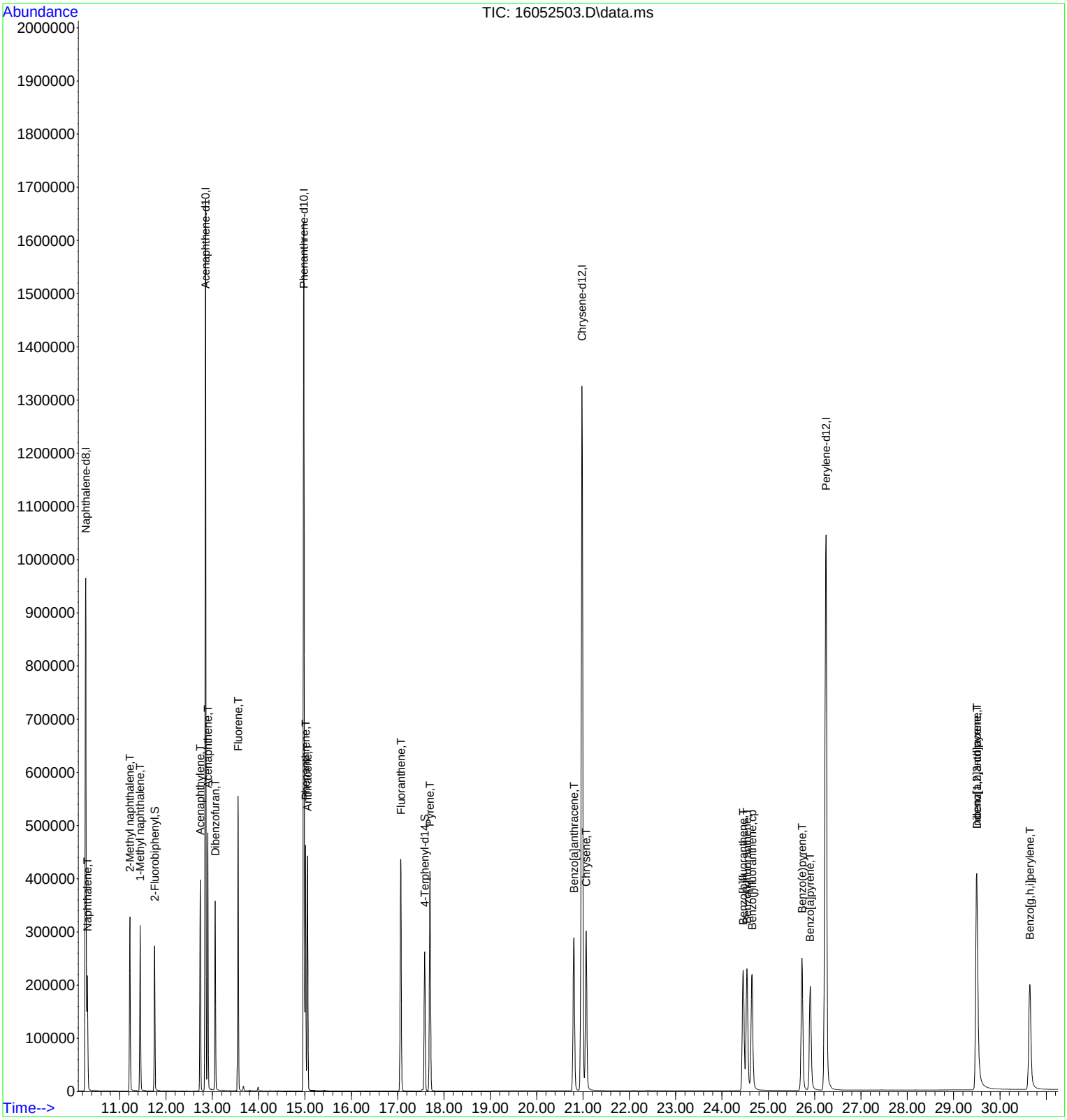
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.267 | 136 | 1377827 | 4000.00 | ug/kg | 85 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1020324 | 4000.00 | ug/kg | 81 |
| 11) Phenanthrene-d10 | 14.974 | 188 | 2014624 | 4000.00 | ug/kg | 69 |
| 16) Chrysene-d12 | 20.980 | 240 | 2217671 | 4000.00 | ug/kg | 82 |
| 20) Perylene-d12 | 26.246 | 264 | 2076653 | 4000.00 | ug/kg | 84 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.756 | 172 | 248921 | 811.41 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 20.29%# | | | |
| 17) 4-Terphenyl-d14 | 17.584 | 244 | 357238 | 761.06 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 19.03%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.304 | 128 | 247639 | 802.28 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.221 | 142 | 199482 | 831.33 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.443 | 142 | 183431 | 807.83 | ug/kg | 99 |
| 7) Acenaphthylene | 12.738 | 152 | 366428 | 821.61 | ug/kg | 99 |
| 8) Acenaphthene | 12.905 | 153 | 227174 | 807.24 | ug/kg | 99 |
| 9) Dibenzofuran | 13.062 | 168 | 338219 | 788.94 | ug/kg | 100 |
| 10) Fluorene | 13.553 | 166 | 294288 | 756.57 | ug/kg | 99 |
| 12) Phenanthrene | 15.012 | 178 | 432770 | 780.71 | ug/kg | 98 |
| 13) Anthracene | 15.054 | 178 | 430952 | 768.31 | ug/kg | 98 |
| 14) Fluoranthene | 17.068 | 202 | 492019 | 899.95 | ug/kg | 98 |
| 15) Pyrene | 17.697 | 202 | 486629 | 910.73 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.804 | 228 | 467518 | 825.87 | ug/kg | 99 |
| 19) Chrysene | 21.068 | 228 | 434176 | 830.29 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.459 | 252 | 450904 | 825.90 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.540 | 252 | 406828 | 826.55 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.650 | 252 | 403639 | 853.85 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.726 | 252 | 474267 | 920.34 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.902 | 252 | 407255 | 800.57 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.506 | 276 | 512582 | 818.08 | ug/kg | 98 |
| 27) Dibenz[a,h]anthracene | 29.491 | 278 | 422341 | 808.84 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.649 | 276 | 437539 | 809.66 | ug/kg | 98 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052503.D
Acq On : 25 May 2016 10:11 am
Operator :
Sample : LCS-75241
Misc : LCS
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 25 16:01:14 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052504.D
Acq On : 25 May 2016 10:48 am
Operator :
Sample : MB-75241
Misc : MBLK
ALS Vial : 4 Sample Multiplier: 1

Quant Time: May 25 16:01:17 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.269 | 136 | 1444229 | 4000.00 | ug/kg | 89 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1150181 | 4000.00 | ug/kg | 92 |
| 11) Phenanthrene-d10 | 14.974 | 188 | 2155478 | 4000.00 | ug/kg | 74 |
| 16) Chrysene-d12 | 20.981 | 240 | 2267486 | 4000.00 | ug/kg | 84 |
| 20) Perylene-d12 | 26.240 | 264 | 2158786 | 4000.00 | ug/kg | 87 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.753 | 172 | 259448 | 806.84 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 20.17%# | | | |
| 17) 4-Terphenyl-d14 | 17.581 | 244 | 357629 | 745.16 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 18.63%# | | | |

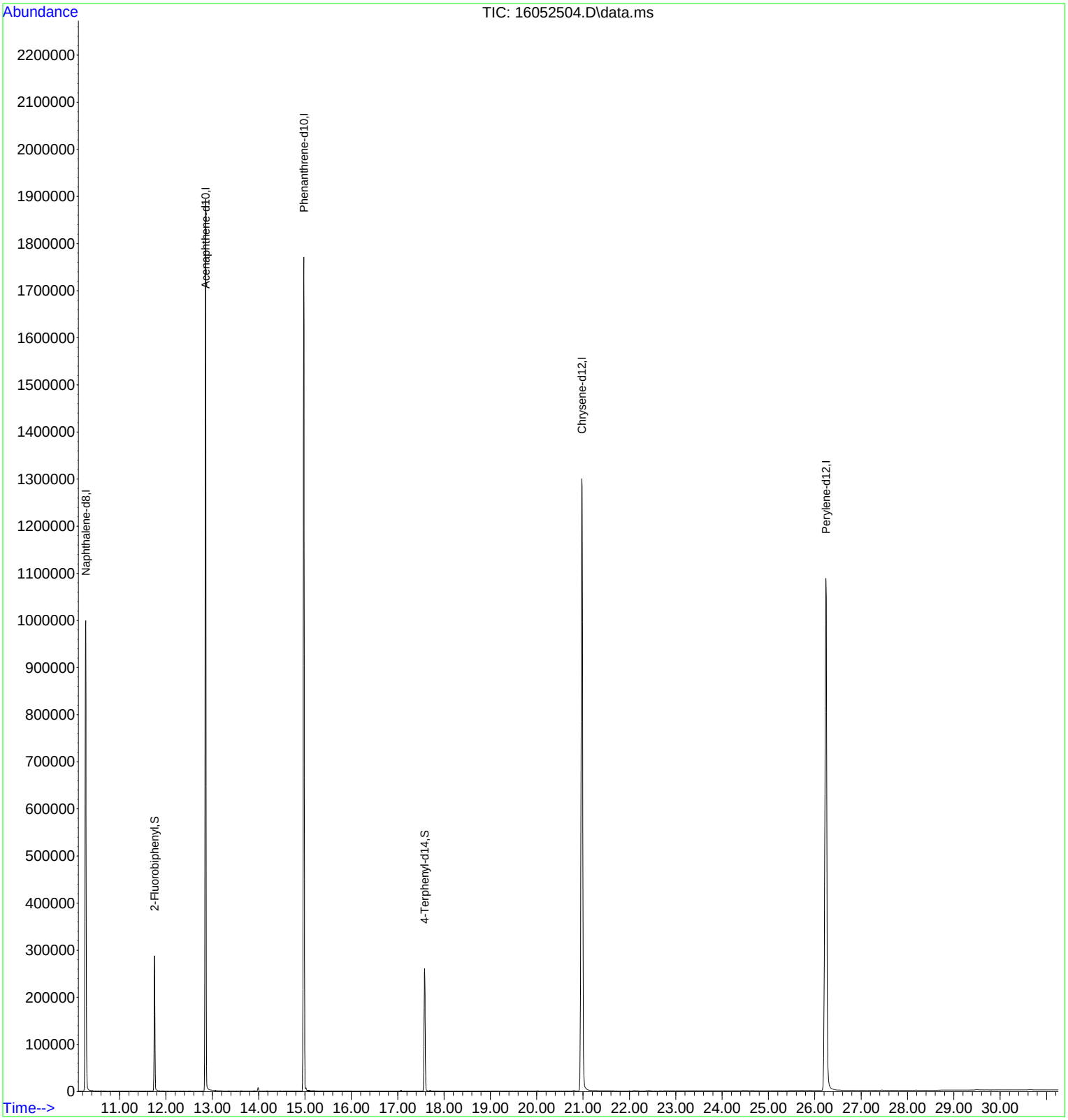
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052504.D
Acq On : 25 May 2016 10:48 am
Operator :
Sample : MB-75241
Misc : MBLK
ALS Vial : 4 Sample Multiplier: 1

Quant Time: May 25 16:01:17 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052520.D
Acq On : 25 May 2016 8:44 pm
Operator :
Sample : ICV2-160525
Misc : ICV
ALS Vial : 20 Sample Multiplier: 1

Quant Time: May 26 08:52:33 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

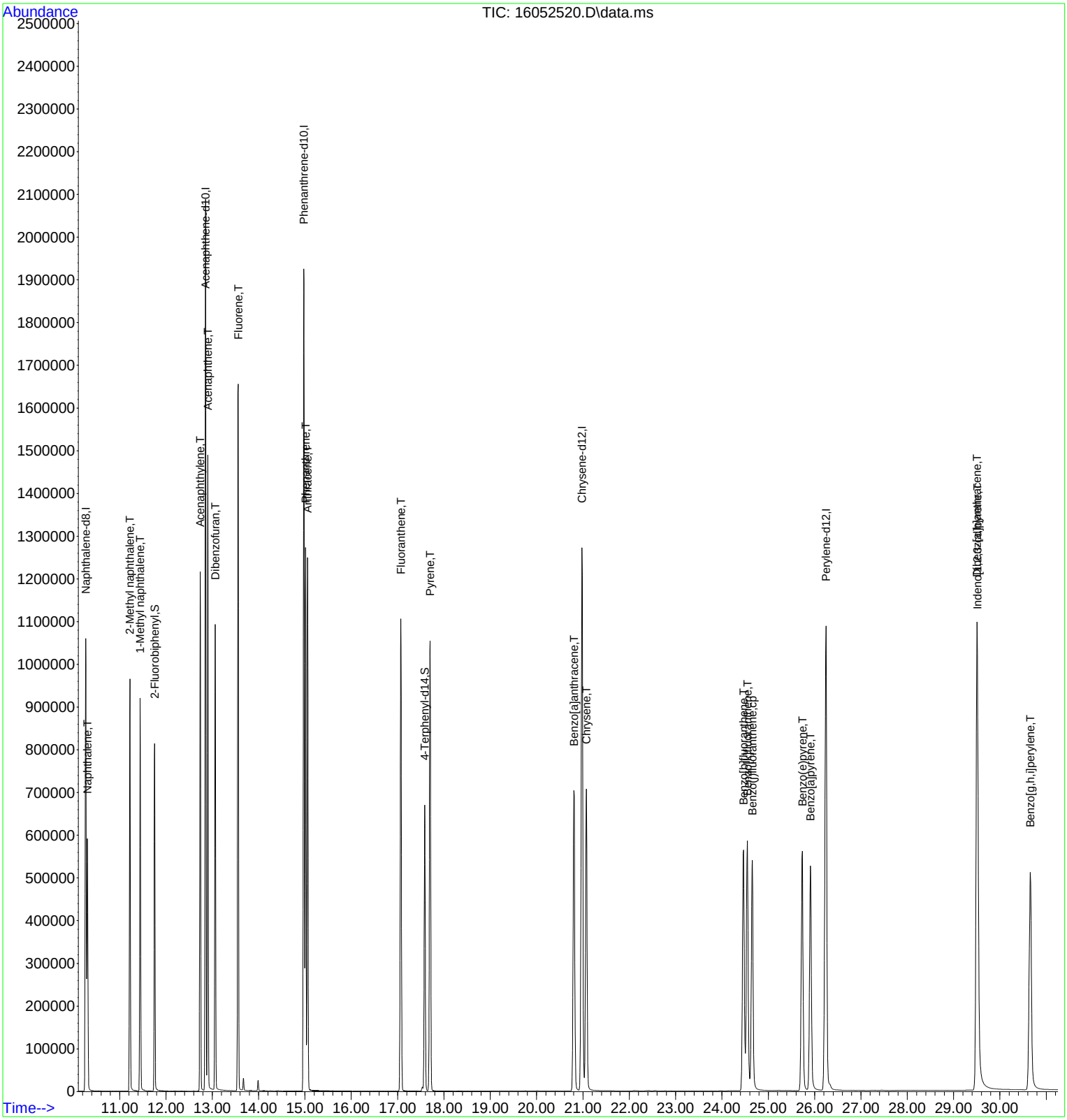
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.267 | 136 | 1494885 | 4000.00 | ug/kg | 92 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1264223 | 4000.00 | ug/kg | 101 |
| 11) Phenanthrene-d10 | 14.976 | 188 | 2389176 | 4000.00 | ug/kg | 82 |
| 16) Chrysene-d12 | 20.980 | 240 | 2196591 | 4000.00 | ug/kg | 81 |
| 20) Perylene-d12 | 26.246 | 264 | 2100898 | 4000.00 | ug/kg | 85 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.756 | 172 | 742841 | 2231.83 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 55.80% | | |
| 17) 4-Terphenyl-d14 | 17.587 | 244 | 926153 | 1992.02 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 49.80%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.304 | 128 | 684059 | 2042.61 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.222 | 142 | 587543 | 2256.81 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.444 | 142 | 541490 | 2197.99 | ug/kg | 100 |
| 7) Acenaphthylene | 12.738 | 152 | 1141279 | 2065.30 | ug/kg | 100 |
| 8) Acenaphthene | 12.905 | 153 | 703753 | 2018.27 | ug/kg | 99 |
| 9) Dibenzofuran | 13.062 | 168 | 1040854 | 1959.53 | ug/kg | 92 |
| 10) Fluorene | 13.558 | 166 | 909821 | 1887.75 | ug/kg | 98 |
| 12) Phenanthrene | 15.014 | 178 | 1233688 | 1876.65 | ug/kg | 100 |
| 13) Anthracene | 15.058 | 178 | 1218362 | 1831.59 | ug/kg | 99 |
| 14) Fluoranthene | 17.071 | 202 | 1260500 | 2007.31 | ug/kg | 99 |
| 15) Pyrene | 17.700 | 202 | 1238813 | 2007.81 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.804 | 228 | 1149249 | 2115.89 | ug/kg | 100 |
| 19) Chrysene | 21.075 | 228 | 1066450 | 2123.95 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.466 | 252 | 1128791 | 2096.90 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.547 | 252 | 1011092 | 2071.33 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.657 | 252 | 968859 | 2081.46 | ug/kg | 100 |
| 24) Benzo(e)pyrene | 25.734 | 252 | 1081161 | 2129.95 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.909 | 252 | 1058487 | 2100.63 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.521 | 276 | 1313826 | 2133.34 | ug/kg | 98 |
| 27) Dibenz[a,h]anthracene | 29.506 | 278 | 1092077 | 2134.12 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.656 | 276 | 1125373 | 2116.67 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052520.D
Acq On : 25 May 2016 8:44 pm
Operator :
Sample : ICV2-160525
Misc : ICV
ALS Vial : 20 Sample Multiplier: 1

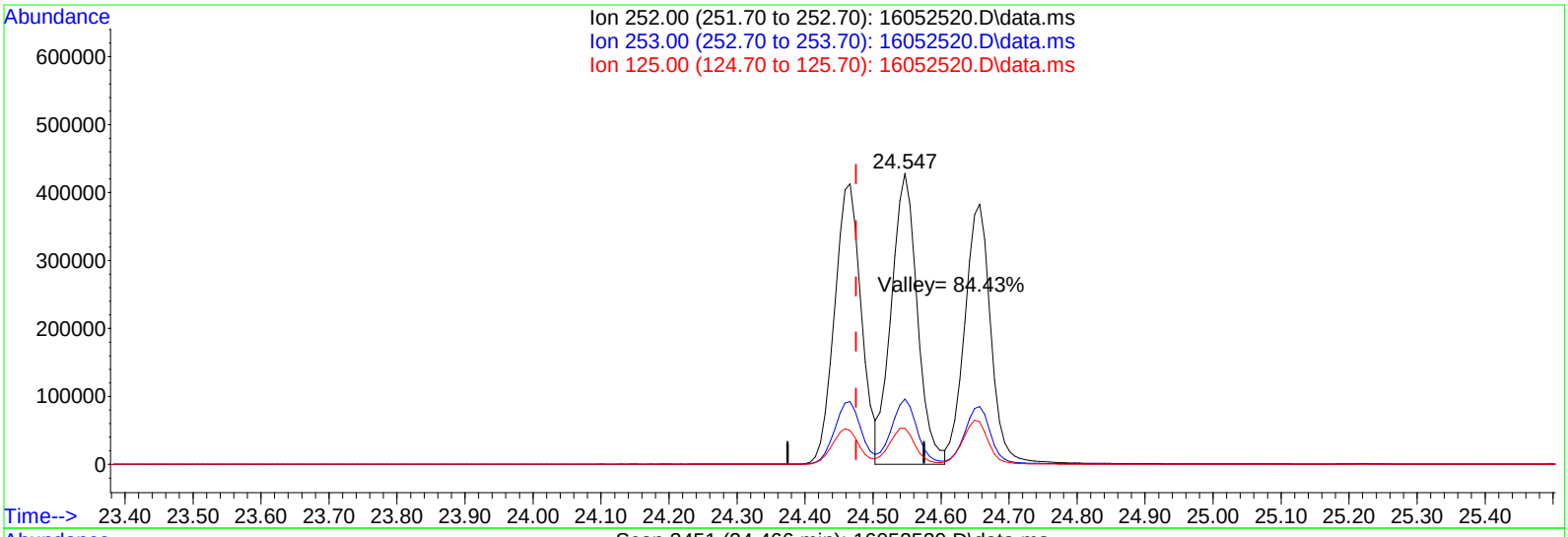
Quant Time: May 26 08:52:33 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

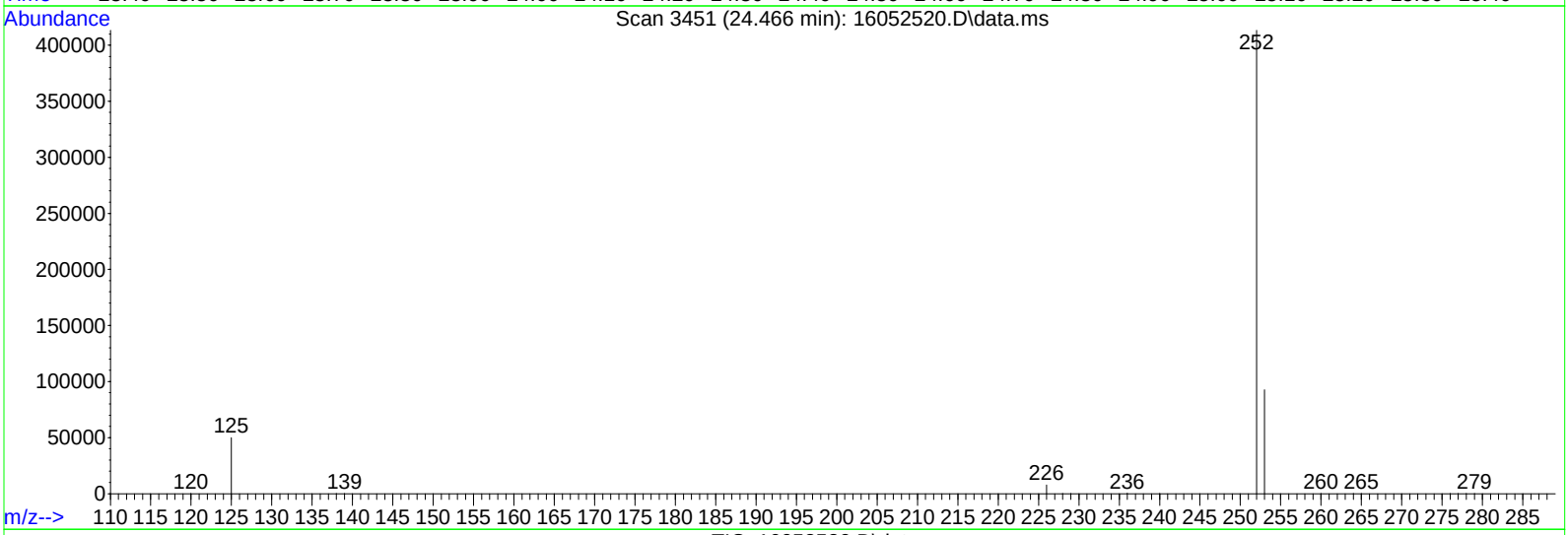


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052520.D
Acq On : 25 May 2016 8:44 pm
Operator :
Sample : ICV2-160525
Misc : ICV
ALS Vial : 20 Sample Multiplier: 1

Quant Time: May 25 21:16:10 2016
Quant Method : C:\MSDCHEM\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration




TIC: 16052520.D\data.ms

(21) Benzo[b]fluoranthene (T)

24.466min (-0.009) 2096.90ug/kg

response 1128791

| Ion | Exp% | Act% |
|---|---|---|
| 252.00 | 100 | 100 |
| 253.00 | 22.30 | 22.30 |
| 125.00 | 12.20 | 12.08 |
| 0.00 | 0.00 | 0.00 |

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052522.D
Acq On : 25 May 2016 9:59 pm
Operator :
Sample : SBLK-160525
Misc : SBLK
ALS Vial : 22 Sample Multiplier: 1

Quant Time: May 26 08:52:36 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.267 | 136 | 1332571 | 4000.00 | ug/kg | 82 |
| 6) Acenaphthene-d10 | 12.851 | 164 | 1091779 | 4000.00 | ug/kg | 87 |
| 11) Phenanthrene-d10 | 14.972 | 188 | 1861067 | 4000.00 | ug/kg | 64 |
| 16) Chrysene-d12 | 20.973 | 240 | 1766225 | 4000.00 | ug/kg | 65 |
| 20) Perylene-d12 | 26.232 | 264 | 1703661 | 4000.00 | ug/kg | 69 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.756 | 172 | 46 | 0.16 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 0.00%# | | | |
| 17) 4-Terphenyl-d14 | 17.586 | 244 | 156 | 0.42 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 0.01%# | | | |

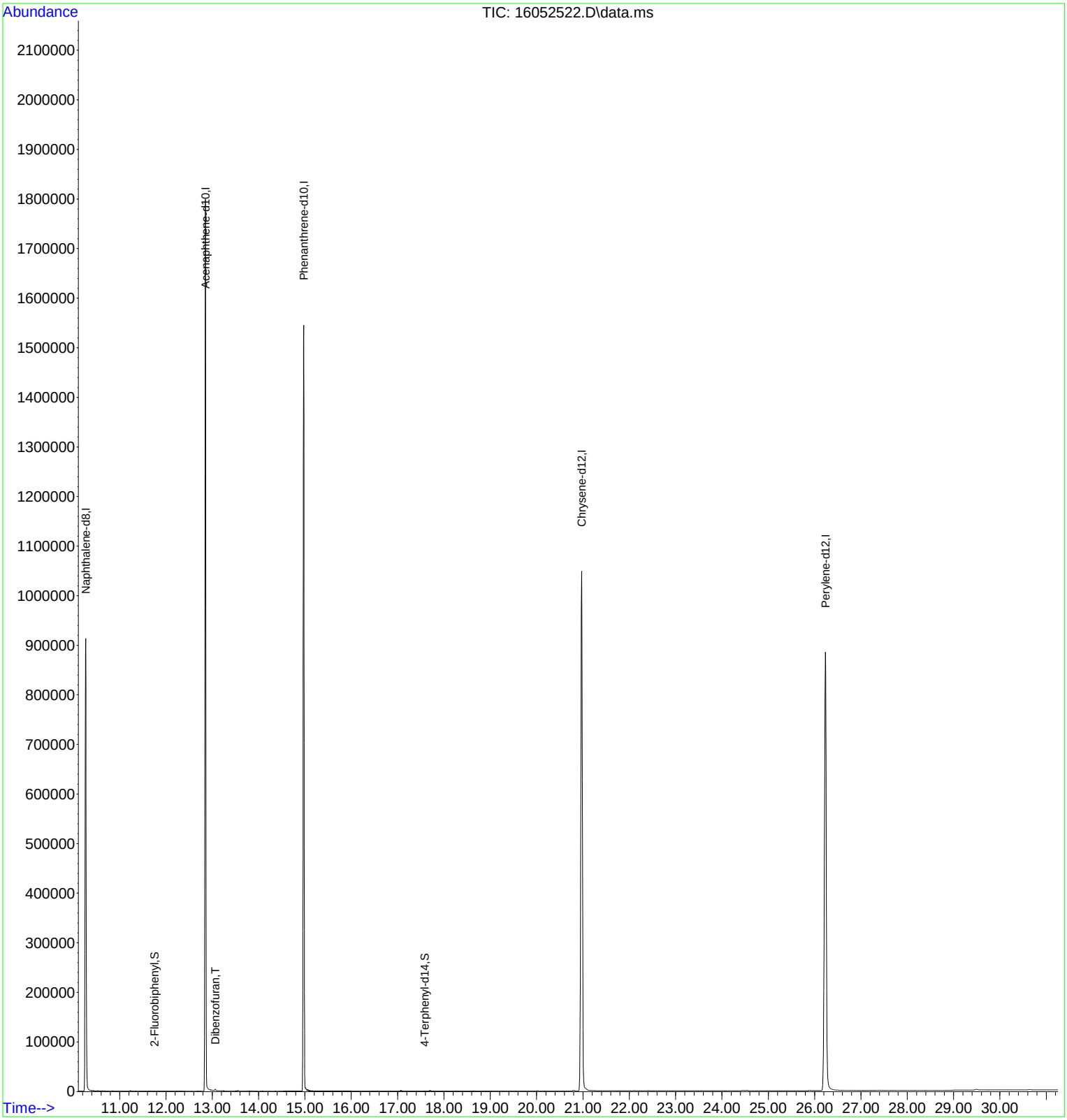
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 9) Dibenzofuran | 13.063 | 168 | 3254 | 7.09 | ug/kg | 93 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052522.D
Acq On : 25 May 2016 9:59 pm
Operator :
Sample : SBLK-160525
Misc : SBLK
ALS Vial : 22 Sample Multiplier: 1

Quant Time: May 26 08:52:36 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052526.D
Acq On : 26 May 2016 12:27 am
Operator :
Sample : 1605135-14AMS
Misc : MS
ALS Vial : 26 Sample Multiplier: 10

Quant Time: May 26 08:52:39 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.268 | 136 | 1667312 | 4000.00 | ug/kg | 102 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1329017 | 4000.00 | ug/kg | 106 |
| 11) Phenanthrene-d10 | 14.975 | 188 | 2301887 | 4000.00 | ug/kg | 79 |
| 16) Chrysene-d12 | 20.981 | 240 | 2316922 | 4000.00 | ug/kg | 85 |
| 20) Perylene-d12 | 26.240 | 264 | 2193820 | 4000.00 | ug/kg | 88 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.757 | 172 | 32536 | 87.64 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.19%# | | | |
| 17) 4-Terphenyl-d14 | 17.584 | 244 | 35806 | 73.01 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.83%# | | | |

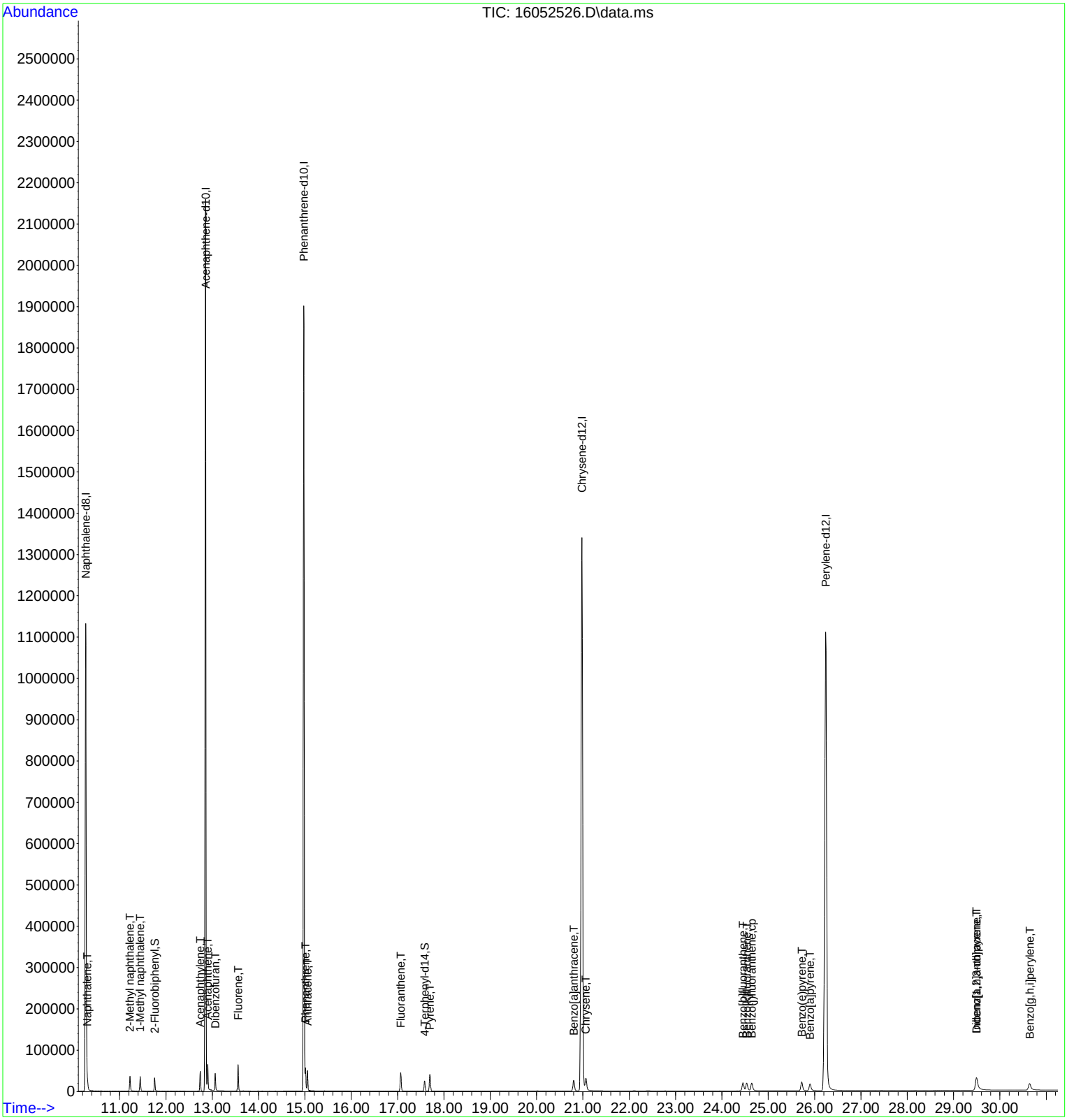
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.305 | 128 | 27124 | 72.62 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.222 | 142 | 24368 | 83.92 | ug/kg | 96 |
| 4) 1-Methyl naphthalene | 11.444 | 142 | 22493 | 81.86 | ug/kg | 99 |
| 7) Acenaphthylene | 12.739 | 152 | 45589 | 78.48 | ug/kg | 99 |
| 8) Acenaphthene | 12.901 | 153 | 28394 | 77.46 | ug/kg | 97 |
| 9) Dibenzofuran | 13.063 | 168 | 42144 | 75.47 | ug/kg | 98 |
| 10) Fluorene | 13.554 | 166 | 35482 | 70.03 | ug/kg | 98 |
| 12) Phenanthrene | 15.010 | 178 | 48111 | 75.96 | ug/kg | 97 |
| 13) Anthracene | 15.055 | 178 | 47025 | 73.37 | ug/kg | 98 |
| 14) Fluoranthene | 17.068 | 202 | 51339 | 78.51 | ug/kg | 97 |
| 15) Pyrene | 17.697 | 202 | 50097 | 78.47 | ug/kg | 96 |
| 18) Benzo[a]anthracene | 20.798 | 228 | 43202 | 70.14 | ug/kg | 99 |
| 19) Chrysene | 21.069 | 228 | 40828 | 71.00 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.453 | 252 | 40434 | 67.54 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.533 | 252 | 33431 | 62.53 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.643 | 252 | 36131 | 68.31 | ug/kg | 98 |
| 24) Benzo(e)pyrene | 25.720 | 252 | 44394 | 77.89 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.903 | 252 | 37215 | 66.56 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.500 | 276 | 46990 | 67.32 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.485 | 278 | 36996 | 61.89 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.643 | 276 | 41088 | 68.19 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052526.D
Acq On : 26 May 2016 12:27 am
Operator :
Sample : 1605135-14AMS
Misc : MS
ALS Vial : 26 Sample Multiplier: 10

Quant Time: May 26 08:52:39 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052527.D
Acq On : 26 May 2016 1:04 am
Operator :
Sample : 1605135-14AMSD
Misc : MSD
ALS Vial : 27 Sample Multiplier: 10

Quant Time: May 26 08:52:43 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

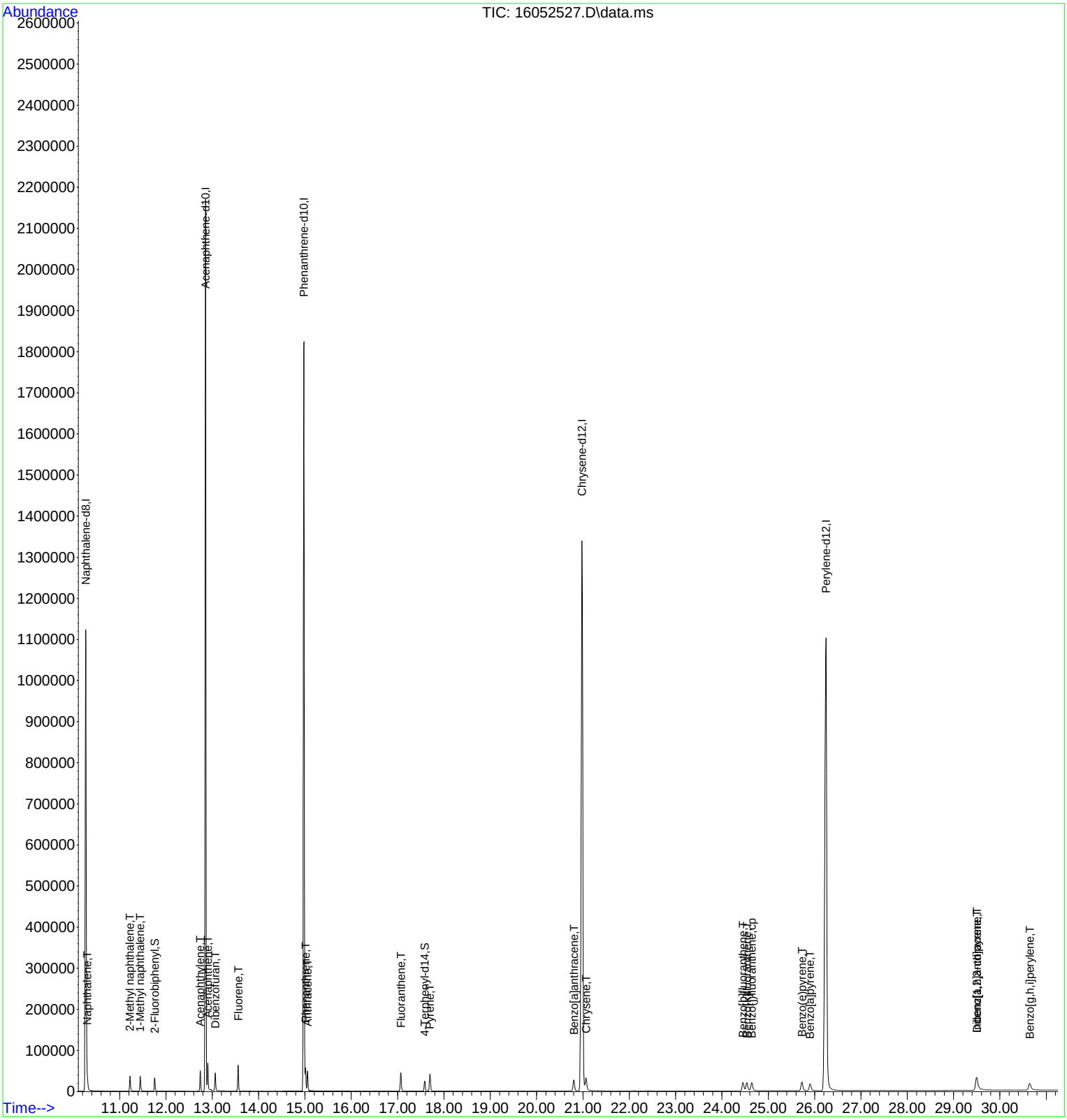
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.267 | 136 | 1651635 | 4000.00 | ug/kg | 101 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1302306 | 4000.00 | ug/kg | 104 |
| 11) Phenanthrene-d10 | 14.976 | 188 | 2228867 | 4000.00 | ug/kg | 76 |
| 16) Chrysene-d12 | 20.980 | 240 | 2310573 | 4000.00 | ug/kg | 85 |
| 20) Perylene-d12 | 26.247 | 264 | 2216809 | 4000.00 | ug/kg | 89 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.756 | 172 | 32852 | 89.33 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.23%# | | | |
| 17) 4-Terphenyl-d14 | 17.584 | 244 | 36180 | 73.98 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.85%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.304 | 128 | 28551 | 77.16 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.226 | 142 | 25478 | 88.58 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.448 | 142 | 23543 | 86.49 | ug/kg | 99 |
| 7) Acenaphthylene | 12.738 | 152 | 47191 | 82.90 | ug/kg | 99 |
| 8) Acenaphthene | 12.905 | 153 | 29370 | 81.77 | ug/kg | 99 |
| 9) Dibenzofuran | 13.063 | 168 | 42937 | 78.47 | ug/kg | 94 |
| 10) Fluorene | 13.558 | 166 | 36021 | 72.55 | ug/kg | 99 |
| 12) Phenanthrene | 15.012 | 178 | 48107 | 78.44 | ug/kg | 97 |
| 13) Anthracene | 15.054 | 178 | 47280 | 76.19 | ug/kg | 98 |
| 14) Fluoranthene | 17.068 | 202 | 51738 | 81.81 | ug/kg | 97 |
| 15) Pyrene | 17.698 | 202 | 51033 | 82.68 | ug/kg | 96 |
| 18) Benzo[a]anthracene | 20.804 | 228 | 44481 | 72.48 | ug/kg | 99 |
| 19) Chrysene | 21.068 | 228 | 42224 | 73.74 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.452 | 252 | 41910 | 69.33 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.540 | 252 | 34896 | 64.63 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.643 | 252 | 37655 | 70.56 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.727 | 252 | 46090 | 80.10 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.903 | 252 | 38683 | 68.53 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.499 | 276 | 48777 | 69.24 | ug/kg | 98 |
| 27) Dibenz[a,h]anthracene | 29.492 | 278 | 38465 | 63.82 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.642 | 276 | 42637 | 70.11 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052527.D
Acq On : 26 May 2016 1:04 am
Operator :
Sample : 1605135-14AMSD
Misc : MSD
ALS Vial : 27 Sample Multiplier: 10

Quant Time: May 26 08:52:43 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052528.D
Acq On : 26 May 2016 1:41 am
Operator :
Sample : 1605098-36A
Misc : SAMP
ALS Vial : 28 Sample Multiplier: 10

Quant Time: May 26 08:55:36 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.267 | 136 | 1530091 | 4000.00 | ug/kg | 94 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1209709 | 4000.00 | ug/kg | 96 |
| 11) Phenanthrene-d10 | 14.976 | 188 | 2091599 | 4000.00 | ug/kg | 71 |
| 16) Chrysene-d12 | 20.980 | 240 | 2100706 | 4000.00 | ug/kg | 77 |
| 20) Perylene-d12 | 26.240 | 264 | 2010622 | 4000.00 | ug/kg | 81 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.756 | 172 | 31915 | 93.68 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.34%# | | | |
| 17) 4-Terphenyl-d14 | 17.584 | 244 | 34885 | 78.46 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.96%# | | | |

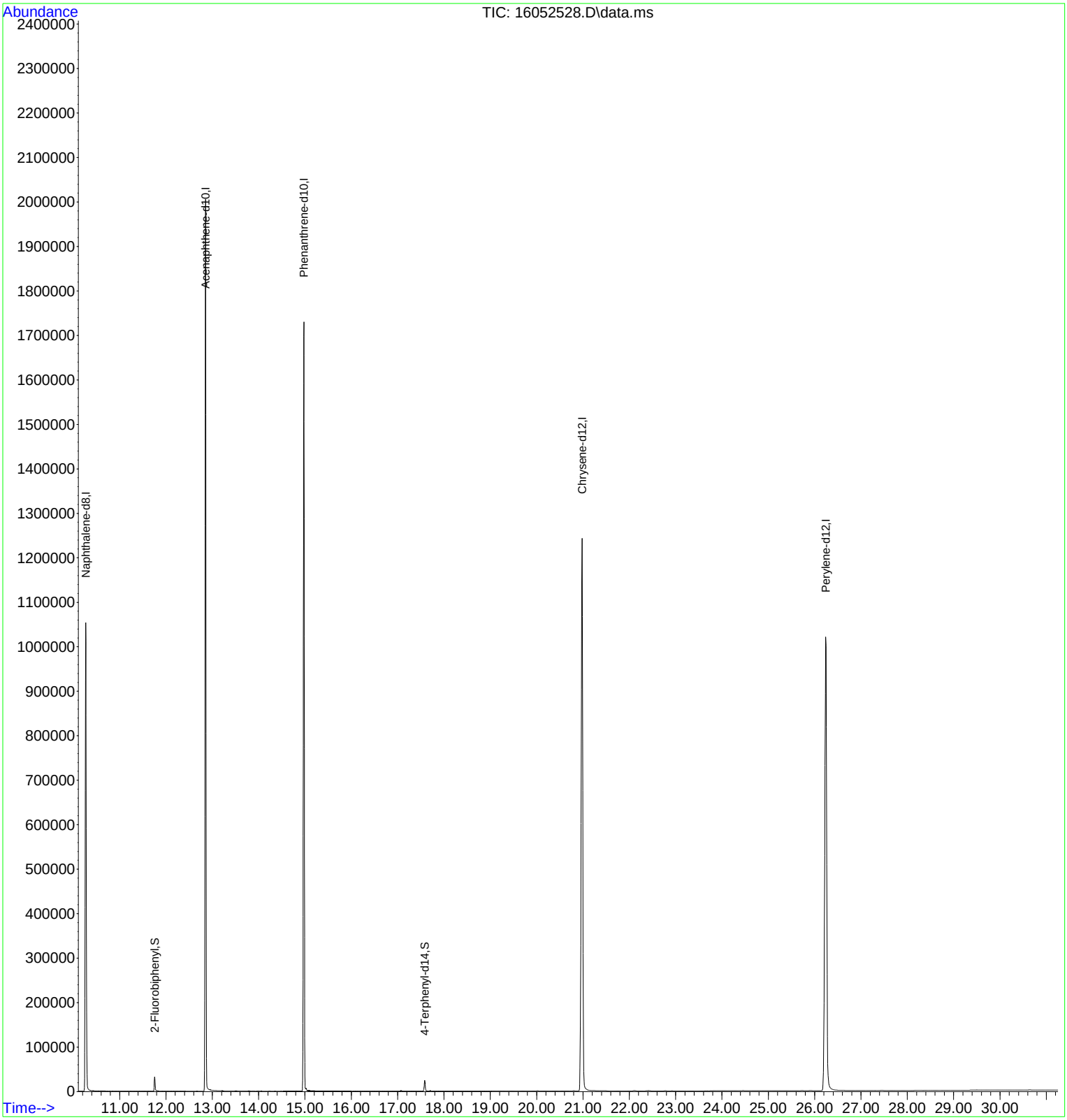
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052528.D
Acq On : 26 May 2016 1:41 am
Operator :
Sample : 1605098-36A
Misc : SAMP
ALS Vial : 28 Sample Multiplier: 10

Quant Time: May 26 08:55:36 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052529.D
Acq On : 26 May 2016 2:18 am
Operator :
Sample : 1605098-39A
Misc : SAMP
ALS Vial : 29 Sample Multiplier: 10

Quant Time: May 26 08:55:39 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.267 | 136 | 1520196 | 4000.00 | ug/kg | 93 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1226554 | 4000.00 | ug/kg | 98 |
| 11) Phenanthrene-d10 | 14.976 | 188 | 2150102 | 4000.00 | ug/kg | 73 |
| 16) Chrysene-d12 | 20.980 | 240 | 2183392 | 4000.00 | ug/kg | 81 |
| 20) Perylene-d12 | 26.247 | 264 | 2093430 | 4000.00 | ug/kg | 84 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.756 | 172 | 31628 | 93.44 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.34%# | | | |
| 17) 4-Terphenyl-d14 | 17.584 | 244 | 35147 | 76.05 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.90%# | | | |

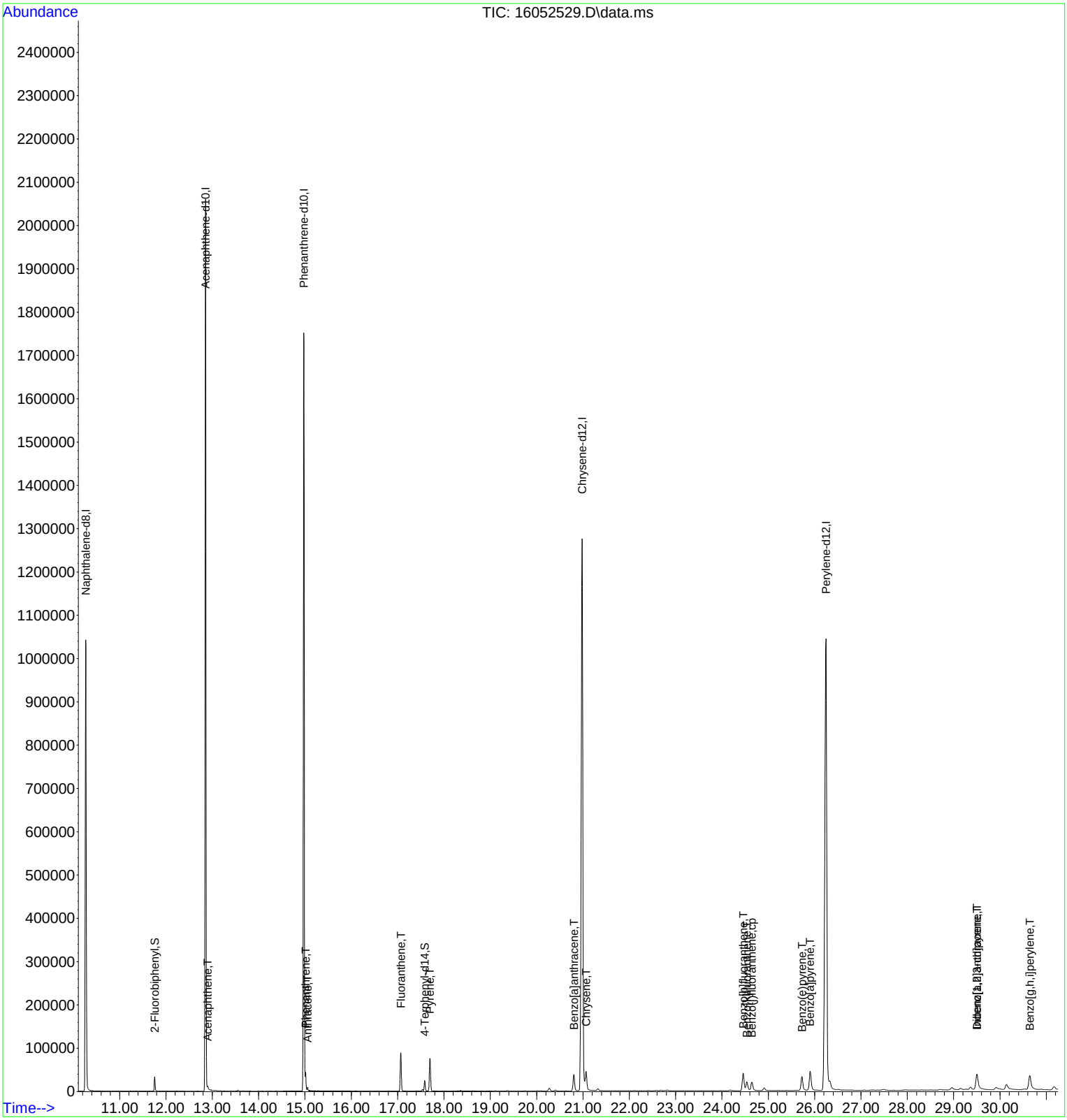
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 8) Acenaphthene | 12.905 | 153 | 2978 | 8.80 | ug/kg | 98 |
| 12) Phenanthrene | 15.012 | 178 | 35569 | 60.12 | ug/kg | 98 |
| 13) Anthracene | 15.056 | 178 | 7641 | 12.76 | ug/kg | 97 |
| 14) Fluoranthene | 17.068 | 202 | 99994 | 166.34 | ug/kg | 97 |
| 15) Pyrene | 17.698 | 202 | 89158 | 151.81 | ug/kg | 96 |
| 18) Benzo[a]anthracene | 20.804 | 228 | 61555 | 107.06 | ug/kg | 98 |
| 19) Chrysene | 21.068 | 228 | 71310 | 134.12 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.460 | 252 | 80911 | 143.72 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.540 | 252 | 35423 | 69.57 | ug/kg | 96 |
| 23) Benzo(j)fluoranthene | 24.643 | 252 | 36780 | 73.10 | ug/kg | 91 |
| 24) Benzo(e)pyrene | 25.727 | 252 | 64992 | 120.94 | ug/kg | 97 |
| 25) Benzo[a]pyrene | 25.903 | 252 | 94609 | 181.17 | ug/kg | 100 |
| 26) Indeno[1,2,3-cd]pyrene | 29.507 | 276 | 74806 | 114.33 | ug/kg | 92 |
| 27) Dibenz[a,h]anthracene | 29.492 | 278 | 12853 | 19.65 | ug/kg | 96 |
| 28) Benzo[g,h,i]perylene | 30.642 | 276 | 78689 | 140.11 | ug/kg | 99 |

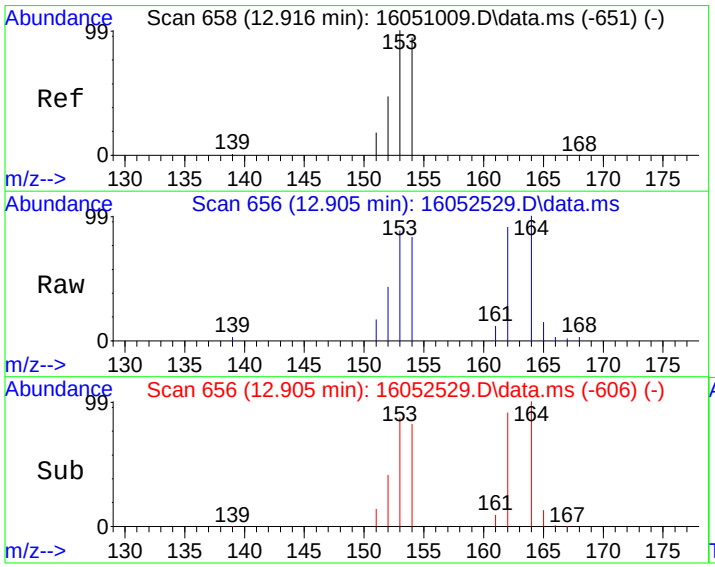
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052529.D
Acq On : 26 May 2016 2:18 am
Operator :
Sample : 1605098-39A
Misc : SAMP
ALS Vial : 29 Sample Multiplier: 10

Quant Time: May 26 08:55:39 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

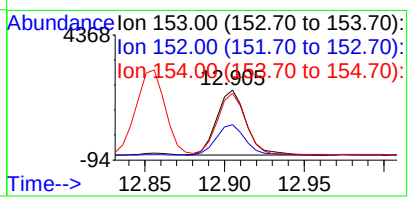


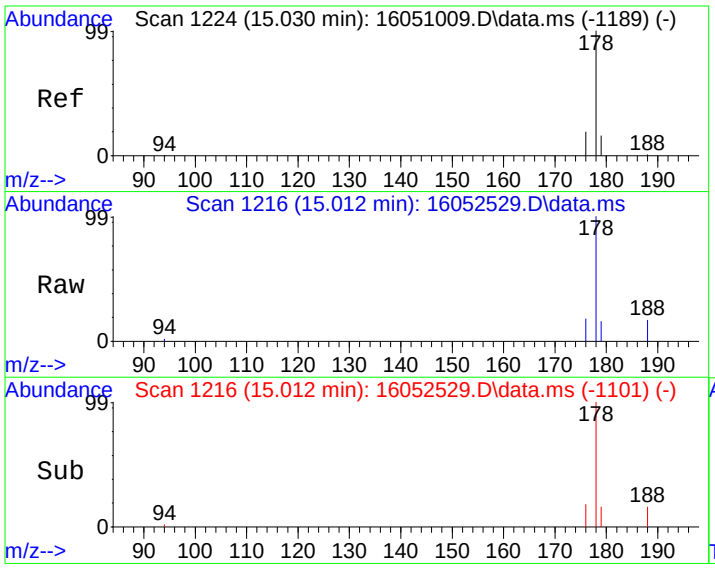



#8
Acenaphthene
Concen: 8.80 ug/kg
RT: 12.905 min Scan# 656
Delta R.T. -0.006 min
Lab File: 16052529.D
Acq: 26 May 2016 2:18 am

Tgt Ion:153 Resp: 2978

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 153 | 100 | | |
| 152 | 47.1 | 26.5 | 66.5 |
| 154 | 94.0 | 76.3 | 116.3 |

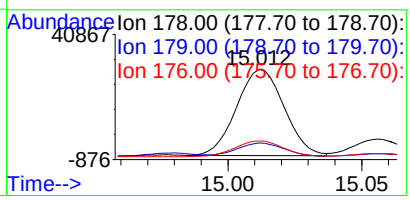


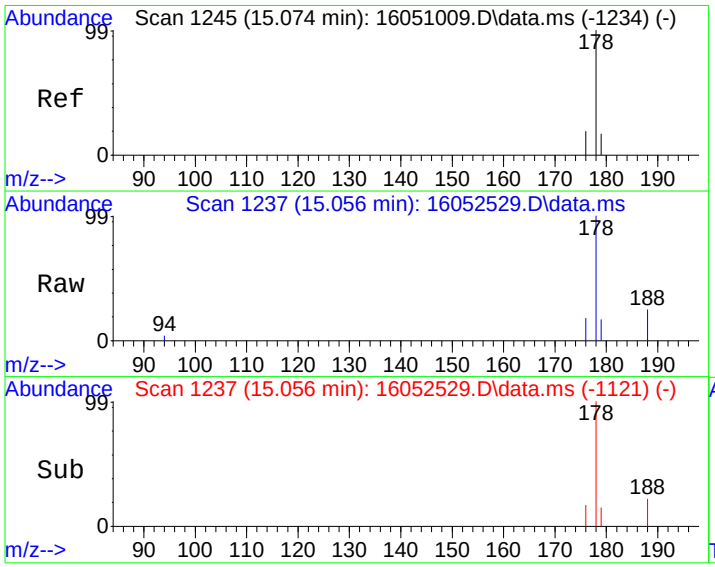




#12
Phenanthrene
Concen: 60.12 ug/kg
RT: 15.012 min Scan# 1216
Delta R.T. -0.008 min
Lab File: 16052529.D
Acq: 26 May 2016 2:18 am

Tgt Ion:178 Resp: 35569

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.2 | 0.0 | 36.4 |
| 176 | 18.2 | 0.0 | 39.0 |

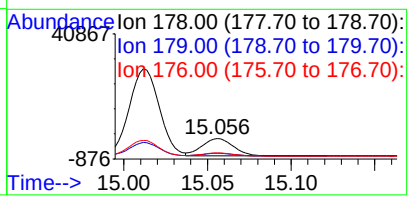


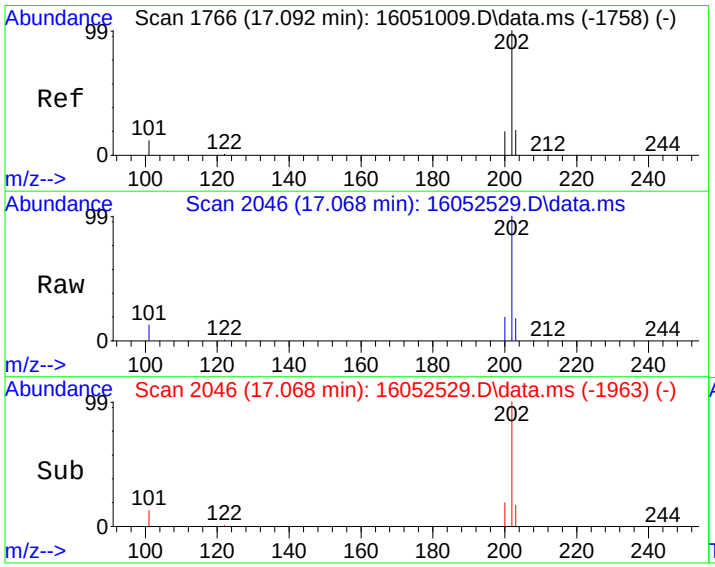




#13
Anthracene
Concen: 12.76 ug/kg
RT: 15.056 min Scan# 1237
Delta R.T. -0.006 min
Lab File: 16052529.D
Acq: 26 May 2016 2:18 am

Tgt Ion:178 Resp: 7641

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.0 | 0.0 | 36.3 |
| 176 | 17.3 | 0.0 | 38.5 |

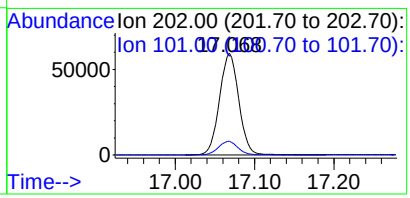


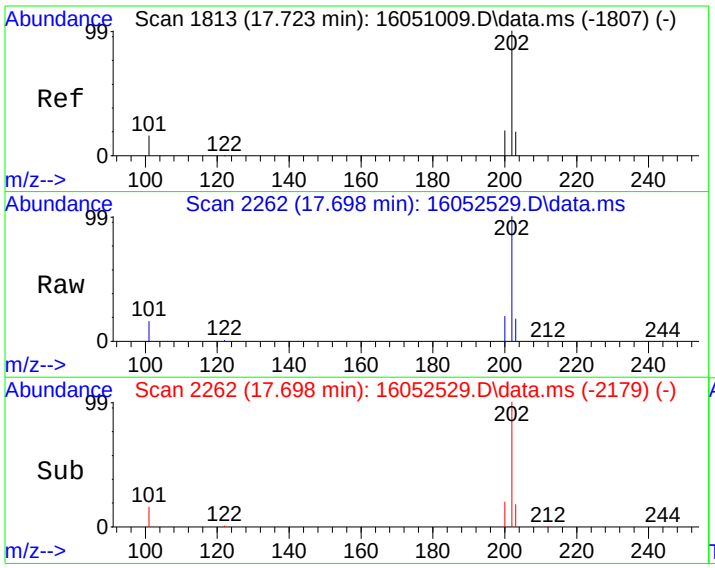



#14
Fluoranthene
Concen:  166.34 ug/kg
RT:  17.068 min  Scan# 2046
Delta R.T.  -0.008 min
Lab File:  16052529.D
Acq: 26 May 2016  2:18 am

Tgt Ion:202 Resp:  99994

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 13.3 | 0.0 | 34.4 |

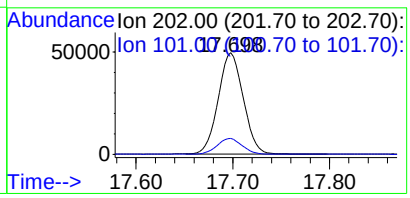


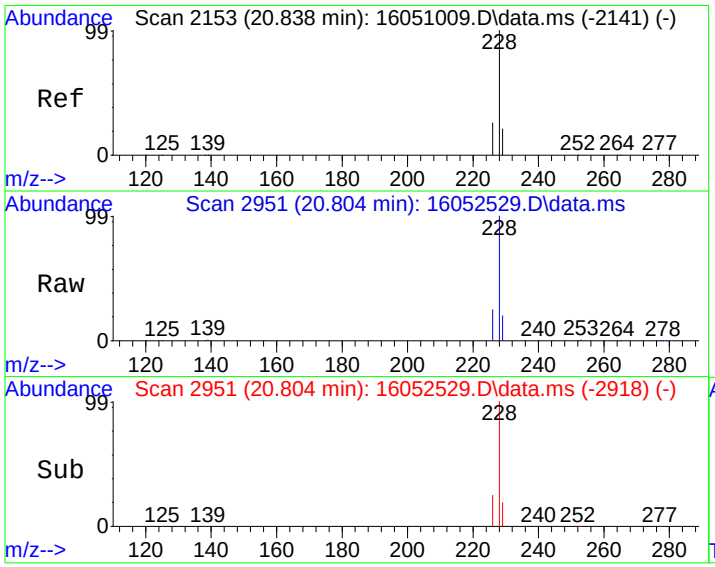




#15
Pyrene
Concen:  151.81 ug/kg
RT:  17.698 min  Scan# 2262
Delta R.T.  -0.008 min
Lab File:  16052529.D
Acq: 26 May 2016  2:18 am

Tgt Ion:202 Resp:  89158

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 15.6 | 0.0 | 37.3 |

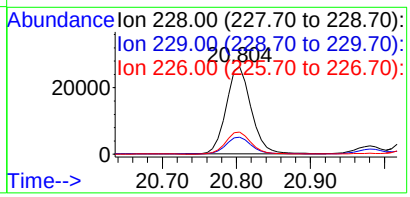


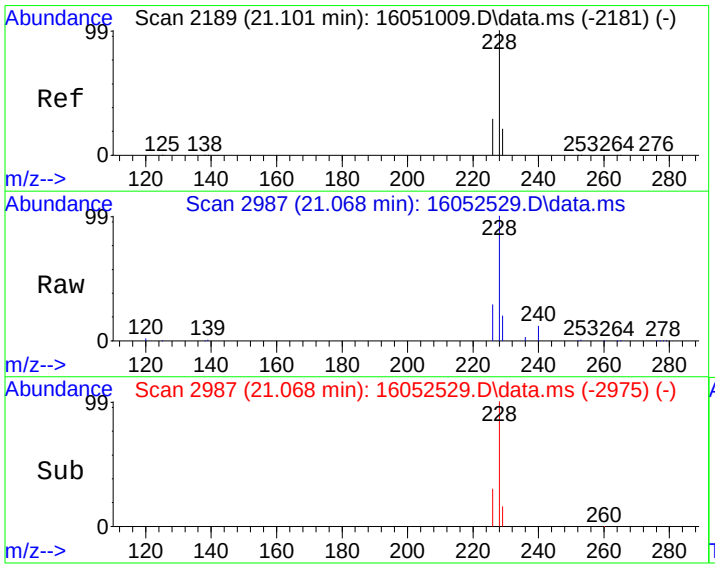




#18
Benzo[a]anthracene
Concen:  107.06 ug/kg
RT:  20.804 min  Scan# 2951
Delta R.T.  -0.008 min
Lab File:  16052529.D
Acq: 26 May 2016  2:18 am

Tgt Ion:228 Resp:  61555

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.2 | 0.3 | 40.3 |
| 226 | 25.1 | 5.7 | 45.7 |

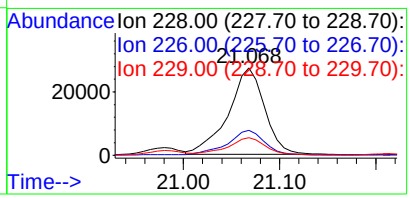


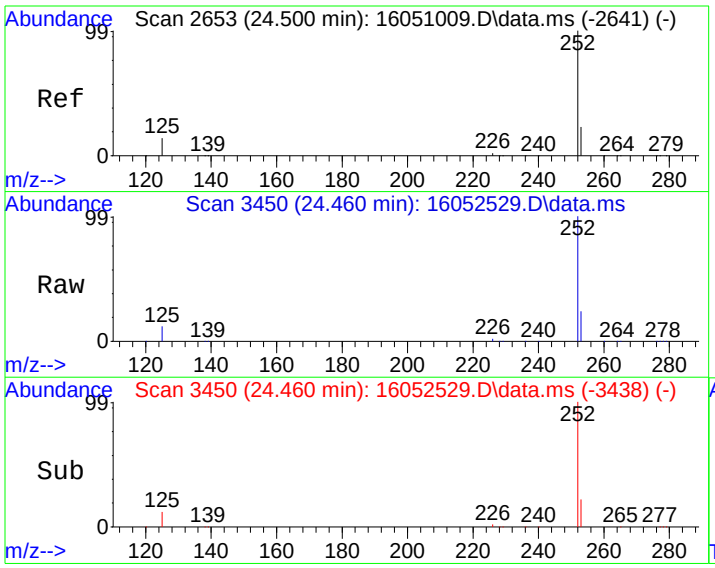



#19
Chrysene
Concen: 134.12 ug/kg
RT: 21.068 min Scan# 2987
Delta R.T. -0.015 min
Lab File: 16052529.D
Acq: 26 May 2016 2:18 am

Tgt Ion:228 Resp: 71310

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.4 | 8.2 | 48.2 |
| 229 | 19.9 | 0.3 | 40.3 |

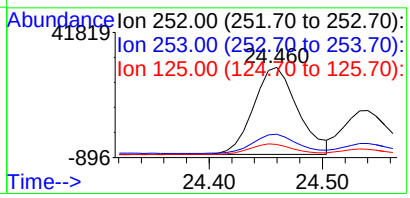


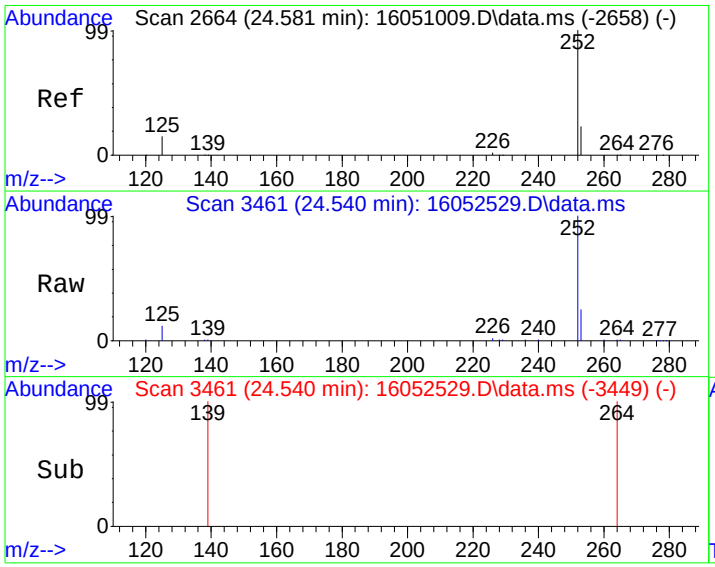




#21
Benzo[b]fluoranthene
Concen: 143.72 ug/kg
RT: 24.460 min Scan# 3450
Delta R.T. -0.015 min
Lab File: 16052529.D
Acq: 26 May 2016 2:18 am

Tgt Ion:252 Resp: 80911

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.0 | 2.3 | 42.3 |
| 125 | 11.7 | 0.0 | 32.2 |

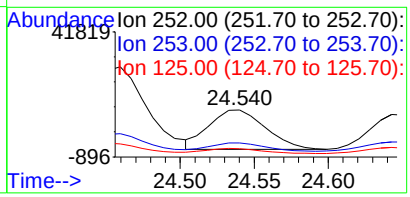


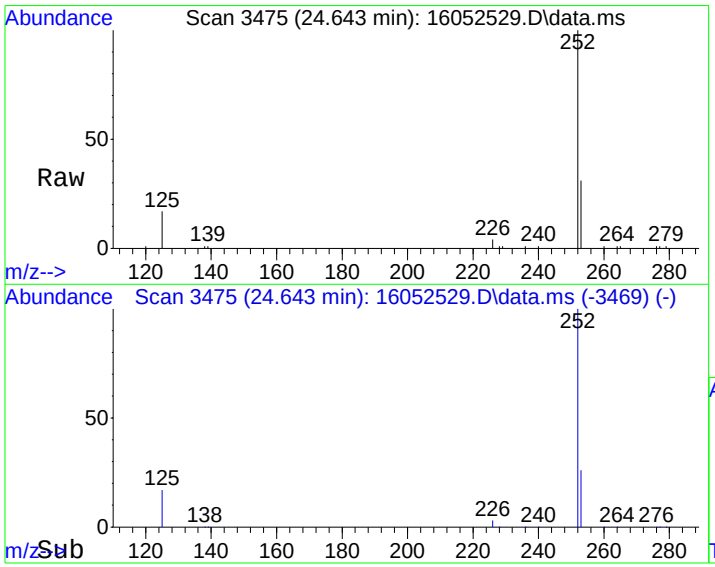




#22
Benzo[k]fluoranthene
Concen: 69.57 ug/kg
RT: 24.540 min Scan# 3461
Delta R.T. -0.015 min
Lab File: 16052529.D
Acq: 26 May 2016 2:18 am

Tgt Ion:252 Resp: 35423

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 20.0 | 2.5 | 42.5 |
| 125 | 11.5 | 0.0 | 32.6 |

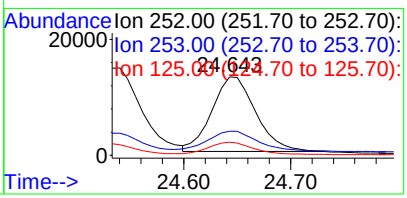


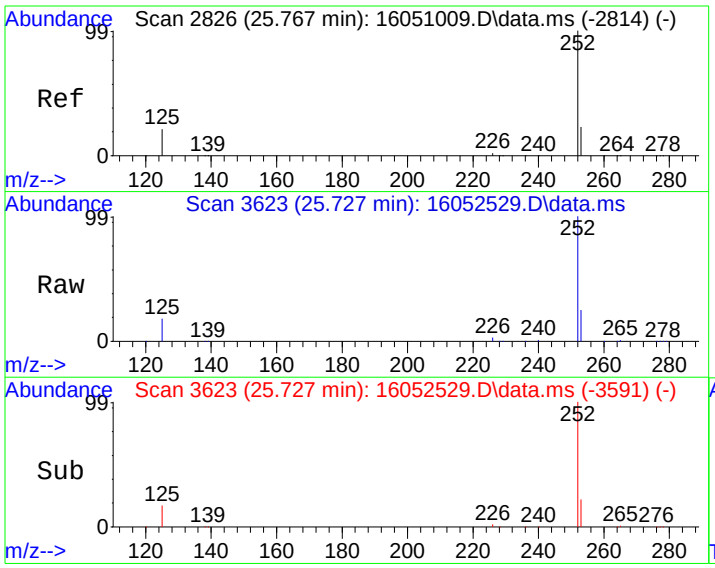



#23
Benzo(j)fluoranthene
Concen: 73.10 ug/kg
RT: 24.643 min Scan# 3475
Delta R.T. -0.022 min
Lab File: 16052529.D
Acq: 26 May 2016 2:18 am

Tgt Ion:252 Resp: 36780

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 29.1 | 2.2 | 42.2 |
| 125 | 16.5 | 0.0 | 37.3 |

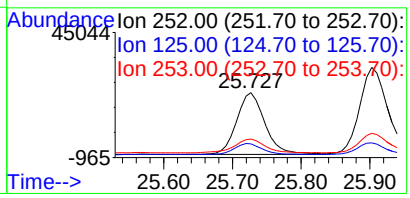


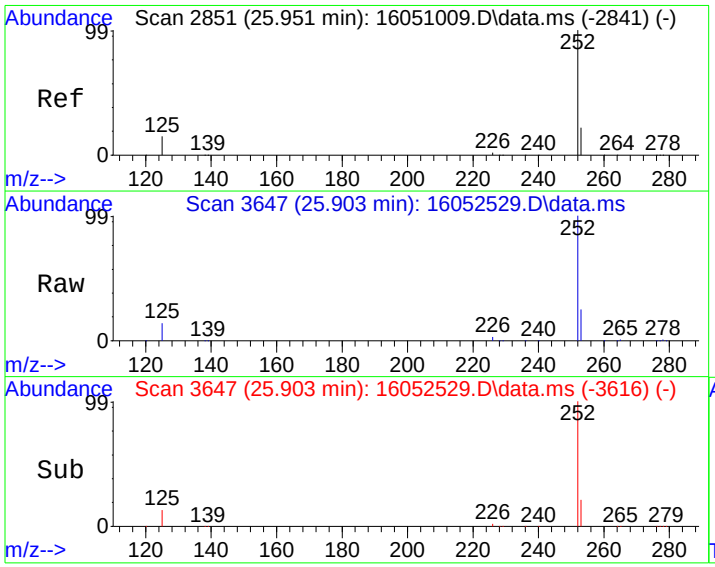




#24
Benzo(e)pyrene
Concen: 120.94 ug/kg
RT: 25.727 min Scan# 3623
Delta R.T. -0.015 min
Lab File: 16052529.D
Acq: 26 May 2016 2:18 am

Tgt Ion:252 Resp: 64992

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 125 | 17.7 | 0.0 | 38.7 |
| 253 | 24.4 | 2.3 | 42.3 |

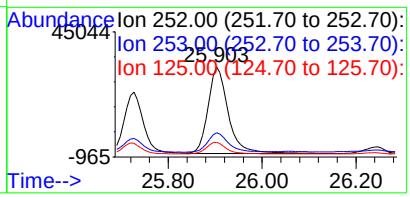


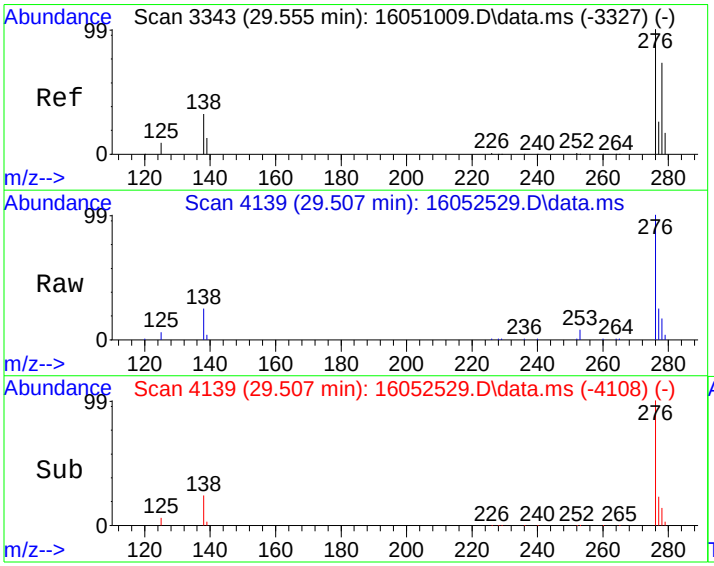




#25
Benzo[a]pyrene
Concen: 181.17 ug/kg
RT: 25.903 min Scan# 3647
Delta R.T. -0.022 min
Lab File: 16052529.D
Acq: 26 May 2016 2:18 am

Tgt Ion:252 Resp: 94609

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.4 | 2.3 | 42.3 |
| 125 | 13.5 | 0.0 | 33.5 |

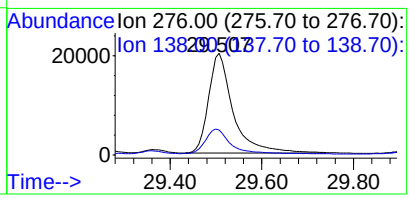


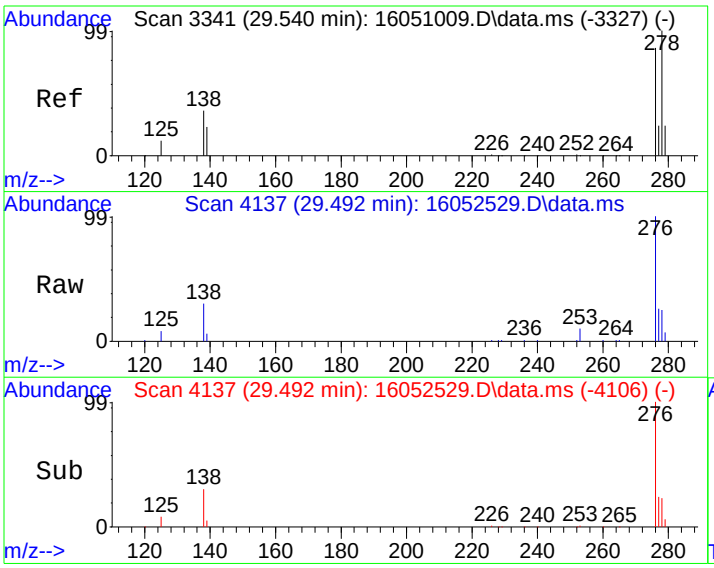



#26
Indeno[1,2,3-cd]pyrene
Concen: 114.33 ug/kg
RT: 29.507 min Scan# 4139
Delta R.T. -0.022 min
Lab File: 16052529.D
Acq: 26 May 2016 2:18 am

Tgt Ion:276 Resp: 74806

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 23.9 | 8.3 | 48.3 |

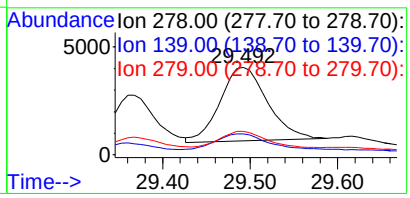


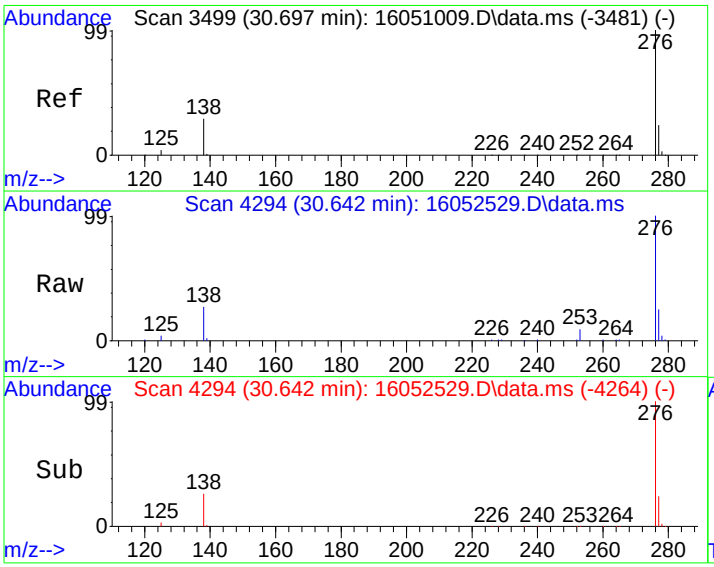




#27
Dibenz[a,h]anthracene
Concen: 19.65 ug/kg
RT: 29.492 min Scan# 4137
Delta R.T. -0.022 min
Lab File: 16052529.D
Acq: 26 May 2016 2:18 am

Tgt Ion:278 Resp: 12853

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 22.0 | 0.0 | 40.0 |
| 279 | 22.8 | 4.2 | 44.2 |

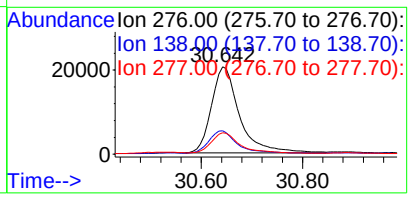



#28
Benzo[g,h,i]perylene
Concen: 140.11 ug/kg
RT: 30.642 min Scan# 4294
Delta R.T. -0.030 min
Lab File: 16052529.D
Acq: 26 May 2016 2:18 am

Tgt Ion:276 Resp: 78689

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 26.0 | 5.8 | 45.8 |
| 277 | 23.7 | 4.4 | 44.4 |



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052530.D
Acq On : 26 May 2016 2:55 am
Operator :
Sample : CCV-160525
Misc : CCV
ALS Vial : 30 Sample Multiplier: 1

Quant Time: May 26 08:52:46 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

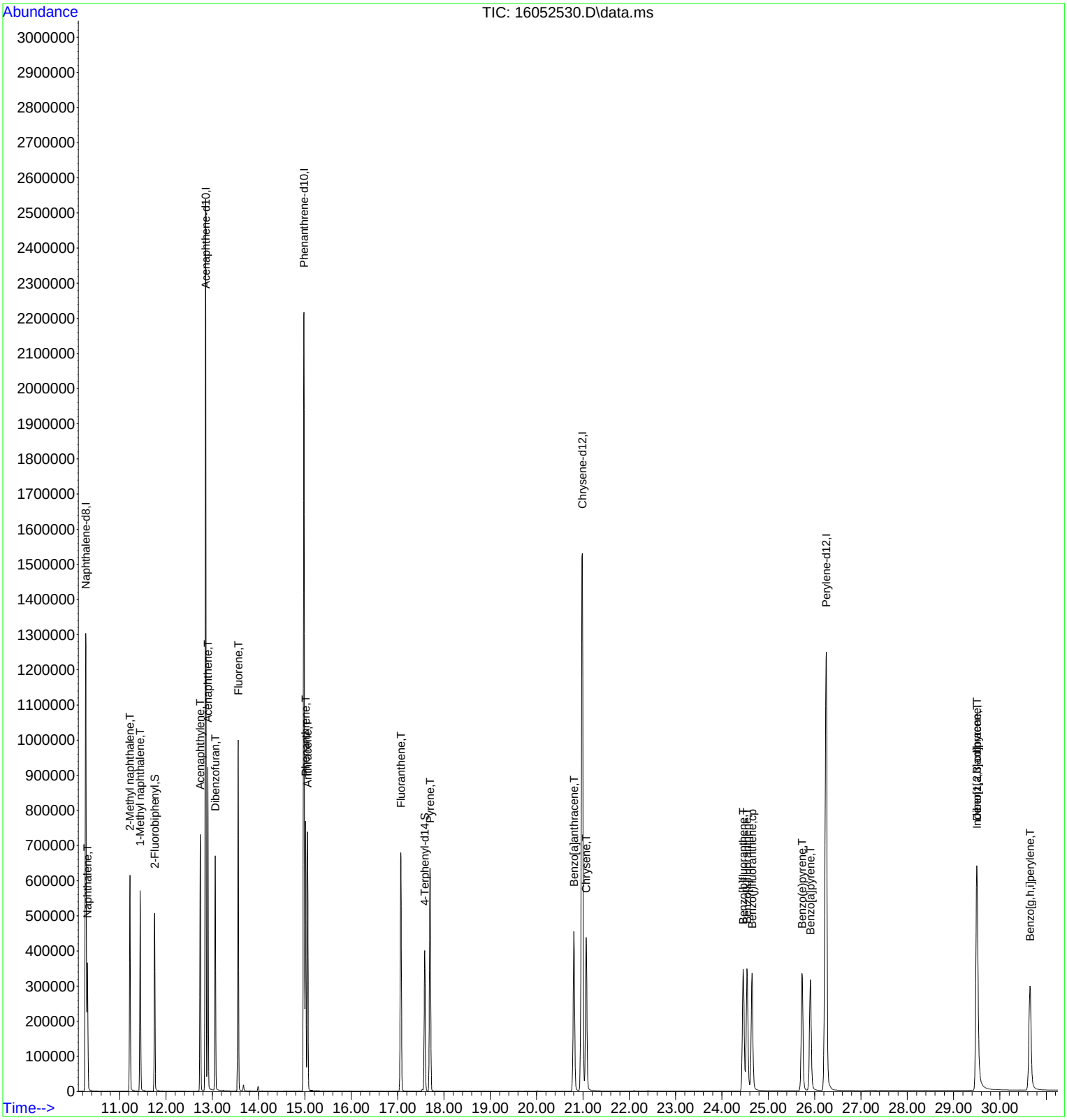
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.267 | 136 | 1875325 | 4000.00 | ug/kg | 115 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1539094 | 4000.00 | ug/kg | 123 |
| 11) Phenanthrene-d10 | 14.978 | 188 | 2805100 | 4000.00 | ug/kg | 96 |
| 16) Chrysene-d12 | 20.987 | 240 | 2687223 | 4000.00 | ug/kg | 99 |
| 20) Perylene-d12 | 26.254 | 264 | 2544373 | 4000.00 | ug/kg | 102 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.756 | 172 | 462827 | 1108.45 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 27.71%# | | | |
| 17) 4-Terphenyl-d14 | 17.584 | 244 | 558281 | 981.54 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 24.54%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.304 | 128 | 419632 | 998.83 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.221 | 142 | 366484 | 1122.13 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.444 | 142 | 337591 | 1092.34 | ug/kg | 99 |
| 7) Acenaphthylene | 12.738 | 152 | 695535 | 1033.88 | ug/kg | 99 |
| 8) Acenaphthene | 12.905 | 153 | 426987 | 1005.85 | ug/kg | 99 |
| 9) Dibenzofuran | 13.062 | 168 | 630442 | 974.91 | ug/kg | 94 |
| 10) Fluorene | 13.558 | 166 | 543082 | 925.58 | ug/kg | 99 |
| 12) Phenanthrene | 15.014 | 178 | 724960 | 939.27 | ug/kg | 99 |
| 13) Anthracene | 15.058 | 178 | 718686 | 920.22 | ug/kg | 99 |
| 14) Fluoranthene | 17.068 | 202 | 760167 | 1001.61 | ug/kg | 99 |
| 15) Pyrene | 17.701 | 202 | 747957 | 1007.82 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.804 | 228 | 698634 | 1023.62 | ug/kg | 99 |
| 19) Chrysene | 21.068 | 228 | 642432 | 1018.74 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.459 | 252 | 680004 | 1020.75 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.540 | 252 | 595704 | 990.49 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.650 | 252 | 584622 | 1013.18 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.727 | 252 | 645929 | 1025.54 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.910 | 252 | 629826 | 1014.28 | ug/kg | 100 |
| 26) Indeno[1,2,3-cd]pyrene | 29.514 | 276 | 777859 | 1018.02 | ug/kg | 97 |
| 27) Dibenz[a,h]anthracene | 29.499 | 278 | 644267 | 1012.52 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.649 | 276 | 659869 | 1001.03 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160525\
Data File : 16052530.D
Acq On : 26 May 2016 2:55 am
Operator :
Sample : CCV-160525
Misc : CCV
ALS Vial : 30 Sample Multiplier: 1

Quant Time: May 26 08:52:46 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



# GCMS8
# Calibration Curve
# For

# DHL Work Order
# 1605098

CAL ID: 658

# Method 8270 PAH Calibration Curve Sheet

**Instrument ID:** GCMS #8 **Calibration File Name:** PP160510.CAL

| Target Concentration | Solvent Amount mL | Standard Preparation Stocks and Surrogate (µL/mL) | Final Volume mL |
|---|---|---|---|
| 5 ppb | 0.999 | 0.001 mL of 5000 ppb | 1 |
| 10 ppb | 0.998 | 0.002 mL of 5000 ppb | 1 |
| 50 ppb | 0.990 | 0.01 mL of 5000 ppb | 1 |
| 100 ppb | 0.980 | 0.02 mL of 5000 ppb | 1 |
| 500 ppb | 0.900 | 0.10 mL of 5000 ppb | 1 |
| 1000 ppb | 0.800 | 0.20 mL of 5000 ppb | 1 |
| 2000 ppb | 0.600 | 0.40 mL of 5000 ppb | 1 |
| 5000 ppb | ---- | PAHCAL160510 | 10 |
| SSCV 2500 ppb | 0.500 | 0.50 mL of PAHSSCV160510-1 | 1 |
| SSCV 2500 ppb | ---- | PAHSSCV160510-2 | 1 |

## Standards Used for the Calibration Curve

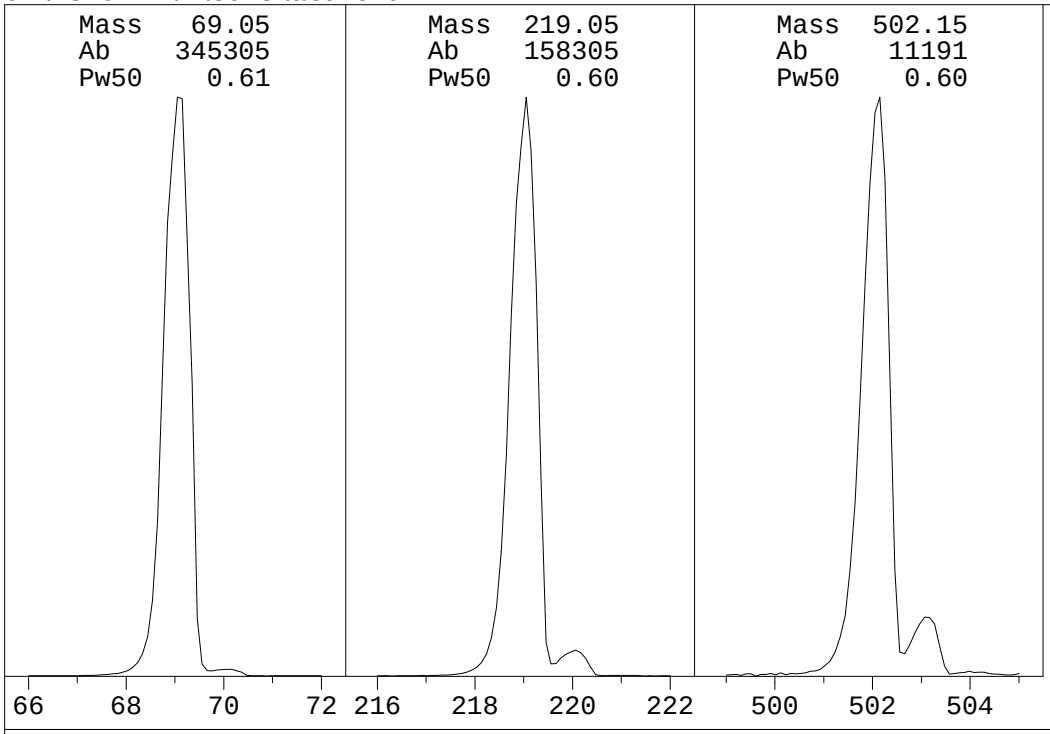
| Primary Stock STDs | DHL Standard ID | Second Source (SS) Stock STDs | DHL Standard ID |
|---|---|---|---|
| 5 PPM (5000 PPB) PAH CAL STD | **PAHCAL160510** | 5PPM (5000PPB) PAH SSCV STD | **PAHSSCV160510-1** |
| | | 5PPM (5000PPB) PAH SSCV STD | **PAHSSCV160510-2** |

| Review Item | Acceptance Criteria | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|---|
| 1. Are all standards within expiration dates? | Primary Stocks = 1 year<br>Intermediate Standards = 6 months | X | | | x |
| 2. Are all manual integrations listed on MI tracking form? **(DoD Projects only)** | Manual Integration Tracking Form | | | X | x |
| 3. Does the tune and resolution check meet criteria? | Benzo(b) / Benzo(k)phenanthrene Valley > 50%<br>See Tune Eval Report | X | | | x |
| 4. Does the ICAL curve meet criteria? Use average CF only if %RSD < 15% | %RSD < 15%<br>COD ≥ 0.990 | X | | | x |
| 5. Has the low point been reprocessed under the new ICAL curve and meets criteria? | 70-130% recovery | X | | | x |
| 6. Has the SSCV been analyzed and meets criteria? | 80-120% recovery | X | | | x |

Analyst: Don Winston Date: 05/11/16

Second-Level Review: Date: 05/13/16

Tue May 10 17:43:08 2016 Instrument: GCMS #8
C:\MSDCHEM\1\5973\atune.u

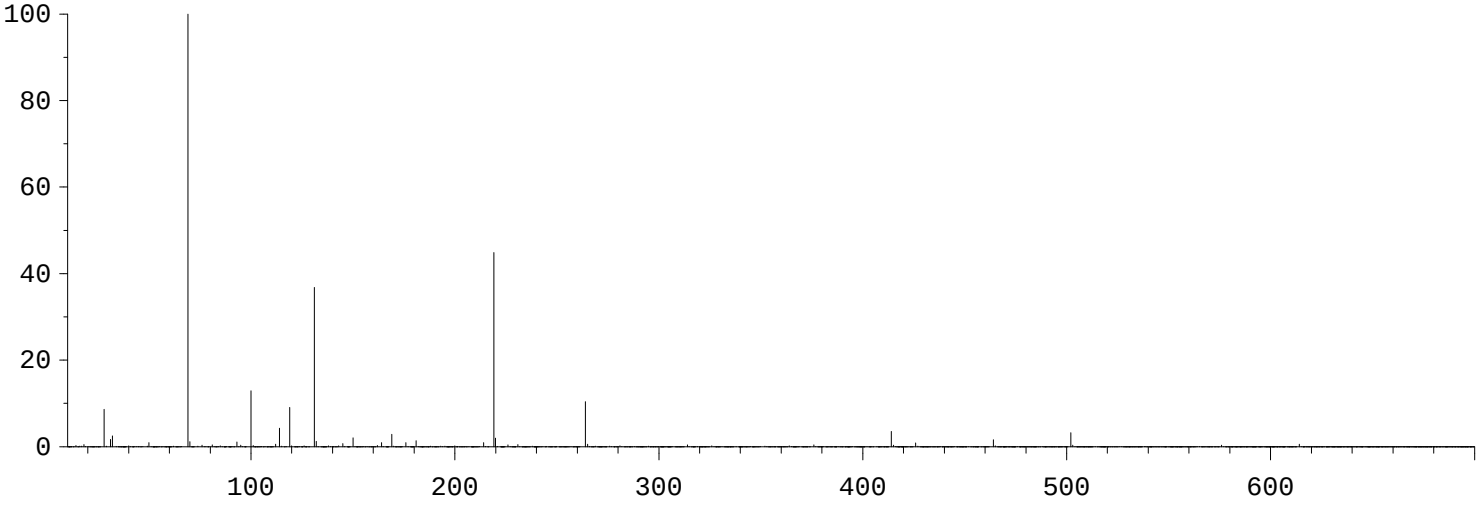



| | | | |
|---|---|---|---|
| Ion Pol | POS | MassGain | 48 |
| | | MassOffs | -11 |
| Emission | 34.6 | AmuGain | 2098 |
| EIEnrgy | 69.9 | AmuOffs | 132 |
| Filament | 2 | Wid219 | -0.001 |
| | | DC Pol | NEG |
| Repeller | 37.83 | | |
| IonFcus | 95.9 | HEDEnab | ON |
| EntLens | 12.0 | EMVolts | 1129 |
| EntOffs | 19.33 | | |
| | | Samples | 8 |
| PFTBA | OPEN | Averages | 3 |
| | | Stepsize | 0.10 |

Zones:

| | | | |
|---|---|---|---|
| MS Source | 230 | Foreline | 42 |
| MS Quad | 150 | | |

Scan: 10.00 - 700.00 Samples: 8 Thresh: 0 Step: 0.10
1104 peaks Base: 69.05 Abundance: 313856




| Mass | Abund | Rel Abund | Iso Mass | Iso Abund | Iso Ratio |
|---|---|---|---|---|---|
| 69.05 | 313856 | 100.00 | 70.05 | 3636 | 1.16 |
| 219.05 | 140864 | 44.88 | 219.95 | 6244 | 4.43 |
| 502.05 | 10193 | 3.25 | 503.05 | 1021 | 10.02 |

Air/Water Check: H20~0.52% N2~8.62% O2~2.46% CO2~0.08% N2/H2O~1654.80%

Column Flow: Front: 0 Back: 1.887 ml/min. Interface Temp: 310

Ramp Criteria:
Ion Focus Maximum 125 volts using ion 219; EM Gain 4120
Repeller Maximum 38 volts using ion 502;

MassGain Values @Samples: 45@3 45@2 45@1 45@0 48@FS

| TARGET MASS: | 50 | 69 | 131 | 219 | 414 | 502 | 800 |
|---|---|---|---|---|---|---|---|
| Amu Offset: | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 |
| Entrance Lens Offset: | 19.3 | 19.3 | 19.3 | 19.3 | 19.3 | 19.3 | 19.3 |

# Response Factor Report GCMS #8

Method Path : C:\msdchem\1\METHODS\
Method File : PAH160510.M
Title : CLP BNA Calibration - Large Volume Injection
Last Update : Wed May 11 10:43:33 2016
Response Via : Initial Calibration

Calibration Files
1 =16051003.D 2 =16051004.D 3 =16051005.D 4 =16051006.D 5 =16051007.D 6 =16051008.D 7 =16051009.D
8 =16051010.D

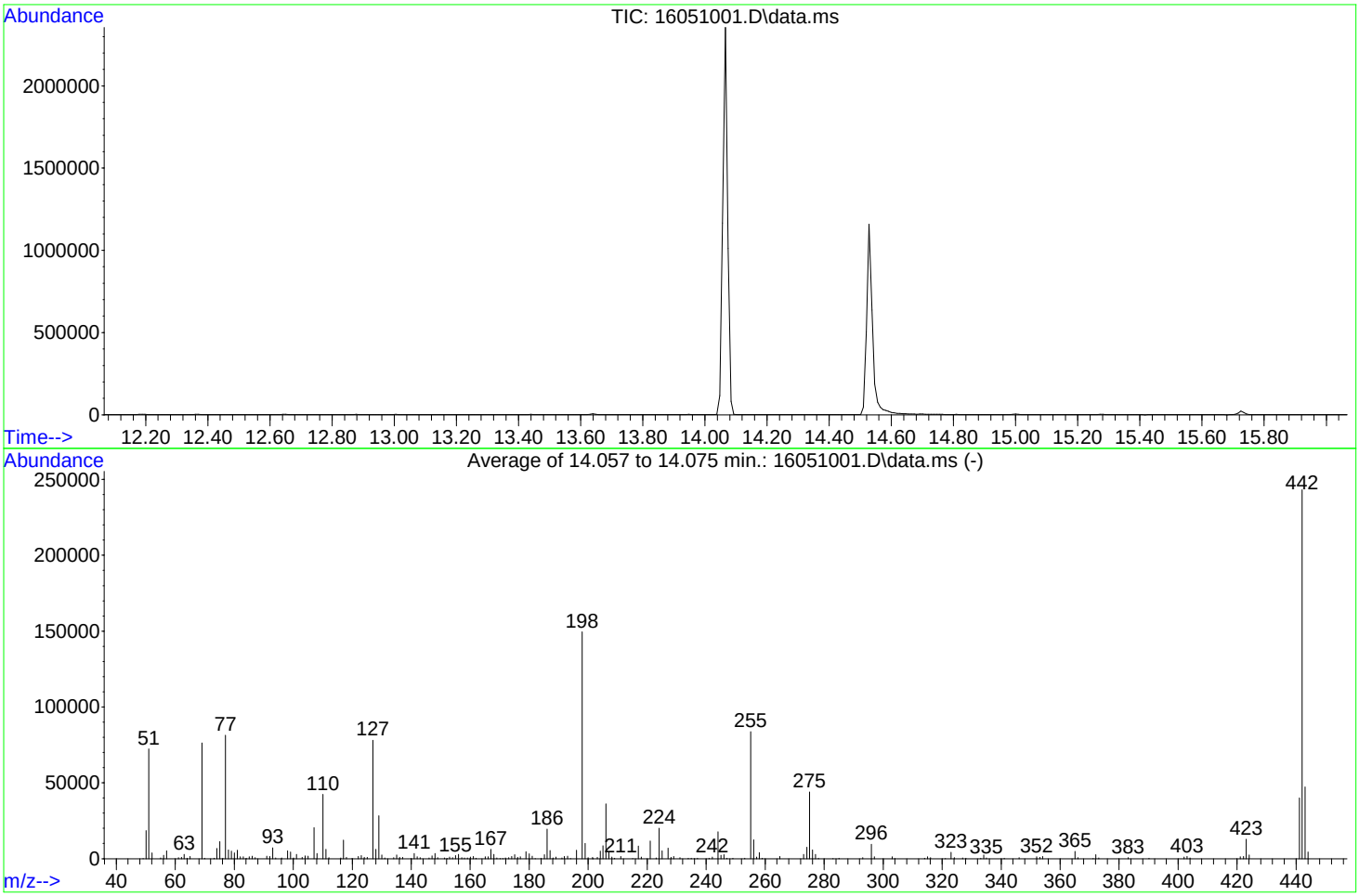
| | | Compound | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Avg | %RSD | Fit | RSD/CF | Constant | Linear | Quad |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | I | Naphthalene-d8 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 2) | T | Naphthalene | 0.990 | 0.957 | 0.981 | 0.991 | 0.980 | 0.983 | 0.972 | 0.901 | 0.969 | 3.05 | A | 0.0305 | 0.0000 | 0.9694 | 0.0000 |
| 3) | T | 2-Methyl napht... | 0.422 | 0.448 | 0.511 | 0.539 | 0.631 | 0.672 | 0.671 | 0.637 | 0.566 | 17.63 | *Q | 0.9991 | -0.0006 | 0.6679 | -0.0223 |
| 4) | T | 1-Methyl napht... | 0.579 | 0.555 | 0.575 | 0.595 | 0.665 | 0.661 | 0.642 | 0.594 | 0.608 | 6.89 | A | 0.0689 | 0.0000 | 0.6083 | 0.0000 |
| 5) | S | 2-Fluorobiphenyl | 0.801 | 0.710 | 0.768 | 0.789 | 0.820 | 0.840 | 0.809 | 0.752 | 0.786 | 5.28 | A | 0.0528 | 0.0000 | 0.7862 | 0.0000 |
| 6) | I | Acenaphthene-d10 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 7) | T | Acenaphthylene | 1.977 | 1.879 | 1.907 | 1.925 | 1.894 | 1.889 | 1.874 | 1.694 | 1.880 | 4.37 | A | 0.0437 | 0.0000 | 1.8797 | 0.0000 |
| 8) | T | Acenaphthene | 1.251 | 1.184 | 1.210 | 1.217 | 1.191 | 1.200 | 1.179 | 1.085 | 1.190 | 4.04 | A | 0.0404 | 0.0000 | 1.1895 | 0.0000 |
| 9) | T | Dibenzofuran | 2.007 | 1.939 | 1.988 | 1.985 | 1.943 | 1.925 | 1.867 | 1.713 | 1.921 | 4.94 | A | 0.0494 | 0.0000 | 1.9209 | 0.0000 |
| 10) | T | Fluorene | 1.915 | 1.810 | 1.845 | 1.817 | 1.805 | 1.821 | 1.760 | 1.680 | 1.806 | 3.73 | A | 0.0373 | 0.0000 | 1.8065 | 0.0000 |
| 11) | I | Phenanthrene-d10 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 12) | T | Phenanthrene | 1.345 | 1.221 | 1.191 | 1.165 | 1.134 | 1.129 | 1.104 | 0.971 | 1.158 | 9.20 | A | 0.0920 | 0.0000 | 1.1577 | 0.0000 |
| 13) | T | Anthracene | 1.456 | 1.302 | 1.300 | 1.290 | 1.248 | 1.211 | 1.197 | 1.032 | 1.254 | 9.57 | A | 0.0957 | 0.0000 | 1.2543 | 0.0000 |
| 14) | T | Fluoranthene | 1.832 | 1.581 | 1.558 | 1.594 | 1.510 | 1.453 | 1.427 | 1.165 | 1.515 | 12.40 | A | 0.1240 | 0.0000 | 1.5151 | 0.0000 |
| 15) | T | Pyrene | 1.863 | 1.601 | 1.565 | 1.586 | 1.498 | 1.446 | 1.422 | 1.176 | 1.520 | 12.79 | A | 0.1279 | 0.0000 | 1.5196 | 0.0000 |
| 16) | I | Chrysene-d12 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 17) | S | 4-Terphenyl-d14 | 1.049 | 0.947 | 0.949 | 0.924 | 0.908 | 0.894 | 0.798 | 0.924 | 8.11 | A | 0.0811 | 0.0000 | 0.9242 | 0.0000 | |
| 18) | T | Benzo[a]anthra... | 1.301 | 1.142 | 1.093 | 1.121 | 1.113 | 1.121 | 1.111 | 0.994 | 1.124 | 7.50 | A | 0.0750 | 0.0000 | 1.1244 | 0.0000 |
| 19) | T | Chrysene | 1.199 | 1.032 | 1.009 | 1.027 | 1.021 | 1.020 | 1.013 | 0.913 | 1.029 | 7.60 | A | 0.0760 | 0.0000 | 1.0293 | 0.0000 |
| 20) | I | Perylene-d12 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 21) | T | Benzo[b]fluora... | 1.383 | 1.128 | 1.060 | 1.095 | 1.118 | 1.152 | 1.129 | 1.048 | 1.139 | 9.20 | A | 0.0920 | 0.0000 | 1.1392 | 0.0000 |
| 22) | T | Benzo[k]fluora... | 0.881 | 0.783 | 0.823 | 0.900 | 0.988 | 1.003 | 1.014 | 0.917 | 0.914 | 9.26 | A | 0.0926 | 0.0000 | 0.9137 | 0.0000 |
| 23) | cp | Benzo(j)fluora... | 0.888 | 0.814 | 0.891 | 0.945 | 0.980 | 0.988 | 0.984 | 0.897 | 0.923 | 6.69 | A | 0.0669 | 0.0000 | 0.9235 | 0.0000 |
| 24) | T | Benzo(e)pyrene | 1.226 | 1.103 | 1.074 | 1.100 | 1.096 | 1.095 | 1.071 | 0.982 | 1.093 | 6.08 | A | 0.0608 | 0.0000 | 1.0934 | 0.0000 |
| 25) | T | Benzo[a]pyrene | 1.183 | 1.057 | 1.005 | 1.025 | 1.036 | 1.053 | 1.045 | 0.972 | 1.047 | 5.91 | A | 0.0591 | 0.0000 | 1.0470 | 0.0000 |
| 26) | T | Indeno[1,2,3-c... | 1.307 | 1.133 | 1.106 | 1.126 | 1.150 | 1.176 | 1.172 | 1.108 | 1.160 | 5.60 | A | 0.0560 | 0.0000 | 1.1599 | 0.0000 |
| 27) | T | Dibenz[a,h]ant... | 0.964 | 1.011 | 0.896 | 0.907 | 0.935 | 0.968 | 0.973 | 0.911 | 0.946 | 4.23 | A | 0.0423 | 0.0000 | 0.9456 | 0.0000 |
| 28) | T | Benzo[g,h,i]pe... | 1.171 | 1.003 | 0.975 | 0.985 | 0.988 | 1.008 | 1.006 | 0.962 | 1.012 | 6.54 | A | 0.0654 | 0.0000 | 1.0121 | 0.0000 |

(#) = Out of Range

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051001.D
Acq On : 10 May 2016 6:03 pm
Operator :
Sample : DFTPP-160510
Misc : TUNE
ALS Vial : 1 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : CLP BNA Calibration - Large Volume Injection
Last Update : Thu Aug 27 07:24:43 2015



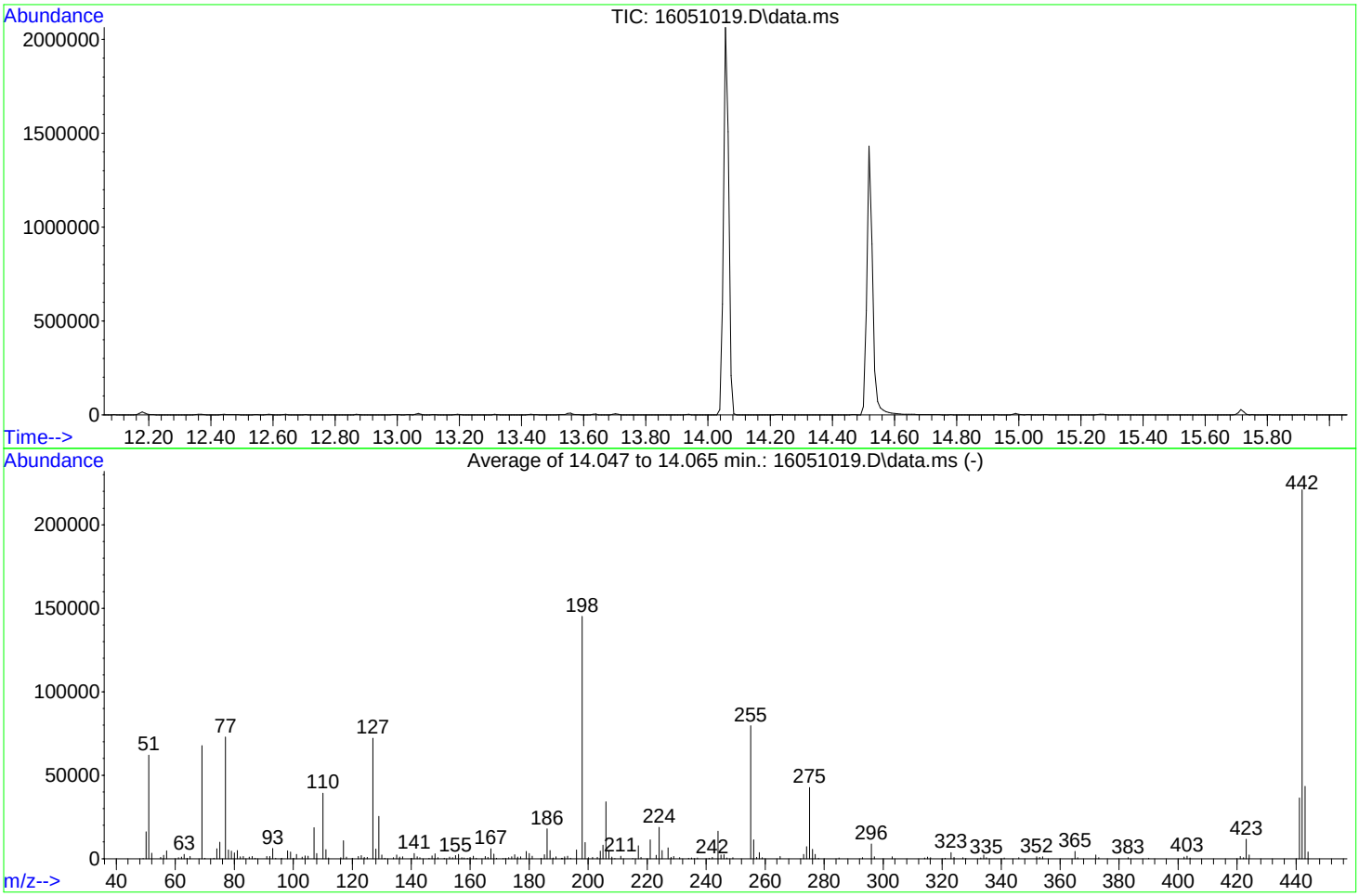

AutoFind: Scans 438, 439, 440; Background Corrected with Scan 434

| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 51 | 198 | 10 | 80 | 48.3 | 72280 | PASS |
| 68 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 69 | 198 | 0.00 | 100 | 50.9 | 76210 | PASS |
| 70 | 69 | 0.00 | 2 | 0.3 | 215 | PASS |
| 127 | 198 | 10 | 80 | 52.2 | 78125 | PASS |
| 197 | 198 | 0.00 | 2 | 0.0 | 0 | PASS |
| 198 | 198 | 100 | 100 | 100.0 | 149602 | PASS |
| 199 | 198 | 5 | 9 | 6.7 | 10041 | PASS |
| 275 | 198 | 10 | 60 | 29.4 | 43976 | PASS |
| 365 | 198 | 1 | 200 | 3.3 | 4880 | PASS |
| 441 | 442 | 0.01 | 24 | 16.5 | 40030 | PASS |
| 442 | 198 | 50 | 400 | 162.6 | 243242 | PASS |
| 443 | 442 | 15 | 24 | 19.5 | 47348 | PASS |

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051019.D
Acq On : 11 May 2016 8:41 am
Operator :
Sample : DFTPP-160511
Misc : TUNE
ALS Vial : 1 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : CLP BNA Calibration - Large Volume Injection
Last Update : Thu Aug 27 07:24:43 2015




AutoFind: Scans 437, 438, 439; Background Corrected with Scan 433

| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 51 | 198 | 10 | 80 | 42.7 | 61954 | PASS |
| 68 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 69 | 198 | 0.00 | 100 | 46.7 | 67805 | PASS |
| 70 | 69 | 0.00 | 2 | 0.3 | 205 | PASS |
| 127 | 198 | 10 | 80 | 49.8 | 72253 | PASS |
| 197 | 198 | 0.00 | 2 | 0.0 | 0 | PASS |
| 198 | 198 | 100 | 100 | 100.0 | 145138 | PASS |
| 199 | 198 | 5 | 9 | 6.6 | 9630 | PASS |
| 275 | 198 | 10 | 60 | 29.3 | 42553 | PASS |
| 365 | 198 | 1 | 200 | 3.0 | 4358 | PASS |
| 441 | 442 | 0.01 | 24 | 16.4 | 36333 | PASS |
| 442 | 198 | 50 | 400 | 152.3 | 221042 | PASS |
| 443 | 442 | 15 | 24 | 19.6 | 43414 | PASS |

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051003.D
Acq On : 10 May 2016 7:16 pm
Operator :
Sample : PAH1-160510 5ppb
Misc : CAL1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 11 10:44:59 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.293 | 136 | 1579654 | 4000.00 | ug/kg | 98 |
| 6) Acenaphthene-d10 | 12.876 | 164 | 1063753 | 4000.00 | ug/kg | 102 |
| 11) Phenanthrene-d10 | 15.002 | 188 | 3341261 | 4000.00 | ug/kg | 99 |
| 16) Chrysene-d12 | 21.028 | 240 | 3890154 | 4000.00 | ug/kg | 104 |
| 20) Perylene-d12 | 26.302 | 264 | 3253488 | 4000.00 | ug/kg | 103 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.786 | 172 | 1581 | 5.09 | ug/kg | 0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 0.13%# | | | |
| 17) 4-Terphenyl-d14 | 17.628 | 244 | 6680 | 7.43 | ug/kg | 0.01 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 0.19%# | | | |

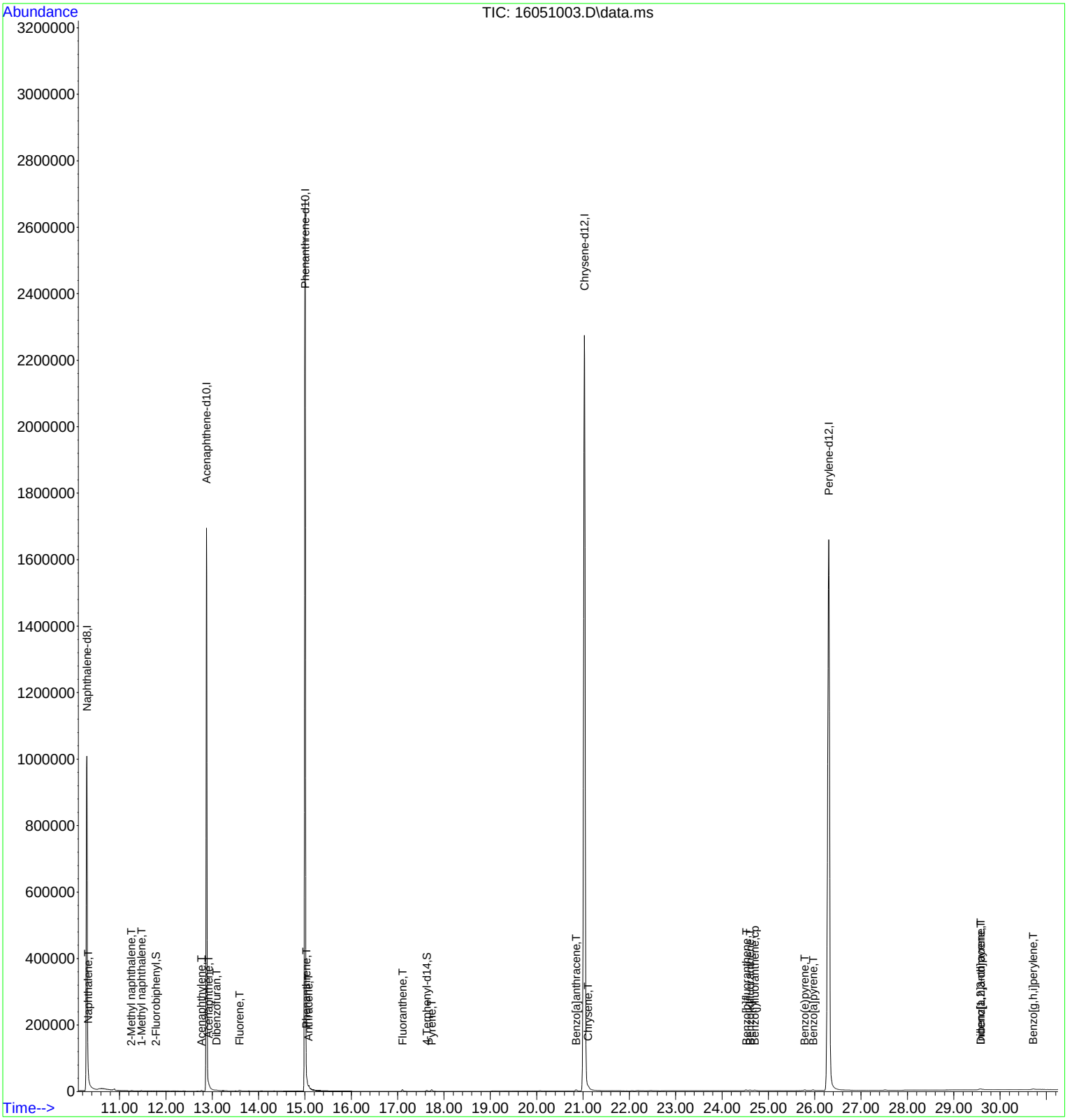
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.330 | 128 | 1955 | 5.11 | ug/kg | 98 |
| 3) 2-Methyl naphthalene | 11.251 | 142 | 834 | 6.59 | ug/kg | 93 |
| 4) 1-Methyl naphthalene | 11.469 | 142 | 1143 | 4.76 | ug/kg | 93 |
| 7) Acenaphthylene | 12.763 | 152 | 2629 | 5.26 | ug/kg | 98 |
| 8) Acenaphthene | 12.930 | 153 | 1663 | 5.26 | ug/kg | 98 |
| 9) Dibenzofuran | 13.097 | 168 | 2669 | 5.22 | ug/kg | 94 |
| 10) Fluorene | 13.588 | 166 | 2546 | 5.30 | ug/kg | 99 |
| 12) Phenanthrene | 15.040 | 178 | 5619 | 5.81 | ug/kg | 98 |
| 13) Anthracene | 15.084 | 178 | 6080 | 5.80 | ug/kg | 95 |
| 14) Fluoranthene | 17.105 | 202 | 7652 | 6.05 | ug/kg | 97 |
| 15) Pyrene | 17.736 | 202 | 7780 | 6.13 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.852 | 228 | 6326 | 5.78 | ug/kg | 99 |
| 19) Chrysene | 21.116 | 228 | 5828 | 5.82 | ug/kg | 97 |
| 21) Benzo[b]fluoranthene | 24.522 | 252 | 5625 | 6.07 | ug/kg | 97 |
| 22) Benzo[k]fluoranthene | 24.603 | 252 | 3581 | 4.82 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.705 | 252 | 3612 | 4.81 | ug/kg | 97 |
| 24) Benzo(e)pyrene | 25.782 | 252 | 4985 | 5.61 | ug/kg | 90 |
| 25) Benzo[a]pyrene | 25.965 | 252 | 4812 | 5.65 | ug/kg | 98 |
| 26) Indeno[1,2,3-cd]pyrene | 29.576 | 276 | 5315 | 5.63 | ug/kg | 95 |
| 27) Dibenz[a,h]anthracene | 29.569 | 278 | 3919 | 5.10 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.719 | 276 | 4763 | 5.79 | ug/kg | 93 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051003.D
Acq On : 10 May 2016 7:16 pm
Operator :
Sample : PAH1-160510 5ppb
Misc : CAL1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 11 10:44:59 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051004.D
Acq On : 10 May 2016 7:53 pm
Operator :
Sample : PAH2-160510 10ppb
Misc : CAL
ALS Vial : 4 Sample Multiplier: 1

Quant Time: May 11 10:45:02 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration

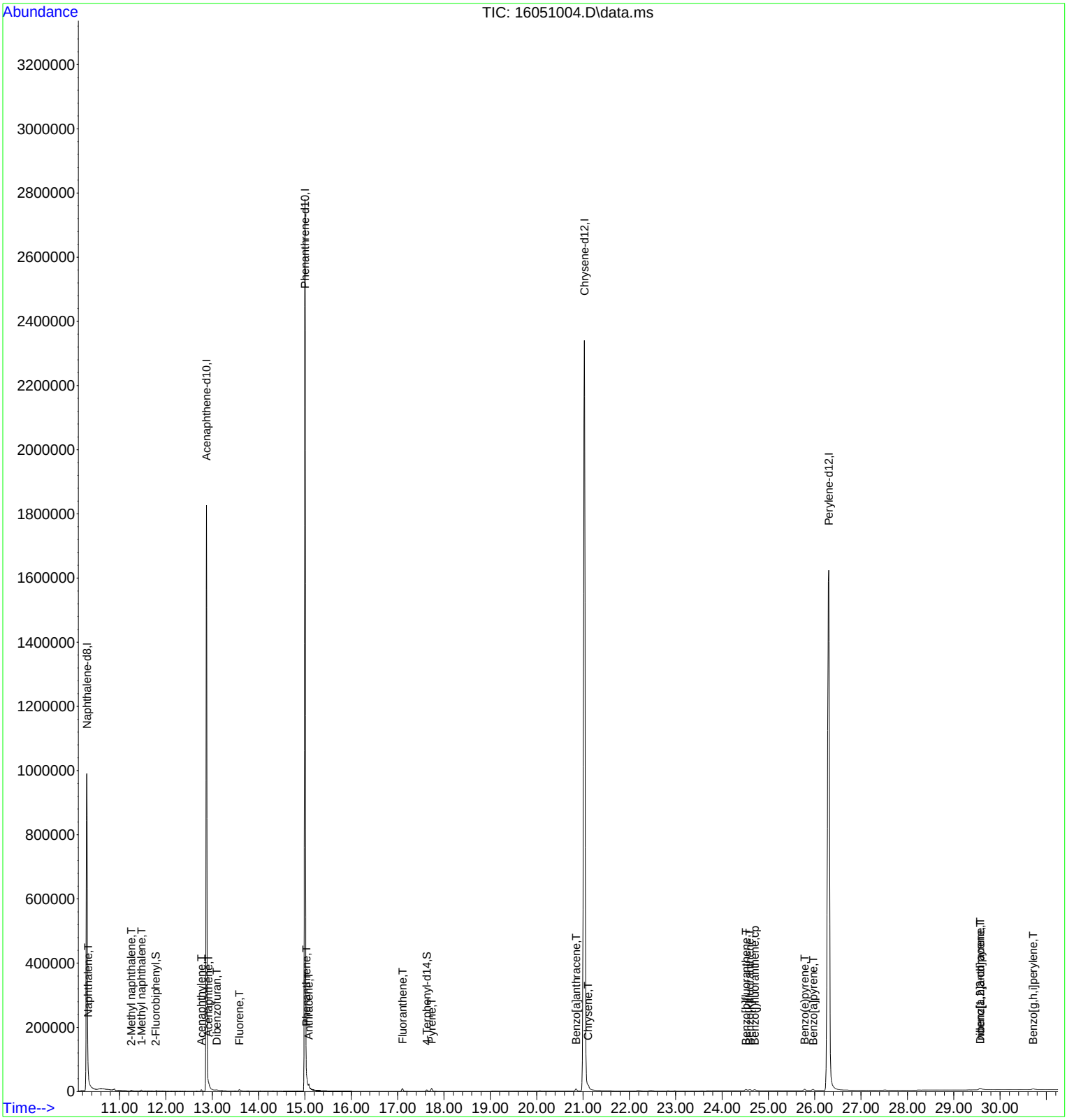
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.293 | 136 | 1604398 | 4000.00 | ug/kg | 100 |
| 6) Acenaphthene-d10 | 12.877 | 164 | 1120203 | 4000.00 | ug/kg | 107 |
| 11) Phenanthrene-d10 | 15.002 | 188 | 3513300 | 4000.00 | ug/kg | 104 |
| 16) Chrysene-d12 | 21.028 | 240 | 3960265 | 4000.00 | ug/kg | 105 |
| 20) Perylene-d12 | 26.302 | 264 | 3295886 | 4000.00 | ug/kg | 104 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.782 | 172 | 2849 | 9.04 | ug/kg | 0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 0.23%# | | | |
| 17) 4-Terphenyl-d14 | 17.629 | 244 | 10384 | 11.35 | ug/kg | 0.01 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 0.28%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.326 | 128 | 3839 | 9.87 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.247 | 142 | 1798 | 10.14 | ug/kg | 97 |
| 4) 1-Methyl naphthalene | 11.469 | 142 | 2228 | 9.13 | ug/kg | 99 |
| 7) Acenaphthylene | 12.764 | 152 | 5262 | 10.00 | ug/kg | 98 |
| 8) Acenaphthene | 12.926 | 153 | 3315 | 9.95 | ug/kg | 95 |
| 9) Dibenzofuran | 13.093 | 168 | 5430 | 10.09 | ug/kg | 91 |
| 10) Fluorene | 13.584 | 166 | 5068 | 10.02 | ug/kg | 97 |
| 12) Phenanthrene | 15.038 | 178 | 10725 | 10.55 | ug/kg | 96 |
| 13) Anthracene | 15.083 | 178 | 11433 | 10.38 | ug/kg | 98 |
| 14) Fluoranthene | 17.106 | 202 | 13885 | 10.43 | ug/kg | 98 |
| 15) Pyrene | 17.737 | 202 | 14059 | 10.53 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.852 | 228 | 11307 | 10.16 | ug/kg | 99 |
| 19) Chrysene | 21.116 | 228 | 10216 | 10.02 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.515 | 252 | 9296 | 9.90 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.596 | 252 | 6454 | 8.57 | ug/kg | 97 |
| 23) Benzo(j)fluoranthene | 24.705 | 252 | 6705 | 8.81 | ug/kg | 98 |
| 24) Benzo(e)pyrene | 25.782 | 252 | 9085 | 10.08 | ug/kg | 95 |
| 25) Benzo[a]pyrene | 25.965 | 252 | 8709 | 10.10 | ug/kg | 98 |
| 26) Indeno[1,2,3-cd]pyrene | 29.577 | 276 | 9338 | 9.77 | ug/kg | 96 |
| 27) Dibenz[a,h]anthracene | 29.569 | 278 | 8277 | 10.62 | ug/kg | 95 |
| 28) Benzo[g,h,i]perylene | 30.712 | 276 | 8261 | 9.91 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051004.D
Acq On : 10 May 2016 7:53 pm
Operator :
Sample : PAH2-160510 10ppb
Misc : CAL
ALS Vial : 4 Sample Multiplier: 1

Quant Time: May 11 10:45:02 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051005.D
Acq On : 10 May 2016 8:30 pm
Operator :
Sample : PAH3-160510 50ppb
Misc : CAL
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 11 10:45:05 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.290 | 136 | 1587879 | 4000.00 | ug/kg | 99 |
| 6) Acenaphthene-d10 | 12.876 | 164 | 1079979 | 4000.00 | ug/kg | 103 |
| 11) Phenanthrene-d10 | 15.000 | 188 | 3384980 | 4000.00 | ug/kg | 101 |
| 16) Chrysene-d12 | 21.027 | 240 | 3907046 | 4000.00 | ug/kg | 104 |
| 20) Perylene-d12 | 26.302 | 264 | 3287870 | 4000.00 | ug/kg | 104 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.779 | 172 | 15251 | 48.87 | ug/kg | 0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 1.22%# | | | |
| 17) 4-Terphenyl-d14 | 17.628 | 244 | 46251 | 51.23 | ug/kg | 0.01 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.28%# | | | |

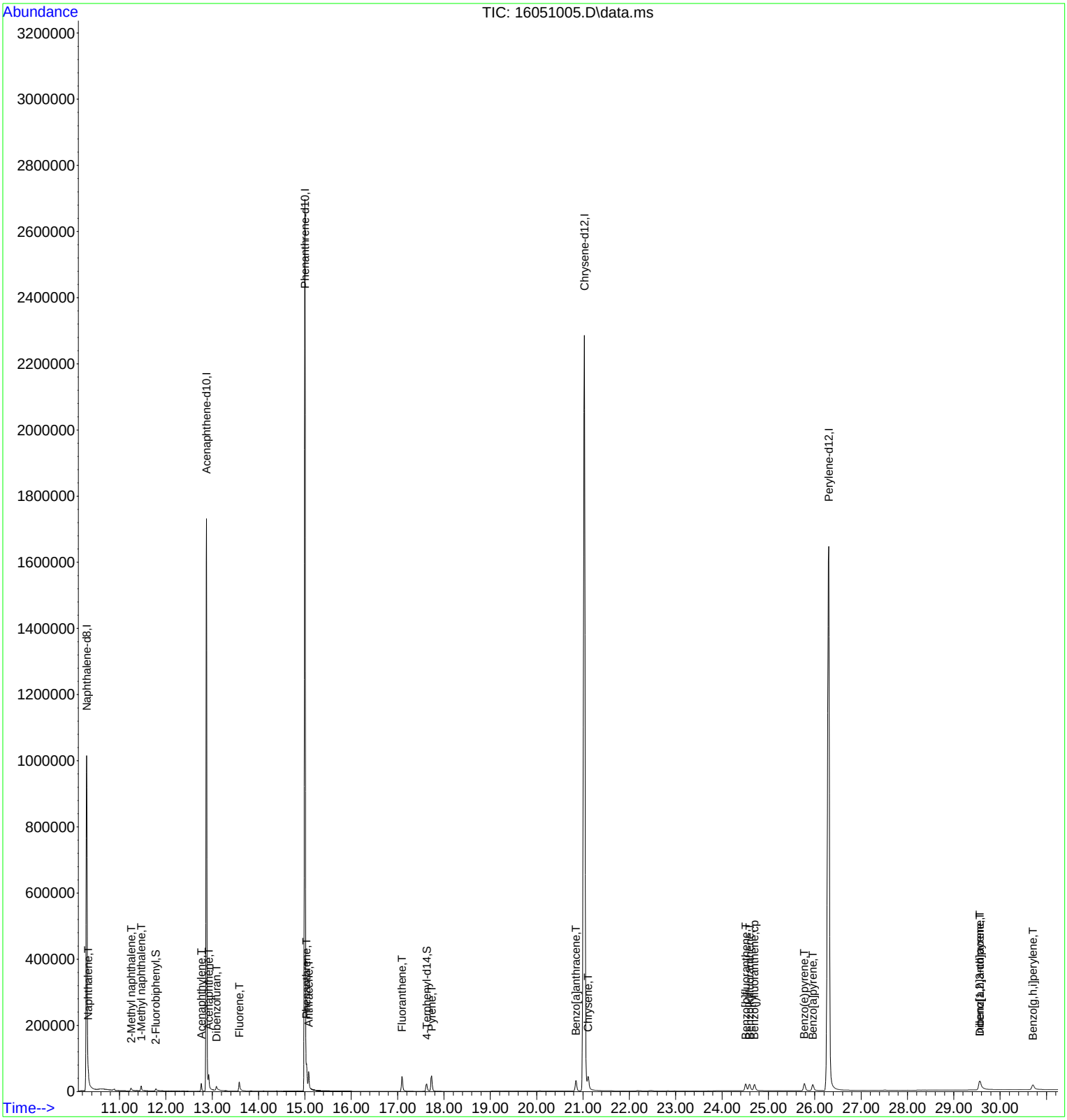
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.327 | 128 | 19480 | 50.62 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.248 | 142 | 10141 | 41.69 | ug/kg | 98 |
| 4) 1-Methyl naphthalene | 11.466 | 142 | 11421 | 47.29 | ug/kg | 98 |
| 7) Acenaphthylene | 12.763 | 152 | 25743 | 50.72 | ug/kg | 98 |
| 8) Acenaphthene | 12.925 | 153 | 16337 | 50.87 | ug/kg | 99 |
| 9) Dibenzofuran | 13.088 | 168 | 26835 | 51.74 | ug/kg | 91 |
| 10) Fluorene | 13.584 | 166 | 24907 | 51.07 | ug/kg | 99 |
| 12) Phenanthrene | 15.036 | 178 | 50392 | 51.44 | ug/kg | 97 |
| 13) Anthracene | 15.080 | 178 | 54990 | 51.81 | ug/kg | 98 |
| 14) Fluoranthene | 17.091 | 202 | 65928 | 51.42 | ug/kg | 85 |
| 15) Pyrene | 17.735 | 202 | 66234 | 51.51 | ug/kg | 96 |
| 18) Benzo[a]anthracene | 20.844 | 228 | 53356 | 48.58 | ug/kg | 98 |
| 19) Chrysene | 21.115 | 228 | 49286 | 49.02 | ug/kg | 98 |
| 21) Benzo[b]fluoranthene | 24.507 | 252 | 43553 | 46.51 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.595 | 252 | 33838 | 45.06 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.697 | 252 | 36600 | 48.22 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.774 | 252 | 44132 | 49.11 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.957 | 252 | 41286 | 47.97 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.569 | 276 | 45459 | 47.68 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.561 | 278 | 36685 | 47.20 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.704 | 276 | 40076 | 48.17 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051005.D
Acq On : 10 May 2016 8:30 pm
Operator :
Sample : PAH3-160510 50ppb
Misc : CAL
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 11 10:45:05 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051006.D
Acq On : 10 May 2016 9:07 pm
Operator :
Sample : PAH4-160510 100ppb
Misc : CAL
ALS Vial : 6 Sample Multiplier: 1

Quant Time: May 11 10:45:08 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.288 | 136 | 1574320 | 4000.00 | ug/kg | 98 |
| 6) Acenaphthene-d10 | 12.871 | 164 | 1055323 | 4000.00 | ug/kg | 101 |
| 11) Phenanthrene-d10 | 14.998 | 188 | 3251486 | 4000.00 | ug/kg | 97 |
| 16) Chrysene-d12 | 21.020 | 240 | 3827236 | 4000.00 | ug/kg | 102 |
| 20) Perylene-d12 | 26.294 | 264 | 3182996 | 4000.00 | ug/kg | 100 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.777 | 172 | 31039 | 100.32 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 2.51%# | | |
| 17) 4-Terphenyl-d14 | 17.615 | 244 | 90784 | 102.66 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 2.57%# | | |

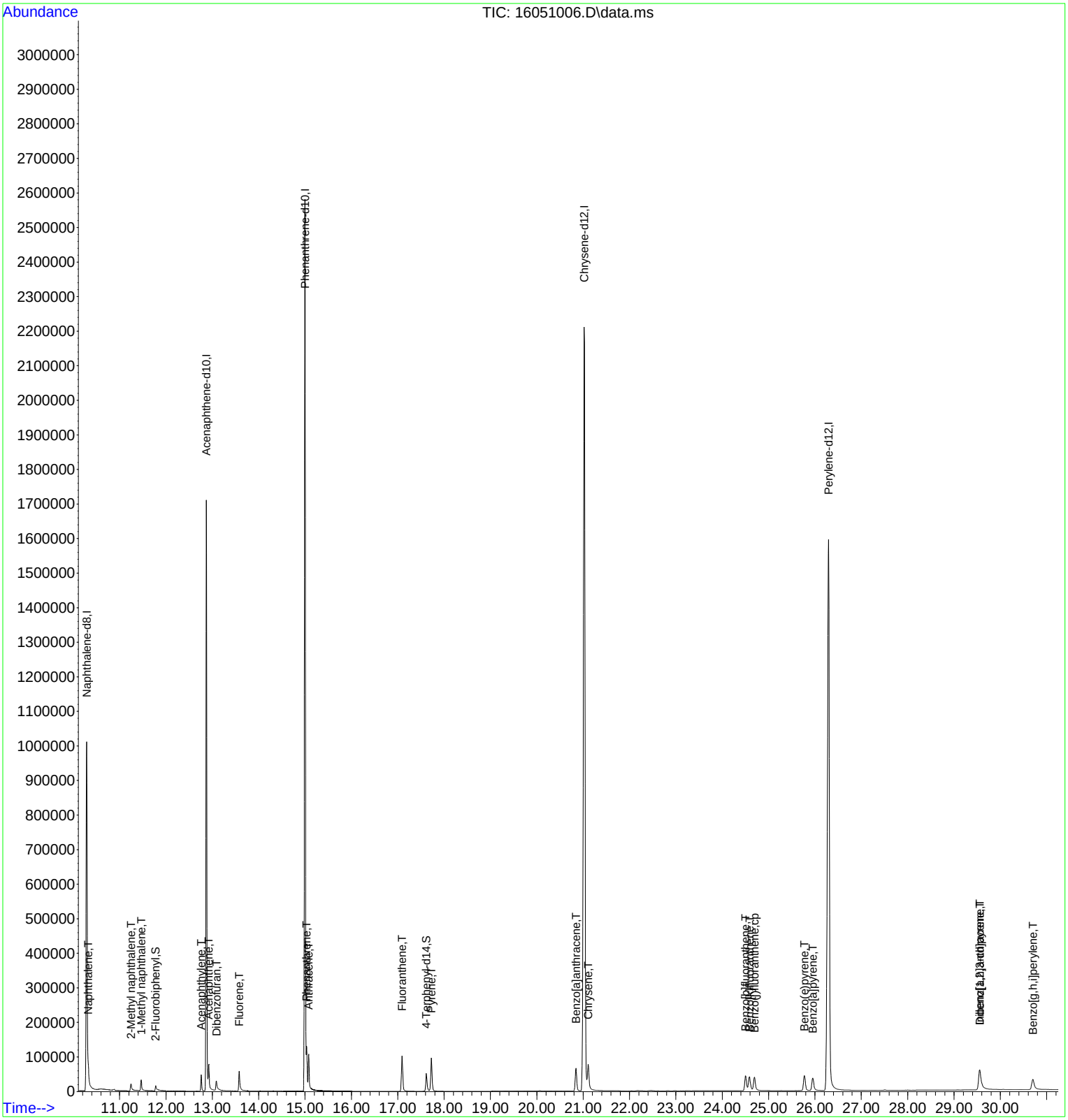
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.325 | 128 | 39007 | 102.24 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.243 | 142 | 21207 | 84.16 | ug/kg | 98 |
| 4) 1-Methyl naphthalene | 11.465 | 142 | 23413 | 97.79 | ug/kg | 99 |
| 7) Acenaphthylene | 12.759 | 152 | 50778 | 102.39 | ug/kg | 99 |
| 8) Acenaphthene | 12.925 | 153 | 32099 | 102.28 | ug/kg | 99 |
| 9) Dibenzofuran | 13.088 | 168 | 52376 | 103.35 | ug/kg | 98 |
| 10) Fluorene | 13.579 | 166 | 47934 | 100.57 | ug/kg | 99 |
| 12) Phenanthrene | 15.034 | 178 | 94723 | 100.66 | ug/kg | 97 |
| 13) Anthracene | 15.078 | 178 | 104836 | 102.82 | ug/kg | 98 |
| 14) Fluoranthene | 17.092 | 202 | 129587 | 105.22 | ug/kg | 93 |
| 15) Pyrene | 17.722 | 202 | 128916 | 104.36 | ug/kg | 93 |
| 18) Benzo[a]anthracene | 20.844 | 228 | 107249 | 99.69 | ug/kg | 98 |
| 19) Chrysene | 21.108 | 228 | 98309 | 99.82 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.500 | 252 | 87156 | 96.15 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.588 | 252 | 71623 | 98.51 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.697 | 252 | 73967 | 100.65 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.774 | 252 | 87538 | 100.61 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.950 | 252 | 81560 | 97.89 | ug/kg | 98 |
| 26) Indeno[1,2,3-cd]pyrene | 29.561 | 276 | 89633 | 97.11 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.547 | 278 | 72155 | 95.89 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.704 | 276 | 78373 | 97.31 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051006.D
Acq On : 10 May 2016 9:07 pm
Operator :
Sample : PAH4-160510 100ppb
Misc : CAL
ALS Vial : 6 Sample Multiplier: 1

Quant Time: May 11 10:45:08 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051007.D
Acq On : 10 May 2016 9:44 pm
Operator :
Sample : PAH5-160510 500ppb
Misc : CAL
ALS Vial : 7 Sample Multiplier: 1

Quant Time: May 11 10:45:12 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration

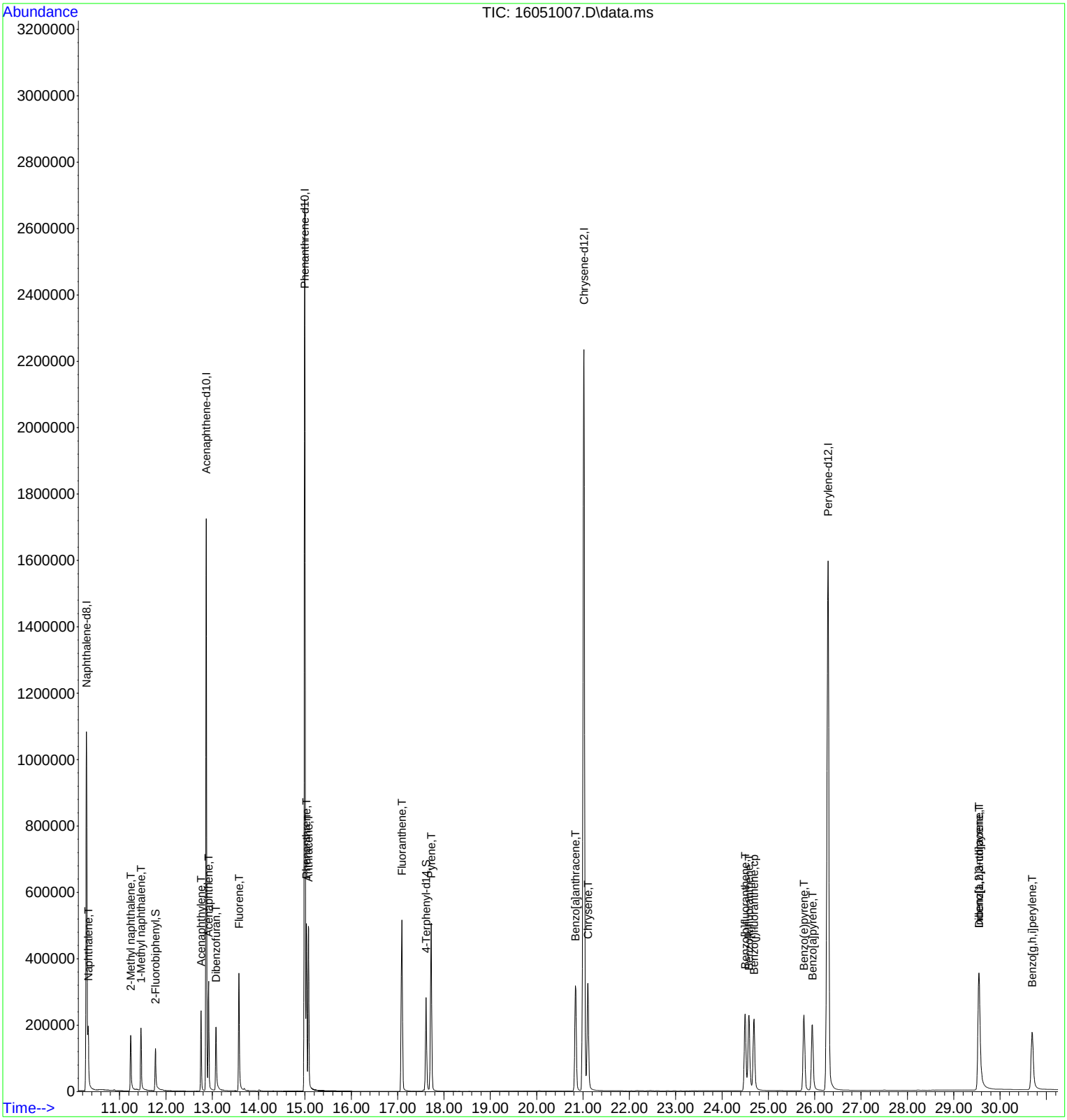
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.284 | 136 | 1616531 | 4000.00 | ug/kg | 100 |
| 6) Acenaphthene-d10 | 12.871 | 164 | 1052604 | 4000.00 | ug/kg | 101 |
| 11) Phenanthrene-d10 | 14.996 | 188 | 3326988 | 4000.00 | ug/kg | 99 |
| 16) Chrysene-d12 | 21.020 | 240 | 3820943 | 4000.00 | ug/kg | 102 |
| 20) Perylene-d12 | 26.287 | 264 | 3197705 | 4000.00 | ug/kg | 101 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.773 | 172 | 165670 | 521.45 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 13.04%# | | | |
| 17) 4-Terphenyl-d14 | 17.615 | 244 | 441296 | 499.86 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 12.50%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.321 | 128 | 197925 | 505.21 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.239 | 142 | 127484 | 477.61 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.461 | 142 | 134372 | 546.57 | ug/kg | 99 |
| 7) Acenaphthylene | 12.759 | 152 | 249148 | 503.69 | ug/kg | 99 |
| 8) Acenaphthene | 12.921 | 153 | 156678 | 500.52 | ug/kg | 99 |
| 9) Dibenzofuran | 13.083 | 168 | 255650 | 505.74 | ug/kg | 98 |
| 10) Fluorene | 13.574 | 166 | 237488 | 499.58 | ug/kg | 100 |
| 12) Phenanthrene | 15.032 | 178 | 471774 | 489.95 | ug/kg | 98 |
| 13) Anthracene | 15.076 | 178 | 518768 | 497.27 | ug/kg | 98 |
| 14) Fluoranthene | 17.092 | 202 | 627904 | 498.28 | ug/kg | 98 |
| 15) Pyrene | 17.722 | 202 | 622926 | 492.85 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.837 | 228 | 531791 | 495.11 | ug/kg | 99 |
| 19) Chrysene | 21.108 | 228 | 487688 | 496.00 | ug/kg | 98 |
| 21) Benzo[b]fluoranthene | 24.500 | 252 | 446872 | 490.71 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.580 | 252 | 394934 | 540.70 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.690 | 252 | 391806 | 530.72 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.767 | 252 | 438198 | 501.33 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.950 | 252 | 414276 | 494.96 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.547 | 276 | 459506 | 495.54 | ug/kg | 97 |
| 27) Dibenz[a,h]anthracene | 29.539 | 278 | 373713 | 494.35 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.689 | 276 | 394763 | 487.88 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051007.D
Acq On : 10 May 2016 9:44 pm
Operator :
Sample : PAH5-160510 500ppb
Misc : CAL
ALS Vial : 7 Sample Multiplier: 1

Quant Time: May 11 10:45:12 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051008.D
Acq On : 10 May 2016 10:21 pm
Operator :
Sample : PAH6-160510 1000ppb
Misc : CAL
ALS Vial : 8 Sample Multiplier: 1

Quant Time: May 11 10:45:15 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.281 | 136 | 1609199 | 4000.00 | ug/kg | 100 |
| 6) Acenaphthene-d10 | 12.866 | 164 | 1043592 | 4000.00 | ug/kg | 100 |
| 11) Phenanthrene-d10 | 14.993 | 188 | 3366458 | 4000.00 | ug/kg | 100 |
| 16) Chrysene-d12 | 21.013 | 240 | 3758565 | 4000.00 | ug/kg | 100 |
| 20) Perylene-d12 | 26.280 | 264 | 3167827 | 4000.00 | ug/kg | 100 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.771 | 172 | 338103 | 1069.04 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 26.73%# | | | |
| 17) 4-Terphenyl-d14 | 17.615 | 244 | 853490 | 982.80 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 24.57%# | | | |

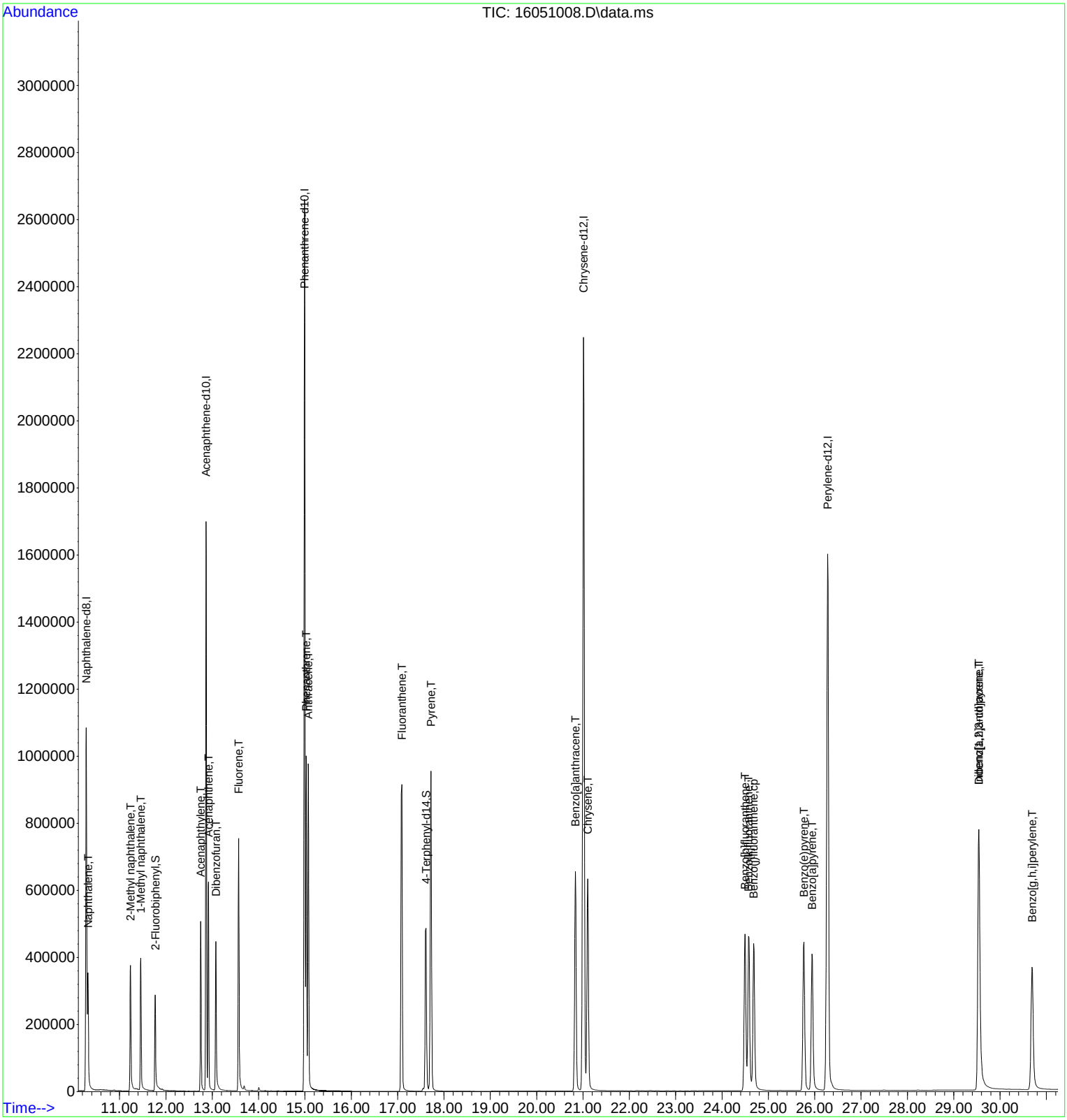
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.319 | 128 | 395299 | 1013.61 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.236 | 142 | 270515 | 1018.82 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.458 | 142 | 265900 | 1086.50 | ug/kg | 100 |
| 7) Acenaphthylene | 12.753 | 152 | 492825 | 1004.92 | ug/kg | 99 |
| 8) Acenaphthene | 12.920 | 153 | 313128 | 1008.96 | ug/kg | 99 |
| 9) Dibenzofuran | 13.077 | 168 | 502264 | 1002.18 | ug/kg | 96 |
| 10) Fluorene | 13.573 | 166 | 475116 | 1008.08 | ug/kg | 98 |
| 12) Phenanthrene | 15.029 | 178 | 950311 | 975.34 | ug/kg | 99 |
| 13) Anthracene | 15.073 | 178 | 1019159 | 965.46 | ug/kg | 99 |
| 14) Fluoranthene | 17.092 | 202 | 1223282 | 959.36 | ug/kg | 98 |
| 15) Pyrene | 17.723 | 202 | 1217297 | 951.81 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.837 | 228 | 1052978 | 996.62 | ug/kg | 99 |
| 19) Chrysene | 21.101 | 228 | 958443 | 990.95 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.500 | 252 | 912278 | 1011.22 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.580 | 252 | 794172 | 1097.55 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.683 | 252 | 782779 | 1070.30 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.767 | 252 | 867399 | 1001.73 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.943 | 252 | 834302 | 1006.19 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.547 | 276 | 931689 | 1014.23 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.539 | 278 | 766967 | 1024.12 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.690 | 276 | 797908 | 995.42 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051008.D
Acq On : 10 May 2016 10:21 pm
Operator :
Sample : PAH6-160510 1000ppb
Misc : CAL
ALS Vial : 8 Sample Multiplier: 1

Quant Time: May 11 10:45:15 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051009.D
Acq On : 10 May 2016 10:58 pm
Operator :
Sample : PAH7-160510 2000ppb
Misc : CAL
ALS Vial : 9 Sample Multiplier: 1

Quant Time: May 11 10:45:18 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.280 | 136 | 1562362 | 4000.00 | ug/kg | 97 |
| 6) Acenaphthene-d10 | 12.867 | 164 | 977263 | 4000.00 | ug/kg | 94 |
| 11) Phenanthrene-d10 | 14.992 | 188 | 3104845 | 4000.00 | ug/kg | 92 |
| 16) Chrysene-d12 | 21.013 | 240 | 3495950 | 4000.00 | ug/kg | 93 |
| 20) Perylene-d12 | 26.280 | 264 | 2966012 | 4000.00 | ug/kg | 94 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.769 | 172 | 632072 | 2058.44 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 51.46% | | |
| 17) 4-Terphenyl-d14 | 17.615 | 244 | 1563267 | 1935.33 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 48.38%# | | |

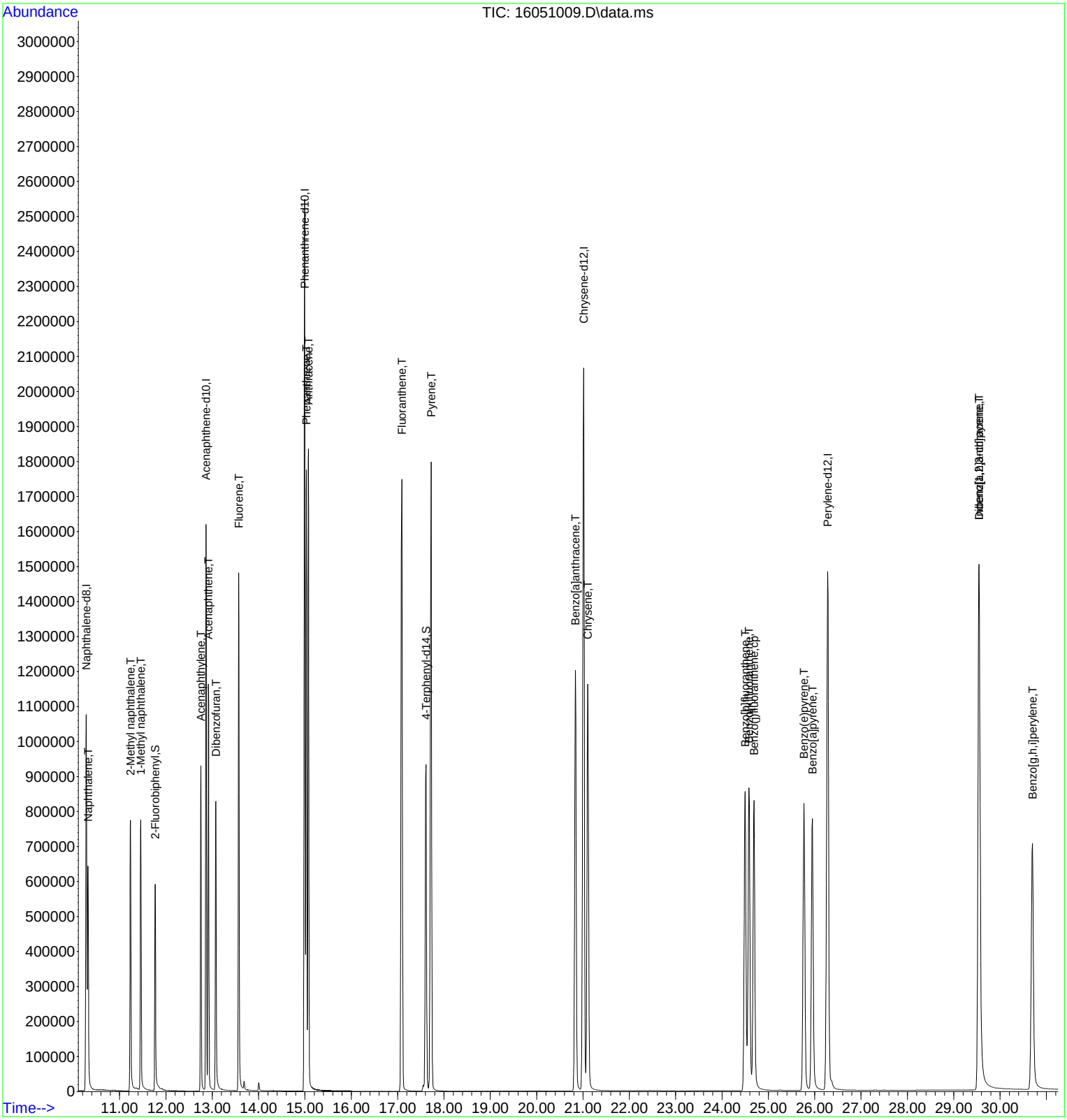
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.317 | 128 | 759401 | 2005.61 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.235 | 142 | 523991 | 2046.89 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.457 | 142 | 501831 | 2112.02 | ug/kg | 100 |
| 7) Acenaphthylene | 12.754 | 152 | 915681 | 1993.89 | ug/kg | 100 |
| 8) Acenaphthene | 12.916 | 153 | 576336 | 1983.10 | ug/kg | 100 |
| 9) Dibenzofuran | 13.078 | 168 | 912453 | 1944.22 | ug/kg | 100 |
| 10) Fluorene | 13.569 | 166 | 859915 | 1948.37 | ug/kg | 100 |
| 12) Phenanthrene | 15.030 | 178 | 1714290 | 1907.70 | ug/kg | 100 |
| 13) Anthracene | 15.074 | 178 | 1858022 | 1908.44 | ug/kg | 100 |
| 14) Fluoranthene | 17.092 | 202 | 2215471 | 1883.89 | ug/kg | 100 |
| 15) Pyrene | 17.723 | 202 | 2207662 | 1871.63 | ug/kg | 100 |
| 18) Benzo[a]anthracene | 20.838 | 228 | 1941914 | 1976.04 | ug/kg | 100 |
| 19) Chrysene | 21.101 | 228 | 1770777 | 1968.37 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.500 | 252 | 1673798 | 1981.57 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.581 | 252 | 1504300 | 2220.40 | ug/kg | 100 |
| 23) Benzo(j)fluoranthene | 24.691 | 252 | 1459957 | 2132.04 | ug/kg | 100 |
| 24) Benzo(e)pyrene | 25.767 | 252 | 1588413 | 1959.22 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.951 | 252 | 1549020 | 1995.27 | ug/kg | 100 |
| 26) Indeno[1,2,3-cd]pyrene | 29.555 | 276 | 1738697 | 2021.53 | ug/kg | 100 |
| 27) Dibenz[a,h]anthracene | 29.540 | 278 | 1443267 | 2058.30 | ug/kg | 100 |
| 28) Benzo[g,h,i]perylene | 30.697 | 276 | 1492122 | 1988.14 | ug/kg | 100 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051009.D
Acq On : 10 May 2016 10:58 pm
Operator :
Sample : PAH7-160510 2000ppb
Misc : CAL
ALS Vial : 9 Sample Multiplier: 1

Quant Time: May 11 10:45:18 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051010.D
Acq On : 10 May 2016 11:34 pm
Operator :
Sample : PAH8-160510 5000ppb
Misc : CAL
ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 11 10:45:21 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration

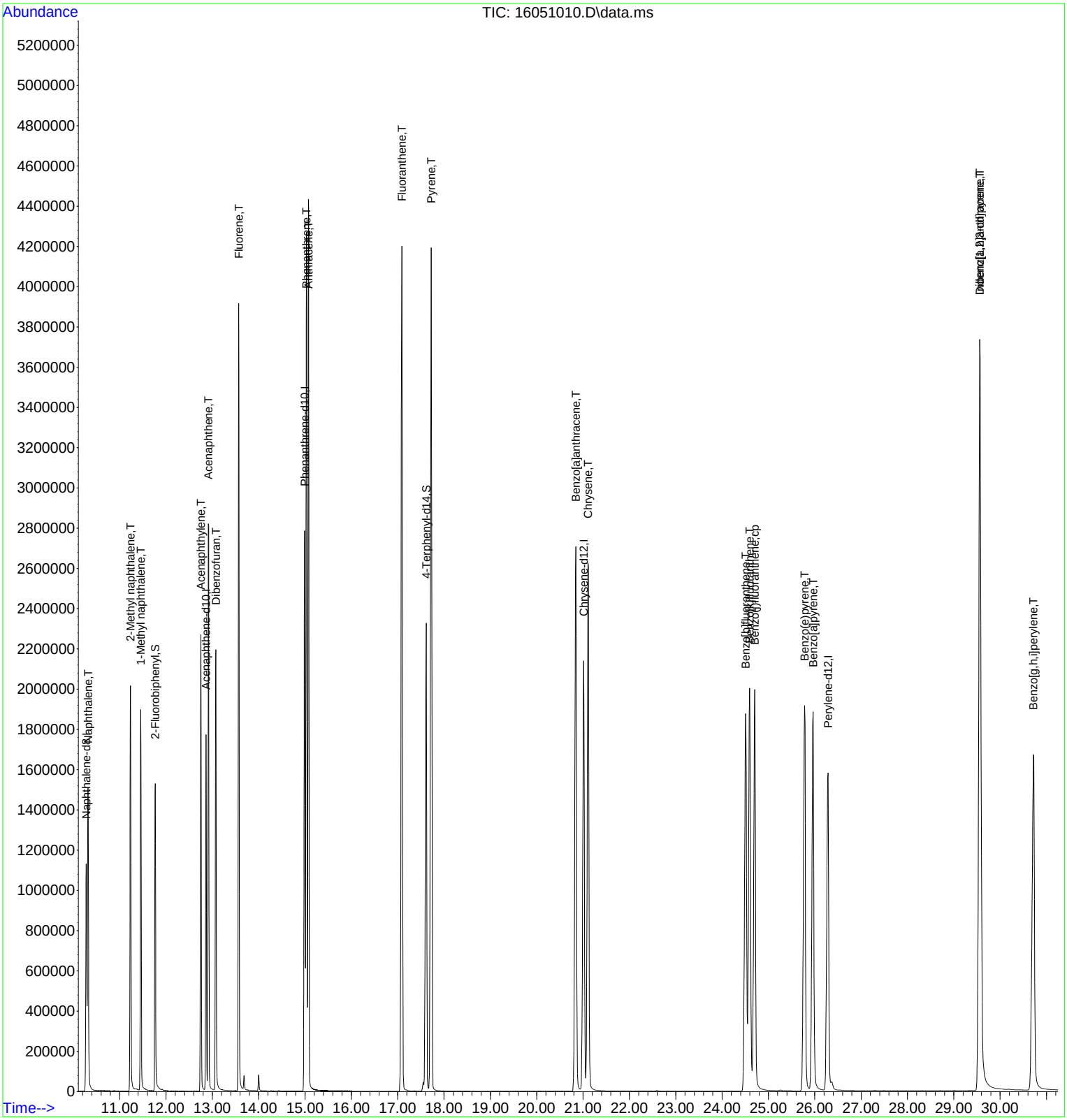
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.279 | 136 | 1607500 | 4000.00 | ug/kg | 100 |
| 6) Acenaphthene-d10 | 12.866 | 164 | 1048910 | 4000.00 | ug/kg | 101 |
| 11) Phenanthrene-d10 | 14.991 | 188 | 3489646 | 4000.00 | ug/kg | 104 |
| 16) Chrysene-d12 | 21.012 | 240 | 3642647 | 4000.00 | ug/kg | 97 |
| 20) Perylene-d12 | 26.286 | 264 | 3135775 | 4000.00 | ug/kg | 99 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.769 | 172 | 1510643 | 4781.51 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 119.54% | | | |
| 17) 4-Terphenyl-d14 | 17.616 | 244 | 3633740 | 4317.42 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 107.94% | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.317 | 128 | 1810982 | 4648.57 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.234 | 142 | 1280055 | 4979.05 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.456 | 142 | 1192892 | 4879.47 | ug/kg | 99 |
| 7) Acenaphthylene | 12.753 | 152 | 2220480 | 4504.81 | ug/kg | 98 |
| 8) Acenaphthene | 12.915 | 153 | 1422129 | 4559.13 | ug/kg | 99 |
| 9) Dibenzofuran | 13.077 | 168 | 2245752 | 4458.31 | ug/kg | 98 |
| 10) Fluorene | 13.568 | 166 | 2202341 | 4649.14 | ug/kg | 99 |
| 12) Phenanthrene | 15.031 | 178 | 4235828 | 4193.94 | ug/kg | 96 |
| 13) Anthracene | 15.075 | 178 | 4500062 | 4112.49 | ug/kg | 96 |
| 14) Fluoranthene | 17.093 | 202 | 5080861 | 3844.01 | ug/kg | 94 |
| 15) Pyrene | 17.723 | 202 | 5128610 | 3868.52 | ug/kg | 90 |
| 18) Benzo[a]anthracene | 20.844 | 228 | 4526014 | 4420.07 | ug/kg | 97 |
| 19) Chrysene | 21.107 | 228 | 4159232 | 4437.15 | ug/kg | 98 |
| 21) Benzo[b]fluoranthene | 24.513 | 252 | 4109167 | 4601.37 | ug/kg | 98 |
| 22) Benzo[k]fluoranthene | 24.594 | 252 | 3594211 | 5017.97 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.704 | 252 | 3516896 | 4857.85 | ug/kg | 98 |
| 24) Benzo(e)pyrene | 25.781 | 252 | 3849551 | 4491.16 | ug/kg | 98 |
| 25) Benzo[a]pyrene | 25.964 | 252 | 3809209 | 4640.96 | ug/kg | 98 |
| 26) Indeno[1,2,3-cd]pyrene | 29.568 | 276 | 4344207 | 4777.43 | ug/kg | 88 |
| 27) Dibenz[a,h]anthracene | 29.560 | 278 | 3568930 | 4814.24 | ug/kg | 97 |
| 28) Benzo[g,h,i]perylene | 30.725 | 276 | 3771267 | 4752.90 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051010.D
Acq On : 10 May 2016 11:34 pm
Operator :
Sample : PAH8-160510 5000ppb
Misc : CAL
ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 11 10:45:21 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051012.D
Acq On : 11 May 2016 12:49 am
Operator :
Sample : SSCV-160510 2500ppb
Misc : ICV
ALS Vial : 12 Sample Multiplier: 1

Quant Time: May 11 10:45:24 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.280 | 136 | 1855821 | 4000.00 | ug/kg | 115 |
| 6) Acenaphthene-d10 | 12.867 | 164 | 1123330 | 4000.00 | ug/kg | 108 |
| 11) Phenanthrene-d10 | 14.987 | 188 | 2598636 | 4000.00 | ug/kg | 77 |
| 16) Chrysene-d12 | 21.006 | 240 | 3825814 | 4000.00 | ug/kg | 102 |
| 20) Perylene-d12 | 26.280 | 264 | 3299401 | 4000.00 | ug/kg | 104 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.765 | 172 | 1675854 | 4594.67 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 114.87% | | | |
| 17) 4-Terphenyl-d14 | 17.615 | 244 | 3374351 | 3817.28 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 95.43% | | | |

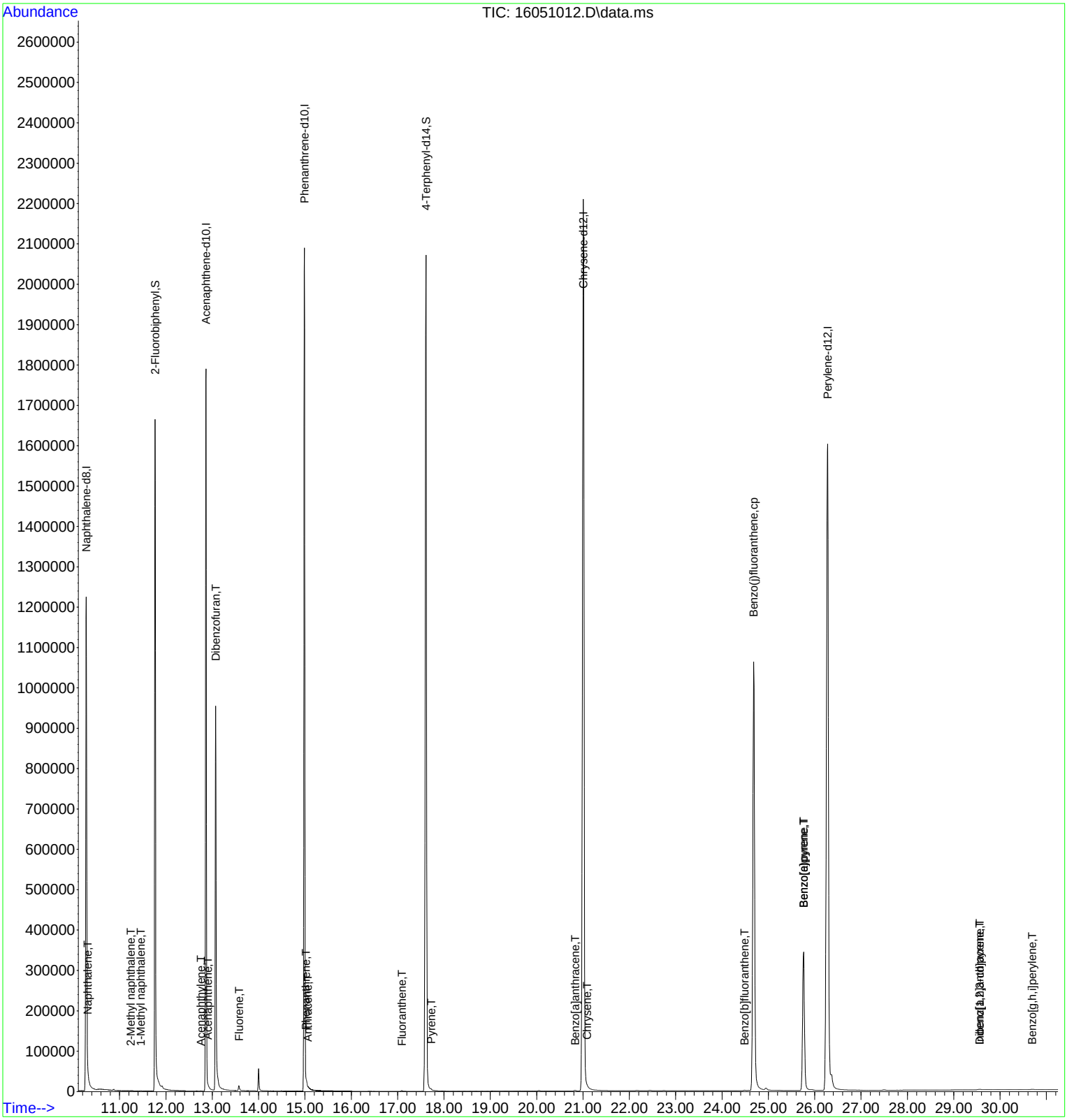
| Target Compounds | | | | | | Qvalue | |
|---|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.317 | 128 | 953 | 2.12 | ug/kg | 76 | |
| 3) 2-Methyl naphthalene | 11.239 | 142 | 531 | 5.14 | ug/kg | 93 | |
| 4) 1-Methyl naphthalene | 11.457 | 142 | 562 | 1.99 | ug/kg | 95 | |
| 7) Acenaphthylene | 12.754 | 152 | 1045 | 1.98 | ug/kg | 96 | |
| 8) Acenaphthene | 12.916 | 153 | 751 | 2.25 | ug/kg | 97 | |
| 9) Dibenzofuran | 13.073 | 168 | 1056592 | 1958.60 | ug/kg | 93 | See rerun for dibenzofuran. |
| 10) Fluorene | 13.574 | 166 | 10421 | 20.54 | ug/kg | 99 | |
| 12) Phenanthrene | 15.025 | 178 | 1893 | 2.52 | ug/kg | 97 | |
| 13) Anthracene | 15.070 | 178 | 1817 | 2.23 | ug/kg | 100 | |
| 14) Fluoranthene | 17.092 | 202 | 2752 | 2.80 | ug/kg | 99 | |
| 15) Pyrene | 17.723 | 202 | 3178 | 3.22 | ug/kg | 96 | |
| 18) Benzo[a]anthracene | 20.830 | 228 | 3027 | 2.81 | ug/kg | 99 | |
| 19) Chrysene | 21.094 | 228 | 2819 | 2.86 | ug/kg | 97 | |
| 21) Benzo[b]fluoranthene | 24.493 | 252 | 2910 | 3.10 | ug/kg | 100 | |
| 22) Benzo[k]fluoranthene | 0.000 | 252 | 0 | N.D. | | | |
| 23) Benzo(j)fluoranthene | 24.683 | 252 | 1990617 | 2613.26 | ug/kg | 100 | |
| 24) Benzo(e)pyrene | 25.760 | 252 | 664023 | 736.28 | ug/kg | 99 | |
| 25) Benzo[a]pyrene | 25.760 | 252 | 641359 | 742.65 | ug/kg | 95 | |
| 26) Indeno[1,2,3-cd]pyrene | 29.562 | 276 | 2706 | 2.83 | ug/kg | 98 | |
| 27) Dibenz[a,h]anthracene | 29.547 | 278 | 2621 | 3.36 | ug/kg | 95 | |
| 28) Benzo[g,h,i]perylene | 30.682 | 276 | 2447 | 2.93 | ug/kg | 96 | |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051012.D
Acq On : 11 May 2016 12:49 am
Operator :
Sample : SSCV-160510 2500ppb
Misc : ICV
ALS Vial : 12 Sample Multiplier: 1

Quant Time: May 11 10:45:24 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051013.D
Acq On : 11 May 2016 1:26 am
Operator :
Sample : SSCV-160510 2500ppb
Misc : ICV
ALS Vial : 13 Sample Multiplier: 1

Quant Time: May 11 10:45:28 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration

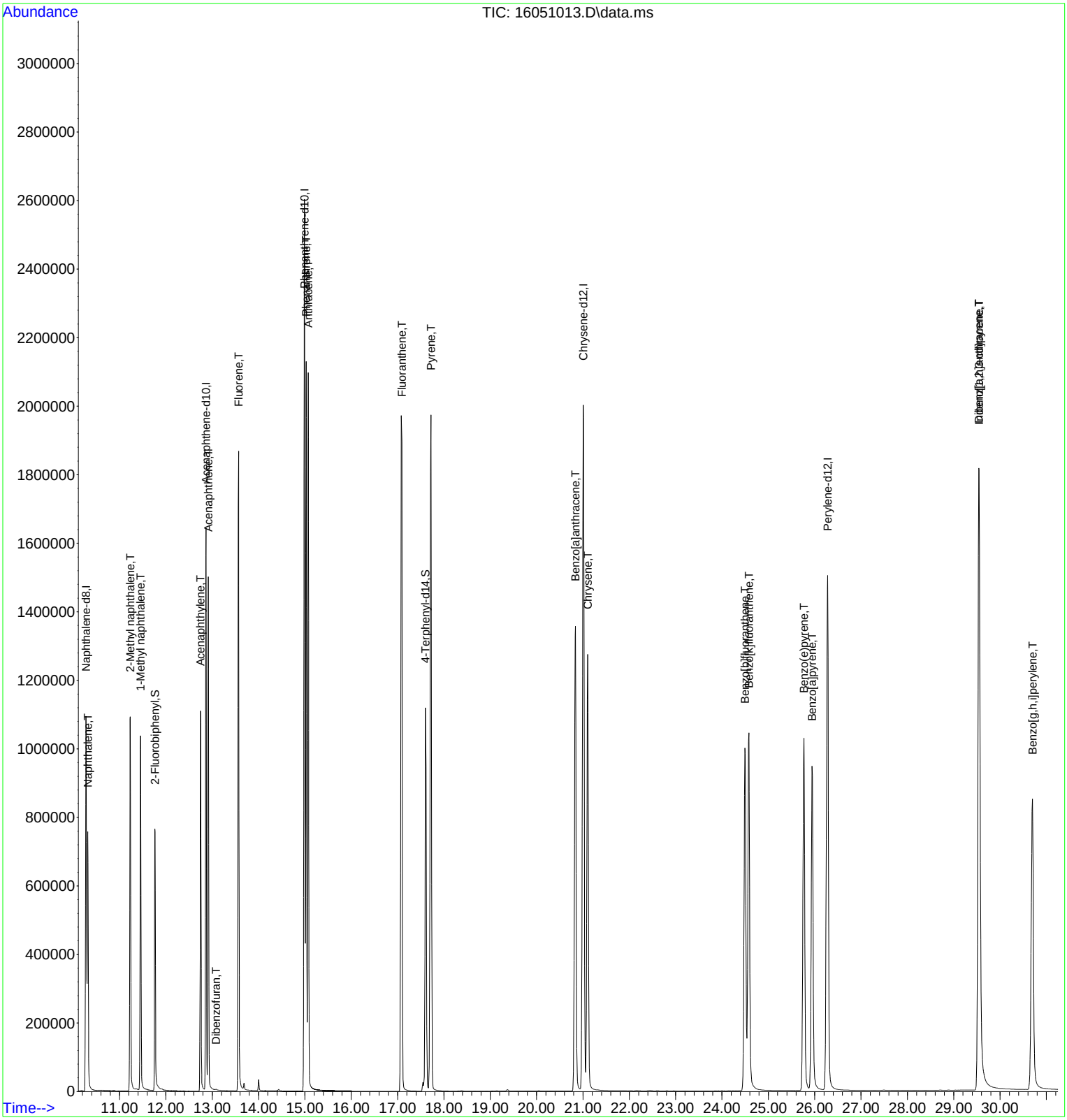
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.278 | 136 | 1554639 | 4000.00 | ug/kg | 97 |
| 6) Acenaphthene-d10 | 12.866 | 164 | 1006608 | 4000.00 | ug/kg | 96 |
| 11) Phenanthrene-d10 | 14.989 | 188 | 3157008 | 4000.00 | ug/kg | 94 |
| 16) Chrysene-d12 | 21.006 | 240 | 3463869 | 4000.00 | ug/kg | 92 |
| 20) Perylene-d12 | 26.280 | 264 | 2950519 | 4000.00 | ug/kg | 93 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.763 | 172 | 779363 | 2550.73 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 63.77% | | |
| 17) 4-Terphenyl-d14 | 17.602 | 244 | 1768654 | 2209.88 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 55.25% | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.315 | 128 | 894398 | 2373.87 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.232 | 142 | 717289 | 2833.51 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.454 | 142 | 656912 | 2778.44 | ug/kg | 100 |
| 7) Acenaphthylene | 12.748 | 152 | 1098072 | 2321.34 | ug/kg | 100 |
| 8) Acenaphthene | 12.915 | 153 | 729094 | 2435.59 | ug/kg | 99 |
| 9) Dibenzofuran | 13.082 | 168 | 3308 | 6.84 | ug/kg | 93 |
| 10) Fluorene | 13.568 | 166 | 1095429 | 2409.63 | ug/kg | 98 |
| 12) Phenanthrene | 15.027 | 178 | 2064186 | 2259.11 | ug/kg | 99 |
| 13) Anthracene | 15.071 | 178 | 2115711 | 2137.21 | ug/kg | 99 |
| 14) Fluoranthene | 17.092 | 202 | 2598569 | 2173.14 | ug/kg | 97 |
| 15) Pyrene | 17.722 | 202 | 2593276 | 2162.22 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.837 | 228 | 2215618 | 2275.43 | ug/kg | 100 |
| 19) Chrysene | 21.101 | 228 | 1891125 | 2121.62 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.493 | 252 | 1991808 | 2370.43 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.581 | 252 | 1882427 | 2793.12 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 0.000 | 252 | 0 | N.D. | | |
| 24) Benzo(e)pyrene | 25.767 | 252 | 1976951 | 2451.27 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.943 | 252 | 1884992 | 2440.78 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.554 | 276 | 2091753 | 2444.78 | ug/kg | 100 |
| 27) Dibenz[a,h]anthracene | 29.540 | 278 | 1738477 | 2492.33 | ug/kg | 100 |
| 28) Benzo[g,h,i]perylene | 30.697 | 276 | 1798976 | 2409.59 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051013.D
Acq On : 11 May 2016 1:26 am
Operator :
Sample : SSCV-160510 2500ppb
Misc : ICV
ALS Vial : 13 Sample Multiplier: 1

Quant Time: May 11 10:45:28 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051020.D
Acq On : 11 May 2016 9:18 am
Operator :
Sample : SSCV-160511
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 11 10:45:44 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration

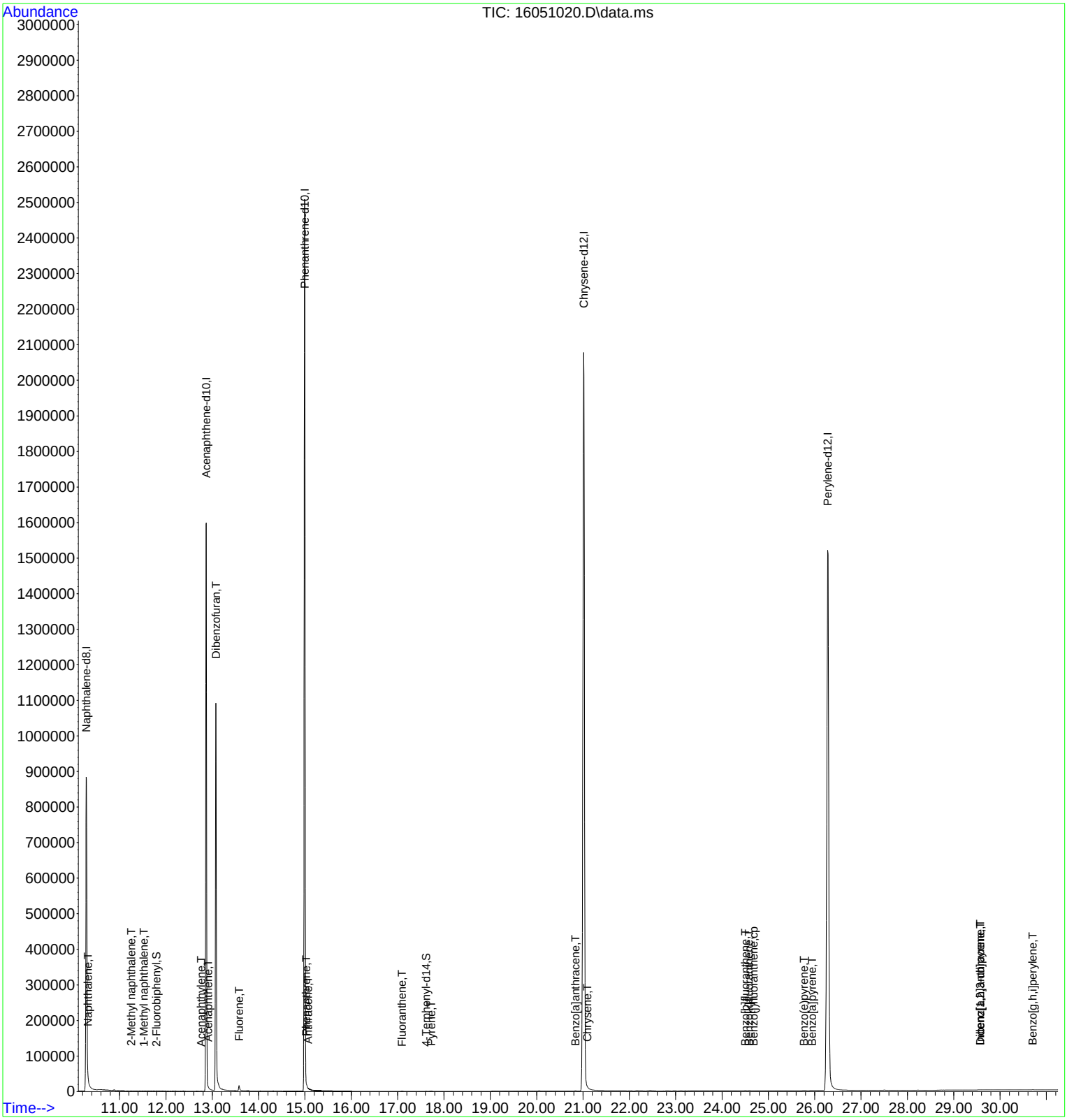
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.280 | 136 | 1399599 | 4000.00 | ug/kg | 87 |
| 6) Acenaphthene-d10 | 12.872 | 164 | 1004361 | 4000.00 | ug/kg | 96 |
| 11) Phenanthrene-d10 | 14.994 | 188 | 3100424 | 4000.00 | ug/kg | 92 |
| 16) Chrysene-d12 | 21.013 | 240 | 3551246 | 4000.00 | ug/kg | 94 |
| 20) Perylene-d12 | 26.280 | 264 | 2998619 | 4000.00 | ug/kg | 95 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.790 | 172 | 161 | 0.59 | ug/kg | 0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.01%# | | |
| 17) 4-Terphenyl-d14 | 17.615 | 244 | 1074 | 1.31 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 0.03%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.321 | 128 | 189 | 0.56 | ug/kg | 80 |
| 3) 2-Methyl naphthalene | 11.243 | 142 | 73 | 3.74 | ug/kg# | 71 |
| 4) 1-Methyl naphthalene | 11.527 | 142 | 17 | 0.08 | ug/kg | 96 |
| 7) Acenaphthylene | 12.759 | 152 | 258 | 0.55 | ug/kg | 97 |
| 8) Acenaphthene | 12.921 | 153 | 264 | 0.88 | ug/kg | 90 |
| 9) Dibenzofuran | 13.078 | 168 | 1144093 | 2372.02 | ug/kg | 92 |
| 10) Fluorene | 13.579 | 166 | 11574 | 25.52 | ug/kg | 99 |
| 12) Phenanthrene | 15.032 | 178 | 1088 | 1.21 | ug/kg | 98 |
| 13) Anthracene | 15.076 | 178 | 957 | 0.98 | ug/kg | 96 |
| 14) Fluoranthene | 17.092 | 202 | 1237 | 1.05 | ug/kg | 91 |
| 15) Pyrene | 17.722 | 202 | 1577 | 1.34 | ug/kg | 95 |
| 18) Benzo[a]anthracene | 20.838 | 228 | 1390 | 1.39 | ug/kg | 97 |
| 19) Chrysene | 21.101 | 228 | 1149 | 1.26 | ug/kg | 97 |
| 21) Benzo[b]fluoranthene | 24.500 | 252 | 1334 | 1.56 | ug/kg | 97 |
| 22) Benzo[k]fluoranthene | 24.581 | 252 | 806 | 1.18 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.683 | 252 | 177 | 0.26 | ug/kg | 72 |
| 24) Benzo(e)pyrene | 25.767 | 252 | 510 | 0.62 | ug/kg | 94 |
| 25) Benzo[a]pyrene | 25.943 | 252 | 1108 | 1.41 | ug/kg | 93 |
| 26) Indeno[1,2,3-cd]pyrene | 29.569 | 276 | 1222 | 1.41 | ug/kg | 95 |
| 27) Dibenz[a,h]anthracene | 29.576 | 278 | 1493 | 2.11 | ug/kg | 90 |
| 28) Benzo[g,h,i]perylene | 30.704 | 276 | 997 | 1.31 | ug/kg | 97 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160510\
Data File : 16051020.D
Acq On : 11 May 2016 9:18 am
Operator :
Sample : SSCV-160511
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 11 10:45:44 2016
Quant Method : C:\msdchem\1\METHODS\PAH160510.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 11 10:43:33 2016
Response via : Initial Calibration



CAL ID: 660

# Method 8270 PAH Calibration Curve Sheet

**Instrument ID:** GCMS #8 **Calibration File Name:** PP160517.CAL

| Target Concentration | Solvent Amount mL | Standard Preparation Stocks and Surrogate (µL/mL) | Final Volume mL |
|---|---|---|---|
| 5 ppb | 0.999 | 0.001 mL of 5000 ppb | 1 |
| 10 ppb | 0.998 | 0.002 mL of 5000 ppb | 1 |
| 50 ppb | 0.990 | 0.01 mL of 5000 ppb | 1 |
| 100 ppb | 0.980 | 0.02 mL of 5000 ppb | 1 |
| 500 ppb | 0.900 | 0.10 mL of 5000 ppb | 1 |
| 1000 ppb | 0.800 | 0.20 mL of 5000 ppb | 1 |
| 2000 ppb | 0.600 | 0.40 mL of 5000 ppb | 1 |
| 5000 ppb | ---- | PAHCAL160510 | 10 |
| SSCV 2500 ppb | 0.500 | 0.50 mL of PAHSSCV160510-1 | 1 |
| SSCV 2500 ppb | ---- | PAHSSCV160510-2 | 1 |

## Standards Used for the Calibration Curve

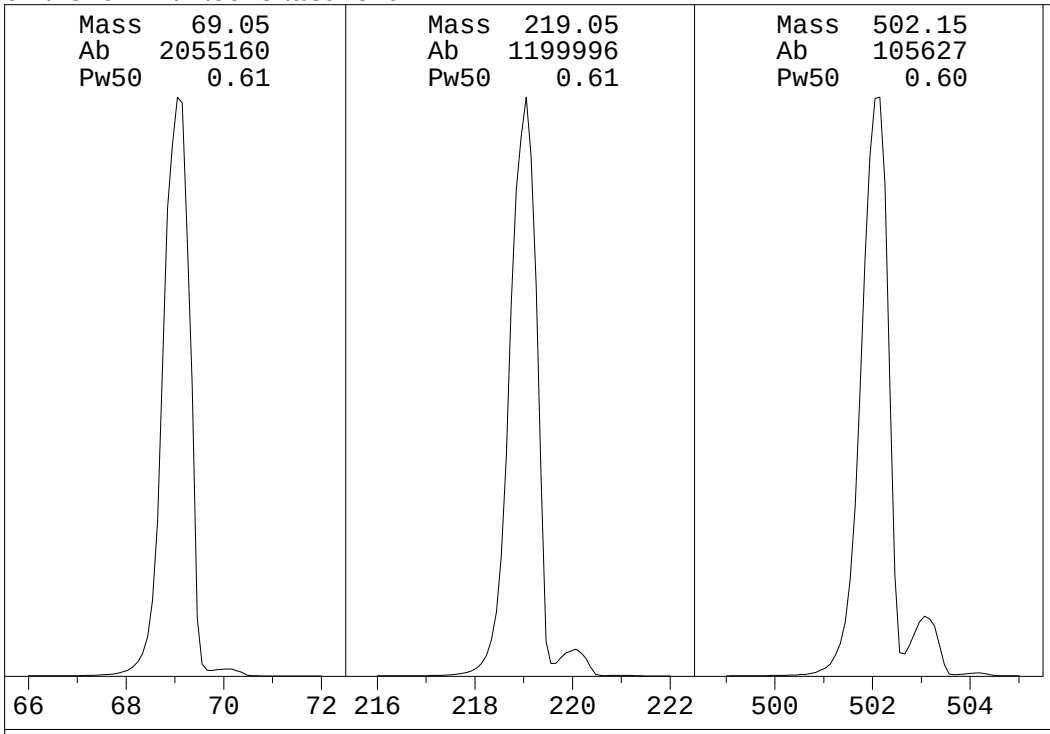
| Primary Stock STDs | DHL Standard ID | Second Source (SS) Stock STDs | DHL Standard ID |
|---|---|---|---|
| 5 PPM (5000 PPB) PAH CAL STD | **PAHCAL160510** | 5PPM (5000PPB) PAH SSCV STD | **PAHSSCV160510-1** |
| | | 5PPM (5000PPB) PAH SSCV STD | **PAHSSCV160510-2** |

| Review Item | Acceptance Criteria | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|---|
| 1. Are all standards within expiration dates? | Primary Stocks = 1 year<br>Intermediate Standards = 6 months | X | | | X |
| 2. Are all manual integrations listed on MI tracking form? **(DoD Projects only)** | Manual Integration Tracking Form | | | X | X |
| 3. Does the tune and resolution check meet criteria? | Benzo(b) / Benzo(k)phenanthrene Valley > 50%<br>See Tune Eval Report | X | | | X |
| 4. Does the ICAL curve meet criteria? Use average CF only if %RSD < 15% | %RSD < 15%<br>COD ≥ 0.990 | X | | | X |
| 5. Has the low point been reprocessed under the new ICAL curve and meets criteria? | 70-130% recovery | X | | | X |
| 6. Has the SSCV been analyzed and meets criteria? | 80-120% recovery | X | | | X |

Analyst: Karyn Lane Date: 05/18/16

Second-Level Review: Date: 05/19/2016

Tue May 17 15:37:19 2016 Instrument: GCMS #8
C:\MSDCHEM\1\5973\atune.u

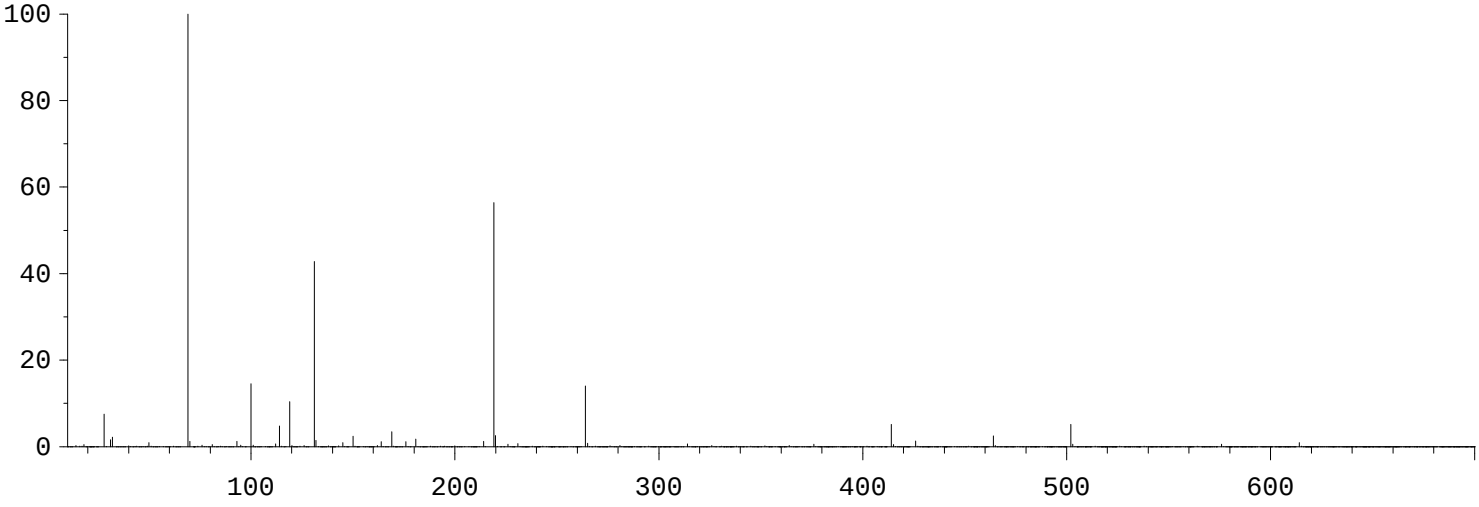



| | | | |
|---|---|---|---|
| Ion Pol | POS | MassGain | 48 |
| | | MassOffs | -11 |
| Emission | 34.6 | AmuGain | 2098 |
| EIEnrgy | 69.9 | AmuOffs | 132 |
| Filament | 2 | Wid219 | -0.001 |
| | | DC Pol | NEG |
| Repeller | 37.83 | | |
| IonFcus | 95.9 | HEDEnab | ON |
| EntLens | 12.0 | EMVolts | 1506 |
| EntOffs | 19.33 | | |
| | | Samples | 8 |
| PFTBA | OPEN | Averages | 3 |
| | | Stepsize | 0.10 |

Zones:

| | | | |
|---|---|---|---|
| MS Source | 230 | Foreline | 41 |
| MS Quad | 150 | | |

Scan: 10.00 - 700.00 Samples: 8 Thresh: 0 Step: 0.10
862 peaks Base: 69.05 Abundance: 1927168




| Mass | Abund | Rel Abund | Iso Mass | Iso Abund | Iso Ratio |
|---|---|---|---|---|---|
| 69.05 | 1927168 | 100.00 | 70.05 | 23616 | 1.23 |
| 219.05 | 1086464 | 56.38 | 219.95 | 49704 | 4.57 |
| 502.05 | 98928 | 5.13 | 503.05 | 10766 | 10.88 |

Air/Water Check: H20~0.48% N2~7.48% O2~2.21% CO2~0.12% N2/H2O~1565.94%

Column Flow: Front: 0 Back: 1.887 ml/min. Interface Temp: 310

Ramp Criteria:
Ion Focus Maximum 125 volts using ion 219; EM Gain 34065
Repeller Maximum 38 volts using ion 502;

MassGain Values @Samples: 45@3 45@2 45@1 45@0 48@FS

| TARGET MASS: | 50 | 69 | 131 | 219 | 414 | 502 | 800 |
|---|---|---|---|---|---|---|---|
| Amu Offset: | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 |
| Entrance Lens Offset: | 19.3 | 19.3 | 19.3 | 19.3 | 19.3 | 19.3 | 19.3 |

# Response Factor Report GCMS #8

Method Path : C:\msdchem\1\METHODS\
Method File : PAH160517.M
Title : CLP BNA Calibration - Large Volume Injection
Last Update : Wed May 18 08:55:04 2016
Response Via : Initial Calibration

Calibration Files
1 =16051715.D 2 =16051716.D 3 =16051717.D 4 =16051718.D 5 =16051719.D 6 =16051720.D 7 =16051721.D
8 =16051722.D

| | | Compound | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Avg | %RSD | Fit | RSD/CF | Constant | Linear | Quad |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | I | Naphthalene-d8 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 2) | T | Naphthalene | 0.971 | 0.931 | 0.909 | 0.923 | 0.896 | 0.882 | 0.854 | 0.803 | 0.896 | 5.70 | A | 0.0570 | 0.0000 | 0.8961 | 0.0000 |
| 3) | T | 2-Methyl napht... | 0.668 | 0.737 | 0.723 | 0.752 | 0.728 | 0.704 | 0.661 | 0.601 | 0.697 | 7.19 | A | 0.0719 | 0.0000 | 0.6966 | 0.0000 |
| 4) | T | 1-Methyl napht... | 0.697 | 0.702 | 0.687 | 0.699 | 0.676 | 0.648 | 0.610 | 0.555 | 0.659 | 7.98 | A | 0.0798 | 0.0000 | 0.6592 | 0.0000 |
| 5) | S | 2-Fluorobiphenyl | 0.930 | 0.951 | 0.942 | 0.982 | 0.925 | 0.877 | 0.808 | 0.711 | 0.891 | 10.09 | A | 0.1009 | 0.0000 | 0.8906 | 0.0000 |
| 6) | I | Acenaphthene-d10 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 7) | T | Acenaphthylene | 1.873 | 1.811 | 1.779 | 1.812 | 1.778 | 1.749 | 1.659 | 1.526 | 1.748 | 6.23 | A | 0.0623 | 0.0000 | 1.7484 | 0.0000 |
| 8) | T | Acenaphthene | 1.167 | 1.152 | 1.126 | 1.146 | 1.113 | 1.099 | 1.051 | 0.972 | 1.103 | 5.81 | A | 0.0581 | 0.0000 | 1.1033 | 0.0000 |
| 9) | T | Dibenzofuran | 1.723 | 1.773 | 1.714 | 1.766 | 1.706 | 1.690 | 1.606 | 1.468 | 1.681 | 5.96 | A | 0.0596 | 0.0000 | 1.6806 | 0.0000 |
| 10) | T | Fluorene | 1.574 | 1.580 | 1.544 | 1.570 | 1.557 | 1.539 | 1.475 | 1.360 | 1.525 | 4.88 | A | 0.0488 | 0.0000 | 1.5249 | 0.0000 |
| 11) | I | Phenanthrene-d10 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 12) | T | Phenanthrene | 1.343 | 1.225 | 1.137 | 1.093 | 1.075 | 1.049 | 0.987 | 0.896 | 1.101 | 12.58 | A | 0.1258 | 0.0000 | 1.1006 | 0.0000 |
| 13) | T | Anthracene | 1.350 | 1.221 | 1.143 | 1.125 | 1.092 | 1.066 | 1.009 | 0.903 | 1.114 | 12.07 | A | 0.1207 | 0.0000 | 1.1137 | 0.0000 |
| 14) | T | Fluoranthene | 1.583 | 1.275 | 1.196 | 1.123 | 1.107 | 1.088 | 1.044 | 0.963 | 1.172 | 16.25 | *Q | 1.0000 | 0.0006 | 1.1096 | -0.1184 |
| 15) | T | Pyrene | 1.586 | 1.256 | 1.180 | 1.100 | 1.074 | 1.064 | 1.028 | 0.961 | 1.156 | 16.94 | *Q | 1.0000 | 0.0006 | 1.0802 | -0.0964 |
| 16) | I | Chrysene-d12 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 17) | S | 4-Terphenyl-d14 | 0.872 | 0.888 | 0.864 | 0.856 | 0.860 | 0.858 | 0.821 | 0.754 | 0.847 | 4.97 | A | 0.0497 | 0.0000 | 0.8466 | 0.0000 |
| 18) | T | Benzo[a]anthra... | 1.506 | 1.204 | 1.026 | 1.022 | 1.027 | 1.032 | 0.987 | 0.920 | 1.091 | 17.03 | *Q | 0.9999 | 0.0005 | 1.0384 | -0.0949 |
| 19) | T | Chrysene | 1.521 | 1.202 | 0.989 | 0.969 | 0.955 | 0.951 | 0.910 | 0.854 | 1.044 | 20.85 | *Q | 1.0000 | 0.0007 | 0.9573 | -0.0833 |
| 20) | I | Perylene-d12 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 21) | T | Benzo[b]fluora... | 1.525 | 1.225 | 1.056 | 1.050 | 1.055 | 1.058 | 1.026 | 0.966 | 1.120 | 15.99 | *Q | 1.0000 | 0.0005 | 1.0659 | -0.0797 |
| 22) | T | Benzo[k]fluora... | 1.318 | 1.047 | 0.912 | 0.909 | 0.937 | 0.953 | 0.939 | 0.886 | 0.987 | 14.39 | *Q | 0.9999 | 0.0003 | 0.9587 | -0.0575 |
| 23) | cp | Benzo(j)fluora... | 1.597 | 1.138 | 0.982 | 0.939 | 0.908 | 0.923 | 0.883 | 0.833 | 1.025 | 24.19# | *Q | 0.9999 | 0.0007 | 0.9226 | -0.0727 |
| 24) | T | Benzo(e)pyrene | 1.554 | 1.244 | 1.042 | 1.019 | 0.993 | 1.003 | 0.966 | 0.907 | 1.091 | 19.34 | *Q | 1.0000 | 0.0006 | 1.0086 | -0.0814 |
| 25) | T | Benzo[a]pyrene | 1.491 | 1.168 | 1.005 | 0.982 | 0.978 | 0.983 | 0.962 | 0.916 | 1.061 | 17.79 | *Q | 1.0000 | 0.0005 | 0.9888 | -0.0580 |
| 26) | T | Indeno[1,2,3-c... | 1.996 | 1.545 | 1.257 | 1.238 | 1.216 | 1.208 | 1.175 | 1.102 | 1.342 | 21.92 | *Q | 1.0000 | 0.0009 | 1.2223 | -0.0964 |
| 27) | T | Dibenz[a,h]ant... | 2.036 | 1.480 | 1.029 | 1.030 | 1.006 | 1.007 | 0.982 | 0.912 | 1.185 | 32.52 | *Q | 0.9999 | 0.0011 | 1.0172 | -0.0844 |
| 28) | T | Benzo[g,h,i]pe... | 1.728 | 1.360 | 1.090 | 1.080 | 1.051 | 1.040 | 1.013 | 0.954 | 1.164 | 22.12 | *Q | 1.0000 | 0.0008 | 1.0532 | -0.0802 |

(#) = Out of Range

Sequence Name: C:\msdchem\1\sequence\160517.S
Comment:
Operator:
Data Path: C:\MSDCHEM\1\DATA\160517\
Instrument Name: GCMS #8
Instrument Control Pre-Seq Cmd:
Data Analysis Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

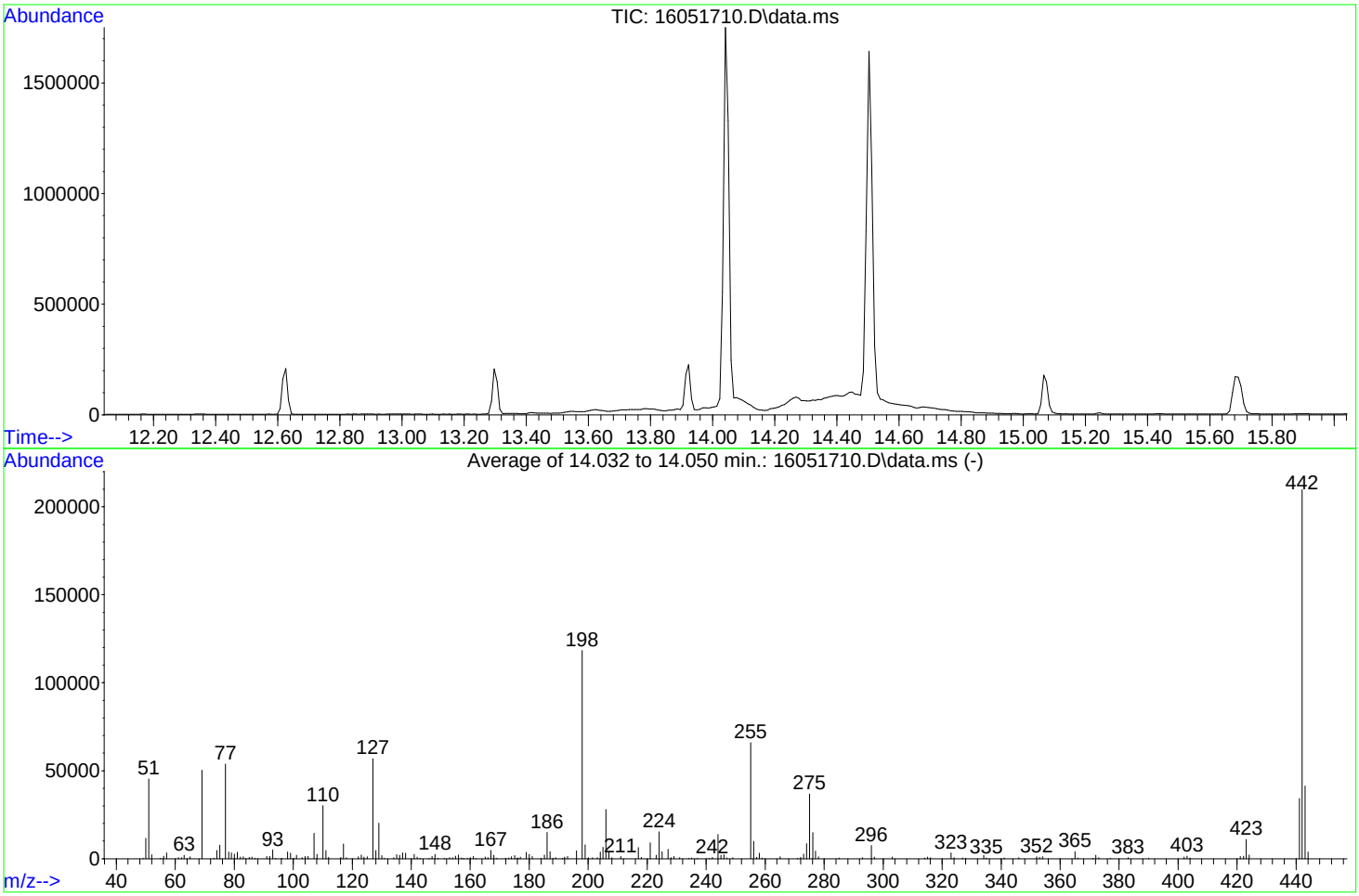
On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

| Line | | Sample Name/Misc Info | | |
|---|---|---|---|---|
| 1) | Sample | 1 | 16051601 DFTPPPCB | DFTPP-160517 |
| 2) | Sample | 2 | 16051602 1660-160511 | ICV-160517 |
| 3) | Sample | 3 | 16051703 1660-160511 | LCS-75186 |
| 4) | Sample | 4 | 16051704 1660-160511 | LCSD-75186 |
| 5) | Sample | 5 | 16051705 1660-160511 | MB-75186 |
| 6) | Sample | 6 | 16051706 1660-160511 | 1605115-01B |
| 7) | Sample | 7 | 16051707 1660-160511 | 1605115-02B |
| 8) | Sample | 1 | 16051708 DFTPPPAH | DFTPP-160517 |
| 9) | Sample | 2 | 16051709 PAH160510 | ICV-160517 |
| 10) | Sample | 1 | 16051710 DFTPPPAH | DFTPP-160517 |
| 11) | Sample | 2 | 16051711 PAH160510 | ICV-160517 |
| 12) | Sample | 3 | 16051712 PAH160510 | SBLK |
| 13) | Sample | 3 | 16051713 PAH160510 | SBLK |
| 14) | Sample | 3 | 16051714 PAH160510 | SBLK |
| 15) | Sample | 4 | 16051715 PAH160510 | P1-160517 5 |
| 16) | Sample | 5 | 16051716 PAH160510 | P2-160517 10 |
| 17) | Sample | 6 | 16051717 PAH160510 | P3-160517 50 |
| 18) | Sample | 7 | 16051718 PAH160510 | P4-160517 100 |
| 19) | Sample | 8 | 16051719 PAH160510 | P5-160517 500 |
| 20) | Sample | 9 | 16051720 PAH160510 | P6-160517 1000 |
| 21) | Sample | 10 | 16051721 PAH160510 | P7-160517 2000 |
| 22) | Sample | 11 | 16051722 PAH160510 | P8-160517 5000 |
| 23) | Sample | 12 | 16051723 PAH160510 | SSCV-160517 |
| 24) | Sample | 13 | 16051724 PAH160510 | SSCV-160517 |

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051710.D
Acq On : 17 May 2016 1:34 pm
Operator :
Sample : DFTPP-160517
Misc : TUNE
ALS Vial : 1 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : CLP BNA Calibration - Large Volume Injection
Last Update : Thu Aug 27 07:24:43 2015




AutoFind: Scans 435, 436, 437; Background Corrected with Scan 431

| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 51 | 198 | 10 | 80 | 38.3 | 45352 | PASS |
| 68 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 69 | 198 | 0.00 | 100 | 42.4 | 50218 | PASS |
| 70 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 127 | 198 | 10 | 80 | 48.0 | 56837 | PASS |
| 197 | 198 | 0.00 | 2 | 0.0 | 0 | PASS |
| 198 | 198 | 100 | 100 | 100.0 | 118309 | PASS |
| 199 | 198 | 5 | 9 | 6.7 | 7917 | PASS |
| 275 | 198 | 10 | 60 | 31.0 | 36677 | PASS |
| 365 | 198 | 1 | 200 | 3.4 | 4059 | PASS |
| 441 | 442 | 0.01 | 24 | 16.3 | 34164 | PASS |
| 442 | 198 | 50 | 400 | 177.3 | 209768 | PASS |
| 443 | 442 | 15 | 24 | 19.7 | 41255 | PASS |

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051715.D
Acq On : 17 May 2016 4:58 pm
Operator :
Sample : P1-160517 5
Misc : CAL1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: May 18 14:55:15 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.276 | 136 | 1615408 | 4000.00 | ug/kg | 99 |
| 6) Acenaphthene-d10 | 12.862 | 164 | 1299470 | 4000.00 | ug/kg | 104 |
| 11) Phenanthrene-d10 | 14.983 | 188 | 2692201 | 4000.00 | ug/kg | 92 |
| 16) Chrysene-d12 | 20.996 | 240 | 2729963 | 4000.00 | ug/kg | 101 |
| 20) Perylene-d12 | 26.262 | 264 | 2530056 | 4000.00 | ug/kg | 102 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.765 | 172 | 1877 | 5.22 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 0.13%# | | | |
| 17) 4-Terphenyl-d14 | 17.598 | 244 | 2976 | 5.15 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 0.13%# | | | |

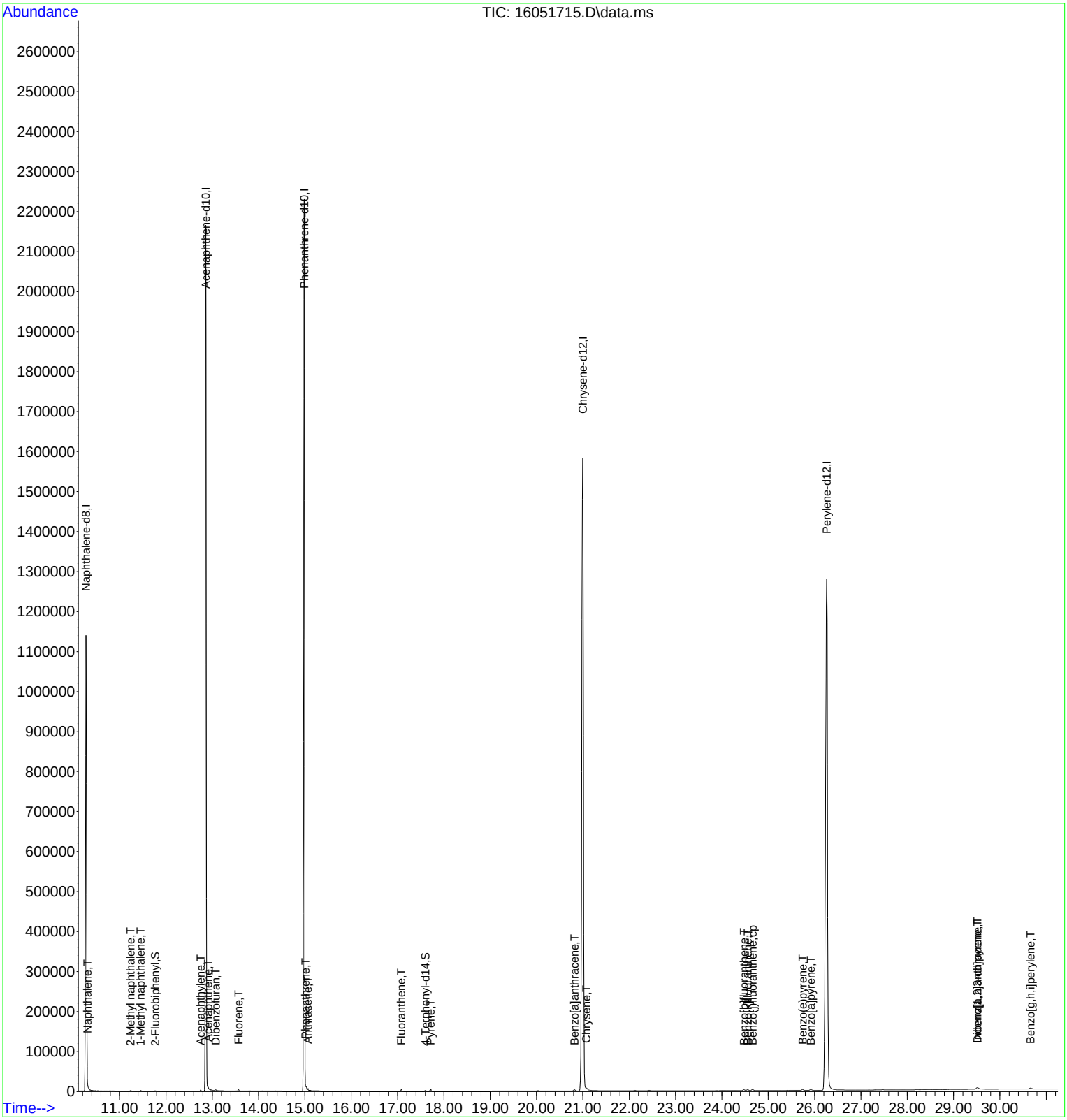
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.313 | 128 | 1960 | 5.42 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.234 | 142 | 1349 | 4.80 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.457 | 142 | 1407 | 5.29 | ug/kg | 95 |
| 7) Acenaphthylene | 12.749 | 152 | 3043 | 5.36 | ug/kg | 98 |
| 8) Acenaphthene | 12.911 | 153 | 1895 | 5.29 | ug/kg | 96 |
| 9) Dibenzofuran | 13.073 | 168 | 2799 | 5.13 | ug/kg | 93 |
| 10) Fluorene | 13.564 | 166 | 2556 | 5.16 | ug/kg | 99 |
| 12) Phenanthrene | 15.019 | 178 | 4521 | 6.10 | ug/kg | 97 |
| 13) Anthracene | 15.063 | 178 | 4542 | 6.06 | ug/kg | 98 |
| 14) Fluoranthene | 17.079 | 202 | 5328 | 5.09 | ug/kg | 100 |
| 15) Pyrene | 17.709 | 202 | 5338 | 5.08 | ug/kg | 96 |
| 18) Benzo[a]anthracene | 20.812 | 228 | 5140 | 5.45 | ug/kg | 99 |
| 19) Chrysene | 21.083 | 228 | 5190 | 5.21 | ug/kg | 98 |
| 21) Benzo[b]fluoranthene | 24.475 | 252 | 4824 | 5.45 | ug/kg | 98 |
| 22) Benzo[k]fluoranthene | 24.556 | 252 | 4169 | 5.77 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.665 | 252 | 5051 | 5.48 | ug/kg | 98 |
| 24) Benzo(e)pyrene | 25.742 | 252 | 4914 | 5.22 | ug/kg | 97 |
| 25) Benzo[a]pyrene | 25.918 | 252 | 4715 | 5.41 | ug/kg | 98 |
| 26) Indeno[1,2,3-cd]pyrene | 29.522 | 276 | 6312 | 5.30 | ug/kg | 97 |
| 27) Dibenz[a,h]anthracene | 29.507 | 278 | 6440 | 5.51 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.657 | 276 | 5466 | 5.18 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051715.D
Acq On : 17 May 2016 4:58 pm
Operator :
Sample : P1-160517 5
Misc : CAL1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: May 18 14:55:15 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051716.D
Acq On : 17 May 2016 5:34 pm
Operator :
Sample : P2-160517 10
Misc : CAL
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 18 14:21:49 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.277 | 136 | 1669821 | 4000.00 | ug/kg | 102 |
| 6) Acenaphthene-d10 | 12.862 | 164 | 1410989 | 4000.00 | ug/kg | 113 |
| 11) Phenanthrene-d10 | 14.983 | 188 | 2926710 | 4000.00 | ug/kg | 100 |
| 16) Chrysene-d12 | 20.995 | 240 | 2655348 | 4000.00 | ug/kg | 98 |
| 20) Perylene-d12 | 26.262 | 264 | 2418020 | 4000.00 | ug/kg | 97 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.766 | 172 | 3970 | 10.68 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 0.27%# | | | |
| 17) 4-Terphenyl-d14 | 17.595 | 244 | 5897 | 10.49 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 0.26%# | | | |

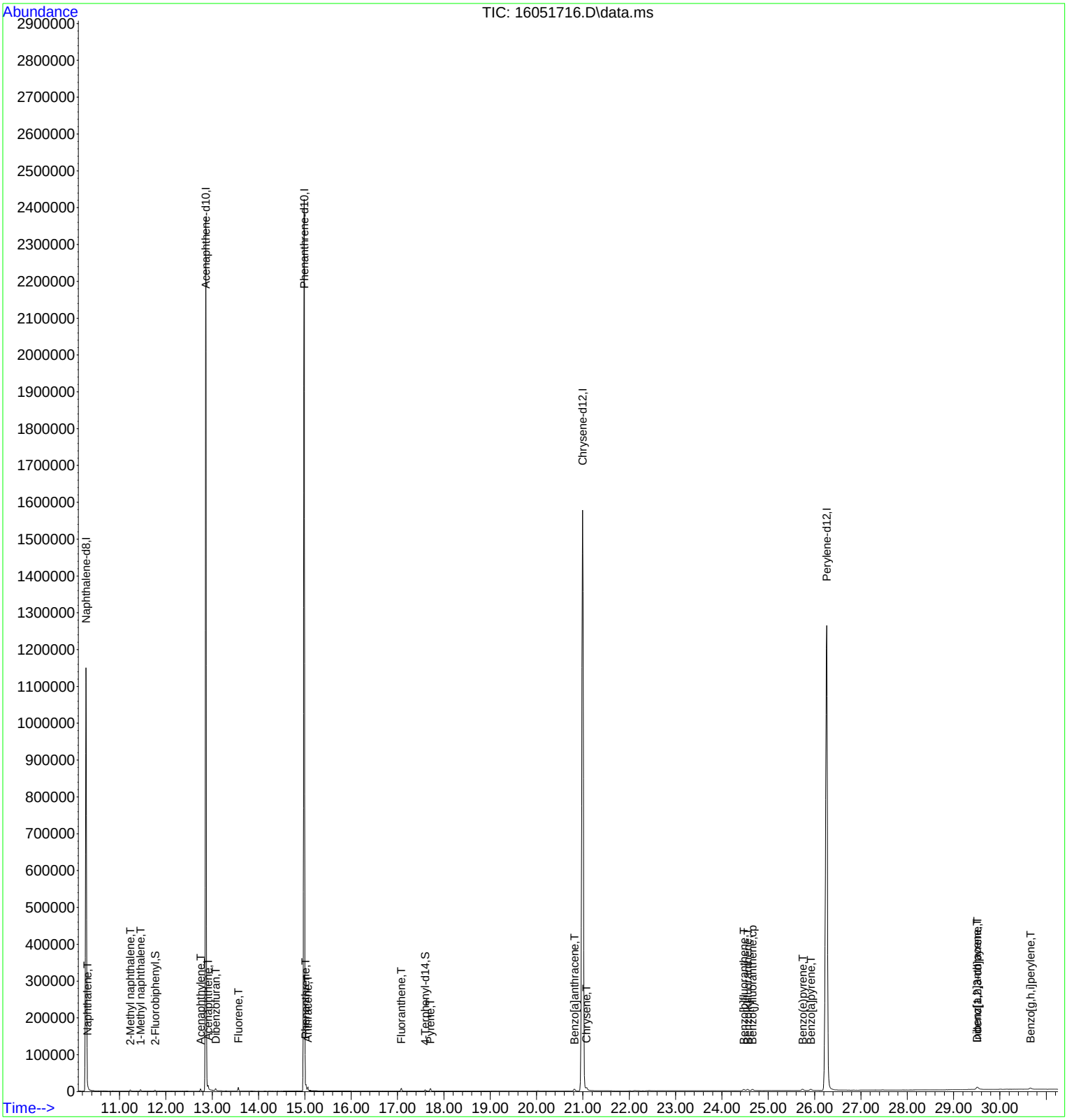
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.314 | 128 | 3887 | 10.39 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.231 | 142 | 3075 | 10.57 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.453 | 142 | 2932 | 10.65 | ug/kg | 98 |
| 7) Acenaphthylene | 12.749 | 152 | 6390 | 10.36 | ug/kg | 98 |
| 8) Acenaphthene | 12.911 | 153 | 4063 | 10.44 | ug/kg | 98 |
| 9) Dibenzofuran | 13.073 | 168 | 6254 | 10.55 | ug/kg | 99 |
| 10) Fluorene | 13.564 | 166 | 5573 | 10.36 | ug/kg | 99 |
| 12) Phenanthrene | 15.019 | 178 | 8966 | 11.13 | ug/kg | 98 |
| 13) Anthracene | 15.063 | 178 | 8936 | 10.97 | ug/kg | 98 |
| 14) Fluoranthene | 17.079 | 202 | 9332 | 9.45 | ug/kg | 98 |
| 15) Pyrene | 17.708 | 202 | 9188 | 9.36 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.820 | 228 | 7990 | 9.79 | ug/kg | 98 |
| 19) Chrysene | 21.083 | 228 | 7982 | 9.83 | ug/kg | 98 |
| 21) Benzo[b]fluoranthene | 24.475 | 252 | 7404 | 9.78 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.555 | 252 | 6327 | 9.81 | ug/kg | 96 |
| 23) Benzo(j)fluoranthene | 24.658 | 252 | 6882 | 9.16 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.742 | 252 | 7518 | 9.85 | ug/kg | 95 |
| 25) Benzo[a]pyrene | 25.918 | 252 | 7061 | 9.69 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.522 | 276 | 9340 | 9.78 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.507 | 278 | 8949 | 10.05 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.657 | 276 | 8222 | 9.89 | ug/kg | 98 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051716.D
Acq On : 17 May 2016 5:34 pm
Operator :
Sample : P2-160517 10
Misc : CAL
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 18 14:21:49 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051717.D
Acq On : 17 May 2016 6:12 pm
Operator :
Sample : P3-160517 50
Misc : CAL
ALS Vial : 6 Sample Multiplier: 1

Quant Time: May 18 14:21:53 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

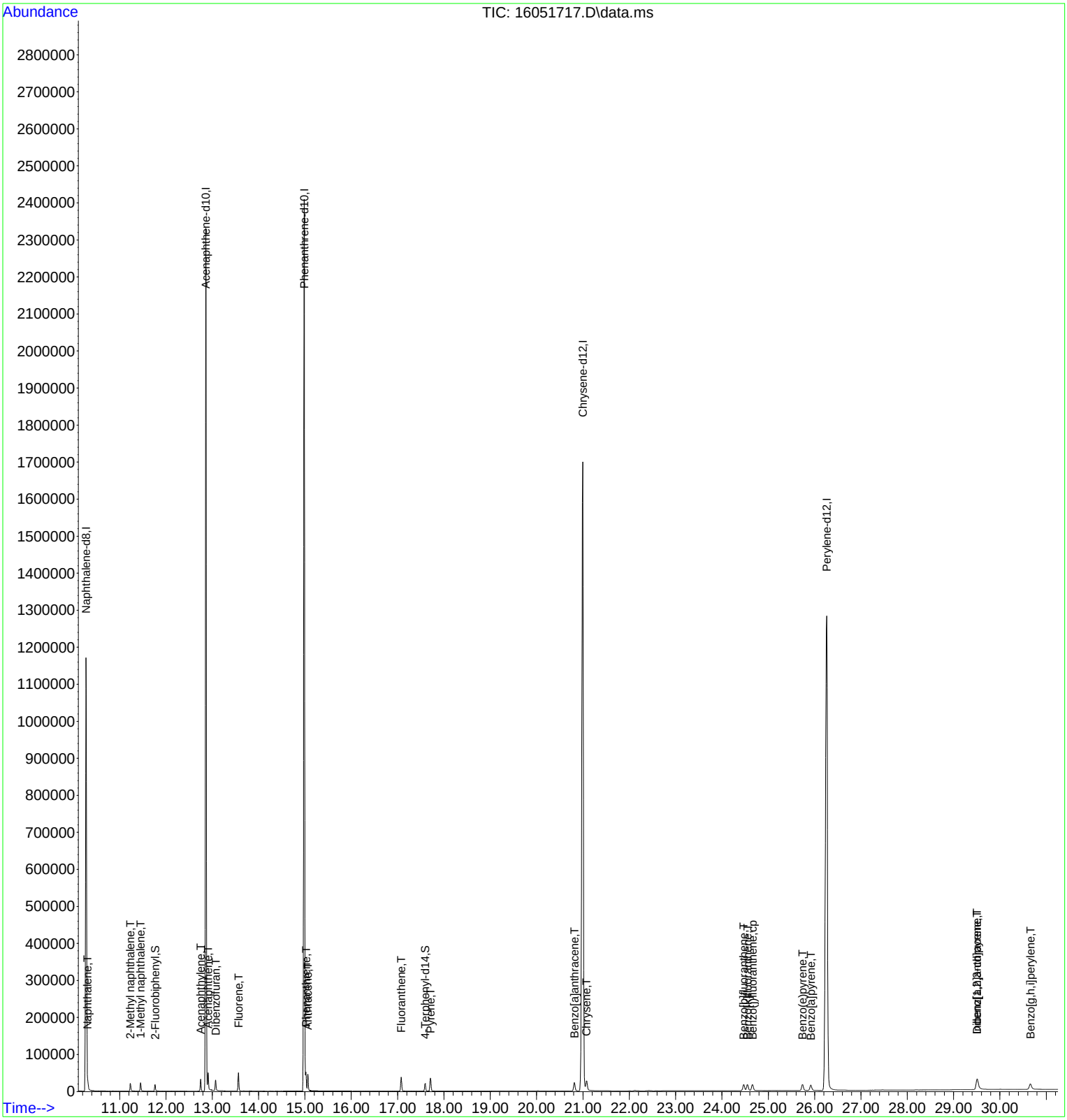
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.275 | 136 | 1691963 | 4000.00 | ug/kg | 104 |
| 6) Acenaphthene-d10 | 12.861 | 164 | 1420682 | 4000.00 | ug/kg | 113 |
| 11) Phenanthrene-d10 | 14.984 | 188 | 2974690 | 4000.00 | ug/kg | 102 |
| 16) Chrysene-d12 | 20.995 | 240 | 2826915 | 4000.00 | ug/kg | 104 |
| 20) Perylene-d12 | 26.262 | 264 | 2545051 | 4000.00 | ug/kg | 102 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.765 | 172 | 19916 | 52.87 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 1.32%# | | | |
| 17) 4-Terphenyl-d14 | 17.596 | 244 | 30536 | 51.03 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.28%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.313 | 128 | 19225 | 50.72 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.230 | 142 | 15281 | 51.86 | ug/kg | 98 |
| 4) 1-Methyl naphthalene | 11.452 | 142 | 14530 | 52.11 | ug/kg | 98 |
| 7) Acenaphthylene | 12.748 | 152 | 31599 | 50.89 | ug/kg | 98 |
| 8) Acenaphthene | 12.910 | 153 | 20004 | 51.05 | ug/kg | 97 |
| 9) Dibenzofuran | 13.072 | 168 | 30435 | 50.99 | ug/kg | 97 |
| 10) Fluorene | 13.563 | 166 | 27428 | 50.64 | ug/kg | 100 |
| 12) Phenanthrene | 15.020 | 178 | 42270 | 51.64 | ug/kg | 97 |
| 13) Anthracene | 15.062 | 178 | 42517 | 51.34 | ug/kg | 98 |
| 14) Fluoranthene | 17.077 | 202 | 44464 | 51.91 | ug/kg | 98 |
| 15) Pyrene | 17.709 | 202 | 43861 | 52.40 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.812 | 228 | 36261 | 47.66 | ug/kg | 98 |
| 19) Chrysene | 21.083 | 228 | 34959 | 48.99 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.467 | 252 | 33604 | 47.88 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.548 | 252 | 29005 | 46.47 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.658 | 252 | 31228 | 50.07 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.742 | 252 | 33142 | 49.21 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.918 | 252 | 31972 | 48.73 | ug/kg | 98 |
| 26) Indeno[1,2,3-cd]pyrene | 29.514 | 276 | 39995 | 48.61 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.500 | 278 | 32742 | 46.13 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.657 | 276 | 34676 | 48.76 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051717.D
Acq On : 17 May 2016 6:12 pm
Operator :
Sample : P3-160517 50
Misc : CAL
ALS Vial : 6 Sample Multiplier: 1

Quant Time: May 18 14:21:53 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051718.D
Acq On : 17 May 2016 6:49 pm
Operator :
Sample : P4-160517 100
Misc : CAL
ALS Vial : 7 Sample Multiplier: 1

Quant Time: May 18 14:21:56 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

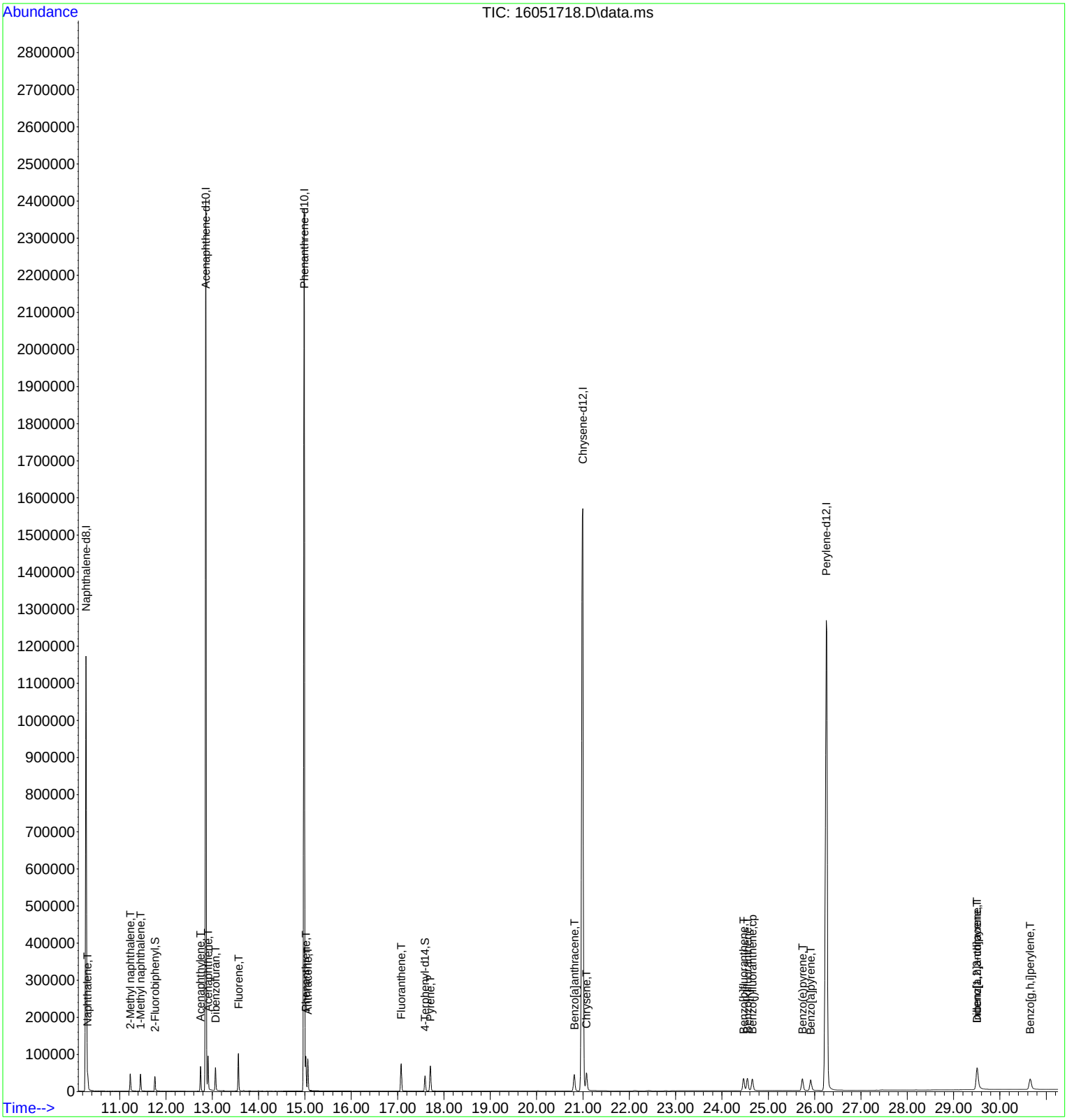
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.276 | 136 | 1693906 | 4000.00 | ug/kg | 104 |
| 6) Acenaphthene-d10 | 12.861 | 164 | 1440728 | 4000.00 | ug/kg | 115 |
| 11) Phenanthrene-d10 | 14.983 | 188 | 2966427 | 4000.00 | ug/kg | 101 |
| 16) Chrysene-d12 | 20.994 | 240 | 2706021 | 4000.00 | ug/kg | 100 |
| 20) Perylene-d12 | 26.254 | 264 | 2498423 | 4000.00 | ug/kg | 101 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.760 | 172 | 41597 | 110.29 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.76%# | | | |
| 17) 4-Terphenyl-d14 | 17.592 | 244 | 57884 | 101.06 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 2.53%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.313 | 128 | 39101 | 103.04 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.230 | 142 | 31845 | 107.95 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.452 | 142 | 29622 | 106.11 | ug/kg | 99 |
| 7) Acenaphthylene | 12.743 | 152 | 65260 | 103.63 | ug/kg | 99 |
| 8) Acenaphthene | 12.910 | 153 | 41268 | 103.85 | ug/kg | 98 |
| 9) Dibenzofuran | 13.067 | 168 | 63596 | 105.06 | ug/kg | 94 |
| 10) Fluorene | 13.563 | 166 | 56542 | 102.94 | ug/kg | 100 |
| 12) Phenanthrene | 15.019 | 178 | 81029 | 99.27 | ug/kg | 97 |
| 13) Anthracene | 15.061 | 178 | 83432 | 101.02 | ug/kg | 98 |
| 14) Fluoranthene | 17.076 | 202 | 83259 | 99.39 | ug/kg | 99 |
| 15) Pyrene | 17.705 | 202 | 81588 | 99.81 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.811 | 228 | 69165 | 96.87 | ug/kg | 99 |
| 19) Chrysene | 21.075 | 228 | 65585 | 98.75 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.467 | 252 | 65590 | 96.99 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.547 | 252 | 56746 | 93.79 | ug/kg | 100 |
| 23) Benzo(j)fluoranthene | 24.657 | 252 | 58663 | 98.81 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.734 | 252 | 63628 | 98.71 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.917 | 252 | 61356 | 97.35 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.514 | 276 | 77335 | 98.62 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.499 | 278 | 64324 | 96.94 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.656 | 276 | 67436 | 99.67 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051718.D
Acq On : 17 May 2016 6:49 pm
Operator :
Sample : P4-160517 100
Misc : CAL
ALS Vial : 7 Sample Multiplier: 1

Quant Time: May 18 14:21:56 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051719.D
Acq On : 17 May 2016 7:26 pm
Operator :
Sample : P5-160517 500
Misc : CAL
ALS Vial : 8 Sample Multiplier: 1

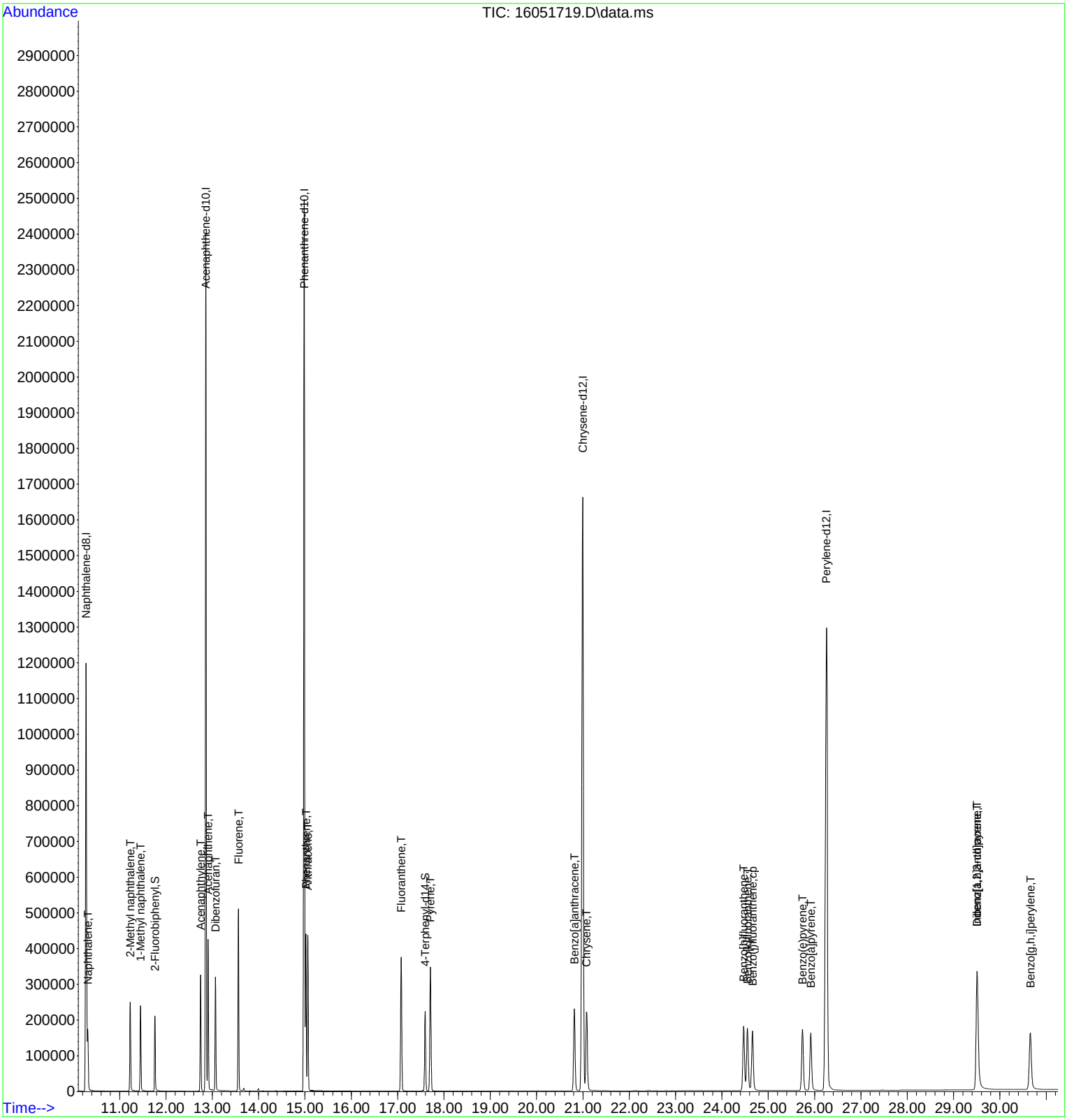
Quant Time: May 18 14:22:00 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.275 | 136 | 1716888 | 4000.00 | ug/kg | 105 |
| 6) Acenaphthene-d10 | 12.861 | 164 | 1420427 | 4000.00 | ug/kg | 113 |
| 11) Phenanthrene-d10 | 14.984 | 188 | 3065132 | 4000.00 | ug/kg | 105 |
| 16) Chrysene-d12 | 20.996 | 240 | 2806740 | 4000.00 | ug/kg | 104 |
| 20) Perylene-d12 | 26.255 | 264 | 2612071 | 4000.00 | ug/kg | 105 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.760 | 172 | 198425 | 519.07 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 12.98%# | | | |
| 17) 4-Terphenyl-d14 | 17.593 | 244 | 301886 | 508.16 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 12.70%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.312 | 128 | 192186 | 499.67 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.229 | 142 | 156202 | 522.41 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.451 | 142 | 144981 | 512.40 | ug/kg | 99 |
| 7) Acenaphthylene | 12.748 | 152 | 315668 | 508.42 | ug/kg | 99 |
| 8) Acenaphthene | 12.910 | 153 | 197655 | 504.51 | ug/kg | 98 |
| 9) Dibenzofuran | 13.067 | 168 | 302969 | 507.65 | ug/kg | 91 |
| 10) Fluorene | 13.563 | 166 | 276455 | 510.53 | ug/kg | 99 |
| 12) Phenanthrene | 15.020 | 178 | 411797 | 488.27 | ug/kg | 98 |
| 13) Anthracene | 15.062 | 178 | 418563 | 490.47 | ug/kg | 98 |
| 14) Fluoranthene | 17.077 | 202 | 424180 | 503.59 | ug/kg | 99 |
| 15) Pyrene | 17.709 | 202 | 411312 | 500.25 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.812 | 228 | 360174 | 498.19 | ug/kg | 99 |
| 19) Chrysene | 21.076 | 228 | 335004 | 501.45 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.468 | 252 | 344489 | 497.86 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.548 | 252 | 306053 | 491.39 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.658 | 252 | 296427 | 493.61 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.735 | 252 | 324231 | 494.73 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.918 | 252 | 319375 | 496.08 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.515 | 276 | 396879 | 499.27 | ug/kg | 98 |
| 27) Dibenz[a,h]anthracene | 29.500 | 278 | 328543 | 495.21 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.657 | 276 | 343154 | 500.70 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051719.D
Acq On : 17 May 2016 7:26 pm
Operator :
Sample : P5-160517 500
Misc : CAL
ALS Vial : 8 Sample Multiplier: 1

Quant Time: May 18 14:22:00 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051720.D
Acq On : 17 May 2016 8:03 pm
Operator :
Sample : P6-160517 1000
Misc : CAL
ALS Vial : 9 Sample Multiplier: 1

Quant Time: May 18 14:22:03 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

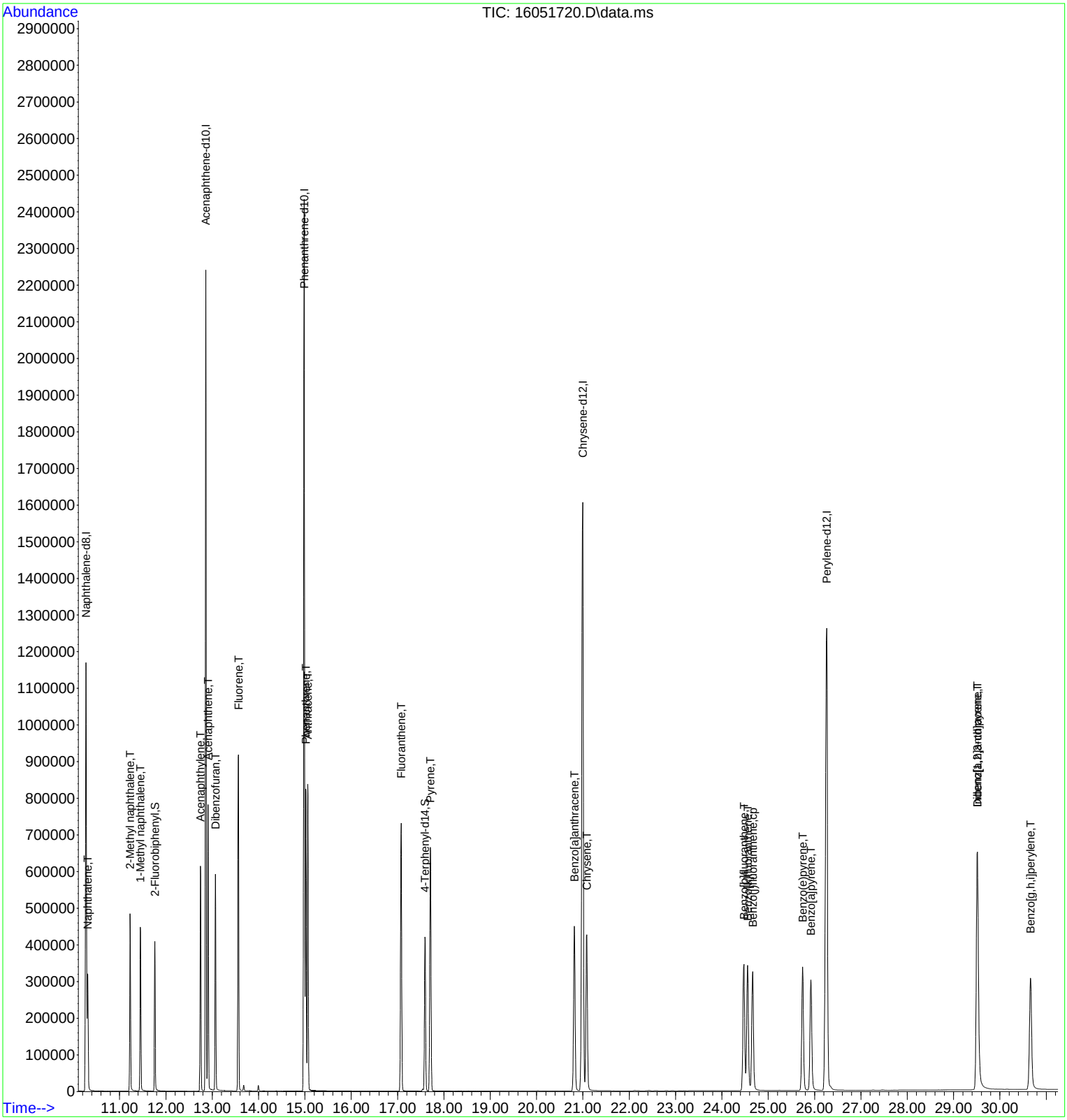
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.276 | 136 | 1672746 | 4000.00 | ug/kg | 103 |
| 6) Acenaphthene-d10 | 12.862 | 164 | 1335900 | 4000.00 | ug/kg | 107 |
| 11) Phenanthrene-d10 | 14.983 | 188 | 3005081 | 4000.00 | ug/kg | 103 |
| 16) Chrysene-d12 | 20.996 | 240 | 2748497 | 4000.00 | ug/kg | 101 |
| 20) Perylene-d12 | 26.263 | 264 | 2515463 | 4000.00 | ug/kg | 101 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.761 | 172 | 366689 | 984.56 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 24.61%# | | | |
| 17) 4-Terphenyl-d14 | 17.592 | 244 | 589485 | 1013.30 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 25.33%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.313 | 128 | 368948 | 984.54 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.227 | 142 | 294264 | 1010.11 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.449 | 142 | 270777 | 982.25 | ug/kg | 98 |
| 7) Acenaphthylene | 12.744 | 152 | 584017 | 1000.15 | ug/kg | 99 |
| 8) Acenaphthene | 12.911 | 153 | 367052 | 996.17 | ug/kg | 99 |
| 9) Dibenzofuran | 13.068 | 168 | 564260 | 1005.29 | ug/kg | 95 |
| 10) Fluorene | 13.564 | 166 | 514152 | 1009.56 | ug/kg | 99 |
| 12) Phenanthrene | 15.019 | 178 | 788028 | 953.04 | ug/kg | 99 |
| 13) Anthracene | 15.063 | 178 | 800602 | 956.88 | ug/kg | 99 |
| 14) Fluoranthene | 17.076 | 202 | 817359 | 1005.41 | ug/kg | 99 |
| 15) Pyrene | 17.709 | 202 | 799661 | 1005.73 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.813 | 228 | 709426 | 1016.07 | ug/kg | 100 |
| 19) Chrysene | 21.084 | 228 | 653281 | 1012.70 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.475 | 252 | 665603 | 1010.40 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.556 | 252 | 599301 | 1008.21 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.666 | 252 | 580263 | 1017.28 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.743 | 252 | 630968 | 1013.00 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.918 | 252 | 618328 | 1007.08 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.522 | 276 | 759719 | 1005.42 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.508 | 278 | 633064 | 1006.18 | ug/kg | 100 |
| 28) Benzo[g,h,i]perylene | 30.665 | 276 | 654258 | 1003.99 | ug/kg | 100 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051720.D
Acq On : 17 May 2016 8:03 pm
Operator :
Sample : P6-160517 1000
Misc : CAL
ALS Vial : 9 Sample Multiplier: 1

Quant Time: May 18 14:22:03 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051721.D
Acq On : 17 May 2016 8:40 pm
Operator :
Sample : P7-160517 2000
Misc : CAL
ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 18 14:22:07 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.273 | 136 | 1630045 | 4000.00 | ug/kg | 100 |
| 6) Acenaphthene-d10 | 12.862 | 164 | 1254060 | 4000.00 | ug/kg | 100 |
| 11) Phenanthrene-d10 | 14.981 | 188 | 2926310 | 4000.00 | ug/kg | 100 |
| 16) Chrysene-d12 | 20.989 | 240 | 2710742 | 4000.00 | ug/kg | 100 |
| 20) Perylene-d12 | 26.255 | 264 | 2483020 | 4000.00 | ug/kg | 100 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.762 | 172 | 658153 | 1813.43 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 45.34% | | | |
| 17) 4-Terphenyl-d14 | 17.593 | 244 | 1112679 | 1939.28 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 48.48%# | | | |

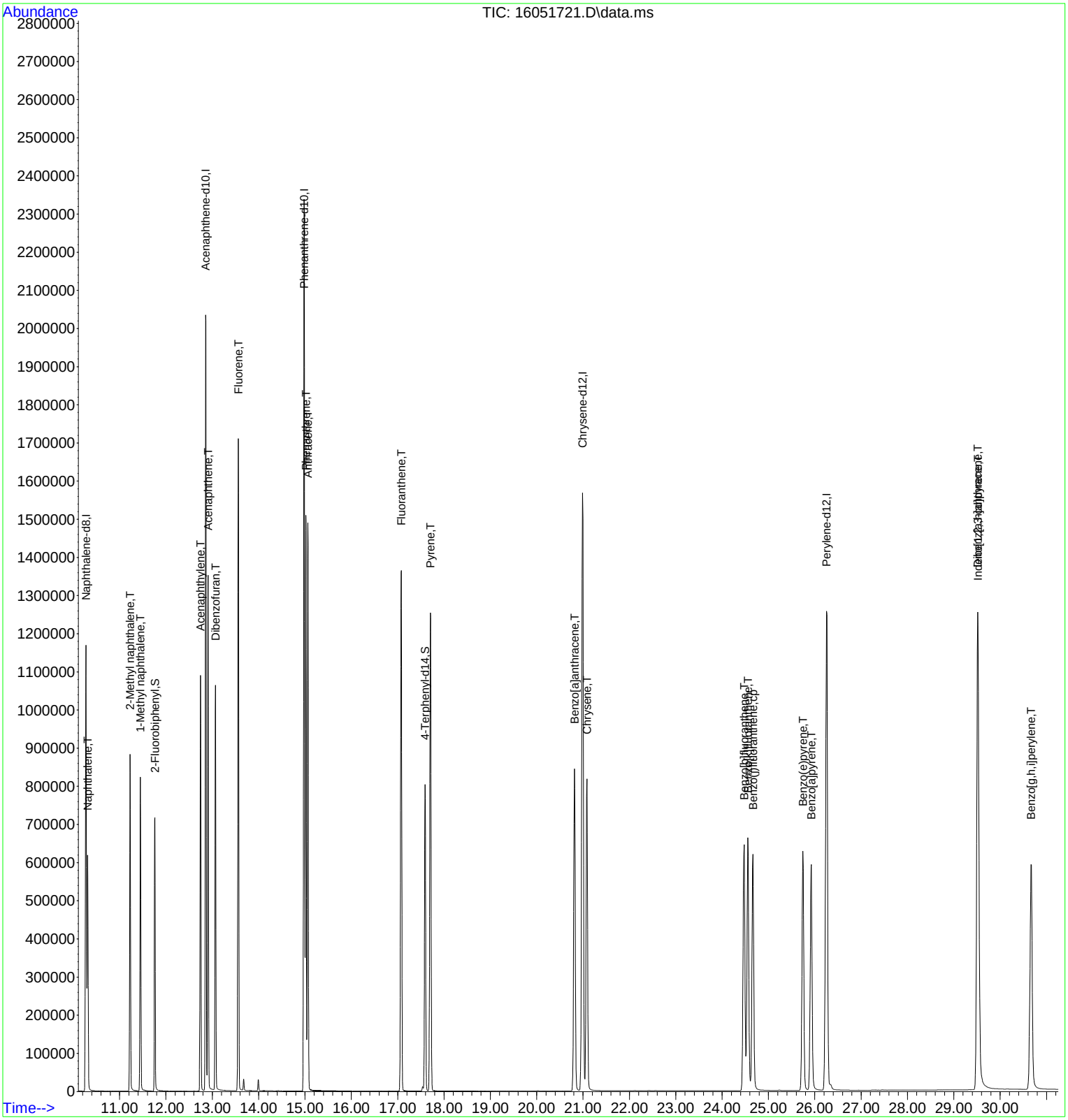
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.310 | 128 | 695769 | 1905.31 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.227 | 142 | 538753 | 1897.81 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.449 | 142 | 497158 | 1850.70 | ug/kg | 100 |
| 7) Acenaphthylene | 12.744 | 152 | 1039945 | 1897.17 | ug/kg | 100 |
| 8) Acenaphthene | 12.911 | 153 | 659005 | 1905.25 | ug/kg | 100 |
| 9) Dibenzofuran | 13.068 | 168 | 1007003 | 1911.16 | ug/kg | 100 |
| 10) Fluorene | 13.559 | 166 | 925041 | 1934.89 | ug/kg | 100 |
| 12) Phenanthrene | 15.019 | 178 | 1444658 | 1794.20 | ug/kg | 100 |
| 13) Anthracene | 15.061 | 178 | 1476119 | 1811.76 | ug/kg | 100 |
| 14) Fluoranthene | 17.077 | 202 | 1527667 | 1984.95 | ug/kg | 100 |
| 15) Pyrene | 17.706 | 202 | 1503502 | 1988.60 | ug/kg | 100 |
| 18) Benzo[a]anthracene | 20.813 | 228 | 1337835 | 1989.79 | ug/kg | 100 |
| 19) Chrysene | 21.084 | 228 | 1233351 | 1983.94 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.475 | 252 | 1273446 | 1997.62 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.556 | 252 | 1165290 | 2018.15 | ug/kg | 100 |
| 23) Benzo(j)fluoranthene | 24.666 | 252 | 1096280 | 1988.83 | ug/kg | 100 |
| 24) Benzo(e)pyrene | 25.742 | 252 | 1199708 | 1993.89 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.926 | 252 | 1194718 | 2003.05 | ug/kg | 100 |
| 26) Indeno[1,2,3-cd]pyrene | 29.530 | 276 | 1458740 | 1998.39 | ug/kg | 100 |
| 27) Dibenz[a,h]anthracene | 29.515 | 278 | 1219313 | 2010.42 | ug/kg | 100 |
| 28) Benzo[g,h,i]perylene | 30.672 | 276 | 1257350 | 1996.01 | ug/kg | 100 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051721.D
Acq On : 17 May 2016 8:40 pm
Operator :
Sample : P7-160517 2000
Misc : CAL
ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 18 14:22:07 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051722.D
Acq On : 17 May 2016 9:17 pm
Operator :
Sample : P8-160517 5000
Misc : CAL
ALS Vial : 11 Sample Multiplier: 1

Quant Time: May 18 14:22:11 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

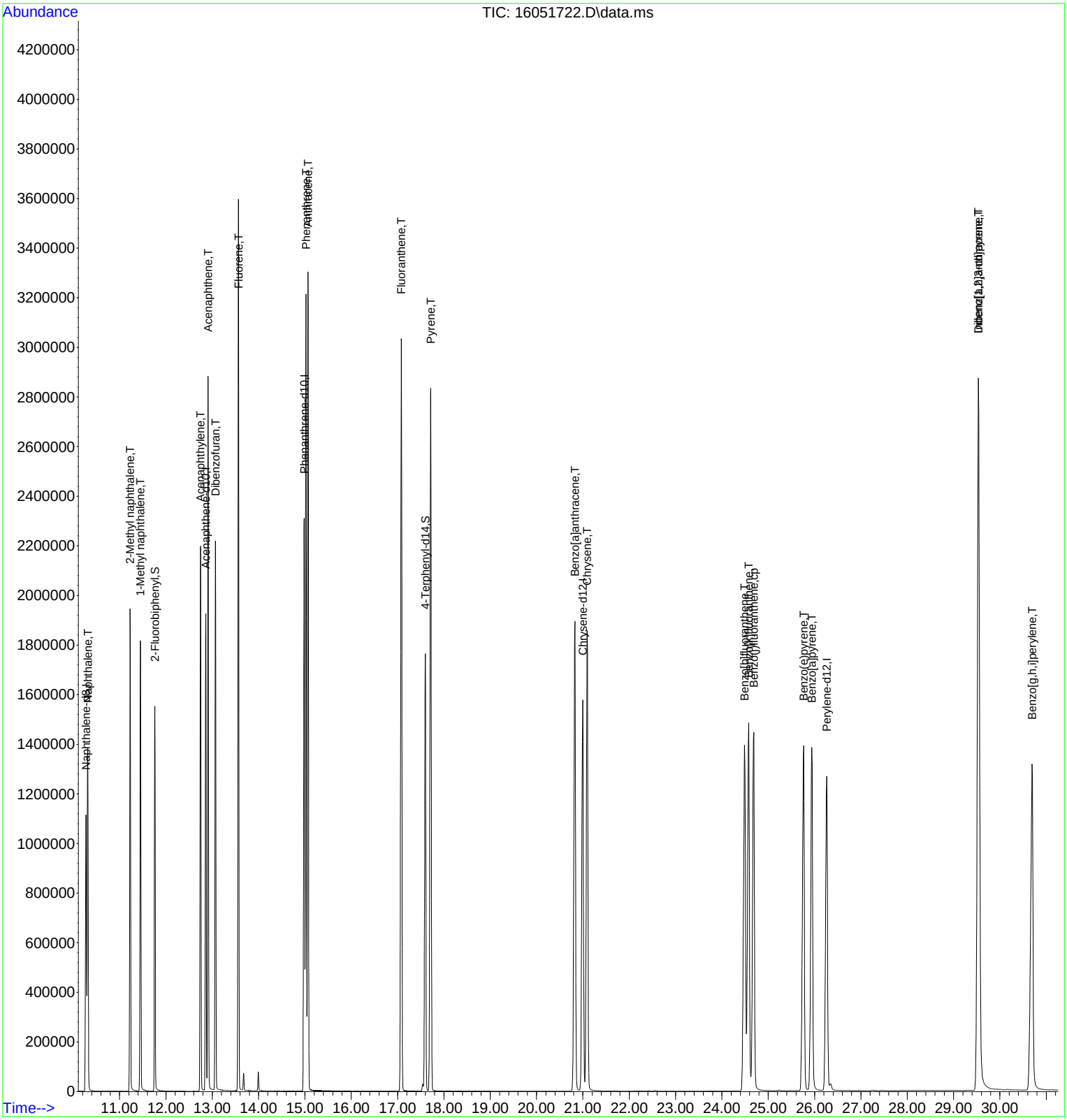
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.276 | 136 | 1589455 | 4000.00 | ug/kg | 98 |
| 6) Acenaphthene-d10 | 12.862 | 164 | 1157466 | 4000.00 | ug/kg | 92 |
| 11) Phenanthrene-d10 | 14.984 | 188 | 2872086 | 4000.00 | ug/kg | 98 |
| 16) Chrysene-d12 | 20.995 | 240 | 2715512 | 4000.00 | ug/kg | 100 |
| 20) Perylene-d12 | 26.262 | 264 | 2467636 | 4000.00 | ug/kg | 99 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.761 | 172 | 1413417 | 3993.89 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 99.85% | | | |
| 17) 4-Terphenyl-d14 | 17.598 | 244 | 2558145 | 4450.75 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 111.27% | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.313 | 128 | 1596025 | 4482.20 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.226 | 142 | 1194581 | 4315.50 | ug/kg | 98 |
| 4) 1-Methyl naphthalene | 11.453 | 142 | 1102506 | 4208.96 | ug/kg | 98 |
| 7) Acenaphthylene | 12.749 | 152 | 2208060 | 4364.33 | ug/kg | 99 |
| 8) Acenaphthene | 12.911 | 153 | 1406596 | 4405.99 | ug/kg | 99 |
| 9) Dibenzofuran | 13.068 | 168 | 2123466 | 4366.39 | ug/kg | 87 |
| 10) Fluorene | 13.564 | 166 | 1967421 | 4458.63 | ug/kg | 100 |
| 12) Phenanthrene | 15.024 | 178 | 3215270 | 4068.60 | ug/kg | 97 |
| 13) Anthracene | 15.068 | 178 | 3242032 | 4054.33 | ug/kg | 97 |
| 14) Fluoranthene | 17.080 | 202 | 3457212 | 5005.46 | ug/kg | 96 |
| 15) Pyrene | 17.715 | 202 | 3449381 | 5003.88 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.827 | 228 | 3123986 | 5001.18 | ug/kg | 98 |
| 19) Chrysene | 21.090 | 228 | 2900176 | 5004.26 | ug/kg | 98 |
| 21) Benzo[b]fluoranthene | 24.489 | 252 | 2980787 | 4998.98 | ug/kg | 98 |
| 22) Benzo[k]fluoranthene | 24.577 | 252 | 2731461 | 4991.28 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.687 | 252 | 2544105 | 4948.79 | ug/kg | 98 |
| 24) Benzo(e)pyrene | 25.764 | 252 | 2799050 | 5000.38 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.940 | 252 | 2826486 | 4997.57 | ug/kg | 97 |
| 26) Indeno[1,2,3-cd]pyrene | 29.544 | 276 | 3400603 | 4999.58 | ug/kg | 88 |
| 27) Dibenz[a,h]anthracene | 29.536 | 278 | 2812177 | 4994.40 | ug/kg | 97 |
| 28) Benzo[g,h,i]perylene | 30.694 | 276 | 2941935 | 5000.81 | ug/kg | 97 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051722.D
Acq On : 17 May 2016 9:17 pm
Operator :
Sample : P8-160517 5000
Misc : CAL
ALS Vial : 11 Sample Multiplier: 1

Quant Time: May 18 14:22:11 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051723.D
Acq On : 17 May 2016 9:54 pm
Operator :
Sample : SSCV-160517
Misc : ICV
ALS Vial : 12 Sample Multiplier: 1

Quant Time: May 18 14:22:14 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.273 | 136 | 1550711 | 4000.00 | ug/kg | 95 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1014776 | 4000.00 | ug/kg | 81 |
| 11) Phenanthrene-d10 | 14.978 | 188 | 2298444 | 4000.00 | ug/kg | 79 |
| 16) Chrysene-d12 | 20.987 | 240 | 2487435 | 4000.00 | ug/kg | 92 |
| 20) Perylene-d12 | 26.254 | 264 | 2286057 | 4000.00 | ug/kg | 92 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.762 | 172 | 122 | 0.35 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 0.01%# | | | |
| 17) 4-Terphenyl-d14 | 17.592 | 244 | 528 | 1.00 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 0.03%# | | | |

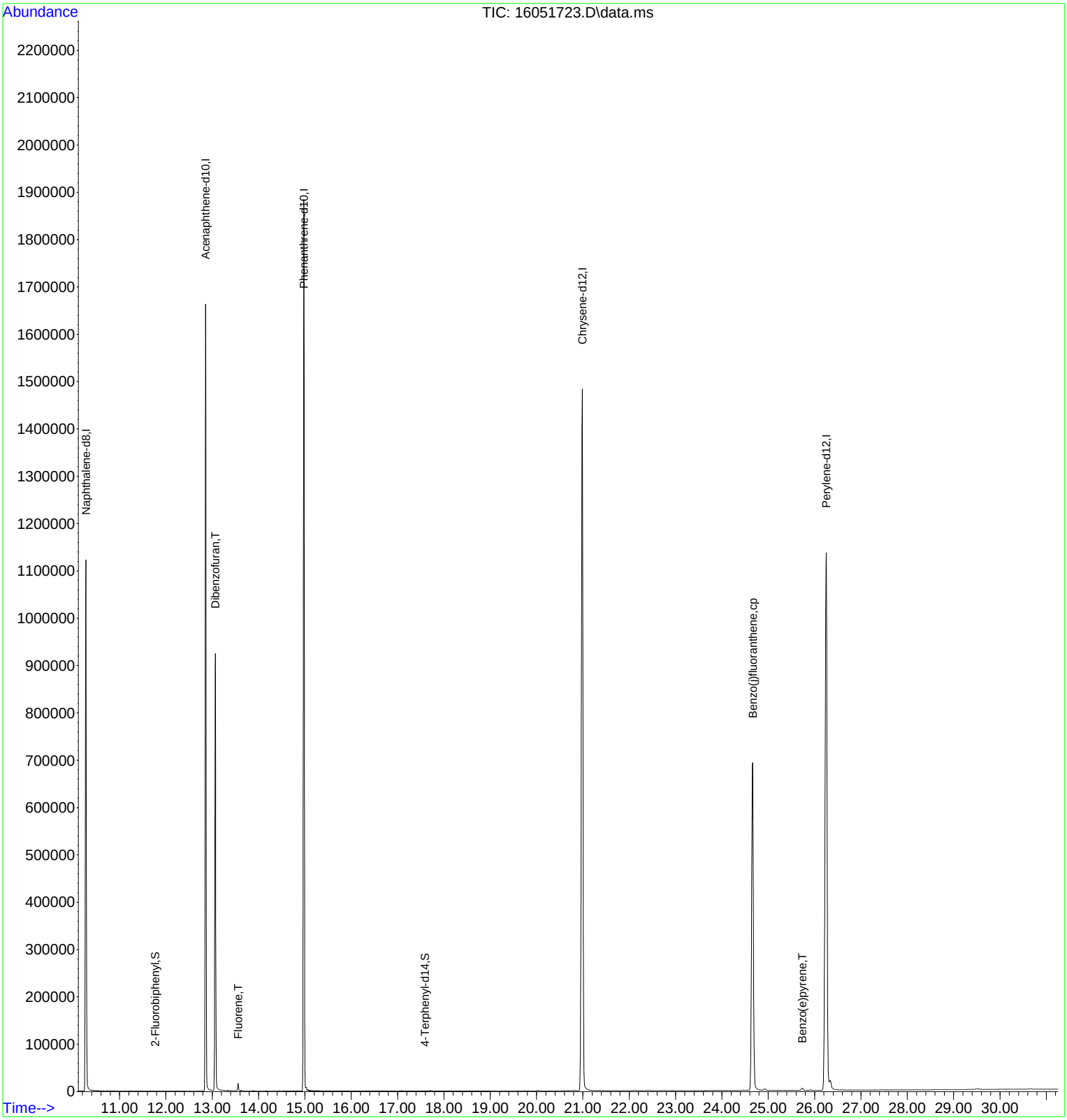
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 9) Dibenzofuran | 13.067 | 168 | 911536 | 2137.91 | ug/kg | 99 |
| 10) Fluorene | 13.558 | 166 | 9200 | 23.78 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.664 | 252 | 1314135 | 2624.66 | ug/kg | 100 |
| 24) Benzo(e)pyrene | 25.734 | 252 | 9708 | 14.36 | ug/kg | 97 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051723.D
Acq On : 17 May 2016 9:54 pm
Operator :
Sample : SSCV-160517
Misc : ICV
ALS Vial : 12 Sample Multiplier: 1

Quant Time: May 18 14:22:14 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051724.D
Acq On : 17 May 2016 10:30 pm
Operator :
Sample : SSCV-160517
Misc : ICV
ALS Vial : 13 Sample Multiplier: 1

Quant Time: May 18 14:22:18 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

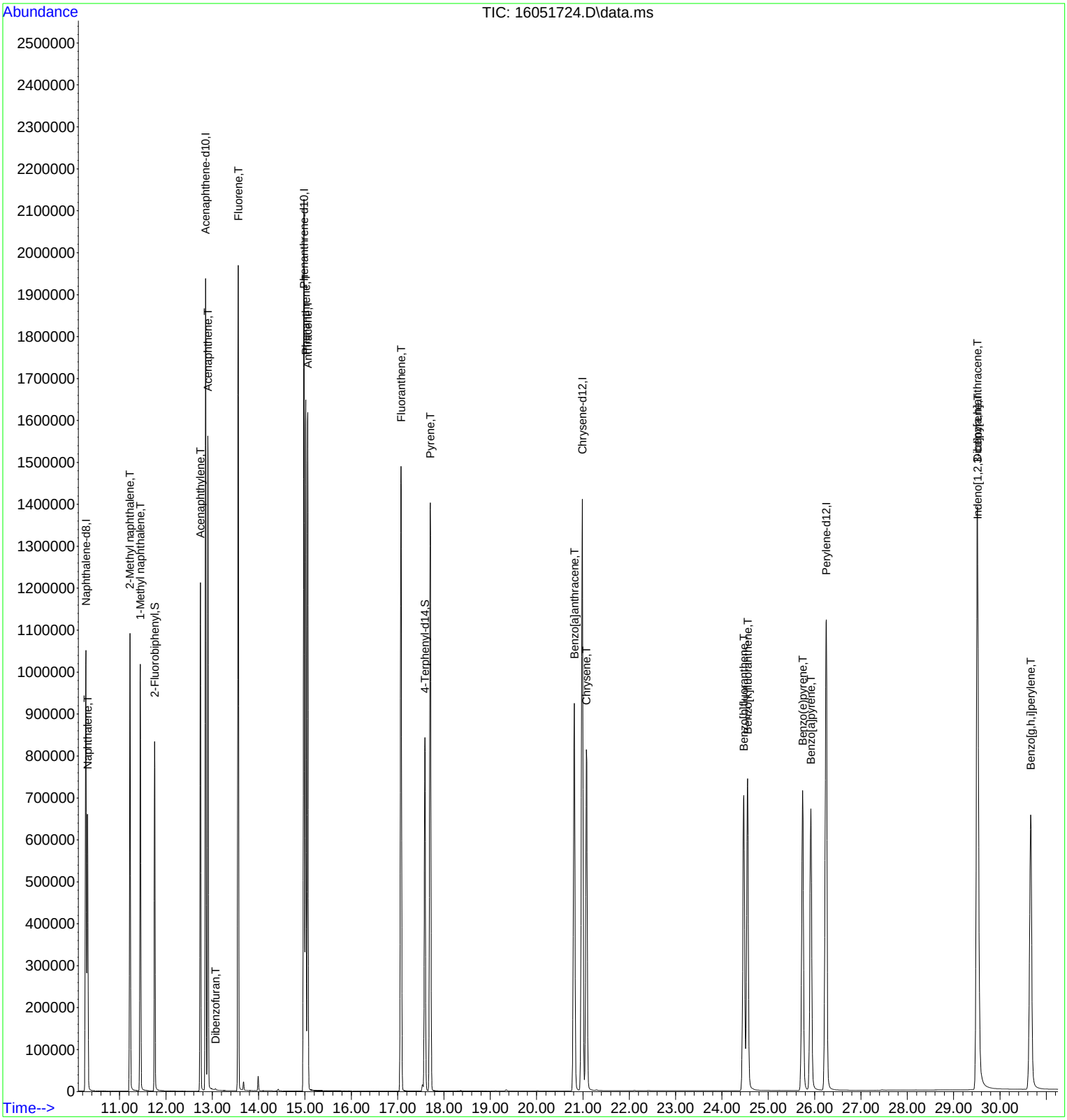
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.272 | 136 | 1465767 | 4000.00 | ug/kg | 90 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1139119 | 4000.00 | ug/kg | 91 |
| 11) Phenanthrene-d10 | 14.979 | 188 | 2615766 | 4000.00 | ug/kg | 89 |
| 16) Chrysene-d12 | 20.988 | 240 | 2355864 | 4000.00 | ug/kg | 87 |
| 20) Perylene-d12 | 26.254 | 264 | 2172980 | 4000.00 | ug/kg | 88 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.757 | 172 | 752192 | 2304.82 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 57.62% | | | |
| 17) 4-Terphenyl-d14 | 17.590 | 244 | 1171361 | 2349.09 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 58.73% | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.309 | 128 | 777437 | 2367.56 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.226 | 142 | 679588 | 2662.22 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.449 | 142 | 612646 | 2536.22 | ug/kg | 99 |
| 7) Acenaphthylene | 12.744 | 152 | 1159951 | 2329.62 | ug/kg | 100 |
| 8) Acenaphthene | 12.906 | 153 | 767350 | 2442.34 | ug/kg | 98 |
| 9) Dibenzofuran | 13.068 | 168 | 3474 | 7.26 | ug/kg | 96 |
| 10) Fluorene | 13.559 | 166 | 1054874 | 2429.09 | ug/kg | 99 |
| 12) Phenanthrene | 15.017 | 178 | 1585495 | 2202.88 | ug/kg | 100 |
| 13) Anthracene | 15.061 | 178 | 1575915 | 2163.88 | ug/kg | 100 |
| 14) Fluoranthene | 17.074 | 202 | 1676150 | 2470.73 | ug/kg | 99 |
| 15) Pyrene | 17.706 | 202 | 1652248 | 2473.32 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.812 | 228 | 1439635 | 2494.31 | ug/kg | 100 |
| 19) Chrysene | 21.075 | 228 | 1238892 | 2310.65 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.474 | 252 | 1404261 | 2544.63 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.555 | 252 | 1350774 | 2702.15 | ug/kg | 100 |
| 24) Benzo(e)pyrene | 25.741 | 252 | 1385526 | 2670.03 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.917 | 252 | 1334073 | 2578.87 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.529 | 276 | 1609547 | 2549.19 | ug/kg | 98 |
| 27) Dibenz[a,h]anthracene | 29.507 | 278 | 1345063 | 2566.28 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.664 | 276 | 1389147 | 2548.55 | ug/kg | 98 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051724.D
Acq On : 17 May 2016 10:30 pm
Operator :
Sample : SSCV-160517
Misc : ICV
ALS Vial : 13 Sample Multiplier: 1

Quant Time: May 18 14:22:18 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



# ICP-MS3
# For

# DHL Work Order
# 1605098

# ICP-MS3_160525A
# For

# DHL Work Order
# 1605098

# Lab Data Review Check List
## EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

| PROJECT AND BATCH NUMBERS ARE LISTED ON THE RUN LOG | Run ID: ICP-MS3_160525A<br>SOP: Metals-ICP-MS-01 | | | |
|---|---|---|---|---|
| **Review Item** | **Yes** | **No** | **N/A** | **2nd Level Review** |
| **Data Folder Contents**<br>1. Is the Prep Batch Report included?<br>***Check the Prep Start/End Dates, Sample Amounts, Bottle #s*** | X | | | |
| 2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date?<br>***All standard/QC sample preparations shall be documented in LIMS*** | X | | | x |
| 3. Is the Run Log and instrument sequence included?<br>***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time*** | X | | | |

## Daily Demonstration of Performance

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.**

| Review Item | Frequency | Limits | Pass | Fail (List Batch/Sample) **See Run Log** | | 2nd Level Review |
|---|---|---|---|---|---|---|
| Tune | Before ICAL | RSD ≤ 5% / Peak Width@10% <0.9amu | X | | | |
| P/A Factor | Before ICAL | Increasing trend | X | | | x |
| Initial Calibration Curve (ICAL) (Blank + 4 Standards) | Prior to samples and when ICV fails | R ≥ 0.995 (DoD)<br>R ≥ 0.998 (6020A) | X | | | |
| **Review Item** | **Frequency** | **Limits** | **Pass** | **Fail** | **N/A** | **Review** |
| ICSA (N/A for Method 200.8+U) | After calibration & every 12 hours | < RL (except Mn & Zn) | X | | | x |
| ICSAB (N/A for Method 200.8+U) | After calibration & every 12 hours | 80-120% (correct for ICSA result) | X | | | |
| **Note: LCVLs and ICSA/ICSAB are N/A for Method 200.8 or project-specific exceptions** | | | | | | |
| ICV (Second Source Verification) | After ICAL | 90-110% | X | | | |
| ICB | After calibration | < MDL | X | | | |
| CCV | Every 10 samples | 90-110% | X | | | |
| CCB | Every 10 samples | < MDL (ALL + DoD) | X | | | |
| Internal Standards | Every sample and QC sample | > 70% (6020A)<br>60-125% (200.8)<br>30-120% (DoD) | X | | | |
| LCVL (6020A test code) | After ICAL, every 10 samples and end of run | 70-130% | | | X | |
| LCVL (All metals test codes except 200.8/6020A) | After ICAL and end of run | 70-130% | X | | | |
| Method Blank (MB) | Every Batch | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | X | | | x |
| Filter/TCLP/SPLP Blank | Filter-Dissolved only TCLP / SPLP | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | | | X | |
| Lab Control Sample (LCS) | Every Batch | 80-120% | X | | | |
| Lab Control Sample Dup (LCSD) | Every Batch | 80-120% | X | | | |
| LCSD - RPD | Every LCS/LCSD | 15 (H2O) / 20 (Soil) | X | | | |
| Matrix Spike/ Matrix Spike Duplicate (MS/MSD) | Every Batch | 80-120% | X | | | |
| MSD - RPD | Every MS/MSD | 15 (H2O) / 20 (Soil) | X | | | |
| Dilution Test (SD) - RPD | Every Batch | 10 | X | X | | |
| Post Digestion Spike (PDS) | Every Batch | 75-125/ 80-120 (6020A) | X | | | |

# Lab Data Review Check List
## EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

| Review Item | Criteria | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|---|
| **Sample Analysis**<br>1. Are all sample hold times met? | 6 months | X | | | x |
| 2. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed? | All results > high point of ICAL must be diluted | X | | | |
| **3. Are ALL reported analytes and reported results > MDL highlighted by the analyst?** | | X | **Confirm with analyst if LIMS result does not match Labcore** | | |

## VARIANCE REPORT

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.**

| NON-CONFORMANCES / VARIANCE | Criteria | Yes | No | N/A | 2nd Level |
|---|---|---|---|---|---|
| 1. Are all non-conformances and corrective actions included and noted? | All deviations from the method and SOP that affect data quality | X | | | x |
| 2. Does the variance require approval by the Technical Director/General Manager/QA Manager? | | | | X | |

TECHNICAL DIRECTOR / QA MANAGER APPROVAL
SIGNATURE AND DATE STAMP:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

| VARIANCE ITEM | REASON | CORRECTIVE ACTION |
|---|---|---|
| __ CCV out of control (± 10%) | __ Carryover from previous run | __ Reanalyze QC to confirm |
| __ CCB out of control (> MDL / >½ RL) | __ Cross contamination | __ Recalibrate |
| __ MB out of control (> RL / >½ RL) | __ Lab Artifact | __ Reprep/Reanalyze sample |
| __ LCS __ LCSD out of control (± 20%) | __ Prep Spike error (describe) | __ Reprep/Reanalyze Batch |
| __ MS __ MSD out of control (± 20%) | __ Matrix Effect | __ Reanalyze Batch/Sample/QC |
| __ RPD out of control for MS/MSD (15/25) | __ High Levels of Target Metals | __ Verify reagents are clean |
| __ Internal Standard(s) out of control (see Method) | __ Insufficient sample for QC | __ Reanalyze sample to confirm |
| __ No MS/MSD prepared - LCS/LCSD used instead | __ Digestion/Prep Error | __ Sample results ND w/ dilution |
| __ Missing QC (other than MS/MSD) | __ Analytical Error | __ Client notified and approved |
| __ QC sample(s) was mis-spiked | __ Client Request | __ Flag data / Case narrative |
| __ ICSA/ICSAB missing or out of control (± 20%) | | __ Accept data |
| __ LCVL out of control (± 30%) | | __ Cal Std high and sample ND |
| __ Other (describe below) | __ Other (describe below) | __ Other (describe below) |

**General Comments and Impact on Data**:

See run log.

Analyst: Karyn Lane Date of Completion: 05/26/2016

Second-Level Review: Janice Whitt Date Stamp: 5/27/2016

REVIEWED BY
By Janice Whitt at 1:26:06 PM, 5/27/2016

# MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

| | | | |
|---|---|---|---|
| **ANALYST:** | KL | **BALANCE #:** | 26 |
| **TEST DATE:** | 05/25/2016 | **Water is at Room Temperatue (70-73°F) / (21-23°C)** | |
| **PIPETTER LAB ID:** | See Below | **WATER TEMP (°C):** | **21-23°C** |
| **TEST VOLUME:** | See Below | **WATER DENSITY:** | **0.998** **(0.9980-0.9976)** |

| | |
|---|---|
| **REFERENCE:** | DoD QSM 5.0 |
| **# of REPLICATES:** | 3 |
| **LABWARE TYPE:** | MECHANICAL VOLUMETRIC PIPETTE |
| **FREQUENCY:** | DAILY BEFORE USE |
| **MEAN CRITERIA:** | ± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME) |
| **RSD CRITERIA:** | < 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS) |

**1) RECORD ROOM AND WATER TEMPERATURE**
**2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.**
**3) WEIGH 3 REPLICATES AT THE TEST VOLUME.**
**4) DETERMINE TOTAL WT.**
**5) CALCULATE VOLUME OF H2O AT °C (in mL)**

**% TEST VOL = Volume of H2O at °C/Test Volume * 100**

**%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100**

**VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY**

| | | | | | BIAS | PRECISION |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-31** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| **1** | **4.00** | 3.9822 | 3.9742 | **99.36** | **PASS** | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| **2** | | 3.9723 | 3.9644 | **99.11** | | |
| **3** | | 3.9751 | 3.9671 | **99.18** | | |
| **AVERAGE (MEAN)** | | **3.977** | **3.969** | **99.21** | | **0.128** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-21** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| **1** | **0.50** | 0.5007 | 0.4997 | **99.94** | **PASS** | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| **2** | | 0.4996 | 0.4986 | **99.72** | | |
| **3** | | 0.4975 | 0.4965 | **99.30** | | |
| **AVERAGE (MEAN)** | | **0.499** | **0.498** | **99.65** | | **0.326** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-39** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| **1** | **0.200** | 0.2009 | 0.2005 | **100.25** | **PASS** | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| **2** | | 0.1995 | 0.1991 | **99.55** | | |
| **3** | | 0.1995 | 0.1991 | **99.55** | | |
| **AVERAGE (MEAN)** | | **0.200** | **0.200** | **99.78** | | **0.404** |
| | | | | | | **PASS** |

Karyn Lane 5-26-16

Analyst / Date

**REVIEWED BY**
By Janice Whitt at 8:41:19 AM, 5/27/2016

Review and Approved / Date

**DHL Analytical, Inc.**

**Run ID:** **ICP-MS3_160525A** **Run No.:** 86019

**Analytical Run Date:** 5/25/2016 **InstrumentID:** ICP-MS3

**Analyst:** Karyn Lane

| SampID | DF | TestCode | SampType | Batch ID | Analysis Date/Time | Q | Comments |
|---|---|---|---|---|---|---|---|
| BLANK STD 1 | 1 | ICPMS_TWDOD | CAL | R86019 | 5/25/2016 11:28:00 AM | | |
| L2-160525 | 1 | ICPMS_TWDOD | CAL | R86019 | 5/25/2016 11:34:00 AM | | |
| L-160525 | 1 | ICPMS_TWDOD | CAL | R86019 | 5/25/2016 11:40:00 AM | | |
| 10X-160525 | 1 | ICPMS_TWDOD | CAL | R86019 | 5/25/2016 11:47:00 AM | | |
| 5X-160525 | 1 | ICPMS_TWDOD | CAL | R86019 | 5/25/2016 11:53:00 AM | | |
| 2X-160525 | 1 | ICPMS_TWDOD | CAL | R86019 | 5/25/2016 11:59:00 AM | | |
| H-160525 | 1 | ICPMS_TWDOD | CAL | R86019 | 5/25/2016 12:05:00 PM | | |
| H2-160525 | 1 | ICPMS_TWDOD | CAL | R86019 | 5/25/2016 12:10:00 PM | | |
| ICSA-160525 | 1 | ICPMS_TWDOD | ICSA | R86019 | 5/25/2016 12:28:00 PM | | |
| ICSAB-160525 | 1 | ICPMS_TWDOD | ICSB | R86019 | 5/25/2016 12:34:00 PM | | |
| ICV1-160525 | 1 | ICPMS_TWDOD | ICV | R86019 | 5/25/2016 12:52:00 PM | | |
| ICB1-160525 | 1 | ICPMS_TWDOD | ICB | R86019 | 5/25/2016 12:58:00 PM | | |
| ILCVL-160525 | 1 | ICPMS_TWDOD | LCVL | R86019 | 5/25/2016 1:04:00 PM | | |
| MB-75167 | 5 | ICPMS_TSDOD1 | MBLK | 75167 | 5/25/2016 1:13:00 PM | | |
| LCS-75167 | 5 | ICPMS_TSDOD1 | LCS | 75167 | 5/25/2016 1:19:00 PM | | |
| LCSD-75167 | 5 | ICPMS_TSDOD1 | LCSD | 75167 | 5/25/2016 1:25:00 PM | | |
| 1605096-25A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 1:37:00 PM | | |
| 1605096-25A SD | 25 | ICPMS_TSDOD1 | SD | 75167 | 5/25/2016 1:43:00 PM | | |
| 1605096-19A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 1:49:00 PM | | |
| 1605096-20A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 1:55:00 PM | | |
| 1605096-21A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 2:01:00 PM | | |
| 1605096-22A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 2:07:00 PM | | |
| 1605096-23A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 2:12:00 PM | | |
| 1605096-24A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 2:18:00 PM | | |
| 1605096-26A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 2:24:00 PM | | |
| 1605096-27A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 2:30:00 PM | | |
| 1605096-28A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 2:36:00 PM | | |
| 1605096-25A PDS | 5 | ICPMS_TSDOD1 | PDS | 75167 | 5/25/2016 2:42:00 PM | | |
| 1605096-25A MS | 5 | ICPMS_TSDOD1 | MS | 75167 | 5/25/2016 2:48:00 PM | | |
| 1605096-25A MSD | 5 | ICPMS_TSDOD1 | MSD | 75167 | 5/25/2016 2:54:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160502- | 10 PPM Ag+Sb PDS | | 07/31/2016 |
| MET-PDS-160502- | 10 PPM CUSTOM PDS SOLUTI | | 07/31/2016 |
| MET-PDS-160502- | 250 PPM Naturals+Al+Fe PDS | | 07/31/2016 |

**Run ID: ICP-MS3_160525A** **Run No.:** 86019

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CCV1-160525 | 1 | ICPMS_TWDOD | CCV | R86019 | 5/25/2016 3:00:00 PM | | |
| CCB1-160525 | 1 | ICPMS_TWDOD | CCB | R86019 | 5/25/2016 3:06:00 PM | | |
| LCVL1-160525 | 1 | ICPMS_TWDOD | LCVL | R86019 | 5/25/2016 3:12:00 PM | | |
| 1605096-29A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 3:18:00 PM | | |
| 1605096-30A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 3:24:00 PM | | |
| 1605096-31A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 3:30:00 PM | | |
| 1605096-32A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 3:36:00 PM | | |
| 1605096-33A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 3:42:00 PM | | |
| 1605096-34A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 3:48:00 PM | | |
| 1605096-35A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 3:54:00 PM | | |
| 1605096-38A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 4:00:00 PM | | |
| 1605096-39A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 4:06:00 PM | | |
| 1605096-40A | 5 | ICPMS_TSDOD1 | SAMP | 75167 | 5/25/2016 4:12:00 PM | | |
| CCV2-160525 | 1 | ICPMS_TWDOD | CCV | R86019 | 5/25/2016 4:18:00 PM | | |
| LCVL2-160525 | 1 | ICPMS_TWDOD | LCVL | R86019 | 5/25/2016 4:30:00 PM | | |
| CCB2-160525 | 1 | ICPMS_TWDOD | CCB | R86019 | 5/25/2016 4:36:00 PM | | |
| MB-75203 | 5 | ICPMS_TSDOD1 | MBLK | 75203 | 5/25/2016 4:42:00 PM | | |
| LCS-75203 | 5 | ICPMS_TSDOD1 | LCS | 75203 | 5/25/2016 4:48:00 PM | | |
| LCSD-75203 | 5 | ICPMS_TSDOD1 | LCSD | 75203 | 5/25/2016 4:54:00 PM | | |
| 1605097-28A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 5:06:00 PM | | |
| 1605097-28A SD | 25 | ICPMS_TSDOD1 | SD | 75203 | 5/25/2016 5:12:00 PM | | |
| 1605097-08A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 5:18:00 PM | | |
| 1605097-09A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 5:24:00 PM | | |
| 1605097-10A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 5:30:00 PM | | |
| 1605097-11A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 5:36:00 PM | | |
| 1605097-12A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 5:42:00 PM | | |
| 1605097-13A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 5:48:00 PM | | |
| 1605097-14A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 5:54:00 PM | | |
| 1605097-15A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 6:00:00 PM | | |
| 1605097-16A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 6:06:00 PM | | |
| 1605097-28A PDS | 5 | ICPMS_TSDOD1 | PDS | 75203 | 5/25/2016 6:12:00 PM | | |
| 1605097-28A MS | 5 | ICPMS_TSDOD1 | MS | 75203 | 5/25/2016 6:18:00 PM | | |
| 1605097-28A MSD | 5 | ICPMS_TSDOD1 | MSD | 75203 | 5/25/2016 6:23:00 PM | | |
| CCV3-160525 | 1 | ICPMS_TWDOD | CCV | R86019 | 5/25/2016 6:35:00 PM | | |
| LCVL3-160525 | 1 | ICPMS_TWDOD | LCVL | R86019 | 5/25/2016 6:48:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160502- | 10 PPM Ag+Sb PDS | | 07/31/2016 |
| MET-PDS-160502- | 10 PPM CUSTOM PDS SOLUTI | | 07/31/2016 |
| MET-PDS-160502- | 250 PPM Naturals+Al+Fe PDS | | 07/31/2016 |

**Run ID: ICP-MS3_160525A** **Run No.:** 86019

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CCB3-160525 | 1 | ICPMS_TWDOD | CCB | R86019 | 5/25/2016 6:54:00 PM | | |
| 1605097-17A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 7:00:00 PM | | |
| 1605097-18A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 7:06:00 PM | | |
| 1605097-19A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 7:12:00 PM | | |
| 1605097-29A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 7:18:00 PM | | |
| 1605097-31A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 7:24:00 PM | | |
| 1605097-32A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 7:30:00 PM | | |
| 1605097-33A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 7:36:00 PM | | |
| 1605097-34A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 7:42:00 PM | | |
| 1605097-35A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 7:48:00 PM | | |
| 1605097-36A | 5 | ICPMS_TSDOD1 | SAMP | 75203 | 5/25/2016 7:54:00 PM | | |
| CCV4-160525 | 1 | ICPMS_TWDOD | CCV | R86019 | 5/25/2016 8:00:00 PM | | |
| LCVL4-160525 | 1 | ICPMS_TWDOD | LCVL | R86019 | 5/25/2016 8:12:00 PM | | |
| CCB4-160525 | 1 | ICPMS_TWDOD | CCB | R86019 | 5/25/2016 8:18:00 PM | | |
| MB-75216 | 5 | ICPMS_TSDOD1 | MBLK | 75216 | 5/25/2016 8:24:00 PM | | |
| LCS-75216 | 5 | ICPMS_TSDOD1 | LCS | 75216 | 5/25/2016 8:30:00 PM | | |
| LCSD-75216 | 5 | ICPMS_TSDOD1 | LCSD | 75216 | 5/25/2016 8:36:00 PM | | |
| 1605097-41A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 8:48:00 PM | | |
| 1605097-41A SD | 25 | ICPMS_TSDOD1 | SD | 75216 | 5/25/2016 8:54:00 PM | | SD RPD fails by <1%. PDS ok. |
| 1605097-37A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 9:00:00 PM | | |
| 1605097-38A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 9:06:00 PM | | |
| 1605097-39A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 9:12:00 PM | | |
| 1605097-40A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 9:18:00 PM | | |
| 1605097-42A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 9:24:00 PM | | |
| 1605097-43A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 9:30:00 PM | | |
| 1605097-44A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 9:36:00 PM | | |
| 1605097-45A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 9:42:00 PM | | |
| 1605098-01A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 9:48:00 PM | | |
| 1605097-41A PDS | 5 | ICPMS_TSDOD1 | PDS | 75216 | 5/25/2016 9:54:00 PM | | |
| 1605097-41A MS | 5 | ICPMS_TSDOD1 | MS | 75216 | 5/25/2016 10:00:00 PM | | |
| 1605097-41A MSD | 5 | ICPMS_TSDOD1 | MSD | 75216 | 5/25/2016 10:06:00 PM | | |
| CCV5-160525 | 1 | ICPMS_TWDOD | CCV | R86019 | 5/25/2016 10:18:00 PM | | |
| LCVL5-160525 | 1 | ICPMS_TWDOD | LCVL | R86019 | 5/25/2016 10:30:00 PM | | |
| CCB5-160525 | 1 | ICPMS_TWDOD | CCB | R86019 | 5/25/2016 10:36:00 PM | | |
| 1605098-02A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 10:42:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160502- | 10 PPM Ag+Sb PDS | | 07/31/2016 |
| MET-PDS-160502- | 10 PPM CUSTOM PDS SOLUTI | | 07/31/2016 |
| MET-PDS-160502- | 250 PPM Naturals+Al+Fe PDS | | 07/31/2016 |

**Run ID: ICP-MS3_160525A** **Run No.:** 86019

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1605098-03A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 10:48:00 PM | | |
| 1605098-04A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 10:54:00 PM | | |
| 1605098-05A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 11:00:00 PM | | |
| 1605098-06A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 11:06:00 PM | | |
| 1605098-07A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 11:12:00 PM | | |
| 1605098-08A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 11:18:00 PM | | |
| 1605098-09A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 11:24:00 PM | | |
| 1605098-10A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 11:30:00 PM | | |
| 1605098-11A | 5 | ICPMS_TSDOD1 | SAMP | 75216 | 5/25/2016 11:36:00 PM | | |
| CCV6-160525 | 1 | ICPMS_TWDOD | CCV | R86019 | 5/25/2016 11:42:00 PM | | |
| LCVL6-160525 | 1 | ICPMS_TWDOD | LCVL | R86019 | 5/25/2016 11:54:00 PM | | |
| CCB6-160525 | 1 | ICPMS_TWDOD | CCB | R86019 | 5/26/2016 | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160502- | 10 PPM Ag+Sb PDS | | 07/31/2016 |
| MET-PDS-160502- | 10 PPM CUSTOM PDS SOLUTI | | 07/31/2016 |
| MET-PDS-160502- | 250 PPM Naturals+Al+Fe PDS | | 07/31/2016 |

| | Method | Type | Vial | Data File | Sample | Comment | Dil/Lvl | ISTD Conc | Action on Failure | Skip | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Keyword | | CALBEG | Start of CALIB | | | | | | |
| 2 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1101 | | BLANK | CAL ICPMS_TW | 1.000 | | | | |
| 3 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1102 | | BLANK | CAL ICPMS_TW | 1.000 | | | | |
| 4 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1103 | | BLANK | CAL ICPMS_TW | 1.000 | | | | |
| 5 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1104 | | BLANK | CAL ICPMS_TW | 1.000 | | | | |
| 6 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | BLANK | CAL ICPMS_TW | 1.000 | | | | |
| 7 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CalBlk | 2101 | | BLANK STD 1 | CAL ICPMS_TW | Level 1 | | | | |
| 8 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CalStd | 2102 | | L2-160525 | CAL ICPMS_TW | Level 2 | | | | |
| 9 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CalStd | 2103 | | L-160525 | CAL ICPMS_TW | Level 3 | | | | |
| 10 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CalStd | 2104 | | 10X-160525 | CAL ICPMS_TW | Level 4 | | | | |
| 11 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CalStd | 2105 | | 5X-160525 | CAL ICPMS_TW | Level 5 | | | | |
| 12 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CalStd | 2106 | | 2X-160525 | CAL ICPMS_TW | Level 6 | | | | |
| 13 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CalStd | 2107 | | H-160525 | CAL ICPMS_TW | Level 7 | | | | |
| 14 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CalStd | 2108 | | H2-160525 | CAL ICPMS_TW | Level 8 | | | | |
| 15 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1104 | | BLANK | CAL ICPMS_TW | 1.000 | | | | |
| 16 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | BLANK | CAL ICPMS_TW | 1.000 | | | | |
| 17 | | Keyword | | CALEND | End of CALIB | | | | | | |
| 18 | | Keyword | | ICSBEG | Start of ICS | | | | | | |
| 19 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | ICS-A | 2109 | | ICSA-160525 | ICSAICPMS_TW | 1.000 | | | | |
| 20 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | ICS-AB | 2110 | | ICSAB-160525 | ICSBICPMS_TW | 1.000 | | | | |
| 21 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1103 | | RINSE | CAL ICPMS_TW | 1.000 | | | | |
| 22 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1104 | | RINSE | CAL ICPMS_TW | 1.000 | | | | |
| 23 | | Keyword | | ICSEND | End of ICS | | | | | | |
| 24 | | Keyword | | SMPLBEG | Start of SMPL | | | | | | |
| 25 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | ICV | 2111 | | ICV1-160525 | ICV ICPMS_TW | 1.000 | | | | |

| | Method | Type | Vial | Data File | Sample | Comment | Dil/Lvl | ISTD Conc | Action on Failure | Skip | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | ICB | 1104 | | ICB1-160525 | ICB ICPMS_TW | 1.000 | | | | |
| 27 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCVL5 | 2112 | | ILCVL-160525 | LCVLICPMS_TW | 1.000 | | | | |
| 28 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | PB | 2201 | | MB-75167 | MBLKICPMS_TSDOD1 | 5.000 | | | | |
| 29 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCS | 2202 | | LCS-75167 | LCS ICPMS_TSDOD1 | 5.000 | | | | |
| 30 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCS | 2203 | | LCSD-75167 | LCSDICPMS_TSDOD1 | 5.000 | | | | |
| 31 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1101 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 32 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | AllRef | 2204 | | 1605096-25A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 33 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | DT | 2205 | | 1605096-25A SD | SD ICPMS_TSDOD1 | 25.00 | | | | |
| 34 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2206 | | 1605096-19A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 35 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2207 | | 1605096-20A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 36 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2208 | | 1605096-21A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 37 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2209 | | 1605096-22A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 38 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2210 | | 1605096-23A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 39 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2211 | | 1605096-24A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 40 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2212 | | 1605096-26A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 41 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2301 | | 1605096-27A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 42 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2302 | | 1605096-28A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 43 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | PDS | 2303 | | 1605096-25A PDS | PDS ICPMS_TSDOD1 | 5.000 | | | | |
| 44 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | MS_S | 2304 | | 1605096-25A MS | MS ICPMS_TSDOD1 | 5.000 | | | | |
| 45 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | MS_S | 2305 | | 1605096-25A MSD | MSD ICPMS_TSDOD1 | 5.000 | | | | |
| 46 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCV1 | 1307 | | CCV1-160525 | CCV ICPMS_TW | 1.000 | | | | |
| 47 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | CCB1-160525 | CCB ICPMS_TW | 1.000 | | | | |
| 48 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCVL5 | 2512 | | LCVL1-160525 | LCVLICPMS_TW | 1.000 | | | | |

| | Method | Type | Vial | Data File | Sample | Comment | Dil/Lvl | ISTD Conc | Action on Failure | Skip | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2401 | | 1605096-29A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 50 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2402 | | 1605096-30A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 51 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2403 | | 1605096-31A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 52 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2404 | | 1605096-32A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 53 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2405 | | 1605096-33A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 54 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2406 | | 1605096-34A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 55 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2407 | | 1605096-35A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 56 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2408 | | 1605096-38A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 57 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2409 | | 1605096-39A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 58 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2410 | | 1605096-40A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 59 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCV1 | 1307 | | CCV2-160525 | CCV ICPMS_TW | 1.000 | | | | |
| 60 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | CCB2-160525 | CCB ICPMS_TW | 1.000 | | | | |
| 61 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCVL5 | 2511 | | LCVL2-160525 | LCVLICPMS_TW | 1.000 | | | | |
| 62 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | CCB2-160525 | CCB ICPMS_TW | 1.000 | | | | |
| 63 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | PB | 3101 | | MB-75203 | MBLKICPMS_TSDOD1 | 5.000 | | | | |
| 64 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCS | 3102 | | LCS-75203 | LCS ICPMS_TSDOD1 | 5.000 | | | | |
| 65 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCS | 3103 | | LCSD-75203 | LCSDICPMS_TSDOD1 | 5.000 | | | | |
| 66 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1101 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 67 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | AllRef | 3104 | | 1605097-28A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 68 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | DT | 3105 | | 1605097-28A SD | SD ICPMS_TSDOD1 | 25.00 | | | | |
| 69 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3106 | | 1605097-08A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 70 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3107 | | 1605097-09A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 71 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3108 | | 1605097-10A | SAMPICPMS_TSDOD1 | 5.000 | | | | |

| | Method | Type | Vial | Data File | Sample | Comment | Dil/Lvl | ISTD Conc | Action on Failure | Skip | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 72 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3109 | | 1605097-11A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 73 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3110 | | 1605097-12A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 74 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3111 | | 1605097-13A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 75 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3112 | | 1605097-14A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 76 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3201 | | 1605097-15A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 77 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3202 | | 1605097-16A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 78 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | PDS | 3203 | | 1605097-28A PDS | PDS ICPMS_TSDOD1 | 5.000 | | | | |
| 79 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | MS_S | 3204 | | 1605097-28A MS | MS_ICPMS_TSDOD1 | 5.000 | | | | |
| 80 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | MS_S | 3205 | | 1605097-28A MSD | MSD ICPMS_TSDOD1 | 5.000 | | | | |
| 81 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1103 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 82 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCV1 | 1307 | | CCV3-160525 | CCV ICPMS_TW | 1.000 | | | | |
| 83 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1104 | | CCB3-160525 | CCB ICPMS_TW | 1.000 | | | | |
| 84 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCVL5 | 2512 | | LCVL3-160525 | LCVLICPMS_TW | 1.000 | | | | |
| 85 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | CCB3-160525 | CCB ICPMS_TW | 1.000 | | | | |
| 86 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3301 | | 1605097-17A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 87 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3302 | | 1605097-18A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 88 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3303 | | 1605097-19A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 89 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3304 | | 1605097-29A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 90 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3305 | | 1605097-31A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 91 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3306 | | 1605097-32A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 92 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3307 | | 1605097-33A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 93 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3308 | | 1605097-34A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 94 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3309 | | 1605097-35A | SAMPICPMS_TSDOD1 | 5.000 | | | | |

| | Method | Type | Vial | Data File | Sample | Comment | Dil/Lvl | ISTD Conc | Action on Failure | Skip | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 95 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3310 | | 1605097-36A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 96 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCV1 | 1307 | | CCV4-160525 | CCV ICPMS_TW | 1.000 | | | | |
| 97 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1104 | | CCB4-160525 | CCB ICPMS_TW | 1.000 | | | | |
| 98 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCVL5 | 2112 | | LCVL4-160525 | LCVLICPMS_TW | 1.000 | | | | |
| 99 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | CCB4-160525 | CCB ICPMS_TW | 1.000 | | | | |
| 100 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | PB | 3401 | | MB-75216 | MBLKICPMS_TSDOD1 | 5.000 | | | | |
| 101 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCS | 3402 | | LCS-75216 | LCS ICPMS_TSDOD1 | 5.000 | | | | |
| 102 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCS | 3403 | | LCSD-75216 | LCSDICPMS_TSDOD1 | 5.000 | | | | |
| 103 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1101 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 104 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | AllRef | 3404 | | 1605097-41A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 105 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | DT | 3405 | | 1605097-41A SD | SD ICPMS_TSDOD1 | 25.00 | | | | |
| 106 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3406 | | 1605097-37A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 107 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3407 | | 1605097-38A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 108 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3408 | | 1605097-39A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 109 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3409 | | 1605097-40A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 110 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3410 | | 1605097-42A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 111 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3411 | | 1605097-43A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 112 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3412 | | 1605097-44A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 113 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3501 | | 1605097-45A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 114 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3502 | | 1605098-01A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 115 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | PDS | 3503 | | 1605097-41A PDS | PDS ICPMS_TSDOD1 | 5.000 | | | | |
| 116 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | MS_S | 3504 | | 1605097-41A MS | MS ICPMS_TSDOD1 | 5.000 | | | | |
| 117 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | MS_S | 3505 | | 1605097-41A MSD | MSD ICPMS_TSDOD1 | 5.000 | | | | |

| | Method | Type | Vial | Data File | Sample | Comment | Dil/Lvl | ISTD Conc | Action on Failure | Skip | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 118 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1101 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 119 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCV1 | 1307 | | CCV5-160525 | CCV ICPMS_TW | 1.000 | | | | |
| 120 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1104 | | CCB5-160525 | CCB ICPMS_TW | 1.000 | | | | |
| 121 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCVL5 | 2511 | | LCVL5-160525 | LCVLICPMS_TW | 1.000 | | | | |
| 122 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | CCB5-160525 | CCB ICPMS_TW | 1.000 | | | | |
| 123 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 4101 | | 1605098-02A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 124 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 4102 | | 1605098-03A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 125 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 4103 | | 1605098-04A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 126 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 4104 | | 1605098-05A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 127 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 4105 | | 1605098-06A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 128 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 4106 | | 1605098-07A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 129 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 4107 | | 1605098-08A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 130 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 4108 | | 1605098-09A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 131 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 4109 | | 1605098-10A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 132 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 4110 | | 1605098-11A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 133 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCV1 | 1307 | | CCV6-160525 | CCV ICPMS_TW | 1.000 | | | | |
| 134 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | CCB6-160525 | CCB ICPMS_TW | 1.000 | | | | |
| 135 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCVL5 | 2112 | | LCVL6-160525 | LCVLICPMS_TW | 1.000 | | | | |
| 136 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | CCB6-160525 | CCB ICPMS_TW | 1.000 | | | | |
| 137 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1101 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 138 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1102 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 139 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1103 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 140 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1104 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |

| | Method | Type | Vial | Data File | Sample | Comment | Dil/Lvl | ISTD Conc | Action on Failure | Skip | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 141 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 142 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1101 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 143 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1102 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 144 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1103 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 145 | | Keyword | | StandBy | | | | | | | |
| 146 | | Keyword | | SMPLEND | End of SMPL | | | | | | |
| 147 | | Keyword | | End | End of Sequence | | | | | | |
| 148 | | Keyword | | CCVBEG | Start of CCV | | | | | | |
| 149 | | Keyword | | CCVEND | End of CCV | | | | | | |
| 150 | | Keyword | | BLKBEG | Start of BLANK | | | | | | |
| 151 | | Keyword | | BLKEND | End of BLANK | | | | | | |
| 152 | | Keyword | | ERRBEG | Start of ERRTERM | | | | | | |
| 153 | | Keyword | | ERREND | End of ERRTERM | | | | | | |

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/17/2016 4:29:01 PM**
Digestion:
Prep End Date:

Prep Batch **75216** Prep Code: **3050_IDOD** Technician: **Will Boston**

Prep Factor Units: **mL/g**

| Equipment List |
|---|
| Hot Block #3 |
| Thermometer #71 |
| Balance #20 |
| Pipette #P-01 |
| Pipette#-P-09 |

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605097-37A | Soil | | 1.08 | 50 | 50.000 | 1 of 1 | |
| 1605097-38A | Soil | | 1.16 | 50 | 50.000 | 1 of 1 | |
| 1605097-39A | Soil | | 1.18 | 50 | 50.000 | of 3 | |
| 1605097-40A | Soil | | 1.16 | 50 | 50.000 | 1 of 1 | |
| 1605097-41A | Soil | | 1.08 | 50 | 50.000 | 1 of 1 | MS+MSD |
| 1605097-42A | Soil | | 1.16 | 50 | 50.000 | 1 of 1 | |
| 1605097-43A | Soil | | 1.15 | 50 | 50.000 | 1 of 1 | |
| 1605097-44A | Soil | | 1.06 | 50 | 50.000 | 1 of 1 | |
| 1605097-45A | Soil | | 1.12 | 50 | 50.000 | 1 of 1 | |
| 1605098-01A | Soil | | 1.10 | 50 | 50.000 | 1 of 1 | |
| 1605098-02A | Soil | | 1.12 | 50 | 50.000 | 1 of 1 | |
| 1605098-03A | Soil | | 1.19 | 50 | 50.000 | 1 of 1 | |
| 1605098-04A | Soil | | 1.18 | 50 | 50.000 | 1 of 1 | |
| 1605098-05A | Soil | | 1.15 | 50 | 50.000 | 1 of 1 | |
| 1605098-06A | Soil | | 1.08 | 50 | 50.000 | 1 of 1 | |
| 1605098-07A | Soil | | 1.12 | 50 | 50.000 | 1 of 1 | |
| 1605098-08A | Soil | | 1.04 | 50 | 50.000 | 1 of 1 | |
| 1605098-09A | Soil | | 1.12 | 50 | 50.000 | 1 of 1 | |
| 1605098-10A | Soil | | 1.11 | 50 | 50.000 | 1 of 1 | |
| 1605098-11A | Soil | | 1.07 | 50 | 50.000 | 1 of 1 | |
| LCS-75216 | Soil | | 1 | 50 | 50.000 | of | |
| LCSD-75216 | Soil | | 1 | 50 | 50.000 | of | |
| MB-75216 | Soil | | 1 | 50 | 50.000 | of | |
| MS 1605097-41A | | | 1.11 | | | | |
| MSD 1605097-41A | | | 1.08 | | | | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 10056 | Digestion Vessels | 1 | vessel | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 10 | ml | 01/10/2026 |
| 10137 | Hydrochloric Acid (trace metal grade) | 5 | ml | 01/10/2026 |
| 10318 | Hydrogen Peroxide, 30% | 3 | ml | 10/29/2016 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160406-1 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.5 | 07/05/2016 |
| MET-SPIKE-160511-1 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 1 | 08/09/2016 |
| MET-SPIKE-160511-2 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 1 | 08/09/2016 |

09:56 - 10:06
10:23 - 12:23
13:52 - 15:52
16:42 - 16:57

WBoston 5-18-16

REVIEWED BY
By Janice Whitt at 9:50:17 AM, 5/27/2016

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/12/2016 2:10:55 PM**
Digestion: **Start: 5/12/2016 3:00:00 PM / Stop: 5/16/2016 8:30:00 AM**
Prep End Date: **5/16/2016 1:30:00 PM**

Prep Batch **75141** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605097-36A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605097-37A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605097-38A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605097-39A | Soil | | 0 | 0 | #Num! | of 3 | |
| | Extra sample sub sampled for MS/MSD | | | | | | |
| 1605097-40A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605097-41A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605097-42A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605097-43A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605097-44A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605097-45A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-01A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-02A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-03A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-04A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-05A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-06A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-07A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-08A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-09A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-10A | Soil | | 0 | 0 | #Num! | 1 of 1 | |

REVIEWED BY
By Janice Whitt at 9:50:20 AM, 5/27/2016

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/12/2016 5:00:00 PM**
Digestion: **Start: 5/12/2015 5:15:00 PM / Stop: 5/16/2016 8:30:00 AM**
Prep End Date: **5/16/2016 3:30:00 PM**

Prep Batch **75144** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker** Prep Factor Units: **mL/**

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605098-11A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-12A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-13A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-14A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-15A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-16A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-17A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling - hard clay enough for MS/MSD | | | | | | |
| 1605098-18A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-19A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-20A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-21A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-22A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling- hard copy | | | | | | |
| 1605098-23A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-24A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-25A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-26A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-27A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605098-28A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-29A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-30A | Soil | | 0 | 0 | #Num! | 1 of 1 | |

REVIEWED BY
By Janice Whitt at 9:52:38 AM, 5/27/2016

# MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

| | | | | |
|---|---|---|---|---|
| **ANALYST:** | CVD | **BALANCE #:** | 26 | |
| **TEST DATE:** | 05/18/2016 | **Water is at Room Temperatue (70-73°F) / (21-23°C)** | | |
| **PIPETTER LAB ID:** | P-01, P-09 | **WATER TEMP (°C):** | 21-23°C | |
| **TEST VOLUME:** | See Below | **WATER DENSITY:** | 0.998 | (0.9980-0.9976) |

| | |
|---|---|
| **REFERENCE:** | DoD QSM 5.0 |
| **# of REPLICATES:** | 3 |
| **LABWARE TYPE:** | MECHANICAL VOLUMETRIC PIPETTE |
| **FREQUENCY:** | DAILY BEFORE USE |
| **MEAN CRITERIA:** | ± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME) |
| **RSD CRITERIA:** | < 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS) |

| | |
|---|---|
| **1) RECORD ROOM AND WATER TEMPERATURE** | **% TEST VOL = Volume of H2O at °C/Test Volume * 100** |
| **2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.** | **%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100** |
| **3) WEIGH 3 REPLICATES AT THE TEST VOLUME.** | |
| **4) DETERMINE TOTAL WT.** | |
| **5) CALCULATE VOLUME OF H2O AT °C (in mL)** | **VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY** |

| | | | | | BIAS | PRECISION |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-01** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 5.00 | 5.0000 | 4.9900 | 99.80 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 5.0004 | 4.9904 | 99.81 | | |
| 3 | | 5.0020 | 4.9920 | 99.84 | | |
| AVERAGE (MEAN) | | 5.001 | 4.991 | 99.82 | | 0.021 |
| | | | | | | PASS |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-09** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 0.20 | 0.2008 | 0.2004 | 100.20 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 0.2007 | 0.2003 | 100.15 | | |
| 3 | | 0.2014 | 0.2010 | 100.50 | | |
| AVERAGE (MEAN) | | 0.201 | 0.201 | 100.28 | | 0.188 |
| | | | | | | PASS |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID:** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | | | | | | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | | | | | |
| 3 | | | | | | |
| AVERAGE (MEAN) | | | | | | |
| | | | | | | |

5/18/16

Analyst / Date

REVIEWED BY
By Janice Whitt at 9:52:43 AM, 5/27/2016

Review and Approved / Date

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/18/2016 8:30:00 AM**
Digestion: **Start: 5/18/2016 9:56:00 AM / Stop: 5/18/2016 4:57:00 PM**
Prep End Date: **5/18/2016 5:46:35 PM**

Prep Batch **75216** Prep Code: **3050_IDOD** Technician: **Will Boston**

Prep Factor Units: **mL/g**

**Equipment List**

Hot Block #3
Thermometer #71
Balance #20
Pipette #P-01
Pipette#-P-09

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605097-37A | Soil | | 1.08 | 50 | 46.296 | 1 of 1 | |
| 1605097-38A | Soil | | 1.16 | 50 | 43.103 | 1 of 1 | |
| 1605097-39A | Soil | | 1.18 | 50 | 42.373 | of 3 | |
| 1605097-40A | Soil | | 1.16 | 50 | 43.103 | 1 of 1 | |
| 1605097-41A | Soil | | 1.08 | 50 | 46.296 | 1 of 1 | |
| 1605097-41A MS | Soil | | 1.11 | 50 | 45.045 | of | |
| 1605097-41A MSD | Soil | | 1.08 | 50 | 46.296 | of | |
| 1605097-41A PDS | Soil | | 1.08 | 50 | 46.296 | of | |
| 1605097-41A SD | Soil | | 1.08 | 50 | 46.296 | of | |
| 1605097-42A | Soil | | 1.16 | 50 | 43.103 | 1 of 1 | |
| 1605097-43A | Soil | | 1.15 | 50 | 43.478 | 1 of 1 | |
| 1605097-44A | Soil | | 1.06 | 50 | 47.170 | 1 of 1 | |
| 1605097-45A | Soil | | 1.12 | 50 | 44.643 | 1 of 1 | |
| 1605098-01A | Soil | | 1.1 | 50 | 45.455 | 1 of 1 | |
| 1605098-02A | Soil | | 1.12 | 50 | 44.643 | 1 of 1 | |
| 1605098-03A | Soil | | 1.19 | 50 | 42.017 | 1 of 1 | |
| 1605098-04A | Soil | | 1.18 | 50 | 42.373 | 1 of 1 | |
| 1605098-05A | Soil | | 1.15 | 50 | 43.478 | 1 of 1 | |
| 1605098-06A | Soil | | 1.08 | 50 | 46.296 | 1 of 1 | |
| 1605098-07A | Soil | | 1.12 | 50 | 44.643 | 1 of 1 | |
| 1605098-08A | Soil | | 1.04 | 50 | 48.077 | 1 of 1 | |
| 1605098-09A | Soil | | 1.12 | 50 | 44.643 | 1 of 1 | |
| 1605098-10A | Soil | | 1.11 | 50 | 45.045 | 1 of 1 | |
| 1605098-11A | Soil | | 1.07 | 50 | 46.729 | 1 of 1 | |
| LCS-75216 | Soil | | 1 | 50 | 50.000 | of | |
| LCSD-75216 | Soil | | 1 | 50 | 50.000 | of | |
| MB-75216 | Soil | | 1 | 50 | 50.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 10056 | Digestion Vessels | 1 | vessel | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 10 | ml | 01/10/2026 |
| 10137 | Hydrochloric Acid (trace metal grade) | 5 | ml | 01/10/2026 |
| 10318 | Hydrogen Peroxide, 30% | 3 | ml | 11/30/2017 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160406-1 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.5 | 07/05/2016 |
| MET-SPIKE-160511-1 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 1 | 08/09/2016 |
| MET-SPIKE-160511-2 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 1 | 08/09/2016 |

**REVIEWED BY**
*By Janice Whitt at 9:52:51 AM, 5/27/2016*

# Calibration Summary Report

**Instrument:** ICPMS3
**Current Method:** C:\ICPCHEM\1\METHODS\DHL_3Fe.M
**Calibration:** C:\ICPCHEM\1\CALIB\DHL_3Fe.C
**Last Update:** May 25 2016 12:14 pm
**Cal Type:** Y=aX+[blank]

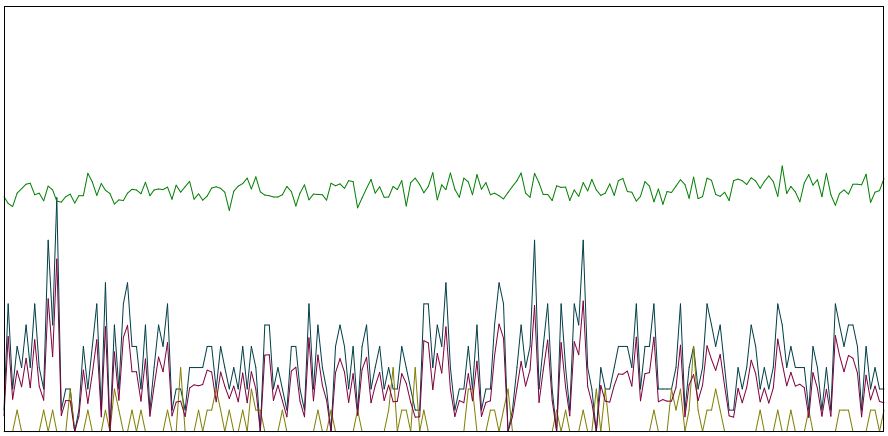
| Standard | Date Acquired | File |
|---|---|---|
| BLANK STD 1 | May 25 2016 11:28 am | c:\icpchem\1\data\16e25k02.b\006calb.d\ |
| L2-160525 | May 25 2016 11:34 am | c:\icpchem\1\data\16e25k02.b\007cals.d\ |
| L-160525 | May 25 2016 11:40 am | c:\icpchem\1\data\16e25k02.b\008cals.d\ |
| 10X-160525 | May 25 2016 11:47 am | c:\icpchem\1\data\16e25k02.b\009cals.d\ |
| 5X-160525 | May 25 2016 11:53 am | c:\icpchem\1\data\16e25k02.b\010cals.d\ |
| 2X-160525 | May 25 2016 11:59 am | c:\icpchem\1\data\16e25k02.b\011cals.d\ |

| Element Name | Corr Coef | Coef A | Coef B | Lvl 2 | Lvl 6 | Lvl 7 | L7 %R | Lvl 8 | L8 %R |
|---|---|---|---|---|---|---|---|---|---|
| Li | 1.0000 | 0.366 | 0.03074 | 1.07 | 264 | 513 | | 1995 | |
| Be | 0.9995 | 0.09676 | 0.001065 | 1.07 | 263 | 493 | 99% | -------- | ###### |
| B | 0.9998 | 0.08331 | 0.128 | 1.13 | 265 | 537 | 107% | 1,989 | 99% |
| Na | 0.9999 | 0.321 | 3.721 | 20.01 | 5,191 | 10,240 | 102% | 24,860 | 99% |
| Mg | 0.9999 | 0.1438 | 0.2978 | 21.26 | 5,057 | 10,270 | 103% | 24,880 | 100% |
| Al | 1.0000 | 0.03287 | 0.2196 | 20.44 | 4,996 | 10,010 | 100% | -------- | ###### |
| K | 1.0000 | 0.0687 | 2.178 | 22.79 | 5,023 | 9,990 | 100% | 25,000 | 100% |
| Ca | 0.9999 | 0.008753 | 0.1812 | 19.96 | 5,049 | 10,220 | 102% | 24,910 | 100% |
| Ti | 1.0000 | 0.02966 | 0 | 1.09 | 255 | 510 | 102% | 1,997 | 100% |
| V | 1.0000 | 1.348 | 0.1088 | 0.97 | 245 | 492 | 98% | 2,003 | 100% |
| Cr | 1.0000 | 1.836 | 0.07661 | 1.03 | 246 | 497 | 99% | 2,001 | 100% |
| Mn | 1.0000 | 0.6516 | 0.04509 | 1.00 | 256 | 513 | 103% | 1,996 | 100% |
| Fe | 1.0000 | 2.22 | 2.739 | 20.37 | 5,010 | 9,979 | 100% | -------- | ###### |
| Co | 1.0000 | 5.603 | 0.108 | 1.00 | 251 | 514 | 103% | 1,996 | 100% |
| Ni | 1.0000 | 1.688 | 0.08941 | 0.96 | 246 | 495 | 99% | 2,002 | 100% |
| Cu | 1.0000 | 4.655 | 0.3349 | 1.05 | 254 | 512 | 102% | 1,996 | 100% |
| Zn | 1.0000 | 0.4193 | 0.3111 | 1.30 | 261 | 514 | 103% | 1,995 | 100% |
| As | 1.0000 | 0.2238 | 0.01653 | 1.04 | 254 | 504 | 101% | 1,998 | 100% |
| Se | 0.9999 | 0.01122 | 0.002569 | 1.24 | 264 | 518 | 104% | 1,994 | 100% |
| Sr | 1.0000 | 0.2943 | 0.03535 | 0.99 | 258 | 507 | 101% | 1,997 | 100% |
| Mo | 1.0000 | 0.05592 | 0.001364 | 0.92 | 240 | 489 | 98% | 2,004 | 100% |
| Ag | 1.0000 | 0.158 | 0.0008843 | 1.04 | 251 | 500 | 100% | -------- | ###### |
| Cd | 1.0000 | 0.03364 | 0.000287 | 0.96 | 248 | 490 | 98% | 2,003 | 100% |
| Sn | 1.0000 | 0.09237 | 0.0124 | 0.96 | 248 | 517 | 103% | 1,996 | 100% |
| Sb | 0.9999 | 0.1113 | 0.005023 | 0.98 | 245 | 503 | 101% | -------- | ###### |
| Ba | 1.0000 | 0.04352 | 0.001615 | 0.96 | 242 | 489 | 98% | 2,004 | 100% |
| Tl | 1.0000 | 0.3323 | 0.003701 | 0.96 | 258 | 507 | 101% | 1,997 | 100% |
| Pb | 1.0000 | 0.4487 | 0.008497 | 0.99 | 251 | 512 | 102% | 1,997 | 100% |

REVIEWED BY
By Janice Whitt at 9:52:56 AM, 5/27/2016

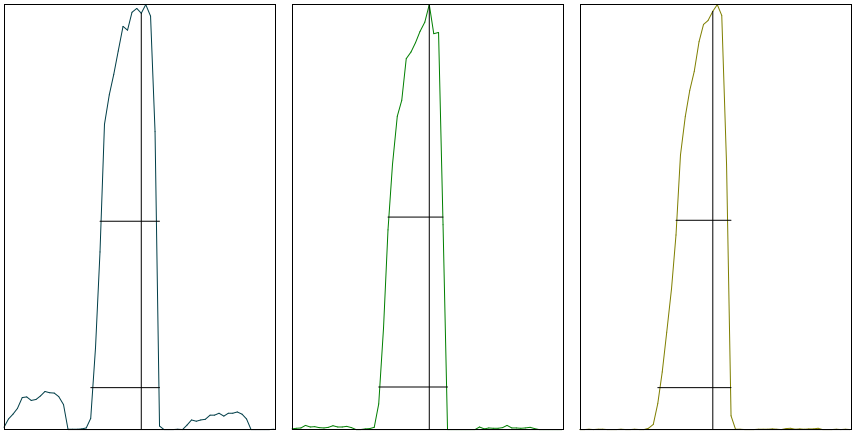
# Tune Report

Tune File : He.U
Comment :



Integration Time: 0.1000 sec
Sampling Period: 0.3100 sec
n: 200
Oxide: 156/140 0.383%
Doubly Charged: 70/140 3.259%

| m/z | Range | Count | Mean | RSD% | Background |
|---|---|---|---|---|---|
| 51 | 20 | 2.0 | 3.3 | 56.70 | 0.30 |
| 59 | 5,000 | 2978.0 | 2842.2 | 3.43 | 0.10 |
| 75 | 20 | 1.0 | 0.4 | 169.18 | 0.40 |
| 51/59 | 1 | 0.067% | 0.117% | 56.99 | |



| m/z: | 59 | 89 | 205 |
|---|---|---|---|
| Height: | 2,818 | 1,202 | 3,098 |
| Axis: | 59.05 | 89.05 | 205.00 |
| W-50%: | 0.65 | 0.60 | 0.60 |
| W-10%: | 0.7500 | 0.7500 | 0.800 |

Integration Time: 0.1000 sec
Acquisition Time: 22.5600 sec

Y axis : Linear



Generated : May 25, 2016 10:34:20
Printed : May 25, 2016 10:34:22

# Tune Report

Tune File : He.U
Comment :

## Tuning Parameters

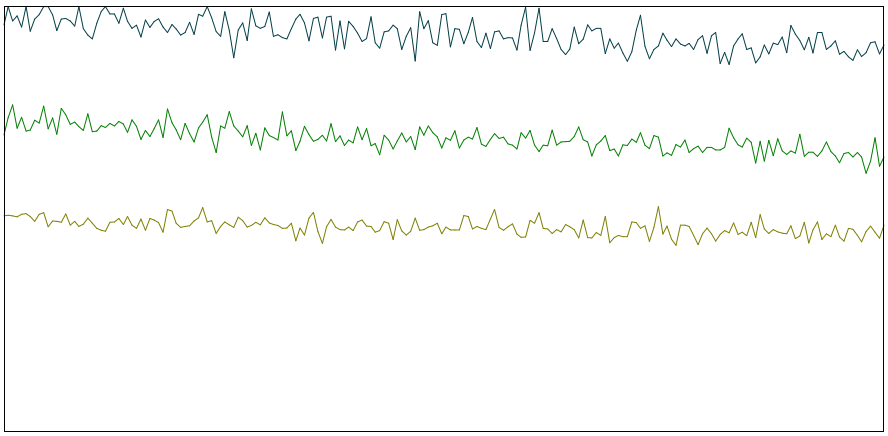
| ===Plasma Condition=== | | | | ===Ion Lenses=== | | | | ===Q-Pole Parameters=== | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RF Power | : | 1600 | W | Extract 1 | : | 0 | V | AMU Gain | : | 121 | |
| RF Matching | : | 1.6 | V | Extract 2 | : | -110 | V | AMU Offset | : | 121 | |
| Smpl Depth | : | 9 | mm | Omega Bias-ce | : | -24 | V | Axis Gain | : | 0.9993 | |
| Torch-H | : | 0 | mm | Omega Lens-ce | : | -2 | V | Axis Offset | : | -0.03 | |
| Torch-V | : | 0.7 | mm | Cell Entrance | : | -40 | V | QP Bias | : | -15 | V |
| Carrier Gas | : | 1.2 | L/min | QP Focus | : | -10 | V | | | | |
| Makeup Gas | : | 0 | L/min | Cell Exit | : | -40 | V | ===Detector Parameters=== | | | |
| Optional Gas | : | --- | % | | | | | Discriminator | : | 8 | mV |
| Nebulizer Pump | : | 0.1 | rps | ===Octopole Parameters=== | | | | Analog HV | : | 1740 | V |
| Sample Pump | : | --- | rps | OctP RF | : | 170 | V | Pulse HV | : | 1460 | V |
| S/C Temp | : | 2 | degC | OctP Bias | : | -18 | V | | | | |

===Reaction Cell===

| Reaction Mode | : | ON | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| H2 Gas | : | 0 | mL/min | He Gas | : | 5 | mL/min | Optional Gas | : | --- | % |

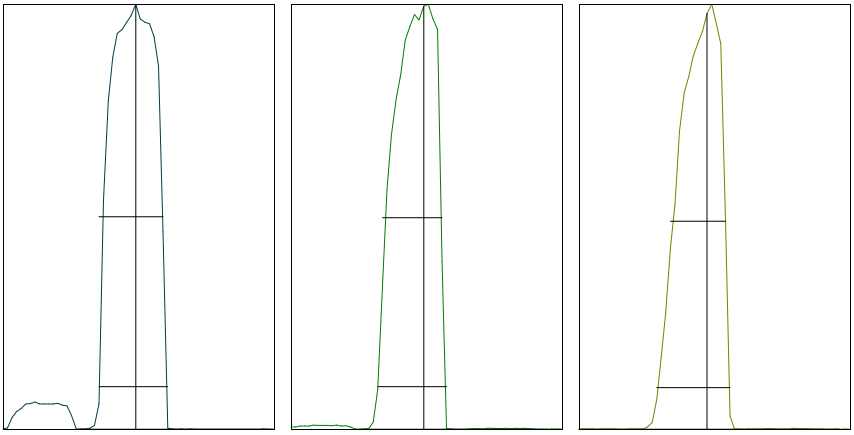
# Tune Report

Tune File : nogas.u
Comment :



| | | |
|---|---|---|
| Integration Time: | 0.1000 sec | |
| Sampling Period: | 0.8200 sec | |
| n: | 200 | |
| Oxide: | 156/140 | 1.016% |
| Doubly Charged: | 70/140 | 1.495% |

| m/z | Range | Count | Mean | RSD% | Background |
|---|---|---|---|---|---|
| 7 | 10,000 | 9090.0 | 9354.8 | 3.64 | 1.70 |
| 89 | 20,000 | 12913.0 | 13784.7 | 4.18 | 3.20 |
| 205 | 20,000 | 9711.0 | 9616.0 | 3.81 | 10.10 |
| 156/140 | 2 | 0.845% | 0.985% | 11.71 | |
| 70/140 | 2 | 0.993% | 1.247% | 10.16 | |
| 63 | 1,000 | 509.0 | 528.5 | 6.08 | 2.20 |
| 23 | 50,000 | 21417.0 | 22985.0 | 4.66 | 1.90 |



| m/z: | 7 | 89 | 205 |
|---|---|---|---|
| Height: | 9,135 | 13,017 | 9,243 |
| Axis: | 7.00 | 89.00 | 204.95 |
| W-50%: | 0.70 | 0.65 | 0.60 |
| W-10%: | 0.7500 | 0.7500 | 0.800 |

| | |
|---|---|
| Integration Time: | 0.1000 sec |
| Acquisition Time: | 22.7600 sec |

Y axis : Linear



Generated : May 25, 2016 10:30:58
Printed : May 25, 2016 10:31:00

# Tune Report

Tune File : nogas.u
Comment :

## Tuning Parameters

| ===Plasma Condition=== | | | | ===Ion Lenses=== | | | | ===Q-Pole Parameters=== | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RF Power | : | 1600 | W | Extract 1 | : | 0 | V | AMU Gain | : | 121 | |
| RF Matching | : | 1.6 | V | Extract 2 | : | -110 | V | AMU Offset | : | 121 | |
| Smpl Depth | : | 9 | mm | Omega Bias-ce | : | -18 | V | Axis Gain | : | 0.9993 | |
| Torch-H | : | 0 | mm | Omega Lens-ce | : | -1 | V | Axis Offset | : | -0.03 | |
| Torch-V | : | 0.7 | mm | Cell Entrance | : | -30 | V | QP Bias | : | -1 | V |
| Carrier Gas | : | 1.2 | L/min | QP Focus | : | 4 | V | | | | |
| Makeup Gas | : | 0 | L/min | Cell Exit | : | -40 | V | ===Detector Parameters=== | | | |
| Optional Gas | : | --- | % | | | | | Discriminator | : | 8 | mV |
| Nebulizer Pump | : | 0.1 | rps | ===Octopole Parameters=== | | | | Analog HV | : | 1740 | V |
| Sample Pump | : | --- | rps | OctP RF | : | 170 | V | Pulse HV | : | 1460 | V |
| S/C Temp | : | 2 | degC | OctP Bias | : | -6 | V | | | | |

===Reaction Cell===

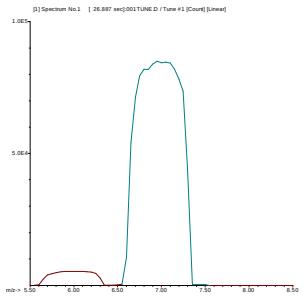
| Reaction Mode | : | OFF | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| H2 Gas | : | 0 | mL/min | He Gas | : | 0 | mL/min | Optional Gas | : | --- | % |

# 6020 QC Tune Report

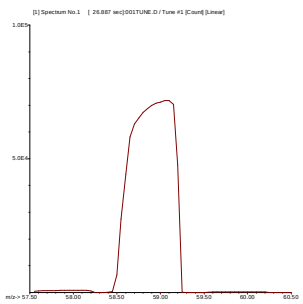
Data File: C:\ICPCHEM\1\DATA\16E25k01.B\001TUNE.D
Date Acquired: May 25 2016 10:48 am
Acq. Method: TN6020.M
Operator: KL
Sample Name: TUNE CHECK
Misc Info:
Vial Number: 1301
Current Method: C:\ICPCHEM\1\METHODS\TN6020.M

**RSD (%)**

| Element | Actual | Required | Flag |
|---|---|---|---|
| 7 Li | 2.47 | 5.00 | |
| 59 Co | 3.32 | 5.00 | |
| 115 In | 3.74 | 5.00 | |
| 205 Tl | 1.43 | 5.00 | |

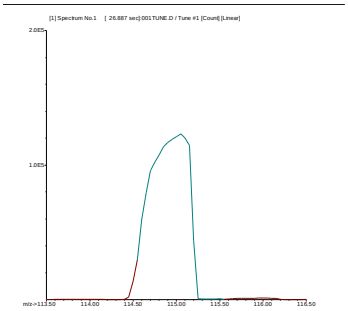


7 Li
**Mass Calib.**
Actual: 7.00
Required: 6.90 - 7.10
Flag:
**Peak Width**
Actual: 0.70
Required: 0.90
Flag:

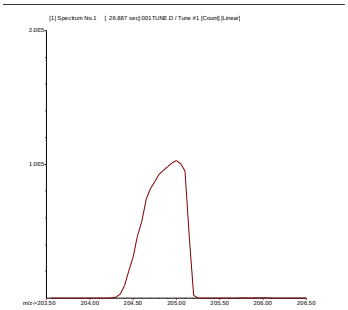


59 Co
**Mass Calib.**
Actual: 59.05
Required: 58.90 - 59.10
Flag:
**Peak Width**
Actual: 0.65
Required: 0.90
Flag:

REVIEWED BY
By Janice Whitt at 9:53:03 AM, 5/27/2016



115 In
**Mass Calib.**
Actual: 115.00
Required: 114.90 - 115.10
Flag:
**Peak Width**
Actual: 0.65
Required: 0.90
Flag:



205 Tl
**Mass Calib.**
Actual: 204.95
Required: 204.90 - 205.10
Flag:
**Peak Width**
Actual: 0.60
Required: 0.90
Flag:

REVIEWED BY
By Janice Whitt at 9:53:08 AM, 5/27/2016

P/A Factor Tuning Report

Acquired:May 25 2016  10:37 am

| Mass[amu] | Element | P/A Factor |
|---|---|---|
| 6 | Li | 0.072231 |
| 23 | Na | 0.088049 |
| 24 | Mg | 0.092570 |
| 27 | Al | 0.096143 |
| 39 | K | 0.097086 |
| 44 | Ca | Sensitivity too low |
| 45 | Sc | 0.097844 |
| 47 | Ti | Sensitivity too low |
| 51 | V | 0.100513 |
| 52 | Cr | 0.103528 |
| 55 | Mn | 0.105065 |
| 59 | Co | 0.109030 |
| 60 | Ni | 0.111564 |
| 63 | Cu | 0.113829 |
| 66 | Zn | 0.112970 |
| 72 | Ge | 0.111909 |
| 75 | As | 0.111226 |
| 78 | Se | Sensitivity too low |
| 88 | Sr | 0.112101 |
| 95 | Mo | 0.110617 |
| 106 | (Cd) | 0.117821 |
| 107 | Ag | Sensitivity too low |
| 108 | (Cd) | 0.118228 |
| 111 | Cd | 0.119577 |
| 115 | In | 0.119323 |
| 118 | Sn | 0.118698 |
| 121 | Sb | 0.118213 |
| 137 | Ba | Sensitivity too low |
| 205 | Tl | 0.129465 |
| 206 | (Pb) | 0.128942 |
| 207 | (Pb) | 0.129311 |
| 208 | Pb | 0.129558 |
| 209 | Bi | 0.129136 |
| 238 | | 0.128564 |

===Detector Parameters===
  Discriminator: 8.0 mV
      Analog HV: 1740 V
       Pulse HV: 1460 V

REVIEWED BY
By Janice Whitt at 9:53:10 AM, 5/27/2016

# Calibration Blank QC Report

Acq. Method: DHL_3Fe.M Sample Name: BLANK STD 1
Operator: KL Instrument: ICPMS3
Last Cal. Update: May 25 2016 11:32 am
Date Acquired: May 25 2016 11:28 am

**QC&ISTD Elements**

| Element | | | | CPS Mean | | SD | RSD(%) |
|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | --- | 35.48 | P | 14.91 | 42.02 |
| 7 | Li | 2 | 45 | 637.82 | P | 64.33 | 10.09 |
| 9 | Be | 2 | 45 | 22.22 | P | 10.18 | 45.81 |
| 11 | B | 2 | 45 | 2658.16 | P | 10.19 | 0.38 |
| 23 | Na | 1 | 45 | 2568.14 | P | 60.60 | 2.36 |
| 24 | Mg | 1 | 45 | 205.57 | P | 18.36 | 8.93 |
| 27 | Al | 1 | 45 | 151.56 | P | 18.00 | 11.88 |
| 39 | K | 1 | 45 | 1503.48 | P | 87.38 | 5.81 |
| 44 | Ca | 2 | 45 | 3760.71 | P | 135.50 | 3.60 |
| 45 | Sc | 1 | --- | 138057.41 | P | 627.20 | 0.45 |
| 45 | Sc | 2 | --- | 4152726.00 | A | 66850.00 | 1.61 |
| 47 | Ti | 1 | 45 | 0.00 | P | 0.00 | 0.00 |
| 51 | V | 1 | 45 | 75.11 | P | 6.30 | 8.39 |
| 51 | V | 2 | --- | | P | | |
| 52 | Cr | 1 | 45 | 52.89 | P | 2.04 | 3.85 |
| 55 | Mn | 1 | 45 | 31.11 | P | 5.39 | 17.32 |
| 56 | Fe | 1 | 72 | 1183.63 | P | 96.32 | 8.14 |
| 59 | Co | 1 | 72 | 46.67 | P | 4.81 | 10.30 |
| 60 | Ni | 1 | 72 | 38.67 | P | 2.31 | 5.97 |
| 60 | Ni | 2 | --- | | P | | |
| 63 | Cu | 1 | 72 | 144.89 | P | 20.06 | 13.85 |
| 63 | Cu | 2 | --- | | P | | |
| 66 | Zn | 1 | 72 | 134.67 | P | 27.75 | 20.61 |
| 66 | Zn | 2 | --- | | P | | |
| 72 | Ge | 1 | --- | 86466.48 | P | 825.70 | 0.95 |
| 72 | Ge | 2 | --- | | P | | |
| 75 | As | 1 | 72 | 7.15 | P | 0.17 | 2.37 |
| 78 | Se | 1 | 72 | 1.11 | P | 0.11 | 10.00 |
| 88 | Sr | 2 | ### | 1070.09 | P | 42.57 | 3.98 |
| 95 | Mo | 2 | ### | 41.11 | P | 19.53 | 47.50 |
| 107 | Ag | 2 | ### | 26.67 | P | 8.82 | 33.07 |
| 111 | Cd | 2 | ### | 8.87 | P | 18.30 | 206.32 |
| 115 | In | 2 | --- | 6053544.00 | A | 97360.00 | 1.61 |
| 118 | Sn | 2 | ### | 375.58 | P | 38.64 | 10.29 |
| 121 | Sb | 2 | ### | 152.23 | P | 31.68 | 20.81 |
| 137 | Ba | 2 | ### | 48.89 | P | 1.93 | 3.94 |
| 205 | Tl | 2 | ### | 101.12 | P | 5.09 | 5.04 |
| 208 | Pb | 2 | ### | 232.23 | P | 24.12 | 10.39 |
| 209 | Bi | 2 | --- | 5465339.00 | A | 35910.00 | 0.66 |

# Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: L2-160525
Operator: KL Instrument: ICPMS3
Date Acquired: May 25 2016 11:34 am
Last Cal. Update: May 25 2016 11:32 am

**QC&ISTD Elements**

| Element | | | | CPS Mean | | SD | RSD(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | --- | -272.88 | P | 43.39 | 15.90 | ISFail |
| 7 | Li | 2 | 45 | 8721.12 | P | 217.90 | 2.50 | |
| 9 | Be | 2 | 45 | 2156.94 | P | 56.98 | 2.64 | |
| 11 | B | 2 | 45 | 4596.57 | P | 58.25 | 1.27 | |
| 23 | Na | 1 | 45 | 7215.69 | P | 210.90 | 2.92 | |
| 24 | Mg | 1 | 45 | 2385.88 | P | 159.10 | 6.67 | |
| 27 | Al | 1 | 45 | 634.25 | P | 29.59 | 4.67 | |
| 39 | K | 1 | 45 | 2662.63 | P | 49.17 | 1.85 | |
| 44 | Ca | 2 | 45 | 7365.79 | P | 40.42 | 0.55 | |
| 45 | Sc | 1 | --- | 142269.80 | P | 1494.00 | 1.05 | |
| 45 | Sc | 2 | --- | 4140339.00 | A | 56330.00 | 1.36 | |
| 47 | Ti | 1 | 45 | 23.11 | P | 7.34 | 31.78 | |
| 51 | V | 1 | 45 | 1012.06 | P | 70.47 | 6.96 | |
| 51 | V | 2 | --- | | P | | | |
| 52 | Cr | 1 | 45 | 1404.10 | P | 31.44 | 2.24 | |
| 55 | Mn | 1 | 45 | 496.02 | P | 3.53 | 0.71 | |
| 56 | Fe | 1 | 72 | 21155.66 | P | 319.20 | 1.51 | |
| 59 | Co | 1 | 72 | 2522.07 | P | 39.66 | 1.57 | |
| 60 | Ni | 1 | 72 | 756.48 | P | 32.04 | 4.24 | |
| 60 | Ni | 2 | --- | | P | | | |
| 63 | Cu | 1 | 72 | 2304.70 | P | 66.10 | 2.87 | |
| 63 | Cu | 2 | --- | | P | | | |
| 66 | Zn | 1 | 72 | 377.79 | P | 37.39 | 9.90 | |
| 66 | Zn | 2 | --- | | P | | | |
| 72 | Ge | 1 | --- | 88235.95 | P | 566.30 | 0.64 | |
| 72 | Ge | 2 | --- | | P | | | |
| 75 | As | 1 | 72 | 109.89 | P | 0.48 | 0.44 | |
| 78 | Se | 1 | 72 | 7.26 | P | 0.93 | 12.84 | |
| 88 | Sr | 2 | 115 | 9914.45 | P | 341.40 | 3.44 | |
| 95 | Mo | 2 | 115 | 1594.62 | P | 79.55 | 4.99 | |
| 107 | Ag | 2 | 115 | 4991.26 | P | 70.99 | 1.42 | |
| 111 | Cd | 2 | 115 | 986.01 | P | 121.80 | 12.35 | |
| 115 | In | 2 | --- | 6056323.00 | A | 74220.00 | 1.23 | |
| 118 | Sn | 2 | 115 | 3058.30 | P | 104.60 | 3.42 | |
| 121 | Sb | 2 | 115 | 3450.66 | P | 114.00 | 3.30 | |
| 137 | Ba | 2 | 115 | 1320.13 | P | 33.84 | 2.56 | |
| 205 | Tl | 2 | 209 | 8724.86 | P | 91.61 | 1.05 | |
| 208 | Pb | 2 | 209 | 12252.01 | P | 155.30 | 1.27 | |
| 209 | Bi | 2 | --- | 5434789.00 | A | 36290.00 | 0.67 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -272.88 | 15.90 | 35.48 | -769.1 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 142269.81 | 1.05 | 138057.45 | 103.1 | 70 - 120 | |
| 45 | Sc | 2 | 4140339.30 | 1.36 | 4152726.00 | 99.7 | 70 - 120 | |
| 72 | Ge | 1 | 88235.95 | 0.64 | 86466.48 | 102.0 | 70 - 120 | |
| 115 | In | 2 | 6056323.00 | 1.23 | 6053544.50 | 100.0 | 70 - 120 | |
| 209 | Bi | 2 | 5434789.50 | 0.67 | 5465338.50 | 99.4 | 70 - 120 | |

# Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: L-160525
Operator: KL Instrument: ICPMS3
Date Acquired: May 25 2016 11:40 am
Last Cal. Update: May 25 2016 11:38 am

**QC&ISTD Elements**

| Element | | | | CPS Mean | | SD | RSD(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | --- | -3158.91 | P | 124.40 | 3.94 | ISFail |
| 7 | Li | 2 | 45 | 81444.23 | P | 803.40 | 0.99 | Fail |
| 9 | Be | 2 | 45 | 20927.95 | P | 469.40 | 2.24 | Fail |
| 11 | B | 2 | 45 | 20744.39 | P | 193.80 | 0.93 | Fail |
| 23 | Na | 1 | 45 | 49294.59 | P | 1168.00 | 2.37 | Fail |
| 24 | Mg | 1 | 45 | 21165.25 | P | 774.90 | 3.66 | Fail |
| 27 | Al | 1 | 45 | 4839.68 | P | 57.26 | 1.18 | Fail |
| 39 | K | 1 | 45 | 11641.46 | P | 10.69 | 0.09 | Fail |
| 44 | Ca | 2 | 45 | 39659.92 | P | 629.10 | 1.59 | Fail |
| 45 | Sc | 1 | --- | 143278.80 | P | 1156.00 | 0.81 | |
| 45 | Sc | 2 | --- | 4120153.00 | A | 49370.00 | 1.20 | |
| 47 | Ti | 1 | 45 | 231.12 | P | 25.17 | 10.89 | |
| 51 | V | 1 | 45 | 9449.51 | P | 199.80 | 2.11 | Fail |
| 51 | V | 2 | --- | | P | | | |
| 52 | Cr | 1 | 45 | 13242.36 | P | 373.10 | 2.82 | Fail |
| 55 | Mn | 1 | 45 | 4834.80 | P | 159.30 | 3.29 | Fail |
| 56 | Fe | 1 | 72 | 201192.91 | P | 3702.00 | 1.84 | Fail |
| 59 | Co | 1 | 72 | 25259.91 | P | 174.60 | 0.69 | |
| 60 | Ni | 1 | 72 | 7550.88 | P | 72.09 | 0.95 | Fail |
| 60 | Ni | 2 | --- | | P | | | |
| 63 | Cu | 1 | 72 | 21661.08 | P | 196.60 | 0.91 | Fail |
| 63 | Cu | 2 | --- | | P | | | |
| 66 | Zn | 1 | 72 | 2069.54 | P | 60.69 | 2.93 | Fail |
| 66 | Zn | 2 | --- | | P | | | |
| 72 | Ge | 1 | --- | 88696.46 | P | 237.30 | 0.27 | |
| 72 | Ge | 2 | --- | | P | | | |
| 75 | As | 1 | 72 | 1024.90 | P | 18.54 | 1.81 | Fail |
| 78 | Se | 1 | 72 | 53.78 | P | 4.01 | 7.46 | Fail |
| 88 | Sr | 2 | 115 | 89335.27 | P | 1407.00 | 1.58 | Fail |
| 95 | Mo | 2 | 115 | 16308.35 | P | 287.20 | 1.76 | Fail |
| 107 | Ag | 2 | 115 | 47737.28 | P | 786.40 | 1.65 | Fail |
| 111 | Cd | 2 | 115 | 10398.60 | P | 459.80 | 4.42 | Fail |
| 115 | In | 2 | --- | 6075602.00 | A | 104300.00 | 1.72 | |
| 118 | Sn | 2 | 115 | 27836.89 | P | 477.40 | 1.72 | Fail |
| 121 | Sb | 2 | 115 | 33005.69 | P | 1040.00 | 3.15 | Fail |
| 137 | Ba | 2 | 115 | 12649.50 | P | 345.50 | 2.73 | Fail |
| 205 | Tl | 2 | 209 | 87908.60 | P | 1714.00 | 1.95 | Fail |
| 208 | Pb | 2 | 209 | 120260.00 | P | 1447.00 | 1.20 | Fail |
| 209 | Bi | 2 | --- | 5493697.00 | A | 55050.00 | 1.00 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -3158.91 | 3.94 | 35.48 | -8903.2 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 143278.77 | 0.81 | 138057.45 | 103.8 | 70 - 120 | |
| 45 | Sc | 2 | 4120152.80 | 1.20 | 4152726.00 | 99.2 | 70 - 120 | |
| 72 | Ge | 1 | 88696.46 | 0.27 | 86466.48 | 102.6 | 70 - 120 | |
| 115 | In | 2 | 6075602.00 | 1.72 | 6053544.50 | 100.4 | 70 - 120 | |
| 209 | Bi | 2 | 5493697.00 | 1.00 | 5465338.50 | 100.5 | 70 - 120 | |

# Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: 10X-160525
Operator: KL Instrument: ICPMS3
Date Acquired: May 25 2016 11:47 am
Last Cal. Update: May 25 2016 11:44 am

**QC&ISTD Elements**

| Element | | | | CPS Mean | | SD | RSD(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | --- | -16288.08 | P | 511.60 | 3.14 | ISFail |
| 7 | Li | 2 | 45 | 402368.41 | P | 3309.00 | 0.82 | Fail |
| 9 | Be | 2 | 45 | 104423.40 | P | 1276.00 | 1.22 | Fail |
| 11 | B | 2 | 45 | 92644.22 | P | 1964.00 | 2.12 | Fail |
| 23 | Na | 1 | 45 | 231656.30 | P | 1302.00 | 0.56 | Fail |
| 24 | Mg | 1 | 45 | 102192.30 | P | 1498.00 | 1.47 | Fail |
| 27 | Al | 1 | 45 | 23101.92 | P | 581.50 | 2.52 | Fail |
| 39 | K | 1 | 45 | 50040.59 | P | 194.10 | 0.39 | Fail |
| 44 | Ca | 2 | 45 | 182260.41 | P | 3542.00 | 1.94 | Fail |
| 45 | Sc | 1 | --- | 141135.50 | P | 450.30 | 0.32 | |
| 45 | Sc | 2 | --- | 4138519.00 | A | 72340.00 | 1.75 | |
| 47 | Ti | 1 | 45 | 1055.62 | P | 23.90 | 2.26 | |
| 51 | V | 1 | 45 | 46600.53 | P | 455.10 | 0.98 | Fail |
| 51 | V | 2 | --- | | P | | | |
| 52 | Cr | 1 | 45 | 64822.04 | P | 589.70 | 0.91 | |
| 55 | Mn | 1 | 45 | 23763.53 | P | 163.10 | 0.69 | |
| 56 | Fe | 1 | 72 | 990195.63 | P | 9009.00 | 0.91 | |
| 59 | Co | 1 | 72 | 125218.50 | P | 1935.00 | 1.55 | |
| 60 | Ni | 1 | 72 | 37202.06 | P | 408.50 | 1.10 | |
| 60 | Ni | 2 | --- | | P | | | |
| 63 | Cu | 1 | 72 | 105463.50 | P | 708.10 | 0.67 | |
| 63 | Cu | 2 | --- | | P | | | |
| 66 | Zn | 1 | 72 | 9840.09 | P | 193.30 | 1.96 | Fail |
| 66 | Zn | 2 | --- | | P | | | |
| 72 | Ge | 1 | --- | 86932.00 | P | 754.00 | 0.87 | |
| 72 | Ge | 2 | --- | | P | | | |
| 75 | As | 1 | 72 | 4967.45 | P | 37.52 | 0.76 | |
| 78 | Se | 1 | 72 | 258.45 | P | 6.20 | 2.40 | Fail |
| 88 | Sr | 2 | 115 | 443033.31 | P | 10500.00 | 2.37 | Fail |
| 95 | Mo | 2 | 115 | 81078.38 | P | 1037.00 | 1.28 | Fail |
| 107 | Ag | 2 | 115 | 237582.70 | P | 4252.00 | 1.79 | Fail |
| 111 | Cd | 2 | 115 | 50820.08 | P | 893.70 | 1.76 | Fail |
| 115 | In | 2 | --- | 6043849.00 | A | 33930.00 | 0.56 | |
| 118 | Sn | 2 | 115 | 138084.59 | P | 2546.00 | 1.84 | Fail |
| 121 | Sb | 2 | 115 | 163930.30 | P | 2776.00 | 1.69 | Fail |
| 137 | Ba | 2 | 115 | 63381.75 | P | 2040.00 | 3.22 | Fail |
| 205 | Tl | 2 | 209 | 442037.59 | P | 4299.00 | 0.97 | Fail |
| 208 | Pb | 2 | 209 | 598058.88 | P | 9443.00 | 1.58 | Fail |
| 209 | Bi | 2 | --- | 5504946.00 | A | 49270.00 | 0.90 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -16288.08 | 3.14 | 35.48 | -45907.1 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 141135.45 | 0.32 | 138057.45 | 102.2 | 70 - 120 | |
| 45 | Sc | 2 | 4138519.00 | 1.75 | 4152726.00 | 99.7 | 70 - 120 | |
| 72 | Ge | 1 | 86932.01 | 0.87 | 86466.48 | 100.5 | 70 - 120 | |
| 115 | In | 2 | 6043848.50 | 0.56 | 6053544.50 | 99.8 | 70 - 120 | |
| 209 | Bi | 2 | 5504946.00 | 0.90 | 5465338.50 | 100.7 | 70 - 120 | |

# Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: 5X-160525
Operator: KL Instrument: ICPMS3
Date Acquired: May 25 2016 11:53 am
Last Cal. Update: May 25 2016 11:50 am

**QC&ISTD Elements**

| Element | | | | CPS Mean | | SD | RSD(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | --- | -32300.18 | P | 989.90 | 3.06 | ISFail |
| 7 | Li | 2 | 45 | 792643.88 | A | 12330.00 | 1.56 | Fail |
| 9 | Be | 2 | 45 | 206314.00 | P | 2797.00 | 1.36 | Fail |
| 11 | B | 2 | 45 | 179068.41 | P | 3589.00 | 2.00 | Fail |
| 23 | Na | 1 | 45 | 456671.19 | P | 2489.00 | 0.55 | Fail |
| 24 | Mg | 1 | 45 | 202978.70 | P | 1794.00 | 0.88 | |
| 27 | Al | 1 | 45 | 45805.44 | P | 528.80 | 1.15 | Fail |
| 39 | K | 1 | 45 | 97811.58 | P | 804.40 | 0.82 | Fail |
| 44 | Ca | 2 | 45 | 356890.41 | P | 7614.00 | 2.13 | Fail |
| 45 | Sc | 1 | --- | 139844.59 | P | 317.00 | 0.23 | |
| 45 | Sc | 2 | --- | 4139387.00 | A | 61320.00 | 1.48 | |
| 47 | Ti | 1 | 45 | 2048.65 | P | 54.40 | 2.66 | |
| 51 | V | 1 | 45 | 93011.17 | P | 1117.00 | 1.20 | |
| 51 | V | 2 | --- | | P | | | |
| 52 | Cr | 1 | 45 | 128337.30 | P | 2310.00 | 1.80 | |
| 55 | Mn | 1 | 45 | 46816.77 | P | 651.40 | 1.39 | |
| 56 | Fe | 1 | 72 | 1983262.00 | A | 31950.00 | 1.61 | |
| 59 | Co | 1 | 72 | 246793.00 | P | 3136.00 | 1.27 | |
| 60 | Ni | 1 | 72 | 73832.64 | P | 1291.00 | 1.75 | |
| 60 | Ni | 2 | --- | | P | | | |
| 63 | Cu | 1 | 72 | 210109.20 | P | 2059.00 | 0.98 | |
| 63 | Cu | 2 | --- | | P | | | |
| 66 | Zn | 1 | 72 | 19530.82 | P | 53.99 | 0.28 | Fail |
| 66 | Zn | 2 | --- | | P | | | |
| 72 | Ge | 1 | --- | 86387.22 | P | 767.70 | 0.89 | |
| 72 | Ge | 2 | --- | | P | | | |
| 75 | As | 1 | 72 | 9879.90 | P | 120.10 | 1.22 | |
| 78 | Se | 1 | 72 | 512.05 | P | 5.95 | 1.16 | |
| 88 | Sr | 2 | 115 | 874582.69 | P | 19150.00 | 2.19 | Fail |
| 95 | Mo | 2 | 115 | 161433.59 | P | 2303.00 | 1.43 | Fail |
| 107 | Ag | 2 | 115 | 468556.91 | P | 7907.00 | 1.69 | Fail |
| 111 | Cd | 2 | 115 | 100303.20 | P | 1203.00 | 1.20 | Fail |
| 115 | In | 2 | --- | 6004016.00 | A | 51360.00 | 0.86 | |
| 118 | Sn | 2 | 115 | 273339.91 | P | 5241.00 | 1.92 | Fail |
| 121 | Sb | 2 | 115 | 326281.69 | P | 7200.00 | 2.21 | Fail |
| 137 | Ba | 2 | 115 | 126337.80 | P | 3084.00 | 2.44 | Fail |
| 205 | Tl | 2 | 209 | 871072.00 | P | 9232.00 | 1.06 | Fail |
| 208 | Pb | 2 | 209 | 1173651.00 | P | 20530.00 | 1.75 | Fail |
| 209 | Bi | 2 | --- | 5392675.00 | A | 32210.00 | 0.60 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -32300.18 | 3.06 | 35.48 | -91036.3 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 139844.64 | 0.23 | 138057.45 | 101.3 | 70 - 120 | |
| 45 | Sc | 2 | 4139386.80 | 1.48 | 4152726.00 | 99.7 | 70 - 120 | |
| 72 | Ge | 1 | 86387.23 | 0.89 | 86466.48 | 99.9 | 70 - 120 | |
| 115 | In | 2 | 6004016.00 | 0.86 | 6053544.50 | 99.2 | 70 - 120 | |
| 209 | Bi | 2 | 5392675.00 | 0.60 | 5465338.50 | 98.7 | 70 - 120 | |

# Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: 2X-160525
Operator: KL Instrument: ICPMS3
Date Acquired: May 25 2016 11:59 am
Last Cal. Update: May 25 2016 11:56 am

**QC&ISTD Elements**

| Element | | | | CPS Mean | | SD | RSD(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | --- | -76509.99 | P | 180.40 | 0.24 | ISFail |
| 7 | Li | 2 | 45 | 1933272.00 | A | 9283.00 | 0.48 | Fail |
| 9 | Be | 2 | 45 | 508742.19 | P | 4856.00 | 0.95 | |
| 11 | B | 2 | 45 | 444105.91 | P | 5067.00 | 1.14 | Fail |
| 23 | Na | 1 | 45 | 1184068.00 | A | 9137.00 | 0.77 | Fail |
| 24 | Mg | 1 | 45 | 515642.91 | P | 3636.00 | 0.71 | |
| 27 | Al | 1 | 45 | 116586.70 | P | 2038.00 | 1.75 | |
| 39 | K | 1 | 45 | 246218.80 | P | 1321.00 | 0.54 | Fail |
| 44 | Ca | 2 | 45 | 888133.38 | M | 34470.00 | 3.88 | Fail |
| 45 | Sc | 1 | --- | 141806.09 | P | 185.10 | 0.13 | |
| 45 | Sc | 2 | --- | 4001920.00 | A | 40540.00 | 1.01 | |
| 47 | Ti | 1 | 45 | 5365.24 | P | 120.50 | 2.25 | |
| 51 | V | 1 | 45 | 233931.20 | P | 2388.00 | 1.02 | |
| 51 | V | 2 | --- | | A | | | |
| 52 | Cr | 1 | 45 | 320402.50 | P | 2792.00 | 0.87 | |
| 55 | Mn | 1 | 45 | 118084.30 | P | 877.90 | 0.74 | |
| 56 | Fe | 1 | 72 | 4840338.00 | A | 43880.00 | 0.91 | |
| 59 | Co | 1 | 72 | 612208.31 | P | 2883.00 | 0.47 | |
| 60 | Ni | 1 | 72 | 180786.41 | P | 979.70 | 0.54 | |
| 60 | Ni | 2 | --- | | P | | | |
| 63 | Cu | 1 | 72 | 514813.41 | P | 4742.00 | 0.92 | |
| 63 | Cu | 2 | --- | | P | | | |
| 66 | Zn | 1 | 72 | 47653.65 | P | 313.90 | 0.66 | Fail |
| 66 | Zn | 2 | --- | | P | | | |
| 72 | Ge | 1 | --- | 87029.36 | P | 440.30 | 0.51 | |
| 72 | Ge | 2 | --- | | P | | | |
| 75 | As | 1 | 72 | 24700.86 | P | 129.60 | 0.52 | |
| 78 | Se | 1 | 72 | 1287.77 | P | 6.35 | 0.49 | |
| 88 | Sr | 2 | 115 | 2245274.00 | A | 48870.00 | 2.18 | Fail |
| 95 | Mo | 2 | 115 | 397199.50 | P | 8239.00 | 2.07 | Fail |
| 107 | Ag | 2 | 115 | 1173027.00 | A | 14630.00 | 1.25 | |
| 111 | Cd | 2 | 115 | 246356.91 | P | 3214.00 | 1.30 | Fail |
| 115 | In | 2 | --- | 5918027.00 | A | 76490.00 | 1.29 | |
| 118 | Sn | 2 | 115 | 678109.69 | P | 11900.00 | 1.75 | Fail |
| 121 | Sb | 2 | 115 | 805410.50 | P | 14660.00 | 1.82 | Fail |
| 137 | Ba | 2 | 115 | 311737.31 | P | 5636.00 | 1.81 | Fail |
| 205 | Tl | 2 | 209 | 2257746.00 | A | 24770.00 | 1.10 | Fail |
| 208 | Pb | 2 | 209 | 2976292.00 | A | 34430.00 | 1.16 | Fail |
| 209 | Bi | 2 | --- | 5277858.00 | A | 82480.00 | 1.56 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -76509.99 | 0.24 | 35.48 | -215639.2 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 141806.06 | 0.13 | 138057.45 | 102.7 | 70 - 120 | |
| 45 | Sc | 2 | 4001920.30 | 1.01 | 4152726.00 | 96.4 | 70 - 120 | |
| 72 | Ge | 1 | 87029.36 | 0.51 | 86466.48 | 100.7 | 70 - 120 | |
| 115 | In | 2 | 5918027.00 | 1.29 | 6053544.50 | 97.8 | 70 - 120 | |
| 209 | Bi | 2 | 5277858.00 | 1.56 | 5465338.50 | 96.6 | 70 - 120 | |

# Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: H-160525
Operator: KL Instrument: ICPMS3
Date Acquired: May 25 2016 12:05 pm
Last Cal. Update: May 25 2016 12:02 pm

**QC&ISTD Elements**

| Element | | | | CPS Mean | | SD | RSD(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | --- | -146565.41 | P | 2970.00 | 2.03 | ISFail |
| 7 | Li | 2 | 45 | 3764275.00 | A | 31320.00 | 0.83 | Fail |
| 9 | Be | 2 | 45 | 955968.63 | A | 9887.00 | 1.03 | |
| 11 | B | 2 | 45 | 899463.81 | A | 18700.00 | 2.08 | Fail |
| 23 | Na | 1 | 45 | 2271337.00 | A | 18240.00 | 0.80 | |
| 24 | Mg | 1 | 45 | 1018896.00 | A | 3994.00 | 0.39 | |
| 27 | Al | 1 | 45 | 227150.80 | P | 2005.00 | 0.88 | |
| 39 | K | 1 | 45 | 475184.69 | P | 2528.00 | 0.53 | Fail |
| 44 | Ca | 2 | 45 | 1796926.00 | A | 23300.00 | 1.30 | Fail |
| 45 | Sc | 1 | --- | 138027.09 | P | 383.10 | 0.28 | |
| 45 | Sc | 2 | --- | 4009804.00 | A | 53030.00 | 1.32 | |
| 47 | Ti | 1 | 45 | 10433.44 | P | 219.50 | 2.10 | |
| 51 | V | 1 | 45 | 457795.69 | P | 2519.00 | 0.55 | |
| 51 | V | 2 | --- | | A | | | |
| 52 | Cr | 1 | 45 | 630315.63 | P | 7160.00 | 1.14 | |
| 55 | Mn | 1 | 45 | 230678.30 | P | 2283.00 | 0.99 | |
| 56 | Fe | 1 | 72 | 9324059.00 | A | 98460.00 | 1.06 | |
| 59 | Co | 1 | 72 | 1212203.00 | A | 6805.00 | 0.56 | |
| 60 | Ni | 1 | 72 | 351711.59 | P | 2177.00 | 0.62 | |
| 60 | Ni | 2 | --- | | P | | | |
| 63 | Cu | 1 | 72 | 1002285.00 | P | 6545.00 | 0.65 | |
| 63 | Cu | 2 | --- | | A | | | |
| 66 | Zn | 1 | 72 | 90796.41 | P | 911.50 | 1.00 | |
| 66 | Zn | 2 | --- | | P | | | |
| 72 | Ge | 1 | --- | 84174.54 | P | 218.10 | 0.26 | |
| 72 | Ge | 2 | --- | | P | | | |
| 75 | As | 1 | 72 | 47505.14 | P | 146.90 | 0.31 | |
| 78 | Se | 1 | 72 | 2446.17 | P | 5.81 | 0.24 | |
| 88 | Sr | 2 | 115 | 4329264.00 | A | 16510.00 | 0.38 | Fail |
| 95 | Mo | 2 | 115 | 793385.38 | P | 7041.00 | 0.89 | Fail |
| 107 | Ag | 2 | 115 | 2292808.00 | A | 18450.00 | 0.80 | |
| 111 | Cd | 2 | 115 | 478300.81 | P | 4761.00 | 1.00 | |
| 115 | In | 2 | --- | 5806672.00 | A | 83470.00 | 1.44 | |
| 118 | Sn | 2 | 115 | 1385374.00 | A | 13700.00 | 0.99 | Fail |
| 121 | Sb | 2 | 115 | 1626515.00 | A | 11050.00 | 0.68 | Fail |
| 137 | Ba | 2 | 115 | 617755.13 | P | 5973.00 | 0.97 | Fail |
| 205 | Tl | 2 | 209 | 4418658.00 | A | 26460.00 | 0.60 | |
| 208 | Pb | 2 | 209 | 6017113.00 | A | 44660.00 | 0.74 | Fail |
| 209 | Bi | 2 | --- | 5242206.00 | A | 62730.00 | 1.20 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -146565.48 | 2.03 | 35.48 | -413086.7 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 138027.08 | 0.28 | 138057.45 | 100.0 | 70 - 120 | |
| 45 | Sc | 2 | 4009804.30 | 1.32 | 4152726.00 | 96.6 | 70 - 120 | |
| 72 | Ge | 1 | 84174.54 | 0.26 | 86466.48 | 97.3 | 70 - 120 | |
| 115 | In | 2 | 5806672.50 | 1.44 | 6053544.50 | 95.9 | 70 - 120 | |
| 209 | Bi | 2 | 5242206.00 | 1.20 | 5465338.50 | 95.9 | 70 - 120 | |

# Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: H2-160525
Operator: KL Instrument: ICPMS3
Date Acquired: May 25 2016 12:10 pm
Last Cal. Update: May 25 2016 12:08 pm

**QC&ISTD Elements**

| Element | | | | CPS Mean | | SD | RSD(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | --- | -543714.13 | P | 4760.00 | 0.88 | ISFail |
| 7 | Li | 2 | 45 | 13999000.00 | A | 104800.00 | 0.75 | |
| 9 | Be | 2 | 45 | 3510109.00 | A | 25700.00 | 0.73 | |
| 11 | B | 2 | 45 | 3178960.00 | A | 4170.00 | 0.13 | Fail |
| 23 | Na | 1 | 45 | 5270676.00 | A | 18920.00 | 0.36 | |
| 24 | Mg | 1 | 45 | 2361325.00 | A | 20340.00 | 0.86 | |
| 27 | Al | 1 | 45 | 368.46 | P | 54.72 | 14.85 | Fail |
| 39 | K | 1 | 45 | 1135242.00 | A | 6457.00 | 0.57 | |
| 44 | Ca | 2 | 45 | 4183497.00 | A | 54710.00 | 1.31 | Fail |
| 45 | Sc | 1 | --- | 132029.09 | P | 725.00 | 0.55 | |
| 45 | Sc | 2 | --- | 3834505.00 | A | 36720.00 | 0.96 | |
| 47 | Ti | 1 | 45 | 39105.30 | P | 320.50 | 0.82 | |
| 51 | V | 1 | 45 | 1782271.00 | A | 19030.00 | 1.07 | |
| 51 | V | 2 | --- | | A | | | |
| 52 | Cr | 1 | 45 | 2425389.00 | A | 36400.00 | 1.50 | |
| 55 | Mn | 1 | 45 | 858525.19 | P | 5048.00 | 0.59 | |
| 56 | Fe | 1 | 72 | 11330.67 | P | 1452.00 | 12.82 | Fail |
| 59 | Co | 1 | 72 | 4495479.00 | A | 60820.00 | 1.35 | |
| 60 | Ni | 1 | 72 | 1357582.00 | A | 6819.00 | 0.50 | |
| 60 | Ni | 2 | --- | | A | | | |
| 63 | Cu | 1 | 72 | 3734901.00 | A | 23670.00 | 0.63 | |
| 63 | Cu | 2 | --- | | A | | | |
| 66 | Zn | 1 | 72 | 336265.00 | P | 1247.00 | 0.37 | |
| 66 | Zn | 2 | --- | | A | | | |
| 72 | Ge | 1 | --- | 80382.26 | P | 523.60 | 0.65 | |
| 72 | Ge | 2 | --- | | P | | | |
| 75 | As | 1 | 72 | 179718.50 | P | 1054.00 | 0.59 | |
| 78 | Se | 1 | 72 | 8990.15 | P | 2.06 | 0.02 | |
| 88 | Sr | 2 | 115 | 16507970.00 | A | 174800.00 | 1.06 | Fail |
| 95 | Mo | 2 | 115 | 3146588.00 | A | 6099.00 | 0.19 | |
| 107 | Ag | 2 | 115 | 1749.15 | P | 336.90 | 19.26 | Fail |
| 111 | Cd | 2 | 115 | 1891356.00 | A | 23860.00 | 1.26 | |
| 115 | In | 2 | --- | 5615400.00 | A | 91620.00 | 1.63 | |
| 118 | Sn | 2 | 115 | 5176959.00 | A | 52390.00 | 1.01 | Fail |
| 121 | Sb | 2 | 115 | 1920.27 | P | 297.10 | 15.47 | Fail |
| 137 | Ba | 2 | 115 | 2448660.00 | A | 37150.00 | 1.52 | |
| 205 | Tl | 2 | 209 | 16400440.00 | A | 215200.00 | 1.31 | |
| 208 | Pb | 2 | 209 | 22141960.00 | A | 91540.00 | 0.41 | |
| 209 | Bi | 2 | --- | 4941974.00 | A | 1275.00 | 0.03 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | | -543714.13 | 0.88 | 35.48 | ######### | 70 - | 120 | ISFail |
| 45 | Sc | 1 | | 132029.14 | 0.55 | 138057.45 | 95.6 | 70 - | 120 | |
| 45 | Sc | 2 | | 3834505.00 | 0.96 | 4152726.00 | 92.3 | 70 - | 120 | |
| 72 | Ge | 1 | | 80382.26 | 0.65 | 86466.48 | 93.0 | 70 - | 120 | |
| 115 | In | 2 | | 5615400.50 | 1.63 | 6053544.50 | 92.8 | 70 - | 120 | |
| 209 | Bi | 2 | | 4941974.50 | 0.03 | 5465338.50 | 90.4 | 70 - | 120 | |

# ICSA QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\016ICSA.D\016ICSA.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 12:28 pm | Sample Name: | **ICSA-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | ICSAICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | RL S | RL Aq | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.475 | ppb | 15.90 | 8.00 | 5.00 | |
| 9 | Be | 2 | 45 | 0.187 | ppb | 36.11 | 0.32 | 0.80 | |
| 11 | B | 2 | 45 | 7.836 | ppb | 4.39 | 30.00 | 30.00 | |
| 23 | Na | 1 | 45 | 97600.000 | ppb | 0.93 | ####### | ####### | |
| 24 | Mg | 1 | 45 | 93480.000 | ppb | 0.64 | ####### | ####### | |
| 27 | Al | 1 | 45 | 99390.000 | ppb | 1.42 | ####### | ####### | |
| 39 | K | 1 | 45 | 97760.000 | ppb | 0.48 | ####### | ####### | |
| 44 | Ca | 2 | 45 | 95500.000 | ppb | 2.91 | ####### | ####### | |
| 47 | Ti | 1 | 45 | 2037.000 | ppb | 1.10 | 10.00 | 10.00 | |
| 51 | V | 1 | 45 | 0.265 | ppb | 5.72 | 10.00 | 10.00 | |
| 52 | Cr | 1 | 45 | 0.601 | ppb | 2.34 | 8.00 | 5.00 | |
| 55 | Mn | 1 | 45 | 1.827 | ppb | 6.34 | 8.00 | 10.00 | |
| 56 | Fe | 1 | 72 | 97930.000 | ppb | 1.47 | ####### | ####### | |
| 59 | Co | 1 | 72 | 0.798 | ppb | 4.18 | 8.00 | 10.00 | |
| 60 | Ni | 1 | 72 | 0.656 | ppb | 6.55 | 8.00 | 10.00 | |
| 63 | Cu | 1 | 72 | 0.742 | ppb | 6.34 | 8.00 | 10.00 | |
| 66 | Zn | 1 | 72 | 1.321 | ppb | 9.19 | 10.00 | 5.00 | |
| 75 | As | 1 | 72 | 0.944 | ppb | 6.96 | 4.00 | 5.00 | |
| 78 | Se | 1 | 72 | 0.496 | ppb | 12.40 | 2.00 | 5.00 | |
| 88 | Sr | 2 | 115 | 1.643 | ppb | 6.86 | 10.00 | 10.00 | |
| 95 | Mo | 2 | 115 | 2009.000 | ppb | 3.32 | 8.00 | 5.00 | |
| 107 | Ag | 2 | 115 | 0.164 | ppb | 15.22 | 0.80 | 2.00 | |
| 111 | Cd | 2 | 115 | 0.427 | ppb | 25.76 | 1.20 | 1.00 | |
| 118 | Sn | 2 | 115 | 0.719 | ppb | 10.57 | 10.00 | 10.00 | |
| 121 | Sb | 2 | 115 | 0.415 | ppb | 8.04 | 4.00 | 2.50 | |
| 137 | Ba | 2 | 115 | 0.539 | ppb | 17.01 | 8.00 | 10.00 | |
| 205 | Tl | 2 | 209 | 0.322 | ppb | 24.92 | 4.00 | 1.50 | |
| 208 | Pb | 2 | 209 | 0.595 | ppb | 15.61 | 1.20 | 1.00 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -42.17 | 117.78 | 35.48 | -118.9 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 130375.06 | 0.20 | 138057.45 | 94.4 | 70 - 120 | |
| 45 | Sc | 2 | 3593776.00 | 3.03 | 4152726.00 | 86.5 | 70 - 120 | |
| 72 | Ge | 1 | 77350.31 | 1.04 | 86466.48 | 89.5 | 70 - 120 | |
| 115 | In | 2 | 5162998.50 | 2.55 | 6053544.50 | 85.3 | 70 - 120 | |
| 209 | Bi | 2 | 4403426.00 | 1.15 | 5465338.50 | 80.6 | 70 - 120 | |

# ICS-AB QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\017ICSB.D\017ICSB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 12:34 pm | Sample Name: | **ICSAB-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | ICSBICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.34 | ppb | 7.12 | --- | 80 - | | 120 | |
| 9 | Be | 2 | 45 | 0.09 | ppb | 35.35 | --- | 80 - | | 120 | |
| 11 | B | 2 | 45 | 6.13 | ppb | 2.70 | --- | 80 - | | 120 | |
| 23 | Na | 1 | 45 | 99590.00 | ppb | 0.36 | 100000.00 | 80 - | | 120 | |
| 24 | Mg | 1 | 45 | 93100.00 | ppb | 1.26 | 100000.00 | 80 - | | 120 | |
| 27 | Al | 1 | 45 | 97260.00 | ppb | 2.05 | 100000.00 | 80 - | | 120 | |
| 39 | K | 1 | 45 | 96130.00 | ppb | 1.29 | 100000.00 | 80 - | | 120 | |
| 44 | Ca | 2 | 45 | 95850.00 | ppb | 2.32 | 100000.00 | 80 - | | 120 | |
| 47 | Ti | 1 | 45 | 2010.00 | ppb | 0.85 | --- | 80 - | | 120 | |
| 51 | V | 1 | 45 | 40.76 | ppb | 1.39 | 40.00 | 80 - | | 120 | |
| 52 | Cr | 1 | 45 | 21.45 | ppb | 1.50 | 20.00 | 80 - | | 120 | |
| 55 | Mn | 1 | 45 | 19.86 | ppb | 1.45 | 20.00 | 80 - | | 120 | |
| 56 | Fe | 1 | 72 | 96600.00 | ppb | 0.32 | 100000.00 | 80 - | | 120 | |
| 59 | Co | 1 | 72 | 42.31 | ppb | 2.15 | 40.00 | 80 - | | 120 | |
| 60 | Ni | 1 | 72 | 38.36 | ppb | 2.21 | 40.00 | 80 - | | 120 | |
| 63 | Cu | 1 | 72 | 20.81 | ppb | 0.59 | 20.00 | 80 - | | 120 | |
| 66 | Zn | 1 | 72 | 19.26 | ppb | 2.18 | 20.00 | 80 - | | 120 | |
| 75 | As | 1 | 72 | 20.12 | ppb | 0.97 | 20.00 | 80 - | | 120 | |
| 78 | Se | 1 | 72 | 19.07 | ppb | 4.07 | 20.00 | 80 - | | 120 | |
| 88 | Sr | 2 | 115 | 1.14 | ppb | 2.68 | --- | 80 - | | 120 | |
| 95 | Mo | 2 | 115 | 2038.00 | ppb | 2.92 | --- | 80 - | | 120 | |
| 107 | Ag | 2 | 115 | 17.93 | ppb | 2.43 | 20.00 | 80 - | | 120 | |
| 111 | Cd | 2 | 115 | 9.47 | ppb | 2.98 | 10.00 | 80 - | | 120 | |
| 118 | Sn | 2 | 115 | 0.64 | ppb | 4.29 | --- | 80 - | | 120 | |
| 121 | Sb | 2 | 115 | 0.07 | ppb | 19.08 | --- | 80 - | | 120 | |
| 137 | Ba | 2 | 115 | 0.56 | ppb | 4.44 | --- | 80 - | | 120 | |
| 205 | Tl | 2 | 209 | 0.15 | ppb | 18.24 | --- | 80 - | | 120 | |
| 208 | Pb | 2 | 209 | 0.38 | ppb | 4.51 | --- | 80 - | | 120 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -19.38 | 119.38 | 35.48 | -54.6 | 70 - | | 120 | ISFail |
| 45 | Sc | 1 | 126240.23 | 0.47 | 138057.45 | 91.4 | 70 - | | 120 | |
| 45 | Sc | 2 | 3338833.80 | 2.89 | 4152726.00 | 80.4 | 70 - | | 120 | |
| 72 | Ge | 1 | 75409.73 | 0.27 | 86466.48 | 87.2 | 70 - | | 120 | |
| 115 | In | 2 | 4891670.50 | 2.18 | 6053544.50 | 80.8 | 70 - | | 120 | |
| 209 | Bi | 2 | 4364433.50 | 0.75 | 5465338.50 | 79.9 | 70 - | | 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\020ICV.D\020ICV.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 12:52 pm | Sample Name: | **ICV1-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | ICV ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 132.70 | ppb | 0.90 | 100.00 | 90 - | 110 | 132.7 | Fail |
| 9 | Be | 2 | 45 | 117.60 | ppb | 1.73 | 100.00 | 90 - | 110 | 117.6 | Fail |
| 11 | B | 2 | 45 | 113.80 | ppb | 0.81 | 100.00 | 90 - | 110 | 113.8 | Fail |
| 23 | Na | 1 | 45 | 2726.00 | ppb | 0.62 | 2500.00 | 90 - | 110 | 109.0 | |
| 24 | Mg | 1 | 45 | 2647.00 | ppb | 1.23 | 2500.00 | 90 - | 110 | 105.9 | |
| 27 | Al | 1 | 45 | 2410.00 | ppb | 1.04 | 2500.00 | 90 - | 110 | 96.4 | |
| 39 | K | 1 | 45 | 2505.00 | ppb | 0.30 | 2500.00 | 90 - | 110 | 100.2 | |
| 44 | Ca | 2 | 45 | 2412.00 | ppb | 1.49 | 2500.00 | 90 - | 110 | 96.5 | |
| 47 | Ti | 1 | 45 | 101.30 | ppb | 4.66 | 100.00 | 90 - | 110 | 101.3 | |
| 51 | V | 1 | 45 | 103.90 | ppb | 0.67 | 100.00 | 90 - | 110 | 103.9 | |
| 52 | Cr | 1 | 45 | 107.10 | ppb | 0.93 | 100.00 | 90 - | 110 | 107.1 | |
| 55 | Mn | 1 | 45 | 99.41 | ppb | 1.56 | 100.00 | 90 - | 110 | 99.4 | |
| 56 | Fe | 1 | 72 | 2613.00 | ppb | 1.97 | 2500.00 | 90 - | 110 | 104.5 | |
| 59 | Co | 1 | 72 | 108.40 | ppb | 1.44 | 100.00 | 90 - | 110 | 108.4 | |
| 60 | Ni | 1 | 72 | 105.80 | ppb | 1.03 | 100.00 | 90 - | 110 | 105.8 | |
| 63 | Cu | 1 | 72 | 107.10 | ppb | 0.88 | 100.00 | 90 - | 110 | 107.1 | |
| 66 | Zn | 1 | 72 | 106.60 | ppb | 0.99 | 100.00 | 90 - | 110 | 106.6 | |
| 75 | As | 1 | 72 | 101.80 | ppb | 0.93 | 100.00 | 90 - | 110 | 101.8 | |
| 78 | Se | 1 | 72 | 99.33 | ppb | 1.67 | 100.00 | 90 - | 110 | 99.3 | |
| 88 | Sr | 2 | 115 | 98.82 | ppb | 1.44 | 100.00 | 90 - | 110 | 98.8 | |
| 95 | Mo | 2 | 115 | 94.32 | ppb | 1.06 | 100.00 | 90 - | 110 | 94.3 | |
| 107 | Ag | 2 | 115 | 97.23 | ppb | 1.35 | 100.00 | 90 - | 110 | 97.2 | |
| 111 | Cd | 2 | 115 | 98.36 | ppb | 1.56 | 100.00 | 90 - | 110 | 98.4 | |
| 118 | Sn | 2 | 115 | 102.30 | ppb | 1.81 | 100.00 | 90 - | 110 | 102.3 | |
| 121 | Sb | 2 | 115 | 97.97 | ppb | 2.15 | 100.00 | 90 - | 110 | 98.0 | |
| 137 | Ba | 2 | 115 | 98.20 | ppb | 0.51 | 100.00 | 90 - | 110 | 98.2 | |
| 205 | Tl | 2 | 209 | 97.27 | ppb | 2.15 | 100.00 | 90 - | 110 | 97.3 | |
| 208 | Pb | 2 | 209 | 99.60 | ppb | 1.33 | 100.00 | 90 - | 110 | 99.6 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -14810.84 | 0.66 | 35.48 | -41743.5 | 70 - | 120 | | ISFail |
| 45 | Sc | 1 | 131446.92 | 1.04 | 138057.45 | 95.2 | 70 - | 120 | | |
| 45 | Sc | 2 | 3243742.30 | 1.16 | 4152726.00 | 78.1 | 70 - | 120 | | |
| 72 | Ge | 1 | 81329.92 | 0.15 | 86466.48 | 94.1 | 70 - | 120 | | |
| 115 | In | 2 | 5054618.50 | 1.10 | 6053544.50 | 83.5 | 70 - | 120 | | |
| 209 | Bi | 2 | 5021154.00 | 0.93 | 5465338.50 | 91.9 | 70 - | 120 | | |

# ICB QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\021_ICB.D\021_ICB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 12:58 pm | Sample Name: | **ICB1-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | ICB ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Instrument: | ICPMS3 |

**QC Elements**

| Element | Conc. | RSD(%) | High Limit | Flag |
|---|---|---|---|---|
| 7 Li 2 45 | 0.21 ppb | 11.50 | 2.00 | |
| 9 Be 2 45 | 0.07 ppb | 30.93 | 0.40 | |
| 11 B 2 45 | 5.79 ppb | 2.54 | 10.00 | |
| 23 Na 1 45 | 17.37 ppb | 3.84 | 50.00 | |
| 24 Mg 1 45 | 9.39 ppb | 12.93 | 50.00 | |
| 27 Al 1 45 | 19.04 ppb | 10.83 | 50.00 | Failaq |
| 39 K 1 45 | 14.47 ppb | 9.67 | 50.00 | |
| 44 Ca 2 45 | 30.65 ppb | 6.42 | 50.00 | |
| 47 Ti 1 45 | 0.50 ppb | 41.66 | 4.00 | |
| 51 V 1 45 | 0.09 ppb | 18.61 | 4.00 | |
| 52 Cr 1 45 | 0.10 ppb | 9.68 | 2.00 | |
| 55 Mn 1 45 | 0.11 ppb | 12.43 | 2.00 | |
| 56 Fe 1 72 | 9.60 ppb | 15.76 | 50.00 | |
| 59 Co 1 72 | 0.09 ppb | 17.22 | 2.00 | |
| 60 Ni 1 72 | 0.13 ppb | 3.23 | 2.00 | |
| 63 Cu 1 72 | 0.16 ppb | 7.81 | 2.00 | |
| 66 Zn 1 72 | 0.32 ppb | 13.44 | 4.00 | |
| 75 As 1 72 | 0.11 ppb | 9.69 | 2.00 | |
| 78 Se 1 72 | 0.17 ppb | 39.95 | 0.60 | |
| 88 Sr 2 115 | 0.19 ppb | 6.69 | 4.00 | |
| 95 Mo 2 115 | 0.29 ppb | 7.31 | 2.00 | |
| 107 Ag 2 115 | 0.06 ppb | 3.62 | 0.40 | |
| 111 Cd 2 115 | 0.06 ppb | 9.17 | 0.40 | |
| 118 Sn 2 115 | 0.26 ppb | 1.17 | 20.00 | |
| 121 Sb 2 115 | 0.07 ppb | 20.81 | 2.00 | |
| 137 Ba 2 115 | 0.08 ppb | 29.87 | 2.00 | |
| 205 Tl 2 209 | 0.16 ppb | 10.66 | 2.00 | |
| 208 Pb 2 209 | 0.11 ppb | 9.75 | 0.40 | |

**ISTD Elements**

| Element | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|
| 6 Li 2 RHig | -9.17 | ###### | 35.48 | -25.9 | 70 - 120 | ISFail |
| 45 Sc 1 | 131168.02 | 0.78 | 138057.45 | 95.0 | 70 - 120 | |
| 45 Sc 2 | 3224747.80 | 0.64 | 4152726.00 | 77.7 | 70 - 120 | |
| 72 Ge 1 | 82581.35 | 0.67 | 86466.48 | 95.5 | 70 - 120 | |
| 115 In 2 | 5056024.00 | 0.99 | 6053544.50 | 83.5 | 70 - 120 | |
| 209 Bi 2 | 5057645.00 | 0.63 | 5465338.50 | 92.5 | 70 - 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\022LCVL.D\022LCVL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 01:04 pm | Sample Name: | **ILCVL-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCVLICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 13.42 | ppb | 0.73 | 5.00 | 70 - | 130 | 268.4 | Fail |
| 9 | Be | 2 | 45 | 1.19 | ppb | 0.10 | 1.00 | 70 - | 130 | 119.4 | |
| 11 | B | 2 | 45 | 24.22 | ppb | 1.70 | 20.00 | 70 - | 130 | 121.1 | |
| 23 | Na | 1 | 45 | 114.50 | ppb | 2.61 | 100.00 | 70 - | 130 | 114.5 | |
| 24 | Mg | 1 | 45 | 110.80 | ppb | 0.26 | 100.00 | 70 - | 130 | 110.8 | |
| 27 | Al | 1 | 45 | 102.40 | ppb | 2.04 | 100.00 | 70 - | 130 | 102.4 | |
| 39 | K | 1 | 45 | 106.90 | ppb | 0.62 | 100.00 | 70 - | 130 | 106.9 | |
| 44 | Ca | 2 | 45 | 103.10 | ppb | 2.32 | 100.00 | 70 - | 130 | 103.1 | |
| 47 | Ti | 1 | 45 | 4.82 | ppb | 3.46 | 5.00 | 70 - | 130 | 96.4 | |
| 51 | V | 1 | 45 | 1.06 | ppb | 0.53 | 1.00 | 70 - | 130 | 106.3 | |
| 52 | Cr | 1 | 45 | 5.23 | ppb | 2.32 | 5.00 | 70 - | 130 | 104.7 | |
| 55 | Mn | 1 | 45 | 4.93 | ppb | 1.70 | 5.00 | 70 - | 130 | 98.5 | |
| 56 | Fe | 1 | 72 | 108.20 | ppb | 1.54 | 100.00 | 70 - | 130 | 108.2 | |
| 59 | Co | 1 | 72 | 5.27 | ppb | 2.71 | 5.00 | 70 - | 130 | 105.4 | |
| 60 | Ni | 1 | 72 | 5.22 | ppb | 2.38 | 5.00 | 70 - | 130 | 104.3 | |
| 63 | Cu | 1 | 72 | 5.43 | ppb | 0.54 | 5.00 | 70 - | 130 | 108.6 | |
| 66 | Zn | 1 | 72 | 5.05 | ppb | 1.92 | 5.00 | 70 - | 130 | 101.0 | |
| 75 | As | 1 | 72 | 5.20 | ppb | 1.53 | 5.00 | 70 - | 130 | 104.0 | |
| 78 | Se | 1 | 72 | 5.14 | ppb | 0.67 | 5.00 | 70 - | 130 | 102.8 | |
| 88 | Sr | 2 | 115 | 4.87 | ppb | 2.33 | 5.00 | 70 - | 130 | 97.3 | |
| 95 | Mo | 2 | 115 | 4.85 | ppb | 3.97 | 5.00 | 70 - | 130 | 97.1 | |
| 107 | Ag | 2 | 115 | 1.95 | ppb | 2.53 | 2.00 | 70 - | 130 | 97.6 | |
| 111 | Cd | 2 | 115 | 1.01 | ppb | 7.83 | 1.00 | 70 - | 130 | 100.9 | |
| 118 | Sn | 2 | 115 | 5.11 | ppb | 2.58 | 5.00 | 70 - | 130 | 102.2 | |
| 121 | Sb | 2 | 115 | 1.92 | ppb | 0.54 | 2.00 | 70 - | 130 | 95.9 | |
| 137 | Ba | 2 | 115 | 4.92 | ppb | 1.37 | 5.00 | 70 - | 130 | 98.4 | |
| 205 | Tl | 2 | 209 | 1.02 | ppb | 1.68 | 1.00 | 70 - | 130 | 101.6 | |
| 208 | Pb | 2 | 209 | 1.03 | ppb | 2.46 | 1.00 | 70 - | 130 | 102.7 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigl -1382.16 | 18.54 | 35.48 | -3895.5 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 135459.27 | 1.56 | 138057.45 | 98.1 | 70 - | 120 | |
| 45 | Sc | 2 | 3244468.30 | 1.14 | 4152726.00 | 78.1 | 70 - | 120 | |
| 72 | Ge | 1 | 84631.23 | 0.49 | 86466.48 | 97.9 | 70 - | 120 | |
| 115 | In | 2 | 5076043.50 | 1.11 | 6053544.50 | 83.9 | 70 - | 120 | |
| 209 | Bi | 2 | 5114711.50 | 0.82 | 5465338.50 | 93.6 | 70 - | 120 | |

# PB QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\023__PB.D\023__PB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 01:13 pm | Sample Name: | MB-75167 |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MBLKICPMS_TSDOD |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL | RL | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.114 | ppb | 5.59 | 2.0 | 8.00 | |
| 9 | Be | 2 | 45 | 0.009 | ppb | 11.95 | 0.4 | 1.20 | |
| 11 | B | 2 | 45 | 2.209 | ppb | 1.34 | 10.0 | 30.00 | |
| 23 | Na | 1 | 45 | 16.470 | ppb | 0.70 | 50.0 | ##### | |
| 24 | Mg | 1 | 45 | 7.826 | ppb | 6.38 | 50.0 | ##### | |
| 27 | Al | 1 | 45 | 10.940 | ppb | 2.16 | 50.0 | ##### | |
| 39 | K | 1 | 45 | 14.880 | ppb | 1.74 | 50.0 | ##### | |
| 44 | Ca | 2 | 45 | 26.420 | ppb | 2.15 | 50.0 | ##### | |
| 47 | Ti | 1 | 45 | 0.411 | ppb | 72.93 | 4.0 | 10.00 | |
| 51 | V | 1 | 45 | -0.004 | ppb | 18.75 | 4.0 | 10.00 | |
| 52 | Cr | 1 | 45 | 0.253 | ppb | 1.14 | 2.0 | 8.00 | |
| 55 | Mn | 1 | 45 | 0.106 | ppb | 8.48 | 2.0 | 8.00 | |
| 56 | Fe | 1 | 72 | 15.190 | ppb | 3.28 | 50.0 | ##### | |
| 59 | Co | 1 | 72 | 0.021 | ppb | 7.22 | 2.0 | 8.00 | |
| 60 | Ni | 1 | 72 | 0.162 | ppb | 5.70 | 2.0 | 8.00 | |
| 63 | Cu | 1 | 72 | 0.177 | ppb | 4.90 | 2.0 | 8.00 | |
| 66 | Zn | 1 | 72 | 1.672 | ppb | 3.83 | 4.0 | 10.00 | |
| 75 | As | 1 | 72 | 0.006 | ppb | 19.89 | 2.0 | 4.00 | |
| 78 | Se | 1 | 72 | 0.115 | ppb | 14.19 | 0.6 | 2.00 | |
| 88 | Sr | 2 | 115 | 0.081 | ppb | 2.18 | 4.0 | 10.00 | |
| 95 | Mo | 2 | 115 | 0.139 | ppb | 12.49 | 2.0 | 8.00 | |
| 107 | Ag | 2 | 115 | 0.014 | ppb | 13.04 | 0.4 | 0.80 | |
| 111 | Cd | 2 | 115 | 0.047 | ppb | 25.25 | 0.4 | 1.20 | |
| 118 | Sn | 2 | 115 | 4.080 | ppb | 2.17 | 20.0 | 40.00 | |
| 121 | Sb | 2 | 115 | -0.019 | ppb | 12.37 | 2.0 | 4.00 | |
| 137 | Ba | 2 | 115 | 0.024 | ppb | 2.71 | 2.0 | 8.00 | |
| 205 | Tl | 2 | 209 | 0.038 | ppb | 21.40 | 2.0 | 4.00 | |
| 208 | Pb | 2 | 209 | 0.099 | ppb | 1.24 | 0.4 | 1.20 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHig | 15.24 | 66.41 | 35.48 | 42.9 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 138950.08 | 1.31 | 138057.45 | 100.6 | 70 - 120 | |
| 45 | Sc | 2 | | 3379711.00 | 0.13 | 4152726.00 | 81.4 | 70 - 120 | |
| 72 | Ge | 1 | | 84587.71 | 0.44 | 86466.48 | 97.8 | 70 - 120 | |
| 115 | In | 2 | | 5306128.00 | 1.08 | 6053544.50 | 87.7 | 70 - 120 | |
| 209 | Bi | 2 | | 5285196.00 | 0.95 | 5465338.50 | 96.7 | 70 - 120 | |

# LCS QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\024_LCS.D\024_LCS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 01:19 pm | Sample Name: | **LCS-75167** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 265.50 | ppb | 1.39 | 200.00 | 80 - | 120 | 132.8 | Fail |
| 9 | Be | 2 | 45 | 230.30 | ppb | 1.54 | 200.00 | 80 - | 120 | 115.2 | |
| 11 | B | 2 | 45 | 218.10 | ppb | 2.50 | 200.00 | 80 - | 120 | 109.1 | |
| 23 | Na | 1 | 45 | 5533.00 | ppb | 0.70 | 1000.00 | 80 - | 120 | 553.3 | Fail |
| 24 | Mg | 1 | 45 | 5238.00 | ppb | 1.55 | 1000.00 | 80 - | 120 | 523.8 | Fail |
| 27 | Al | 1 | 45 | 999.50 | ppb | 1.92 | 1000.00 | 80 - | 120 | 100.0 | |
| 39 | K | 1 | 45 | 5086.00 | ppb | 0.67 | 1000.00 | 80 - | 120 | 508.6 | Fail |
| 44 | Ca | 2 | 45 | 5038.00 | ppb | 2.31 | 1000.00 | 80 - | 120 | 503.8 | Fail |
| 47 | Ti | 1 | 45 | 204.20 | ppb | 1.05 | 200.00 | 80 - | 120 | 102.1 | |
| 51 | V | 1 | 45 | 206.00 | ppb | 0.91 | 200.00 | 80 - | 120 | 103.0 | |
| 52 | Cr | 1 | 45 | 209.70 | ppb | 1.37 | 200.00 | 80 - | 120 | 104.9 | |
| 55 | Mn | 1 | 45 | 204.20 | ppb | 0.91 | 200.00 | 80 - | 120 | 102.1 | |
| 56 | Fe | 1 | 72 | 1051.00 | ppb | 0.49 | 1000.00 | 80 - | 120 | 105.1 | |
| 59 | Co | 1 | 72 | 217.10 | ppb | 1.30 | 200.00 | 80 - | 120 | 108.6 | |
| 60 | Ni | 1 | 72 | 211.20 | ppb | 0.77 | 200.00 | 80 - | 120 | 105.6 | |
| 63 | Cu | 1 | 72 | 216.60 | ppb | 0.69 | 200.00 | 80 - | 120 | 108.3 | |
| 66 | Zn | 1 | 72 | 201.20 | ppb | 0.78 | 200.00 | 80 - | 120 | 100.6 | |
| 75 | As | 1 | 72 | 198.50 | ppb | 0.79 | 200.00 | 80 - | 120 | 99.3 | |
| 78 | Se | 1 | 72 | 181.60 | ppb | 1.57 | 200.00 | 80 - | 120 | 90.8 | |
| 88 | Sr | 2 | 115 | 207.20 | ppb | 0.25 | 200.00 | 80 - | 120 | 103.6 | |
| 95 | Mo | 2 | 115 | 196.20 | ppb | 1.95 | 200.00 | 80 - | 120 | 98.1 | |
| 107 | Ag | 2 | 115 | 201.00 | ppb | 1.97 | 200.00 | 80 - | 120 | 100.5 | |
| 111 | Cd | 2 | 115 | 195.40 | ppb | 1.38 | 200.00 | 80 - | 120 | 97.7 | |
| 118 | Sn | 2 | 115 | 207.70 | ppb | 2.03 | 200.00 | 80 - | 120 | 103.9 | |
| 121 | Sb | 2 | 115 | 197.60 | ppb | 1.42 | 200.00 | 80 - | 120 | 98.8 | |
| 137 | Ba | 2 | 115 | 201.00 | ppb | 1.13 | 200.00 | 80 - | 120 | 100.5 | |
| 205 | Tl | 2 | 209 | 207.40 | ppb | 0.74 | 200.00 | 80 - | 120 | 103.7 | |
| 208 | Pb | 2 | 209 | 202.10 | ppb | 1.58 | 200.00 | 80 - | 120 | 101.1 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -63648.56 | 1.20 | 35.48 | -179389.9 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 135627.30 | 0.80 | 138057.45 | 98.2 | 70 - | 120 | |
| 45 | Sc | 2 | 3333592.00 | 1.65 | 4152726.00 | 80.3 | 70 - | 120 | |
| 72 | Ge | 1 | 82920.67 | 0.35 | 86466.48 | 95.9 | 70 - | 120 | |
| 115 | In | 2 | 5124735.00 | 1.45 | 6053544.50 | 84.7 | 70 - | 120 | |
| 209 | Bi | 2 | 4962097.00 | 0.47 | 5465338.50 | 90.8 | 70 - | 120 | |

# LCS QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\025_LCS.D\025_LCS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 01:25 pm | Sample Name: | **LCSD-75167** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCSDICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 268.80 | ppb | 1.11 | 200.00 | 80 - | 120 | 134.4 | Fail |
| 9 | Be | 2 | 45 | 229.90 | ppb | 0.99 | 200.00 | 80 - | 120 | 115.0 | |
| 11 | B | 2 | 45 | 222.90 | ppb | 1.01 | 200.00 | 80 - | 120 | 111.5 | |
| 23 | Na | 1 | 45 | 5547.00 | ppb | 1.01 | 1000.00 | 80 - | 120 | 554.7 | Fail |
| 24 | Mg | 1 | 45 | 5263.00 | ppb | 0.63 | 1000.00 | 80 - | 120 | 526.3 | Fail |
| 27 | Al | 1 | 45 | 1003.00 | ppb | 1.56 | 1000.00 | 80 - | 120 | 100.3 | |
| 39 | K | 1 | 45 | 5171.00 | ppb | 0.48 | 1000.00 | 80 - | 120 | 517.1 | Fail |
| 44 | Ca | 2 | 45 | 5040.00 | ppb | 1.79 | 1000.00 | 80 - | 120 | 504.0 | Fail |
| 47 | Ti | 1 | 45 | 203.60 | ppb | 0.62 | 200.00 | 80 - | 120 | 101.8 | |
| 51 | V | 1 | 45 | 203.30 | ppb | 0.89 | 200.00 | 80 - | 120 | 101.7 | |
| 52 | Cr | 1 | 45 | 207.90 | ppb | 1.21 | 200.00 | 80 - | 120 | 104.0 | |
| 55 | Mn | 1 | 45 | 204.40 | ppb | 1.72 | 200.00 | 80 - | 120 | 102.2 | |
| 56 | Fe | 1 | 72 | 1067.00 | ppb | 0.76 | 1000.00 | 80 - | 120 | 106.7 | |
| 59 | Co | 1 | 72 | 215.70 | ppb | 1.40 | 200.00 | 80 - | 120 | 107.9 | |
| 60 | Ni | 1 | 72 | 211.90 | ppb | 0.78 | 200.00 | 80 - | 120 | 106.0 | |
| 63 | Cu | 1 | 72 | 217.20 | ppb | 1.43 | 200.00 | 80 - | 120 | 108.6 | |
| 66 | Zn | 1 | 72 | 200.20 | ppb | 0.69 | 200.00 | 80 - | 120 | 100.1 | |
| 75 | As | 1 | 72 | 199.80 | ppb | 0.97 | 200.00 | 80 - | 120 | 99.9 | |
| 78 | Se | 1 | 72 | 187.00 | ppb | 1.05 | 200.00 | 80 - | 120 | 93.5 | |
| 88 | Sr | 2 | 115 | 206.70 | ppb | 0.81 | 200.00 | 80 - | 120 | 103.4 | |
| 95 | Mo | 2 | 115 | 192.30 | ppb | 0.22 | 200.00 | 80 - | 120 | 96.2 | |
| 107 | Ag | 2 | 115 | 198.10 | ppb | 0.71 | 200.00 | 80 - | 120 | 99.1 | |
| 111 | Cd | 2 | 115 | 193.60 | ppb | 1.84 | 200.00 | 80 - | 120 | 96.8 | |
| 118 | Sn | 2 | 115 | 207.00 | ppb | 1.61 | 200.00 | 80 - | 120 | 103.5 | |
| 121 | Sb | 2 | 115 | 195.50 | ppb | 1.11 | 200.00 | 80 - | 120 | 97.8 | |
| 137 | Ba | 2 | 115 | 198.90 | ppb | 0.63 | 200.00 | 80 - | 120 | 99.5 | |
| 205 | Tl | 2 | 209 | 210.80 | ppb | 1.04 | 200.00 | 80 - | 120 | 105.4 | |
| 208 | Pb | 2 | 209 | 204.60 | ppb | 1.39 | 200.00 | 80 - | 120 | 102.3 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -64219.47 | 2.09 | 35.48 | -180999.0 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 140421.91 | 0.70 | 138057.45 | 101.7 | 70 - | 120 | |
| 45 | Sc | 2 | 3352217.80 | 1.16 | 4152726.00 | 80.7 | 70 - | 120 | |
| 72 | Ge | 1 | 84473.22 | 0.24 | 86466.48 | 97.7 | 70 - | 120 | |
| 115 | In | 2 | 5205467.00 | 1.89 | 6053544.50 | 86.0 | 70 - | 120 | |
| 209 | Bi | 2 | 5025508.50 | 0.46 | 5465338.50 | 92.0 | 70 - | 120 | |

# DT QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\028DT1.D\028DT1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 01:43 pm | Sample Name: | **1605096-25A SD** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SD ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 25.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 25.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 12.82 | ppb | 2.34 | -848.41 | 90 - 110 | -7.6 | |
| 9 | Be | 2 | 45 | 0.42 | ppb | 6.99 | 1.99 | 90 - 110 | 105.8 | GOOD |
| 11 | B | 2 | 45 | 36.98 | ppb | 3.50 | 164.00 | 90 - 110 | 112.7 | |
| 23 | Na | 1 | 45 | 2996.00 | ppb | 0.99 | 14910.00 | 90 - 110 | 100.5 | GOOD |
| 24 | Mg | 1 | 45 | 2335.00 | ppb | 1.43 | 11690.00 | 90 - 110 | 99.9 | GOOD |
| 27 | Al | 1 | 45 | 11360.00 | ppb | 2.04 | 58020.00 | 90 - 110 | 97.9 | GOOD |
| 39 | K | 1 | 45 | 2290.00 | ppb | 2.41 | 11410.00 | 90 - 110 | 100.4 | GOOD |
| 44 | Ca | 2 | 45 | 26400.00 | ppb | 1.42 | 128900.00 | 90 - 110 | 102.4 | GOOD |
| 47 | Ti | 1 | 45 | 41.07 | ppb | 5.37 | 191.20 | 90 - 110 | 107.4 | GOOD |
| 51 | V | 1 | 45 | 22.58 | ppb | 2.48 | 110.80 | 90 - 110 | 101.9 | GOOD |
| 52 | Cr | 1 | 45 | 13.60 | ppb | 1.68 | 66.46 | 90 - 110 | 102.3 | GOOD |
| 55 | Mn | 1 | 45 | 8.87 | ppb | 3.13 | 42.90 | 90 - 110 | 103.3 | GOOD |
| 56 | Fe | 1 | 72 | 15180.00 | ppb | 2.69 | 76410.00 | 90 - 110 | 99.3 | GOOD |
| 59 | Co | 1 | 72 | 1.18 | ppb | 3.95 | 5.72 | 90 - 110 | 103.2 | GOOD |
| 60 | Ni | 1 | 72 | 2.77 | ppb | 1.01 | 13.46 | 90 - 110 | 102.9 | GOOD |
| 63 | Cu | 1 | 72 | 2.49 | ppb | 1.04 | 11.45 | 90 - 110 | 108.7 | GOOD |
| 66 | Zn | 1 | 72 | 15.07 | ppb | 0.81 | 64.32 | 90 - 110 | 117.1 | |
| 75 | As | 1 | 72 | 7.56 | ppb | 0.47 | 36.30 | 90 - 110 | 104.2 | GOOD |
| 78 | Se | 1 | 72 | 3.61 | ppb | 7.98 | 19.12 | 90 - 110 | 94.5 | GOOD |
| 88 | Sr | 2 | 115 | 1005.00 | ppb | 2.71 | 5046.00 | 90 - 110 | 99.6 | GOOD |
| 95 | Mo | 2 | 115 | 0.43 | ppb | 8.73 | 2.03 | 90 - 110 | 105.4 | GOOD |
| 107 | Ag | 2 | 115 | 0.04 | ppb | 10.38 | 0.12 | 90 - 110 | 165.7 | |
| 111 | Cd | 2 | 115 | 0.13 | ppb | 30.79 | 0.39 | 90 - 110 | 165.4 | |
| 118 | Sn | 2 | 115 | 1.35 | ppb | 5.51 | 6.08 | 90 - 110 | 111.0 | |
| 121 | Sb | 2 | 115 | 0.04 | ppb | 7.48 | 0.16 | 90 - 110 | 121.8 | |
| 137 | Ba | 2 | 115 | 121.10 | ppb | 2.99 | 608.50 | 90 - 110 | 99.5 | GOOD |
| 205 | Tl | 2 | 209 | 0.14 | ppb | 3.28 | 0.53 | 90 - 110 | 137.3 | |
| 208 | Pb | 2 | 209 | 9.87 | ppb | 1.92 | 50.79 | 90 - 110 | 97.1 | GOOD |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHig | -848.41 | 10.62 | 35.48 | -2391.2 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | | 129534.38 | 1.03 | 138057.45 | 93.8 | 70 - | 120 | |
| 45 | Sc | 2 | | 3098517.00 | 2.81 | 4152726.00 | 74.6 | 70 - | 120 | |
| 72 | Ge | 1 | | 80793.95 | 0.82 | 86466.48 | 93.4 | 70 - | 120 | |
| 115 | In | 2 | | 4839998.50 | 1.41 | 6053544.50 | 80.0 | 70 - | 120 | |
| 209 | Bi | 2 | | 4760438.50 | 1.01 | 5465338.50 | 87.1 | 70 - | 120 | |

# PDS QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\038_PDS.D\038_PDS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 02:42 pm | Sample Name: | **1605096-25A PDS** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | PDS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 292.20 | ppb | 1.09 | -28273.46 | 200 | 75-125 | ###### | Fail |
| 9 | Be | 2 | 45 | 199.90 | ppb | 1.79 | 1.99 | 200 | 75-125 | 99.0 | |
| 11 | B | 2 | 45 | 329.70 | ppb | 1.97 | 164.00 | 200 | 75-125 | 82.9 | |
| 23 | Na | 1 | 45 | 19190.00 | ppb | 1.05 | 14910.00 | 5000 | 75-125 | 85.6 | |
| 24 | Mg | 1 | 45 | 16160.00 | ppb | 1.27 | 11690.00 | 5000 | 75-125 | 89.4 | |
| 27 | Al | 1 | 45 | 61090.00 | ppb | 1.96 | 58020.00 | 5000 | 75-125 | 61.4 | Fail |
| 39 | K | 1 | 45 | 16090.00 | ppb | 0.08 | 11410.00 | 5000 | 75-125 | 93.6 | |
| 44 | Ca | 2 | 45 | 131700.00 | ppb | 2.24 | 128900.00 | 5000 | 75-125 | 56.0 | Fail |
| 47 | Ti | 1 | 45 | 386.80 | ppb | 1.79 | 191.20 | 200 | 75-125 | 97.8 | |
| 51 | V | 1 | 45 | 308.20 | ppb | 1.34 | 110.80 | 200 | 75-125 | 98.7 | |
| 52 | Cr | 1 | 45 | 263.90 | ppb | 0.53 | 66.46 | 200 | 75-125 | 98.7 | |
| 55 | Mn | 1 | 45 | 229.00 | ppb | 0.80 | 42.90 | 200 | 75-125 | 93.0 | |
| 56 | Fe | 1 | 72 | 79690.00 | ppb | 1.38 | 76410.00 | 5000 | 75-125 | 65.6 | Fail |
| 59 | Co | 1 | 72 | 211.10 | ppb | 0.46 | 5.72 | 200 | 75-125 | 102.7 | |
| 60 | Ni | 1 | 72 | 208.40 | ppb | 0.31 | 13.46 | 200 | 75-125 | 97.5 | |
| 63 | Cu | 1 | 72 | 203.20 | ppb | 0.75 | 11.45 | 200 | 75-125 | 95.9 | |
| 66 | Zn | 1 | 72 | 243.00 | ppb | 0.87 | 64.32 | 200 | 75-125 | 89.3 | |
| 75 | As | 1 | 72 | 232.20 | ppb | 0.41 | 36.30 | 200 | 75-125 | 98.0 | |
| 78 | Se | 1 | 72 | 197.60 | ppb | 1.10 | 19.12 | 200 | 75-125 | 89.2 | |
| 88 | Sr | 2 | 115 | 5224.00 | ppb | 2.68 | 5046.00 | 200 | 75-125 | 89.0 | |
| 95 | Mo | 2 | 115 | 188.40 | ppb | 2.43 | 2.03 | 200 | 75-125 | 93.2 | |
| 107 | Ag | 2 | 115 | 177.20 | ppb | 2.18 | 0.12 | 200 | 75-125 | 88.5 | |
| 111 | Cd | 2 | 115 | 180.20 | ppb | 2.88 | 0.39 | 200 | 75-125 | 89.9 | |
| 118 | Sn | 2 | 115 | 204.90 | ppb | 2.35 | 6.08 | 200 | 75-125 | 99.4 | |
| 121 | Sb | 2 | 115 | 187.10 | ppb | 2.25 | 0.16 | 200 | 75-125 | 93.5 | |
| 137 | Ba | 2 | 115 | 807.10 | ppb | 2.41 | 608.50 | 200 | 75-125 | 99.3 | |
| 205 | Tl | 2 | 209 | 207.80 | ppb | 0.64 | 0.53 | 200 | 75-125 | 103.6 | |
| 208 | Pb | 2 | 209 | 251.80 | ppb | 1.22 | 50.79 | 200 | 75-125 | 100.5 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -28273.46 | 2.85 | 35.48 | -79687.2 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 138213.80 | 0.50 | 138057.45 | 100.1 | 70 - 120 | |
| 45 | Sc | 2 | 3186713.30 | 2.32 | 4152726.00 | 76.7 | 70 - 120 | |
| 72 | Ge | 1 | 81909.52 | 0.28 | 86466.48 | 94.7 | 70 - 120 | |
| 115 | In | 2 | 5124928.50 | 2.46 | 6053544.50 | 84.7 | 70 - 120 | |
| 209 | Bi | 2 | 4698154.00 | 1.31 | 5465338.50 | 86.0 | 70 - 120 | |

# MS/MSD QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\039_MS.D\039_MS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 02:48 pm | Sample Name: | **1605096-25A MS** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 306.20 | ppb | 1.47 | ######## | 200 | 80-120 | ###### | Fail |
| 9 | Be | 2 | 45 | 204.90 | ppb | 1.98 | 1.99 | 200 | 80-120 | 101.5 | |
| 11 | B | 2 | 45 | 326.70 | ppb | 2.55 | 164.00 | 200 | 80-120 | 81.4 | |
| 23 | Na | 1 | 45 | 18670.00 | ppb | 3.14 | 14910.00 | 1000 | 80-120 | 376.0 | Fail |
| 24 | Mg | 1 | 45 | 17150.00 | ppb | 3.98 | 11690.00 | 1000 | 80-120 | 546.0 | Fail |
| 27 | Al | 1 | 45 | 67470.00 | ppb | 5.08 | 58020.00 | 1000 | 80-120 | 945.0 | Fail |
| 39 | K | 1 | 45 | 16470.00 | ppb | 4.12 | 11410.00 | 1000 | 80-120 | 506.0 | Fail |
| 44 | Ca | 2 | 45 | 125300.00 | ppb | 2.42 | ######## | 1000 | 80-120 | -360.0 | Fail |
| 47 | Ti | 1 | 45 | 309.40 | ppb | 5.04 | 191.20 | 200 | 80-120 | 59.1 | Fail |
| 51 | V | 1 | 45 | 302.20 | ppb | 3.61 | 110.80 | 200 | 80-120 | 95.7 | |
| 52 | Cr | 1 | 45 | 265.30 | ppb | 4.31 | 66.46 | 200 | 80-120 | 99.4 | |
| 55 | Mn | 1 | 45 | 234.20 | ppb | 4.36 | 42.90 | 200 | 80-120 | 95.6 | |
| 56 | Fe | 1 | 72 | 53960.00 | ppb | 4.05 | 76410.00 | 1000 | 80-120 | ###### | Fail |
| 59 | Co | 1 | 72 | 212.20 | ppb | 3.24 | 5.72 | 200 | 80-120 | 103.2 | |
| 60 | Ni | 1 | 72 | 212.60 | ppb | 3.68 | 13.46 | 200 | 80-120 | 99.6 | |
| 63 | Cu | 1 | 72 | 208.00 | ppb | 3.43 | 11.45 | 200 | 80-120 | 98.3 | |
| 66 | Zn | 1 | 72 | 241.20 | ppb | 2.71 | 64.32 | 200 | 80-120 | 88.4 | |
| 75 | As | 1 | 72 | 215.60 | ppb | 3.22 | 36.30 | 200 | 80-120 | 89.7 | |
| 78 | Se | 1 | 72 | 197.10 | ppb | 1.90 | 19.12 | 200 | 80-120 | 89.0 | |
| 88 | Sr | 2 | 115 | 3848.00 | ppb | 2.62 | 5046.00 | 200 | 80-120 | -599.0 | Fail |
| 95 | Mo | 2 | 115 | 171.20 | ppb | 1.58 | 2.03 | 200 | 80-120 | 84.6 | |
| 107 | Ag | 2 | 115 | 182.90 | ppb | 1.37 | 0.12 | 200 | 80-120 | 91.4 | |
| 111 | Cd | 2 | 115 | 187.10 | ppb | 1.71 | 0.39 | 200 | 80-120 | 93.4 | |
| 118 | Sn | 2 | 115 | 201.40 | ppb | 2.43 | 6.08 | 200 | 80-120 | 97.7 | |
| 121 | Sb | 2 | 115 | 42.99 | ppb | 2.08 | 0.16 | 200 | 80-120 | 21.4 | Fail |
| 137 | Ba | 2 | 115 | 786.90 | ppb | 2.15 | 608.50 | 200 | 80-120 | 89.2 | |
| 205 | Tl | 2 | 209 | 212.60 | ppb | 1.29 | 0.53 | 200 | 80-120 | 106.0 | |
| 208 | Pb | 2 | 209 | 253.70 | ppb | 1.54 | 50.79 | 200 | 80-120 | 101.5 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -60936.06 | 2.42 | 35.48 | ######## | 70 - 120 | ISFail |
| 45 | Sc | 1 | 147209.28 | 3.34 | 138057.45 | 106.6 | 70 - 120 | |
| 45 | Sc | 2 | 3330153.00 | 2.22 | 4152726.00 | 80.2 | 70 - 120 | |
| 72 | Ge | 1 | 86370.90 | 3.06 | 86466.48 | 99.9 | 70 - 120 | |
| 115 | In | 2 | 5348178.50 | 1.48 | 6053544.50 | 88.3 | 70 - 120 | |
| 209 | Bi | 2 | 4955914.50 | 1.00 | 5465338.50 | 90.7 | 70 - 120 | |

# MS/MSD QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\040_MS.D\040_MS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 02:54 pm | Sample Name: | **1605096-25A MSD** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MSD ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 306.10 | ppb | 0.99 | ######## | 200 | 80-120 | ###### | Fail |
| 9 | Be | 2 | 45 | 202.40 | ppb | 1.24 | 1.99 | 200 | 80-120 | 100.2 | |
| 11 | B | 2 | 45 | 324.70 | ppb | 2.14 | 164.00 | 200 | 80-120 | 80.4 | |
| 23 | Na | 1 | 45 | 18310.00 | ppb | 3.15 | 14910.00 | 1000 | 80-120 | 340.0 | Fail |
| 24 | Mg | 1 | 45 | 16690.00 | ppb | 2.70 | 11690.00 | 1000 | 80-120 | 500.0 | Fail |
| 27 | Al | 1 | 45 | 65010.00 | ppb | 2.71 | 58020.00 | 1000 | 80-120 | 699.0 | Fail |
| 39 | K | 1 | 45 | 15950.00 | ppb | 1.27 | 11410.00 | 1000 | 80-120 | 454.0 | Fail |
| 44 | Ca | 2 | 45 | 135000.00 | ppb | 2.34 | ######## | 1000 | 80-120 | 610.0 | Fail |
| 47 | Ti | 1 | 45 | 289.50 | ppb | 2.94 | 191.20 | 200 | 80-120 | 49.2 | Fail |
| 51 | V | 1 | 45 | 301.00 | ppb | 2.08 | 110.80 | 200 | 80-120 | 95.1 | |
| 52 | Cr | 1 | 45 | 262.20 | ppb | 2.26 | 66.46 | 200 | 80-120 | 97.9 | |
| 55 | Mn | 1 | 45 | 233.50 | ppb | 2.50 | 42.90 | 200 | 80-120 | 95.3 | |
| 56 | Fe | 1 | 72 | 54240.00 | ppb | 3.62 | 76410.00 | 1000 | 80-120 | ###### | Fail |
| 59 | Co | 1 | 72 | 208.00 | ppb | 2.64 | 5.72 | 200 | 80-120 | 101.1 | |
| 60 | Ni | 1 | 72 | 208.00 | ppb | 1.78 | 13.46 | 200 | 80-120 | 97.3 | |
| 63 | Cu | 1 | 72 | 203.70 | ppb | 2.50 | 11.45 | 200 | 80-120 | 96.1 | |
| 66 | Zn | 1 | 72 | 234.90 | ppb | 1.53 | 64.32 | 200 | 80-120 | 85.3 | |
| 75 | As | 1 | 72 | 214.60 | ppb | 1.73 | 36.30 | 200 | 80-120 | 89.2 | |
| 78 | Se | 1 | 72 | 191.30 | ppb | 3.40 | 19.12 | 200 | 80-120 | 86.1 | |
| 88 | Sr | 2 | 115 | 3681.00 | ppb | 2.07 | 5046.00 | 200 | 80-120 | -682.5 | Fail |
| 95 | Mo | 2 | 115 | 169.60 | ppb | 2.42 | 2.03 | 200 | 80-120 | 83.8 | |
| 107 | Ag | 2 | 115 | 182.90 | ppb | 1.79 | 0.12 | 200 | 80-120 | 91.4 | |
| 111 | Cd | 2 | 115 | 184.30 | ppb | 2.31 | 0.39 | 200 | 80-120 | 92.0 | |
| 118 | Sn | 2 | 115 | 197.80 | ppb | 1.58 | 6.08 | 200 | 80-120 | 95.9 | |
| 121 | Sb | 2 | 115 | 47.07 | ppb | 1.84 | 0.16 | 200 | 80-120 | 23.5 | Fail |
| 137 | Ba | 2 | 115 | 612.20 | ppb | 1.31 | 608.50 | 200 | 80-120 | 1.9 | Fail |
| 205 | Tl | 2 | 209 | 209.50 | ppb | 1.36 | 0.53 | 200 | 80-120 | 104.5 | |
| 208 | Pb | 2 | 209 | 249.20 | ppb | 0.56 | 50.79 | 200 | 80-120 | 99.2 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -57666.63 | 3.82 | 35.48 | ######## | 70 - 120 | ISFail |
| 45 | Sc | 1 | 135450.27 | 1.50 | 138057.45 | 98.1 | 70 - 120 | |
| 45 | Sc | 2 | 3119073.00 | 2.31 | 4152726.00 | 75.1 | 70 - 120 | |
| 72 | Ge | 1 | 80387.88 | 1.58 | 86466.48 | 93.0 | 70 - 120 | |
| 115 | In | 2 | 4999808.00 | 1.09 | 6053544.50 | 82.6 | 70 - 120 | |
| 209 | Bi | 2 | 4706235.00 | 0.48 | 5465338.50 | 86.1 | 70 - 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\041CCV1.D\041CCV1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 03:00 pm | Sample Name: | **CCV1-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCV ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 257.50 | ppb | 0.45 | 200.00 | 90 - | 110 | 128.8 | Fail |
| 9 | Be | 2 | 45 | 230.30 | ppb | 2.44 | 200.00 | 90 - | 110 | 115.2 | Fail |
| 11 | B | 2 | 45 | 210.60 | ppb | 2.71 | 200.00 | 90 - | 110 | 105.3 | |
| 23 | Na | 1 | 45 | 5402.00 | ppb | 0.74 | 5000.00 | 90 - | 110 | 108.0 | |
| 24 | Mg | 1 | 45 | 5092.00 | ppb | 0.86 | 5000.00 | 90 - | 110 | 101.8 | |
| 27 | Al | 1 | 45 | 4814.00 | ppb | 0.34 | 5000.00 | 90 - | 110 | 96.3 | |
| 39 | K | 1 | 45 | 5125.00 | ppb | 0.59 | 5000.00 | 90 - | 110 | 102.5 | |
| 44 | Ca | 2 | 45 | 5132.00 | ppb | 2.18 | 5000.00 | 90 - | 110 | 102.6 | |
| 47 | Ti | 1 | 45 | 202.50 | ppb | 1.72 | 200.00 | 90 - | 110 | 101.3 | |
| 51 | V | 1 | 45 | 203.10 | ppb | 0.39 | 200.00 | 90 - | 110 | 101.6 | |
| 52 | Cr | 1 | 45 | 207.20 | ppb | 0.80 | 200.00 | 90 - | 110 | 103.6 | |
| 55 | Mn | 1 | 45 | 202.50 | ppb | 0.33 | 200.00 | 90 - | 110 | 101.3 | |
| 56 | Fe | 1 | 72 | 5141.00 | ppb | 1.27 | 5000.00 | 90 - | 110 | 102.8 | |
| 59 | Co | 1 | 72 | 212.80 | ppb | 0.28 | 200.00 | 90 - | 110 | 106.4 | |
| 60 | Ni | 1 | 72 | 210.40 | ppb | 0.29 | 200.00 | 90 - | 110 | 105.2 | |
| 63 | Cu | 1 | 72 | 215.00 | ppb | 0.83 | 200.00 | 90 - | 110 | 107.5 | |
| 66 | Zn | 1 | 72 | 212.10 | ppb | 1.31 | 200.00 | 90 - | 110 | 106.1 | |
| 75 | As | 1 | 72 | 209.50 | ppb | 0.46 | 200.00 | 90 - | 110 | 104.8 | |
| 78 | Se | 1 | 72 | 201.20 | ppb | 0.93 | 200.00 | 90 - | 110 | 100.6 | |
| 88 | Sr | 2 | 115 | 208.70 | ppb | 2.12 | 200.00 | 90 - | 110 | 104.4 | |
| 95 | Mo | 2 | 115 | 193.00 | ppb | 1.83 | 200.00 | 90 - | 110 | 96.5 | |
| 107 | Ag | 2 | 115 | 199.50 | ppb | 1.62 | 200.00 | 90 - | 110 | 99.8 | |
| 111 | Cd | 2 | 115 | 200.40 | ppb | 2.01 | 200.00 | 90 - | 110 | 100.2 | |
| 118 | Sn | 2 | 115 | 202.00 | ppb | 2.09 | 200.00 | 90 - | 110 | 101.0 | |
| 121 | Sb | 2 | 115 | 201.60 | ppb | 2.05 | 200.00 | 90 - | 110 | 100.8 | |
| 137 | Ba | 2 | 115 | 203.20 | ppb | 2.52 | 200.00 | 90 - | 110 | 101.6 | |
| 205 | Tl | 2 | 209 | 207.80 | ppb | 1.71 | 200.00 | 90 - | 110 | 103.9 | |
| 208 | Pb | 2 | 209 | 202.90 | ppb | 2.08 | 200.00 | 90 - | 110 | 101.5 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -58255.70 | 2.61 | 35.48 | -164190.4 | 70 - | 120 | | ISFail |
| 45 | Sc | 1 | 139384.48 | 0.65 | 138057.45 | 101.0 | 70 - | 120 | | |
| 45 | Sc | 2 | 3205460.80 | 2.07 | 4152726.00 | 77.2 | 70 - | 120 | | |
| 72 | Ge | 1 | 85838.23 | 0.58 | 86466.48 | 99.3 | 70 - | 120 | | |
| 115 | In | 2 | 5231003.00 | 2.21 | 6053544.50 | 86.4 | 70 - | 120 | | |
| 209 | Bi | 2 | 5123227.00 | 1.40 | 5465338.50 | 93.7 | 70 - | 120 | | |

# CCB QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\042_CCB.D\042_CCB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 03:06 pm | Sample Name: | **CCB1-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCB ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL S | MDL Aq | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.433 | ppb | 10.59 | 2.00 | 2.00 | |
| 9 | Be | 2 | 45 | 0.210 | ppb | 6.78 | 0.40 | 0.30 | |
| 11 | B | 2 | 45 | 8.140 | ppb | 3.37 | 10.00 | 10.00 | |
| 23 | Na | 1 | 45 | 18.440 | ppb | 3.23 | 50.00 | ##### | |
| 24 | Mg | 1 | 45 | 10.770 | ppb | 7.42 | 50.00 | ##### | |
| 27 | Al | 1 | 45 | 42.930 | ppb | 4.75 | 50.00 | 10.00 | FailAq |
| 39 | K | 1 | 45 | 17.510 | ppb | 4.30 | 50.00 | ##### | |
| 44 | Ca | 2 | 45 | 87.150 | ppb | 9.51 | 50.00 | ##### | Failsoil |
| 47 | Ti | 1 | 45 | 0.409 | ppb | 24.12 | 4.00 | 3.00 | |
| 51 | V | 1 | 45 | 0.255 | ppb | 1.93 | 4.00 | 3.00 | |
| 52 | Cr | 1 | 45 | 0.271 | ppb | 4.16 | 2.00 | 2.00 | |
| 55 | Mn | 1 | 45 | 0.282 | ppb | 5.83 | 2.00 | 3.00 | |
| 56 | Fe | 1 | 72 | 32.540 | ppb | 5.08 | 50.00 | 30.00 | FailAq |
| 59 | Co | 1 | 72 | 0.248 | ppb | 5.48 | 2.00 | 3.00 | |
| 60 | Ni | 1 | 72 | 0.244 | ppb | 9.64 | 2.00 | 3.00 | |
| 63 | Cu | 1 | 72 | 0.283 | ppb | 6.39 | 2.00 | 2.00 | |
| 66 | Zn | 1 | 72 | 1.976 | ppb | 7.02 | 4.00 | 2.00 | |
| 75 | As | 1 | 72 | 0.298 | ppb | 4.53 | 2.00 | 2.00 | |
| 78 | Se | 1 | 72 | 0.390 | ppb | 27.96 | 0.60 | 2.00 | |
| 88 | Sr | 2 | 115 | 1.779 | ppb | 10.85 | 4.00 | 3.00 | |
| 95 | Mo | 2 | 115 | 0.269 | ppb | 5.92 | 2.00 | 2.00 | |
| 107 | Ag | 2 | 115 | 0.200 | ppb | 16.49 | 0.40 | 1.00 | |
| 111 | Cd | 2 | 115 | 0.165 | ppb | 4.08 | 0.40 | 0.30 | |
| 118 | Sn | 2 | 115 | 0.320 | ppb | 8.34 | 20.00 | 3.00 | |
| 121 | Sb | 2 | 115 | 0.214 | ppb | 1.57 | 2.00 | 0.80 | |
| 137 | Ba | 2 | 115 | 0.409 | ppb | 17.19 | 2.00 | 3.00 | |
| 205 | Tl | 2 | 209 | 0.363 | ppb | 9.75 | 2.00 | 0.50 | |
| 208 | Pb | 2 | 209 | 0.288 | ppb | 10.51 | 0.40 | 0.30 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigh | -65.03 | 9.06 | 35.48 | -183.3 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 139664.42 | 1.41 | 138057.45 | 101.2 | 70 - 120 | |
| 45 | Sc | 2 | | 3457188.00 | 1.46 | 4152726.00 | 83.3 | 70 - 120 | |
| 72 | Ge | 1 | | 86696.27 | 1.74 | 86466.48 | 100.3 | 70 - 120 | |
| 115 | In | 2 | | 5560422.00 | 1.08 | 6053544.50 | 91.9 | 70 - 120 | |
| 209 | Bi | 2 | | 5387535.50 | 0.59 | 5465338.50 | 98.6 | 70 - 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\043LCVL.D\043LCVL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 03:12 pm | Sample Name: | **LCVL1-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCVLICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 12.40 | ppb | 2.28 | 5.00 | 70 - | 130 | 248.0 | Fail |
| 9 | Be | 2 | 45 | 1.22 | ppb | 7.42 | 1.00 | 70 - | 130 | 122.1 | |
| 11 | B | 2 | 45 | 23.03 | ppb | 3.21 | 20.00 | 70 - | 130 | 115.2 | |
| 23 | Na | 1 | 45 | 111.10 | ppb | 2.30 | 100.00 | 70 - | 130 | 111.1 | |
| 24 | Mg | 1 | 45 | 104.60 | ppb | 1.42 | 100.00 | 70 - | 130 | 104.6 | |
| 27 | Al | 1 | 45 | 114.50 | ppb | 5.19 | 100.00 | 70 - | 130 | 114.5 | |
| 39 | K | 1 | 45 | 106.70 | ppb | 2.79 | 100.00 | 70 - | 130 | 106.7 | |
| 44 | Ca | 2 | 45 | 133.40 | ppb | 5.49 | 100.00 | 70 - | 130 | 133.4 | Fail |
| 47 | Ti | 1 | 45 | 5.17 | ppb | 15.21 | 5.00 | 70 - | 130 | 103.3 | |
| 51 | V | 1 | 45 | 1.10 | ppb | 7.94 | 1.00 | 70 - | 130 | 109.8 | |
| 52 | Cr | 1 | 45 | 5.35 | ppb | 0.54 | 5.00 | 70 - | 130 | 107.1 | |
| 55 | Mn | 1 | 45 | 5.06 | ppb | 3.50 | 5.00 | 70 - | 130 | 101.3 | |
| 56 | Fe | 1 | 72 | 117.60 | ppb | 0.47 | 100.00 | 70 - | 130 | 117.6 | |
| 59 | Co | 1 | 72 | 5.21 | ppb | 2.27 | 5.00 | 70 - | 130 | 104.2 | |
| 60 | Ni | 1 | 72 | 5.31 | ppb | 1.44 | 5.00 | 70 - | 130 | 106.2 | |
| 63 | Cu | 1 | 72 | 5.40 | ppb | 0.49 | 5.00 | 70 - | 130 | 107.9 | |
| 66 | Zn | 1 | 72 | 6.15 | ppb | 6.56 | 5.00 | 70 - | 130 | 123.1 | |
| 75 | As | 1 | 72 | 5.30 | ppb | 1.29 | 5.00 | 70 - | 130 | 106.1 | |
| 78 | Se | 1 | 72 | 5.41 | ppb | 7.33 | 5.00 | 70 - | 130 | 108.1 | |
| 88 | Sr | 2 | 115 | 5.90 | ppb | 4.12 | 5.00 | 70 - | 130 | 118.0 | |
| 95 | Mo | 2 | 115 | 4.86 | ppb | 5.28 | 5.00 | 70 - | 130 | 97.1 | |
| 107 | Ag | 2 | 115 | 1.99 | ppb | 1.99 | 2.00 | 70 - | 130 | 99.7 | |
| 111 | Cd | 2 | 115 | 1.04 | ppb | 2.74 | 1.00 | 70 - | 130 | 103.6 | |
| 118 | Sn | 2 | 115 | 5.06 | ppb | 2.31 | 5.00 | 70 - | 130 | 101.3 | |
| 121 | Sb | 2 | 115 | 2.04 | ppb | 2.42 | 2.00 | 70 - | 130 | 101.8 | |
| 137 | Ba | 2 | 115 | 5.12 | ppb | 3.57 | 5.00 | 70 - | 130 | 102.5 | |
| 205 | Tl | 2 | 209 | 1.09 | ppb | 5.30 | 1.00 | 70 - | 130 | 108.6 | |
| 208 | Pb | 2 | 209 | 1.13 | ppb | 4.50 | 1.00 | 70 - | 130 | 112.8 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigh | -1497.45 | 11.42 | 35.48 | -4220.5 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | | 142045.39 | 1.34 | 138057.45 | 102.9 | 70 - | 120 | |
| 45 | Sc | 2 | | 3463241.30 | 1.23 | 4152726.00 | 83.4 | 70 - | 120 | |
| 72 | Ge | 1 | | 88739.16 | 0.94 | 86466.48 | 102.6 | 70 - | 120 | |
| 115 | In | 2 | | 5506156.00 | 0.93 | 6053544.50 | 91.0 | 70 - | 120 | |
| 209 | Bi | 2 | | 5359035.00 | 1.62 | 5465338.50 | 98.1 | 70 - | 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\054CCV1.D\054CCV1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 04:18 pm | Sample Name: | CCV2-160525 |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCV ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 225.40 | ppb | 0.21 | 200.00 | 90 - | 110 | 112.7 | Fail |
| 9 | Be | 2 | 45 | 211.30 | ppb | 1.77 | 200.00 | 90 - | 110 | 105.7 | |
| 11 | B | 2 | 45 | 198.60 | ppb | 2.38 | 200.00 | 90 - | 110 | 99.3 | |
| 23 | Na | 1 | 45 | 5226.00 | ppb | 0.92 | 5000.00 | 90 - | 110 | 104.5 | |
| 24 | Mg | 1 | 45 | 4977.00 | ppb | 1.10 | 5000.00 | 90 - | 110 | 99.5 | |
| 27 | Al | 1 | 45 | 4873.00 | ppb | 1.46 | 5000.00 | 90 - | 110 | 97.5 | |
| 39 | K | 1 | 45 | 5113.00 | ppb | 0.41 | 5000.00 | 90 - | 110 | 102.3 | |
| 44 | Ca | 2 | 45 | 5051.00 | ppb | 1.81 | 5000.00 | 90 - | 110 | 101.0 | |
| 47 | Ti | 1 | 45 | 201.50 | ppb | 1.99 | 200.00 | 90 - | 110 | 100.8 | |
| 51 | V | 1 | 45 | 198.70 | ppb | 1.14 | 200.00 | 90 - | 110 | 99.4 | |
| 52 | Cr | 1 | 45 | 200.70 | ppb | 0.78 | 200.00 | 90 - | 110 | 100.4 | |
| 55 | Mn | 1 | 45 | 202.80 | ppb | 1.25 | 200.00 | 90 - | 110 | 101.4 | |
| 56 | Fe | 1 | 72 | 5102.00 | ppb | 1.59 | 5000.00 | 90 - | 110 | 102.0 | |
| 59 | Co | 1 | 72 | 209.40 | ppb | 0.87 | 200.00 | 90 - | 110 | 104.7 | |
| 60 | Ni | 1 | 72 | 205.50 | ppb | 1.00 | 200.00 | 90 - | 110 | 102.8 | |
| 63 | Cu | 1 | 72 | 211.20 | ppb | 1.15 | 200.00 | 90 - | 110 | 105.6 | |
| 66 | Zn | 1 | 72 | 206.70 | ppb | 1.03 | 200.00 | 90 - | 110 | 103.4 | |
| 75 | As | 1 | 72 | 207.30 | ppb | 0.29 | 200.00 | 90 - | 110 | 103.7 | |
| 78 | Se | 1 | 72 | 207.90 | ppb | 1.46 | 200.00 | 90 - | 110 | 104.0 | |
| 88 | Sr | 2 | 115 | 206.50 | ppb | 1.66 | 200.00 | 90 - | 110 | 103.3 | |
| 95 | Mo | 2 | 115 | 192.20 | ppb | 1.18 | 200.00 | 90 - | 110 | 96.1 | |
| 107 | Ag | 2 | 115 | 197.00 | ppb | 1.23 | 200.00 | 90 - | 110 | 98.5 | |
| 111 | Cd | 2 | 115 | 197.40 | ppb | 2.02 | 200.00 | 90 - | 110 | 98.7 | |
| 118 | Sn | 2 | 115 | 199.90 | ppb | 0.92 | 200.00 | 90 - | 110 | 100.0 | |
| 121 | Sb | 2 | 115 | 197.90 | ppb | 1.46 | 200.00 | 90 - | 110 | 99.0 | |
| 137 | Ba | 2 | 115 | 203.50 | ppb | 2.00 | 200.00 | 90 - | 110 | 101.8 | |
| 205 | Tl | 2 | 209 | 209.70 | ppb | 1.11 | 200.00 | 90 - | 110 | 104.9 | |
| 208 | Pb | 2 | 209 | 203.70 | ppb | 2.03 | 200.00 | 90 - | 110 | 101.9 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -59303.85 | 1.51 | 35.48 | -167144.6 | 70 - | 120 | | ISFail |
| 45 | Sc | 1 | 144873.81 | 0.12 | 138057.45 | 104.9 | 70 - | 120 | | |
| 45 | Sc | 2 | 3665770.80 | 1.24 | 4152726.00 | 88.3 | 70 - | 120 | | |
| 72 | Ge | 1 | 88156.38 | 0.14 | 86466.48 | 102.0 | 70 - | 120 | | |
| 115 | In | 2 | 5908646.50 | 1.34 | 6053544.50 | 97.6 | 70 - | 120 | | |
| 209 | Bi | 2 | 5578386.00 | 1.19 | 5465338.50 | 102.1 | 70 - | 120 | | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\056LCVL.D\056LCVL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 04:30 pm | Sample Name: | **LCVL2-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCVLICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 11.09 | ppb | 0.45 | 5.00 | 70 - | 130 | 221.8 | Fail |
| 9 | Be | 2 | 45 | 1.10 | ppb | 6.50 | 1.00 | 70 - | 130 | 109.7 | |
| 11 | B | 2 | 45 | 20.80 | ppb | 2.69 | 20.00 | 70 - | 130 | 104.0 | |
| 23 | Na | 1 | 45 | 101.60 | ppb | 2.22 | 100.00 | 70 - | 130 | 101.6 | |
| 24 | Mg | 1 | 45 | 103.60 | ppb | 1.50 | 100.00 | 70 - | 130 | 103.6 | |
| 27 | Al | 1 | 45 | 116.40 | ppb | 2.81 | 100.00 | 70 - | 130 | 116.4 | |
| 39 | K | 1 | 45 | 102.70 | ppb | 1.45 | 100.00 | 70 - | 130 | 102.7 | |
| 44 | Ca | 2 | 45 | 119.00 | ppb | 1.99 | 100.00 | 70 - | 130 | 119.0 | |
| 47 | Ti | 1 | 45 | 5.30 | ppb | 14.60 | 5.00 | 70 - | 130 | 106.0 | |
| 51 | V | 1 | 45 | 1.07 | ppb | 6.47 | 1.00 | 70 - | 130 | 106.7 | |
| 52 | Cr | 1 | 45 | 5.08 | ppb | 2.77 | 5.00 | 70 - | 130 | 101.6 | |
| 55 | Mn | 1 | 45 | 5.16 | ppb | 1.97 | 5.00 | 70 - | 130 | 103.3 | |
| 56 | Fe | 1 | 72 | 119.40 | ppb | 0.83 | 100.00 | 70 - | 130 | 119.4 | |
| 59 | Co | 1 | 72 | 5.08 | ppb | 0.48 | 5.00 | 70 - | 130 | 101.6 | |
| 60 | Ni | 1 | 72 | 5.09 | ppb | 3.22 | 5.00 | 70 - | 130 | 101.8 | |
| 63 | Cu | 1 | 72 | 5.18 | ppb | 1.83 | 5.00 | 70 - | 130 | 103.5 | |
| 66 | Zn | 1 | 72 | 5.26 | ppb | 4.09 | 5.00 | 70 - | 130 | 105.2 | |
| 75 | As | 1 | 72 | 5.21 | ppb | 2.67 | 5.00 | 70 - | 130 | 104.2 | |
| 78 | Se | 1 | 72 | 5.47 | ppb | 5.73 | 5.00 | 70 - | 130 | 109.4 | |
| 88 | Sr | 2 | 115 | 4.94 | ppb | 2.79 | 5.00 | 70 - | 130 | 98.7 | |
| 95 | Mo | 2 | 115 | 4.52 | ppb | 0.94 | 5.00 | 70 - | 130 | 90.5 | |
| 107 | Ag | 2 | 115 | 1.93 | ppb | 1.90 | 2.00 | 70 - | 130 | 96.4 | |
| 111 | Cd | 2 | 115 | 1.03 | ppb | 5.60 | 1.00 | 70 - | 130 | 102.5 | |
| 118 | Sn | 2 | 115 | 4.85 | ppb | 4.00 | 5.00 | 70 - | 130 | 96.9 | |
| 121 | Sb | 2 | 115 | 1.93 | ppb | 3.99 | 2.00 | 70 - | 130 | 96.5 | |
| 137 | Ba | 2 | 115 | 5.09 | ppb | 1.65 | 5.00 | 70 - | 130 | 101.8 | |
| 205 | Tl | 2 | 209 | 1.02 | ppb | 2.71 | 1.00 | 70 - | 130 | 101.8 | |
| 208 | Pb | 2 | 209 | 1.13 | ppb | 3.93 | 1.00 | 70 - | 130 | 112.7 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -1460.79 | 0.75 | 35.48 | -4117.2 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 150917.67 | 0.48 | 138057.45 | 109.3 | 70 - | 120 | |
| 45 | Sc | 2 | 3788611.30 | 1.71 | 4152726.00 | 91.2 | 70 - | 120 | |
| 72 | Ge | 1 | 93323.72 | 1.25 | 86466.48 | 107.9 | 70 - | 120 | |
| 115 | In | 2 | 6153700.50 | 1.04 | 6053544.50 | 101.7 | 70 - | 120 | |
| 209 | Bi | 2 | 5856716.50 | 1.29 | 5465338.50 | 107.2 | 70 - | 120 | |

# CCB QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\057_CCB.D\057_CCB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 04:36 pm | Sample Name: | **CCB2-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCB ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL S | MDL Aq | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.114 | ppb | 8.83 | 2.00 | 2.00 | |
| 9 | Be | 2 | 45 | 0.026 | ppb | 15.55 | 0.40 | 0.30 | |
| 11 | B | 2 | 45 | 3.723 | ppb | 0.50 | 10.00 | 10.00 | |
| 23 | Na | 1 | 45 | 4.689 | ppb | 1.05 | 50.00 | ##### | |
| 24 | Mg | 1 | 45 | 3.487 | ppb | 5.70 | 50.00 | ##### | |
| 27 | Al | 1 | 45 | 23.370 | ppb | 4.47 | 50.00 | 10.00 | FailAq |
| 39 | K | 1 | 45 | 6.262 | ppb | 2.69 | 50.00 | ##### | |
| 44 | Ca | 2 | 45 | 40.080 | ppb | 3.91 | 50.00 | ##### | |
| 47 | Ti | 1 | 45 | 0.121 | ppb | 86.59 | 4.00 | 3.00 | |
| 51 | V | 1 | 45 | 0.057 | ppb | 2.01 | 4.00 | 3.00 | |
| 52 | Cr | 1 | 45 | 0.044 | ppb | 6.31 | 2.00 | 2.00 | |
| 55 | Mn | 1 | 45 | 0.196 | ppb | 16.30 | 2.00 | 3.00 | |
| 56 | Fe | 1 | 72 | 13.720 | ppb | 2.72 | 50.00 | 30.00 | |
| 59 | Co | 1 | 72 | 0.024 | ppb | 25.55 | 2.00 | 3.00 | |
| 60 | Ni | 1 | 72 | 0.064 | ppb | 10.29 | 2.00 | 3.00 | |
| 63 | Cu | 1 | 72 | 0.066 | ppb | 4.40 | 2.00 | 2.00 | |
| 66 | Zn | 1 | 72 | 0.107 | ppb | 8.21 | 4.00 | 2.00 | |
| 75 | As | 1 | 72 | 0.053 | ppb | 9.85 | 2.00 | 2.00 | |
| 78 | Se | 1 | 72 | 0.044 | ppb | 12.06 | 0.60 | 2.00 | |
| 88 | Sr | 2 | 115 | 0.283 | ppb | 2.14 | 4.00 | 3.00 | |
| 95 | Mo | 2 | 115 | 0.039 | ppb | 30.52 | 2.00 | 2.00 | |
| 107 | Ag | 2 | 115 | 0.036 | ppb | 18.90 | 0.40 | 1.00 | |
| 111 | Cd | 2 | 115 | 0.028 | ppb | 63.94 | 0.40 | 0.30 | |
| 118 | Sn | 2 | 115 | 0.062 | ppb | 7.28 | 20.00 | 3.00 | |
| 121 | Sb | 2 | 115 | 0.010 | ppb | 5.36 | 2.00 | 0.80 | |
| 137 | Ba | 2 | 115 | 0.139 | ppb | 9.14 | 2.00 | 3.00 | |
| 205 | Tl | 2 | 209 | 0.040 | ppb | 4.45 | 2.00 | 0.50 | |
| 208 | Pb | 2 | 209 | 0.117 | ppb | 10.66 | 0.40 | 0.30 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigh | 18.42 | 181.11 | 35.48 | 51.9 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 148528.41 | 0.64 | 138057.45 | 107.6 | 70 - 120 | |
| 45 | Sc | 2 | | 3836923.00 | 1.21 | 4152726.00 | 92.4 | 70 - 120 | |
| 72 | Ge | 1 | | 91909.60 | 0.57 | 86466.48 | 106.3 | 70 - 120 | |
| 115 | In | 2 | | 6127724.50 | 0.47 | 6053544.50 | 101.2 | 70 - 120 | |
| 209 | Bi | 2 | | 5867469.00 | 1.09 | 5465338.50 | 107.4 | 70 - 120 | |

# PB QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\058__PB.D\058__PB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 04:42 pm | Sample Name: | MB-75203 |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MBLKICPMS_TSDOD |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL | RL | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.052 | ppb | 5.69 | 2.0 | 8.00 | |
| 9 | Be | 2 | 45 | 0.006 | ppb | 29.86 | 0.4 | 1.20 | |
| 11 | B | 2 | 45 | 1.222 | ppb | 2.33 | 10.0 | 30.00 | |
| 23 | Na | 1 | 45 | 7.187 | ppb | 3.90 | 50.0 | ##### | |
| 24 | Mg | 1 | 45 | 2.873 | ppb | 6.86 | 50.0 | ##### | |
| 27 | Al | 1 | 45 | 10.570 | ppb | 15.15 | 50.0 | ##### | |
| 39 | K | 1 | 45 | 9.829 | ppb | 5.31 | 50.0 | ##### | |
| 44 | Ca | 2 | 45 | 27.850 | ppb | 1.96 | 50.0 | ##### | |
| 47 | Ti | 1 | 45 | 0.138 | ppb | 49.50 | 4.0 | 10.00 | |
| 51 | V | 1 | 45 | 0.027 | ppb | 10.18 | 4.0 | 10.00 | |
| 52 | Cr | 1 | 45 | 0.271 | ppb | 9.95 | 2.0 | 8.00 | |
| 55 | Mn | 1 | 45 | 0.187 | ppb | 7.19 | 2.0 | 8.00 | |
| 56 | Fe | 1 | 72 | 14.690 | ppb | 2.55 | 50.0 | ##### | |
| 59 | Co | 1 | 72 | 0.016 | ppb | 13.28 | 2.0 | 8.00 | |
| 60 | Ni | 1 | 72 | 0.193 | ppb | 2.88 | 2.0 | 8.00 | |
| 63 | Cu | 1 | 72 | 0.121 | ppb | 1.58 | 2.0 | 8.00 | |
| 66 | Zn | 1 | 72 | 2.627 | ppb | 6.25 | 4.0 | 10.00 | |
| 75 | As | 1 | 72 | 0.011 | ppb | 24.64 | 2.0 | 4.00 | |
| 78 | Se | 1 | 72 | 0.070 | ppb | 18.90 | 0.6 | 2.00 | |
| 88 | Sr | 2 | 115 | 0.083 | ppb | 3.46 | 4.0 | 10.00 | |
| 95 | Mo | 2 | 115 | 0.026 | ppb | 5.73 | 2.0 | 8.00 | |
| 107 | Ag | 2 | 115 | 0.014 | ppb | 14.53 | 0.4 | 0.80 | |
| 111 | Cd | 2 | 115 | 0.024 | ppb | 51.24 | 0.4 | 1.20 | |
| 118 | Sn | 2 | 115 | 3.856 | ppb | 2.48 | 20.0 | 40.00 | |
| 121 | Sb | 2 | 115 | -0.006 | ppb | 7.39 | 2.0 | 4.00 | |
| 137 | Ba | 2 | 115 | 0.100 | ppb | 8.00 | 2.0 | 8.00 | |
| 205 | Tl | 2 | 209 | 0.025 | ppb | 21.94 | 2.0 | 4.00 | |
| 208 | Pb | 2 | 209 | 0.094 | ppb | 3.41 | 0.4 | 1.20 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHig | -8.23 | 156.95 | 35.48 | -23.2 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 151404.89 | 1.26 | 138057.45 | 109.7 | 70 - 120 | |
| 45 | Sc | 2 | | 3947981.80 | 2.19 | 4152726.00 | 95.1 | 70 - 120 | |
| 72 | Ge | 1 | | 92794.41 | 0.92 | 86466.48 | 107.3 | 70 - 120 | |
| 115 | In | 2 | | 6311580.00 | 0.89 | 6053544.50 | 104.3 | 70 - 120 | |
| 209 | Bi | 2 | | 5844232.00 | 1.05 | 5465338.50 | 106.9 | 70 - 120 | |

# LCS QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\059_LCS.D\059_LCS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 04:48 pm | Sample Name: | **LCS-75203** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 221.40 | ppb | 1.68 | 200.00 | 80 - | 120 | 110.7 | |
| 9 | Be | 2 | 45 | 198.60 | ppb | 1.74 | 200.00 | 80 - | 120 | 99.3 | |
| 11 | B | 2 | 45 | 193.10 | ppb | 1.13 | 200.00 | 80 - | 120 | 96.6 | |
| 23 | Na | 1 | 45 | 5242.00 | ppb | 0.82 | 1000.00 | 80 - | 120 | 524.2 | Fail |
| 24 | Mg | 1 | 45 | 5010.00 | ppb | 1.14 | 1000.00 | 80 - | 120 | 501.0 | Fail |
| 27 | Al | 1 | 45 | 1000.00 | ppb | 2.40 | 1000.00 | 80 - | 120 | 100.0 | |
| 39 | K | 1 | 45 | 5160.00 | ppb | 0.99 | 1000.00 | 80 - | 120 | 516.0 | Fail |
| 44 | Ca | 2 | 45 | 5092.00 | ppb | 3.30 | 1000.00 | 80 - | 120 | 509.2 | Fail |
| 47 | Ti | 1 | 45 | 205.30 | ppb | 3.06 | 200.00 | 80 - | 120 | 102.7 | |
| 51 | V | 1 | 45 | 195.60 | ppb | 1.09 | 200.00 | 80 - | 120 | 97.8 | |
| 52 | Cr | 1 | 45 | 197.60 | ppb | 1.17 | 200.00 | 80 - | 120 | 98.8 | |
| 55 | Mn | 1 | 45 | 202.50 | ppb | 0.88 | 200.00 | 80 - | 120 | 101.3 | |
| 56 | Fe | 1 | 72 | 14.90 | ppb | 18.41 | 1000.00 | 80 - | 120 | 1.5 | Fail |
| 59 | Co | 1 | 72 | 207.00 | ppb | 1.21 | 200.00 | 80 - | 120 | 103.5 | |
| 60 | Ni | 1 | 72 | 202.70 | ppb | 1.39 | 200.00 | 80 - | 120 | 101.4 | |
| 63 | Cu | 1 | 72 | 206.00 | ppb | 1.08 | 200.00 | 80 - | 120 | 103.0 | |
| 66 | Zn | 1 | 72 | 192.30 | ppb | 1.08 | 200.00 | 80 - | 120 | 96.2 | |
| 75 | As | 1 | 72 | 195.00 | ppb | 0.84 | 200.00 | 80 - | 120 | 97.5 | |
| 78 | Se | 1 | 72 | 187.10 | ppb | 1.10 | 200.00 | 80 - | 120 | 93.6 | |
| 88 | Sr | 2 | 115 | 206.20 | ppb | 2.35 | 200.00 | 80 - | 120 | 103.1 | |
| 95 | Mo | 2 | 115 | 190.60 | ppb | 1.83 | 200.00 | 80 - | 120 | 95.3 | |
| 107 | Ag | 2 | 115 | 195.30 | ppb | 1.81 | 200.00 | 80 - | 120 | 97.7 | |
| 111 | Cd | 2 | 115 | 188.00 | ppb | 1.43 | 200.00 | 80 - | 120 | 94.0 | |
| 118 | Sn | 2 | 115 | 201.50 | ppb | 2.31 | 200.00 | 80 - | 120 | 100.8 | |
| 121 | Sb | 2 | 115 | 192.00 | ppb | 1.62 | 200.00 | 80 - | 120 | 96.0 | |
| 137 | Ba | 2 | 115 | 198.80 | ppb | 1.76 | 200.00 | 80 - | 120 | 99.4 | |
| 205 | Tl | 2 | 209 | 210.30 | ppb | 0.80 | 200.00 | 80 - | 120 | 105.2 | |
| 208 | Pb | 2 | 209 | 202.40 | ppb | 1.32 | 200.00 | 80 - | 120 | 101.2 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -63158.17 | 2.44 | 35.48 | -178007.8 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 153352.81 | 0.32 | 138057.45 | 111.1 | 70 - | 120 | |
| 45 | Sc | 2 | 3881132.80 | 0.82 | 4152726.00 | 93.5 | 70 - | 120 | |
| 72 | Ge | 1 | 92384.76 | 0.43 | 86466.48 | 106.8 | 70 - | 120 | |
| 115 | In | 2 | 6182055.50 | 1.66 | 6053544.50 | 102.1 | 70 - | 120 | |
| 209 | Bi | 2 | 5695322.50 | 0.68 | 5465338.50 | 104.2 | 70 - | 120 | |

# LCS QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\060_LCS.D\060_LCS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 04:54 pm | Sample Name: | **LCSD-75203** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCSDICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 214.70 | ppb | 0.85 | 200.00 | 80 - | 120 | 107.4 | |
| 9 | Be | 2 | 45 | 195.10 | ppb | 1.78 | 200.00 | 80 - | 120 | 97.6 | |
| 11 | B | 2 | 45 | 192.40 | ppb | 0.96 | 200.00 | 80 - | 120 | 96.2 | |
| 23 | Na | 1 | 45 | 5183.00 | ppb | 1.22 | 1000.00 | 80 - | 120 | 518.3 | Fail |
| 24 | Mg | 1 | 45 | 4973.00 | ppb | 0.94 | 1000.00 | 80 - | 120 | 497.3 | Fail |
| 27 | Al | 1 | 45 | 984.90 | ppb | 0.67 | 1000.00 | 80 - | 120 | 98.5 | |
| 39 | K | 1 | 45 | 5084.00 | ppb | 0.66 | 1000.00 | 80 - | 120 | 508.4 | Fail |
| 44 | Ca | 2 | 45 | 5039.00 | ppb | 3.08 | 1000.00 | 80 - | 120 | 503.9 | Fail |
| 47 | Ti | 1 | 45 | 198.90 | ppb | 1.04 | 200.00 | 80 - | 120 | 99.5 | |
| 51 | V | 1 | 45 | 195.20 | ppb | 0.90 | 200.00 | 80 - | 120 | 97.6 | |
| 52 | Cr | 1 | 45 | 196.20 | ppb | 1.21 | 200.00 | 80 - | 120 | 98.1 | |
| 55 | Mn | 1 | 45 | 200.40 | ppb | 0.58 | 200.00 | 80 - | 120 | 100.2 | |
| 56 | Fe | 1 | 72 | 7.12 | ppb | 2.67 | 1000.00 | 80 - | 120 | 0.7 | Fail |
| 59 | Co | 1 | 72 | 204.30 | ppb | 0.58 | 200.00 | 80 - | 120 | 102.2 | |
| 60 | Ni | 1 | 72 | 201.10 | ppb | 0.81 | 200.00 | 80 - | 120 | 100.6 | |
| 63 | Cu | 1 | 72 | 204.40 | ppb | 0.29 | 200.00 | 80 - | 120 | 102.2 | |
| 66 | Zn | 1 | 72 | 192.20 | ppb | 0.54 | 200.00 | 80 - | 120 | 96.1 | |
| 75 | As | 1 | 72 | 192.40 | ppb | 0.71 | 200.00 | 80 - | 120 | 96.2 | |
| 78 | Se | 1 | 72 | 186.50 | ppb | 0.61 | 200.00 | 80 - | 120 | 93.3 | |
| 88 | Sr | 2 | 115 | 200.70 | ppb | 1.28 | 200.00 | 80 - | 120 | 100.4 | |
| 95 | Mo | 2 | 115 | 186.40 | ppb | 1.26 | 200.00 | 80 - | 120 | 93.2 | |
| 107 | Ag | 2 | 115 | 191.80 | ppb | 1.50 | 200.00 | 80 - | 120 | 95.9 | |
| 111 | Cd | 2 | 115 | 184.90 | ppb | 1.28 | 200.00 | 80 - | 120 | 92.5 | |
| 118 | Sn | 2 | 115 | 198.80 | ppb | 1.23 | 200.00 | 80 - | 120 | 99.4 | |
| 121 | Sb | 2 | 115 | 188.40 | ppb | 1.39 | 200.00 | 80 - | 120 | 94.2 | |
| 137 | Ba | 2 | 115 | 195.40 | ppb | 2.14 | 200.00 | 80 - | 120 | 97.7 | |
| 205 | Tl | 2 | 209 | 204.70 | ppb | 1.07 | 200.00 | 80 - | 120 | 102.4 | |
| 208 | Pb | 2 | 209 | 200.90 | ppb | 1.68 | 200.00 | 80 - | 120 | 100.5 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -62425.43 | 2.23 | 35.48 | -175942.6 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 152501.11 | 0.45 | 138057.45 | 110.5 | 70 - | 120 | |
| 45 | Sc | 2 | 3952946.00 | 0.93 | 4152726.00 | 95.2 | 70 - | 120 | |
| 72 | Ge | 1 | 92354.59 | 0.31 | 86466.48 | 106.8 | 70 - | 120 | |
| 115 | In | 2 | 6303113.50 | 1.09 | 6053544.50 | 104.1 | 70 - | 120 | |
| 209 | Bi | 2 | 5781782.50 | 1.24 | 5465338.50 | 105.8 | 70 - | 120 | |

# DT QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\063DT1.D\063DT1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 05:12 pm | Sample Name: | **1605097-28A SD** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SD ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 25.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 25.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 10.68 | ppb | 0.31 | -1009.98 | 90 - 110 | -5.3 | |
| 9 | Be | 2 | 45 | 0.50 | ppb | 4.56 | 2.29 | 90 - 110 | 108.4 | GOOD |
| 11 | B | 2 | 45 | 14.59 | ppb | 1.96 | 66.33 | 90 - 110 | 110.0 | GOOD |
| 23 | Na | 1 | 45 | 550.40 | ppb | 0.62 | 2812.00 | 90 - 110 | 97.9 | GOOD |
| 24 | Mg | 1 | 45 | 2388.00 | ppb | 1.70 | 12380.00 | 90 - 110 | 96.4 | GOOD |
| 27 | Al | 1 | 45 | 11330.00 | ppb | 2.01 | 59530.00 | 90 - 110 | 95.2 | GOOD |
| 39 | K | 1 | 45 | 2808.00 | ppb | 0.81 | 14360.00 | 90 - 110 | 97.8 | GOOD |
| 44 | Ca | 2 | 45 | 18700.00 | ppb | 0.84 | 92720.00 | 90 - 110 | 100.8 | GOOD |
| 47 | Ti | 1 | 45 | 96.33 | ppb | 4.93 | 489.50 | 90 - 110 | 98.4 | GOOD |
| 51 | V | 1 | 45 | 18.26 | ppb | 0.83 | 94.15 | 90 - 110 | 97.0 | GOOD |
| 52 | Cr | 1 | 45 | 12.95 | ppb | 2.42 | 65.89 | 90 - 110 | 98.3 | GOOD |
| 55 | Mn | 1 | 45 | 138.80 | ppb | 0.88 | 702.60 | 90 - 110 | 98.8 | GOOD |
| 56 | Fe | 1 | 72 | 10530.00 | ppb | 1.55 | 54530.00 | 90 - 110 | 96.6 | GOOD |
| 59 | Co | 1 | 72 | 3.62 | ppb | 2.09 | 18.42 | 90 - 110 | 98.1 | GOOD |
| 60 | Ni | 1 | 72 | 7.57 | ppb | 1.52 | 37.46 | 90 - 110 | 101.0 | GOOD |
| 63 | Cu | 1 | 72 | 11.57 | ppb | 1.48 | 55.89 | 90 - 110 | 103.5 | GOOD |
| 66 | Zn | 1 | 72 | 91.25 | ppb | 1.39 | 420.00 | 90 - 110 | 108.6 | GOOD |
| 75 | As | 1 | 72 | 4.02 | ppb | 2.27 | 19.83 | 90 - 110 | 101.4 | GOOD |
| 78 | Se | 1 | 72 | 3.79 | ppb | 4.59 | 19.31 | 90 - 110 | 98.1 | GOOD |
| 88 | Sr | 2 | 115 | 63.06 | ppb | 1.25 | 338.30 | 90 - 110 | 93.2 | GOOD |
| 95 | Mo | 2 | 115 | 0.38 | ppb | 5.61 | 1.87 | 90 - 110 | 101.9 | GOOD |
| 107 | Ag | 2 | 115 | 0.10 | ppb | 1.12 | 0.35 | 90 - 110 | 144.4 | |
| 111 | Cd | 2 | 115 | 0.35 | ppb | 11.00 | 1.48 | 90 - 110 | 118.0 | |
| 118 | Sn | 2 | 115 | 1.38 | ppb | 3.37 | 6.70 | 90 - 110 | 102.6 | GOOD |
| 121 | Sb | 2 | 115 | 0.81 | ppb | 2.46 | 4.07 | 90 - 110 | 98.9 | GOOD |
| 137 | Ba | 2 | 115 | 134.60 | ppb | 1.51 | 698.30 | 90 - 110 | 96.4 | GOOD |
| 205 | Tl | 2 | 209 | 0.17 | ppb | 4.40 | 0.69 | 90 - 110 | 121.4 | |
| 208 | Pb | 2 | 209 | 24.44 | ppb | 1.42 | 127.60 | 90 - 110 | 95.8 | GOOD |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHig | -1009.98 | 6.08 | 35.48 | -2846.6 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | | 148827.52 | 0.63 | 138057.45 | 107.8 | 70 - | 120 | |
| 45 | Sc | 2 | | 3881641.80 | 1.01 | 4152726.00 | 93.5 | 70 - | 120 | |
| 72 | Ge | 1 | | 91383.96 | 0.18 | 86466.48 | 105.7 | 70 - | 120 | |
| 115 | In | 2 | | 6188540.50 | 0.88 | 6053544.50 | 102.2 | 70 - | 120 | |
| 209 | Bi | 2 | | 5756888.50 | 1.23 | 5465338.50 | 105.3 | 70 - | 120 | |

# PDS QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\073_PDS.D\073_PDS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 06:12 pm | Sample Name: | **1605097-28A PDS** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | PDS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 269.80 | ppb | 0.73 | -29445.26 | 200 | 75-125 | ###### | Fail |
| 9 | Be | 2 | 45 | 194.10 | ppb | 1.32 | 2.29 | 200 | 75-125 | 95.9 | |
| 11 | B | 2 | 45 | 245.00 | ppb | 1.31 | 66.33 | 200 | 75-125 | 89.3 | |
| 23 | Na | 1 | 45 | 8248.00 | ppb | 1.07 | 2812.00 | 5000 | 75-125 | 108.7 | |
| 24 | Mg | 1 | 45 | 17640.00 | ppb | 0.70 | 12380.00 | 5000 | 75-125 | 105.2 | |
| 27 | Al | 1 | 45 | 65200.00 | ppb | 1.21 | 59530.00 | 5000 | 75-125 | 113.4 | |
| 39 | K | 1 | 45 | 20050.00 | ppb | 2.45 | 14360.00 | 5000 | 75-125 | 113.8 | |
| 44 | Ca | 2 | 45 | 98350.00 | ppb | 2.14 | 92720.00 | 5000 | 75-125 | 112.6 | |
| 47 | Ti | 1 | 45 | 707.30 | ppb | 1.10 | 489.50 | 200 | 75-125 | 108.9 | |
| 51 | V | 1 | 45 | 300.60 | ppb | 0.10 | 94.15 | 200 | 75-125 | 103.2 | |
| 52 | Cr | 1 | 45 | 271.20 | ppb | 0.59 | 65.89 | 200 | 75-125 | 102.7 | |
| 55 | Mn | 1 | 45 | 914.00 | ppb | 0.17 | 702.60 | 200 | 75-125 | 105.7 | |
| 56 | Fe | 1 | 72 | 60660.00 | ppb | 0.30 | 54530.00 | 5000 | 75-125 | 122.6 | |
| 59 | Co | 1 | 72 | 228.00 | ppb | 0.35 | 18.42 | 200 | 75-125 | 104.8 | |
| 60 | Ni | 1 | 72 | 236.70 | ppb | 1.08 | 37.46 | 200 | 75-125 | 99.6 | |
| 63 | Cu | 1 | 72 | 254.70 | ppb | 0.44 | 55.89 | 200 | 75-125 | 99.4 | |
| 66 | Zn | 1 | 72 | 610.90 | ppb | 0.24 | 420.00 | 200 | 75-125 | 95.5 | |
| 75 | As | 1 | 72 | 221.90 | ppb | 0.16 | 19.83 | 200 | 75-125 | 101.0 | |
| 78 | Se | 1 | 72 | 207.40 | ppb | 0.68 | 19.31 | 200 | 75-125 | 94.0 | |
| 88 | Sr | 2 | 115 | 543.10 | ppb | 1.51 | 338.30 | 200 | 75-125 | 102.4 | |
| 95 | Mo | 2 | 115 | 193.60 | ppb | 1.99 | 1.87 | 200 | 75-125 | 95.9 | |
| 107 | Ag | 2 | 115 | 186.70 | ppb | 2.34 | 0.35 | 200 | 75-125 | 93.2 | |
| 111 | Cd | 2 | 115 | 186.40 | ppb | 2.38 | 1.48 | 200 | 75-125 | 92.5 | |
| 118 | Sn | 2 | 115 | 212.70 | ppb | 1.91 | 6.70 | 200 | 75-125 | 103.0 | |
| 121 | Sb | 2 | 115 | 197.20 | ppb | 1.89 | 4.07 | 200 | 75-125 | 96.6 | |
| 137 | Ba | 2 | 115 | 910.90 | ppb | 3.72 | 698.30 | 200 | 75-125 | 106.3 | |
| 205 | Tl | 2 | 209 | 215.20 | ppb | 1.47 | 0.69 | 200 | 75-125 | 107.3 | |
| 208 | Pb | 2 | 209 | 340.20 | ppb | 1.15 | 127.60 | 200 | 75-125 | 106.3 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHig | -29445.26 | 6.43 | 35.48 | -82989.8 | 70 | - | 120 | ISFail |
| 45 | Sc | 1 | | 133346.86 | 0.23 | 138057.45 | 96.6 | 70 | - | 120 | |
| 45 | Sc | 2 | | 3319231.30 | 1.25 | 4152726.00 | 79.9 | 70 | - | 120 | |
| 72 | Ge | 1 | | 79858.46 | 0.65 | 86466.48 | 92.4 | 70 | - | 120 | |
| 115 | In | 2 | | 5342066.00 | 1.33 | 6053544.50 | 88.2 | 70 | - | 120 | |
| 209 | Bi | 2 | | 4828942.00 | 1.01 | 5465338.50 | 88.4 | 70 | - | 120 | |

# MS/MSD QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\074_MS.D\074_MS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 06:18 pm | Sample Name: | **1605097-28A MS** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 264.30 | ppb | 1.41 | ######## | 200 | 80-120 | ###### | Fail |
| 9 | Be | 2 | 45 | 187.60 | ppb | 1.78 | 2.29 | 200 | 80-120 | 92.7 | |
| 11 | B | 2 | 45 | 233.70 | ppb | 2.27 | 66.33 | 200 | 80-120 | 83.7 | |
| 23 | Na | 1 | 45 | 7959.00 | ppb | 0.44 | 2812.00 | 1000 | 80-120 | 514.7 | Fail |
| 24 | Mg | 1 | 45 | 17340.00 | ppb | 0.63 | 12380.00 | 1000 | 80-120 | 496.0 | Fail |
| 27 | Al | 1 | 45 | 62010.00 | ppb | 0.94 | 59530.00 | 1000 | 80-120 | 248.0 | Fail |
| 39 | K | 1 | 45 | 19400.00 | ppb | 0.56 | 14360.00 | 1000 | 80-120 | 504.0 | Fail |
| 44 | Ca | 2 | 45 | 97620.00 | ppb | 1.32 | 92720.00 | 1000 | 80-120 | 490.0 | Fail |
| 47 | Ti | 1 | 45 | 730.70 | ppb | 0.44 | 489.50 | 200 | 80-120 | 120.6 | Fail |
| 51 | V | 1 | 45 | 289.70 | ppb | 1.12 | 94.15 | 200 | 80-120 | 97.8 | |
| 52 | Cr | 1 | 45 | 259.80 | ppb | 1.23 | 65.89 | 200 | 80-120 | 97.0 | |
| 55 | Mn | 1 | 45 | 878.60 | ppb | 1.28 | 702.60 | 200 | 80-120 | 88.0 | |
| 56 | Fe | 1 | 72 | 54810.00 | ppb | 1.65 | 54530.00 | 1000 | 80-120 | 28.0 | Fail |
| 59 | Co | 1 | 72 | 217.70 | ppb | 0.73 | 18.42 | 200 | 80-120 | 99.6 | |
| 60 | Ni | 1 | 72 | 229.40 | ppb | 0.48 | 37.46 | 200 | 80-120 | 96.0 | |
| 63 | Cu | 1 | 72 | 246.30 | ppb | 0.77 | 55.89 | 200 | 80-120 | 95.2 | |
| 66 | Zn | 1 | 72 | 585.10 | ppb | 0.98 | 420.00 | 200 | 80-120 | 82.6 | |
| 75 | As | 1 | 72 | 209.50 | ppb | 0.42 | 19.83 | 200 | 80-120 | 94.8 | |
| 78 | Se | 1 | 72 | 199.20 | ppb | 1.77 | 19.31 | 200 | 80-120 | 89.9 | |
| 88 | Sr | 2 | 115 | 542.10 | ppb | 1.67 | 338.30 | 200 | 80-120 | 101.9 | |
| 95 | Mo | 2 | 115 | 179.40 | ppb | 1.46 | 1.87 | 200 | 80-120 | 88.8 | |
| 107 | Ag | 2 | 115 | 183.20 | ppb | 2.02 | 0.35 | 200 | 80-120 | 91.4 | |
| 111 | Cd | 2 | 115 | 182.20 | ppb | 1.63 | 1.48 | 200 | 80-120 | 90.4 | |
| 118 | Sn | 2 | 115 | 198.50 | ppb | 2.15 | 6.70 | 200 | 80-120 | 95.9 | |
| 121 | Sb | 2 | 115 | 67.45 | ppb | 1.96 | 4.07 | 200 | 80-120 | 31.7 | Fail |
| 137 | Ba | 2 | 115 | 969.10 | ppb | 3.28 | 698.30 | 200 | 80-120 | 135.4 | Fail |
| 205 | Tl | 2 | 209 | 209.70 | ppb | 1.49 | 0.69 | 200 | 80-120 | 104.5 | |
| 208 | Pb | 2 | 209 | 331.00 | ppb | 1.38 | 127.60 | 200 | 80-120 | 101.7 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -55032.41 | 2.41 | 35.48 | ######## | 70 - 120 | ISFail |
| 45 | Sc | 1 | 131064.13 | 0.21 | 138057.45 | 94.9 | 70 - 120 | |
| 45 | Sc | 2 | 3314812.00 | 1.64 | 4152726.00 | 79.8 | 70 - 120 | |
| 72 | Ge | 1 | 78394.84 | 0.19 | 86466.48 | 90.7 | 70 - 120 | |
| 115 | In | 2 | 5326506.50 | 1.70 | 6053544.50 | 88.0 | 70 - 120 | |
| 209 | Bi | 2 | 4825896.00 | 1.22 | 5465338.50 | 88.3 | 70 - 120 | |

# MS/MSD QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\075_MS.D\075_MS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 06:23 pm | Sample Name: | **1605097-28A MSD** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MSD ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 255.20 | ppb | 0.17 | ######## | 200 | 80-120 | ###### | Fail |
| 9 | Be | 2 | 45 | 184.30 | ppb | 1.16 | 2.29 | 200 | 80-120 | 91.0 | |
| 11 | B | 2 | 45 | 225.90 | ppb | 1.27 | 66.33 | 200 | 80-120 | 79.8 | Fail |
| 23 | Na | 1 | 45 | 7648.00 | ppb | 0.06 | 2812.00 | 1000 | 80-120 | 483.6 | Fail |
| 24 | Mg | 1 | 45 | 16590.00 | ppb | 1.05 | 12380.00 | 1000 | 80-120 | 421.0 | Fail |
| 27 | Al | 1 | 45 | 59470.00 | ppb | 2.08 | 59530.00 | 1000 | 80-120 | -6.0 | Fail |
| 39 | K | 1 | 45 | 18850.00 | ppb | 0.59 | 14360.00 | 1000 | 80-120 | 449.0 | Fail |
| 44 | Ca | 2 | 45 | 92930.00 | ppb | 1.91 | 92720.00 | 1000 | 80-120 | 21.0 | Fail |
| 47 | Ti | 1 | 45 | 730.00 | ppb | 0.25 | 489.50 | 200 | 80-120 | 120.3 | Fail |
| 51 | V | 1 | 45 | 284.10 | ppb | 0.99 | 94.15 | 200 | 80-120 | 95.0 | |
| 52 | Cr | 1 | 45 | 252.00 | ppb | 1.21 | 65.89 | 200 | 80-120 | 93.1 | |
| 55 | Mn | 1 | 45 | 851.20 | ppb | 0.52 | 702.60 | 200 | 80-120 | 74.3 | Fail |
| 56 | Fe | 1 | 72 | 51850.00 | ppb | 0.84 | 54530.00 | 1000 | 80-120 | -268.0 | Fail |
| 59 | Co | 1 | 72 | 212.40 | ppb | 0.44 | 18.42 | 200 | 80-120 | 97.0 | |
| 60 | Ni | 1 | 72 | 224.80 | ppb | 0.86 | 37.46 | 200 | 80-120 | 93.7 | |
| 63 | Cu | 1 | 72 | 245.20 | ppb | 0.62 | 55.89 | 200 | 80-120 | 94.7 | |
| 66 | Zn | 1 | 72 | 563.40 | ppb | 0.58 | 420.00 | 200 | 80-120 | 71.7 | Fail |
| 75 | As | 1 | 72 | 207.60 | ppb | 0.29 | 19.83 | 200 | 80-120 | 93.9 | |
| 78 | Se | 1 | 72 | 193.40 | ppb | 1.75 | 19.31 | 200 | 80-120 | 87.0 | |
| 88 | Sr | 2 | 115 | 523.20 | ppb | 2.04 | 338.30 | 200 | 80-120 | 92.5 | |
| 95 | Mo | 2 | 115 | 177.20 | ppb | 2.27 | 1.87 | 200 | 80-120 | 87.7 | |
| 107 | Ag | 2 | 115 | 180.10 | ppb | 1.84 | 0.35 | 200 | 80-120 | 89.9 | |
| 111 | Cd | 2 | 115 | 180.00 | ppb | 1.81 | 1.48 | 200 | 80-120 | 89.3 | |
| 118 | Sn | 2 | 115 | 196.50 | ppb | 1.83 | 6.70 | 200 | 80-120 | 94.9 | |
| 121 | Sb | 2 | 115 | 67.52 | ppb | 1.96 | 4.07 | 200 | 80-120 | 31.7 | Fail |
| 137 | Ba | 2 | 115 | 914.40 | ppb | 0.75 | 698.30 | 200 | 80-120 | 108.1 | |
| 205 | Tl | 2 | 209 | 204.10 | ppb | 0.91 | 0.69 | 200 | 80-120 | 101.7 | |
| 208 | Pb | 2 | 209 | 320.20 | ppb | 1.28 | 127.60 | 200 | 80-120 | 96.3 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -53763.51 | 1.84 | 35.48 | ######## | 70 - 120 | ISFail |
| 45 | Sc | 1 | 130317.94 | 0.29 | 138057.45 | 94.4 | 70 - 120 | |
| 45 | Sc | 2 | 3323918.00 | 1.13 | 4152726.00 | 80.0 | 70 - 120 | |
| 72 | Ge | 1 | 78498.56 | 0.23 | 86466.48 | 90.8 | 70 - 120 | |
| 115 | In | 2 | 5302083.00 | 1.81 | 6053544.50 | 87.6 | 70 - 120 | |
| 209 | Bi | 2 | 4801700.00 | 0.56 | 5465338.50 | 87.9 | 70 - 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\077CCV1.D\077CCV1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 06:35 pm | Sample Name: | **CCV3-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCV ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 224.10 | ppb | 0.51 | 200.00 | 90 - | 110 | 112.1 | Fail |
| 9 | Be | 2 | 45 | 205.60 | ppb | 1.26 | 200.00 | 90 - | 110 | 102.8 | |
| 11 | B | 2 | 45 | 191.60 | ppb | 1.68 | 200.00 | 90 - | 110 | 95.8 | |
| 23 | Na | 1 | 45 | 5257.00 | ppb | 1.66 | 5000.00 | 90 - | 110 | 105.1 | |
| 24 | Mg | 1 | 45 | 4989.00 | ppb | 1.41 | 5000.00 | 90 - | 110 | 99.8 | |
| 27 | Al | 1 | 45 | 4902.00 | ppb | 1.30 | 5000.00 | 90 - | 110 | 98.0 | |
| 39 | K | 1 | 45 | 5176.00 | ppb | 0.77 | 5000.00 | 90 - | 110 | 103.5 | |
| 44 | Ca | 2 | 45 | 4974.00 | ppb | 1.20 | 5000.00 | 90 - | 110 | 99.5 | |
| 47 | Ti | 1 | 45 | 199.80 | ppb | 1.83 | 200.00 | 90 - | 110 | 99.9 | |
| 51 | V | 1 | 45 | 198.40 | ppb | 1.37 | 200.00 | 90 - | 110 | 99.2 | |
| 52 | Cr | 1 | 45 | 201.00 | ppb | 1.36 | 200.00 | 90 - | 110 | 100.5 | |
| 55 | Mn | 1 | 45 | 202.20 | ppb | 1.49 | 200.00 | 90 - | 110 | 101.1 | |
| 56 | Fe | 1 | 72 | 5005.00 | ppb | 1.74 | 5000.00 | 90 - | 110 | 100.1 | |
| 59 | Co | 1 | 72 | 204.80 | ppb | 1.90 | 200.00 | 90 - | 110 | 102.4 | |
| 60 | Ni | 1 | 72 | 202.60 | ppb | 1.63 | 200.00 | 90 - | 110 | 101.3 | |
| 63 | Cu | 1 | 72 | 206.10 | ppb | 1.72 | 200.00 | 90 - | 110 | 103.1 | |
| 66 | Zn | 1 | 72 | 205.60 | ppb | 0.69 | 200.00 | 90 - | 110 | 102.8 | |
| 75 | As | 1 | 72 | 207.60 | ppb | 0.58 | 200.00 | 90 - | 110 | 103.8 | |
| 78 | Se | 1 | 72 | 207.20 | ppb | 0.30 | 200.00 | 90 - | 110 | 103.6 | |
| 88 | Sr | 2 | 115 | 206.80 | ppb | 0.81 | 200.00 | 90 - | 110 | 103.4 | |
| 95 | Mo | 2 | 115 | 189.10 | ppb | 0.96 | 200.00 | 90 - | 110 | 94.6 | |
| 107 | Ag | 2 | 115 | 195.20 | ppb | 1.23 | 200.00 | 90 - | 110 | 97.6 | |
| 111 | Cd | 2 | 115 | 195.80 | ppb | 1.47 | 200.00 | 90 - | 110 | 97.9 | |
| 118 | Sn | 2 | 115 | 197.60 | ppb | 1.65 | 200.00 | 90 - | 110 | 98.8 | |
| 121 | Sb | 2 | 115 | 196.20 | ppb | 1.26 | 200.00 | 90 - | 110 | 98.1 | |
| 137 | Ba | 2 | 115 | 202.00 | ppb | 1.10 | 200.00 | 90 - | 110 | 101.0 | |
| 205 | Tl | 2 | 209 | 208.80 | ppb | 1.22 | 200.00 | 90 - | 110 | 104.4 | |
| 208 | Pb | 2 | 209 | 203.20 | ppb | 2.08 | 200.00 | 90 - | 110 | 101.6 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -55353.93 | 0.78 | 35.48 | -156012.0 | 70 - | 120 | | ISFail |
| 45 | Sc | 1 | 132440.27 | 0.34 | 138057.45 | 95.9 | 70 - | 120 | | |
| 45 | Sc | 2 | 3373511.30 | 0.43 | 4152726.00 | 81.2 | 70 - | 120 | | |
| 72 | Ge | 1 | 81496.83 | 0.51 | 86466.48 | 94.3 | 70 - | 120 | | |
| 115 | In | 2 | 5506163.50 | 1.19 | 6053544.50 | 91.0 | 70 - | 120 | | |
| 209 | Bi | 2 | 5191287.50 | 1.72 | 5465338.50 | 95.0 | 70 - | 120 | | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\079LCVL.D\079LCVL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 06:48 pm | Sample Name: | **LCVL3-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCVLICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 10.95 | ppb | 1.32 | 5.00 | 70 - | 130 | 219.0 | Fail |
| 9 | Be | 2 | 45 | 1.10 | ppb | 4.19 | 1.00 | 70 - | 130 | 110.2 | |
| 11 | B | 2 | 45 | 20.36 | ppb | 2.22 | 20.00 | 70 - | 130 | 101.8 | |
| 23 | Na | 1 | 45 | 101.30 | ppb | 2.07 | 100.00 | 70 - | 130 | 101.3 | |
| 24 | Mg | 1 | 45 | 102.00 | ppb | 1.40 | 100.00 | 70 - | 130 | 102.0 | |
| 27 | Al | 1 | 45 | 114.40 | ppb | 2.00 | 100.00 | 70 - | 130 | 114.4 | |
| 39 | K | 1 | 45 | 107.10 | ppb | 1.23 | 100.00 | 70 - | 130 | 107.1 | |
| 44 | Ca | 2 | 45 | 111.40 | ppb | 2.39 | 100.00 | 70 - | 130 | 111.4 | |
| 47 | Ti | 1 | 45 | 4.87 | ppb | 3.51 | 5.00 | 70 - | 130 | 97.5 | |
| 51 | V | 1 | 45 | 1.07 | ppb | 4.78 | 1.00 | 70 - | 130 | 107.3 | |
| 52 | Cr | 1 | 45 | 5.14 | ppb | 2.07 | 5.00 | 70 - | 130 | 102.8 | |
| 55 | Mn | 1 | 45 | 5.09 | ppb | 1.65 | 5.00 | 70 - | 130 | 101.8 | |
| 56 | Fe | 1 | 72 | 113.70 | ppb | 1.23 | 100.00 | 70 - | 130 | 113.7 | |
| 59 | Co | 1 | 72 | 5.15 | ppb | 3.81 | 5.00 | 70 - | 130 | 103.0 | |
| 60 | Ni | 1 | 72 | 5.04 | ppb | 2.45 | 5.00 | 70 - | 130 | 100.7 | |
| 63 | Cu | 1 | 72 | 5.10 | ppb | 1.35 | 5.00 | 70 - | 130 | 102.0 | |
| 66 | Zn | 1 | 72 | 5.04 | ppb | 1.70 | 5.00 | 70 - | 130 | 100.7 | |
| 75 | As | 1 | 72 | 5.24 | ppb | 1.10 | 5.00 | 70 - | 130 | 104.8 | |
| 78 | Se | 1 | 72 | 4.84 | ppb | 4.02 | 5.00 | 70 - | 130 | 96.9 | |
| 88 | Sr | 2 | 115 | 4.99 | ppb | 2.27 | 5.00 | 70 - | 130 | 99.7 | |
| 95 | Mo | 2 | 115 | 4.60 | ppb | 2.76 | 5.00 | 70 - | 130 | 91.9 | |
| 107 | Ag | 2 | 115 | 1.98 | ppb | 1.41 | 2.00 | 70 - | 130 | 99.0 | |
| 111 | Cd | 2 | 115 | 0.95 | ppb | 5.15 | 1.00 | 70 - | 130 | 95.4 | |
| 118 | Sn | 2 | 115 | 5.00 | ppb | 2.75 | 5.00 | 70 - | 130 | 99.9 | |
| 121 | Sb | 2 | 115 | 1.99 | ppb | 2.86 | 2.00 | 70 - | 130 | 99.4 | |
| 137 | Ba | 2 | 115 | 4.95 | ppb | 1.39 | 5.00 | 70 - | 130 | 98.9 | |
| 205 | Tl | 2 | 209 | 1.04 | ppb | 1.79 | 1.00 | 70 - | 130 | 104.4 | |
| 208 | Pb | 2 | 209 | 1.08 | ppb | 3.07 | 1.00 | 70 - | 130 | 108.1 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 RHigl | -1368.58 | 9.05 | 35.48 | -3857.3 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 132194.70 | 0.57 | 138057.45 | 95.8 | 70 - | 120 | |
| 45 | Sc | 2 | 3373480.80 | 2.08 | 4152726.00 | 81.2 | 70 - | 120 | |
| 72 | Ge | 1 | 82538.56 | 0.78 | 86466.48 | 95.5 | 70 - | 120 | |
| 115 | In | 2 | 5528710.50 | 1.00 | 6053544.50 | 91.3 | 70 - | 120 | |
| 209 | Bi | 2 | 5205336.50 | 1.37 | 5465338.50 | 95.2 | 70 - | 120 | |

# CCB QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\080_CCB.D\080_CCB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 06:54 pm | Sample Name: | CCB3-160525 |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCB ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL S | MDL Aq | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.174 | ppb | 5.99 | 2.00 | 2.00 | |
| 9 | Be | 2 | 45 | 0.044 | ppb | 23.81 | 0.40 | 0.30 | |
| 11 | B | 2 | 45 | 3.542 | ppb | 3.33 | 10.00 | 10.00 | |
| 23 | Na | 1 | 45 | 5.276 | ppb | 0.48 | 50.00 | ##### | |
| 24 | Mg | 1 | 45 | 3.450 | ppb | 2.79 | 50.00 | ##### | |
| 27 | Al | 1 | 45 | 22.670 | ppb | 3.18 | 50.00 | 10.00 | FailAq |
| 39 | K | 1 | 45 | 11.050 | ppb | 5.41 | 50.00 | ##### | |
| 44 | Ca | 2 | 45 | 36.660 | ppb | 4.62 | 50.00 | ##### | |
| 47 | Ti | 1 | 45 | 0.320 | ppb | 32.74 | 4.00 | 3.00 | |
| 51 | V | 1 | 45 | 0.076 | ppb | 3.85 | 4.00 | 3.00 | |
| 52 | Cr | 1 | 45 | 0.073 | ppb | 6.84 | 2.00 | 2.00 | |
| 55 | Mn | 1 | 45 | 0.189 | ppb | 8.75 | 2.00 | 3.00 | |
| 56 | Fe | 1 | 72 | 12.020 | ppb | 5.47 | 50.00 | 30.00 | |
| 59 | Co | 1 | 72 | 0.054 | ppb | 9.25 | 2.00 | 3.00 | |
| 60 | Ni | 1 | 72 | 0.073 | ppb | 12.83 | 2.00 | 3.00 | |
| 63 | Cu | 1 | 72 | 0.090 | ppb | 8.33 | 2.00 | 2.00 | |
| 66 | Zn | 1 | 72 | 0.099 | ppb | 6.13 | 4.00 | 2.00 | |
| 75 | As | 1 | 72 | 0.082 | ppb | 10.49 | 2.00 | 2.00 | |
| 78 | Se | 1 | 72 | 0.101 | ppb | 27.71 | 0.60 | 2.00 | |
| 88 | Sr | 2 | 115 | 0.306 | ppb | 1.53 | 4.00 | 3.00 | |
| 95 | Mo | 2 | 115 | 0.053 | ppb | 28.91 | 2.00 | 2.00 | |
| 107 | Ag | 2 | 115 | 0.059 | ppb | 20.67 | 0.40 | 1.00 | |
| 111 | Cd | 2 | 115 | 0.046 | ppb | 15.27 | 0.40 | 0.30 | |
| 118 | Sn | 2 | 115 | 0.094 | ppb | 8.29 | 20.00 | 3.00 | |
| 121 | Sb | 2 | 115 | 0.057 | ppb | 17.69 | 2.00 | 0.80 | |
| 137 | Ba | 2 | 115 | 0.163 | ppb | 11.70 | 2.00 | 3.00 | |
| 205 | Tl | 2 | 209 | 0.073 | ppb | 12.00 | 2.00 | 0.50 | |
| 208 | Pb | 2 | 209 | 0.087 | ppb | 9.06 | 0.40 | 0.30 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigh | -6.73 | 314.05 | 35.48 | -19.0 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 131019.38 | 1.80 | 138057.45 | 94.9 | 70 - 120 | |
| 45 | Sc | 2 | | 3443980.30 | 1.36 | 4152726.00 | 82.9 | 70 - 120 | |
| 72 | Ge | 1 | | 82146.60 | 0.43 | 86466.48 | 95.0 | 70 - 120 | |
| 115 | In | 2 | | 5582825.00 | 0.97 | 6053544.50 | 92.2 | 70 - 120 | |
| 209 | Bi | 2 | | 5275857.50 | 0.52 | 5465338.50 | 96.5 | 70 - 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\091CCV1.D\091CCV1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 08:00 pm | Sample Name: | **CCV4-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCV ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 218.10 | ppb | 0.45 | 200.00 | 90 - | 110 | 109.1 | |
| 9 | Be | 2 | 45 | 202.80 | ppb | 1.61 | 200.00 | 90 - | 110 | 101.4 | |
| 11 | B | 2 | 45 | 186.20 | ppb | 0.72 | 200.00 | 90 - | 110 | 93.1 | |
| 23 | Na | 1 | 45 | 5248.00 | ppb | 0.23 | 5000.00 | 90 - | 110 | 105.0 | |
| 24 | Mg | 1 | 45 | 4949.00 | ppb | 1.42 | 5000.00 | 90 - | 110 | 99.0 | |
| 27 | Al | 1 | 45 | 4907.00 | ppb | 1.17 | 5000.00 | 90 - | 110 | 98.1 | |
| 39 | K | 1 | 45 | 5162.00 | ppb | 0.88 | 5000.00 | 90 - | 110 | 103.2 | |
| 44 | Ca | 2 | 45 | 5035.00 | ppb | 1.17 | 5000.00 | 90 - | 110 | 100.7 | |
| 47 | Ti | 1 | 45 | 197.50 | ppb | 0.88 | 200.00 | 90 - | 110 | 98.8 | |
| 51 | V | 1 | 45 | 199.70 | ppb | 1.30 | 200.00 | 90 - | 110 | 99.9 | |
| 52 | Cr | 1 | 45 | 200.60 | ppb | 1.38 | 200.00 | 90 - | 110 | 100.3 | |
| 55 | Mn | 1 | 45 | 204.40 | ppb | 0.37 | 200.00 | 90 - | 110 | 102.2 | |
| 56 | Fe | 1 | 72 | 5115.00 | ppb | 0.94 | 5000.00 | 90 - | 110 | 102.3 | |
| 59 | Co | 1 | 72 | 206.60 | ppb | 0.99 | 200.00 | 90 - | 110 | 103.3 | |
| 60 | Ni | 1 | 72 | 203.50 | ppb | 0.77 | 200.00 | 90 - | 110 | 101.8 | |
| 63 | Cu | 1 | 72 | 206.90 | ppb | 0.27 | 200.00 | 90 - | 110 | 103.5 | |
| 66 | Zn | 1 | 72 | 206.20 | ppb | 0.37 | 200.00 | 90 - | 110 | 103.1 | |
| 75 | As | 1 | 72 | 210.00 | ppb | 0.95 | 200.00 | 90 - | 110 | 105.0 | |
| 78 | Se | 1 | 72 | 206.70 | ppb | 1.38 | 200.00 | 90 - | 110 | 103.4 | |
| 88 | Sr | 2 | 115 | 205.50 | ppb | 1.18 | 200.00 | 90 - | 110 | 102.8 | |
| 95 | Mo | 2 | 115 | 188.30 | ppb | 1.03 | 200.00 | 90 - | 110 | 94.2 | |
| 107 | Ag | 2 | 115 | 192.40 | ppb | 1.22 | 200.00 | 90 - | 110 | 96.2 | |
| 111 | Cd | 2 | 115 | 192.60 | ppb | 1.16 | 200.00 | 90 - | 110 | 96.3 | |
| 118 | Sn | 2 | 115 | 199.00 | ppb | 1.50 | 200.00 | 90 - | 110 | 99.5 | |
| 121 | Sb | 2 | 115 | 197.80 | ppb | 1.43 | 200.00 | 90 - | 110 | 98.9 | |
| 137 | Ba | 2 | 115 | 202.90 | ppb | 1.59 | 200.00 | 90 - | 110 | 101.5 | |
| 205 | Tl | 2 | 209 | 209.90 | ppb | 2.26 | 200.00 | 90 - | 110 | 105.0 | |
| 208 | Pb | 2 | 209 | 201.30 | ppb | 1.54 | 200.00 | 90 - | 110 | 100.7 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -52192.45 | 0.70 | 35.48 | -147101.5 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 123775.41 | 0.53 | 138057.45 | 89.7 | 70 - | 120 | |
| 45 | Sc | 2 | 3241279.00 | 1.27 | 4152726.00 | 78.1 | 70 - | 120 | |
| 72 | Ge | 1 | 76393.88 | 0.58 | 86466.48 | 88.4 | 70 - | 120 | |
| 115 | In | 2 | 5457622.50 | 1.71 | 6053544.50 | 90.2 | 70 - | 120 | |
| 209 | Bi | 2 | 5083478.00 | 0.94 | 5465338.50 | 93.0 | 70 - | 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\093LCVL.D\093LCVL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 08:12 pm | Sample Name: | **LCVL4-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCVLICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 10.71 | ppb | 0.90 | 5.00 | 70 - | 130 | 214.2 | Fail |
| 9 | Be | 2 | 45 | 1.01 | ppb | 2.41 | 1.00 | 70 - | 130 | 101.2 | |
| 11 | B | 2 | 45 | 19.60 | ppb | 2.59 | 20.00 | 70 - | 130 | 98.0 | |
| 23 | Na | 1 | 45 | 98.51 | ppb | 0.63 | 100.00 | 70 - | 130 | 98.5 | |
| 24 | Mg | 1 | 45 | 103.20 | ppb | 1.90 | 100.00 | 70 - | 130 | 103.2 | |
| 27 | Al | 1 | 45 | 121.20 | ppb | 0.75 | 100.00 | 70 - | 130 | 121.2 | |
| 39 | K | 1 | 45 | 109.60 | ppb | 2.66 | 100.00 | 70 - | 130 | 109.6 | |
| 44 | Ca | 2 | 45 | 120.00 | ppb | 3.06 | 100.00 | 70 - | 130 | 120.0 | |
| 47 | Ti | 1 | 45 | 5.98 | ppb | 14.77 | 5.00 | 70 - | 130 | 119.7 | |
| 51 | V | 1 | 45 | 1.06 | ppb | 6.51 | 1.00 | 70 - | 130 | 106.1 | |
| 52 | Cr | 1 | 45 | 5.04 | ppb | 3.79 | 5.00 | 70 - | 130 | 100.8 | |
| 55 | Mn | 1 | 45 | 5.29 | ppb | 0.90 | 5.00 | 70 - | 130 | 105.9 | |
| 56 | Fe | 1 | 72 | 125.50 | ppb | 2.39 | 100.00 | 70 - | 130 | 125.5 | |
| 59 | Co | 1 | 72 | 5.05 | ppb | 2.11 | 5.00 | 70 - | 130 | 100.9 | |
| 60 | Ni | 1 | 72 | 5.10 | ppb | 1.07 | 5.00 | 70 - | 130 | 101.9 | |
| 63 | Cu | 1 | 72 | 5.08 | ppb | 2.01 | 5.00 | 70 - | 130 | 101.6 | |
| 66 | Zn | 1 | 72 | 4.87 | ppb | 3.16 | 5.00 | 70 - | 130 | 97.3 | |
| 75 | As | 1 | 72 | 5.27 | ppb | 1.54 | 5.00 | 70 - | 130 | 105.4 | |
| 78 | Se | 1 | 72 | 5.17 | ppb | 3.96 | 5.00 | 70 - | 130 | 103.4 | |
| 88 | Sr | 2 | 115 | 5.02 | ppb | 1.52 | 5.00 | 70 - | 130 | 100.4 | |
| 95 | Mo | 2 | 115 | 4.61 | ppb | 3.99 | 5.00 | 70 - | 130 | 92.1 | |
| 107 | Ag | 2 | 115 | 1.92 | ppb | 0.82 | 2.00 | 70 - | 130 | 96.2 | |
| 111 | Cd | 2 | 115 | 1.01 | ppb | 10.89 | 1.00 | 70 - | 130 | 101.1 | |
| 118 | Sn | 2 | 115 | 4.97 | ppb | 2.31 | 5.00 | 70 - | 130 | 99.4 | |
| 121 | Sb | 2 | 115 | 1.93 | ppb | 3.68 | 2.00 | 70 - | 130 | 96.6 | |
| 137 | Ba | 2 | 115 | 5.23 | ppb | 4.69 | 5.00 | 70 - | 130 | 104.6 | |
| 205 | Tl | 2 | 209 | 1.02 | ppb | 0.65 | 1.00 | 70 - | 130 | 102.3 | |
| 208 | Pb | 2 | 209 | 1.01 | ppb | 0.43 | 1.00 | 70 - | 130 | 101.2 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 RHigl | -1383.62 | 8.79 | 35.48 | -3899.7 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 127192.41 | 1.52 | 138057.45 | 92.1 | 70 - | 120 | |
| 45 | Sc | 2 | 3302091.00 | 1.63 | 4152726.00 | 79.5 | 70 - | 120 | |
| 72 | Ge | 1 | 79279.07 | 0.74 | 86466.48 | 91.7 | 70 - | 120 | |
| 115 | In | 2 | 5476371.00 | 1.17 | 6053544.50 | 90.5 | 70 - | 120 | |
| 209 | Bi | 2 | 5219516.50 | 0.53 | 5465338.50 | 95.5 | 70 - | 120 | |

# CCB QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\094_CCB.D\094_CCB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 08:18 pm | Sample Name: | **CCB4-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCB ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL S | MDL Aq | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.133 | ppb | 6.28 | 2.00 | 2.00 | |
| 9 | Be | 2 | 45 | 0.025 | ppb | 18.54 | 0.40 | 0.30 | |
| 11 | B | 2 | 45 | 3.193 | ppb | 2.17 | 10.00 | 10.00 | |
| 23 | Na | 1 | 45 | 5.372 | ppb | 5.20 | 50.00 | ##### | |
| 24 | Mg | 1 | 45 | 3.716 | ppb | 6.39 | 50.00 | ##### | |
| 27 | Al | 1 | 45 | 23.950 | ppb | 7.39 | 50.00 | 10.00 | FailAq |
| 39 | K | 1 | 45 | 9.750 | ppb | 2.79 | 50.00 | ##### | |
| 44 | Ca | 2 | 45 | 38.080 | ppb | 3.00 | 50.00 | ##### | |
| 47 | Ti | 1 | 45 | 0.119 | ppb | 69.30 | 4.00 | 3.00 | |
| 51 | V | 1 | 45 | 0.075 | ppb | 11.65 | 4.00 | 3.00 | |
| 52 | Cr | 1 | 45 | 0.069 | ppb | 11.74 | 2.00 | 2.00 | |
| 55 | Mn | 1 | 45 | 0.176 | ppb | 3.07 | 2.00 | 3.00 | |
| 56 | Fe | 1 | 72 | 15.770 | ppb | 10.37 | 50.00 | 30.00 | |
| 59 | Co | 1 | 72 | 0.022 | ppb | 15.43 | 2.00 | 3.00 | |
| 60 | Ni | 1 | 72 | 0.096 | ppb | 17.56 | 2.00 | 3.00 | |
| 63 | Cu | 1 | 72 | 0.085 | ppb | 19.07 | 2.00 | 2.00 | |
| 66 | Zn | 1 | 72 | 0.115 | ppb | 7.88 | 4.00 | 2.00 | |
| 75 | As | 1 | 72 | 0.055 | ppb | 4.49 | 2.00 | 2.00 | |
| 78 | Se | 1 | 72 | 0.125 | ppb | 14.28 | 0.60 | 2.00 | |
| 88 | Sr | 2 | 115 | 0.247 | ppb | 3.23 | 4.00 | 3.00 | |
| 95 | Mo | 2 | 115 | 0.022 | ppb | 14.10 | 2.00 | 2.00 | |
| 107 | Ag | 2 | 115 | 0.038 | ppb | 23.81 | 0.40 | 1.00 | |
| 111 | Cd | 2 | 115 | 0.040 | ppb | 36.53 | 0.40 | 0.30 | |
| 118 | Sn | 2 | 115 | 0.041 | ppb | 15.66 | 20.00 | 3.00 | |
| 121 | Sb | 2 | 115 | 0.010 | ppb | 14.00 | 2.00 | 0.80 | |
| 137 | Ba | 2 | 115 | 0.122 | ppb | 14.11 | 2.00 | 3.00 | |
| 205 | Tl | 2 | 209 | 0.042 | ppb | 8.92 | 2.00 | 0.50 | |
| 208 | Pb | 2 | 209 | 0.054 | ppb | 6.74 | 0.40 | 0.30 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigh | -7.96 | 138.90 | 35.48 | -22.4 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 125573.63 | 0.51 | 138057.45 | 91.0 | 70 - 120 | |
| 45 | Sc | 2 | | 3352020.80 | 1.17 | 4152726.00 | 80.7 | 70 - 120 | |
| 72 | Ge | 1 | | 78407.98 | 0.54 | 86466.48 | 90.7 | 70 - 120 | |
| 115 | In | 2 | | 5570337.50 | 1.06 | 6053544.50 | 92.0 | 70 - 120 | |
| 209 | Bi | 2 | | 5268501.00 | 1.17 | 5465338.50 | 96.4 | 70 - 120 | |

# PB QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\095__PB.D\095__PB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 08:24 pm | Sample Name: | **MB-75216** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MBLKICPMS_TSDOD |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL | RL | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.070 | ppb | 4.70 | 2.0 | 8.00 | |
| 9 | Be | 2 | 45 | 0.002 | ppb | 55.47 | 0.4 | 1.20 | |
| 11 | B | 2 | 45 | 0.988 | ppb | 2.50 | 10.0 | 30.00 | |
| 23 | Na | 1 | 45 | 4.416 | ppb | 4.22 | 50.0 | ##### | |
| 24 | Mg | 1 | 45 | 3.168 | ppb | 8.21 | 50.0 | ##### | |
| 27 | Al | 1 | 45 | 11.340 | ppb | 8.17 | 50.0 | ##### | |
| 39 | K | 1 | 45 | 10.080 | ppb | 3.70 | 50.0 | ##### | |
| 44 | Ca | 2 | 45 | 23.300 | ppb | 2.99 | 50.0 | ##### | |
| 47 | Ti | 1 | 45 | 0.238 | ppb | 45.83 | 4.0 | 10.00 | |
| 51 | V | 1 | 45 | 0.028 | ppb | 15.35 | 4.0 | 10.00 | |
| 52 | Cr | 1 | 45 | 0.215 | ppb | 8.16 | 2.0 | 8.00 | |
| 55 | Mn | 1 | 45 | 0.143 | ppb | 13.02 | 2.0 | 8.00 | |
| 56 | Fe | 1 | 72 | 17.000 | ppb | 6.37 | 50.0 | ##### | |
| 59 | Co | 1 | 72 | 0.012 | ppb | 13.68 | 2.0 | 8.00 | |
| 60 | Ni | 1 | 72 | 0.154 | ppb | 12.72 | 2.0 | 8.00 | |
| 63 | Cu | 1 | 72 | 0.076 | ppb | 2.62 | 2.0 | 8.00 | |
| 66 | Zn | 1 | 72 | 0.920 | ppb | 8.33 | 4.0 | 10.00 | |
| 75 | As | 1 | 72 | 0.022 | ppb | 12.28 | 2.0 | 4.00 | |
| 78 | Se | 1 | 72 | 0.125 | ppb | 25.75 | 0.6 | 2.00 | |
| 88 | Sr | 2 | 115 | 0.078 | ppb | 3.18 | 4.0 | 10.00 | |
| 95 | Mo | 2 | 115 | 0.018 | ppb | 17.28 | 2.0 | 8.00 | |
| 107 | Ag | 2 | 115 | 0.018 | ppb | 18.75 | 0.4 | 0.80 | |
| 111 | Cd | 2 | 115 | 0.021 | ppb | 63.35 | 0.4 | 1.20 | |
| 118 | Sn | 2 | 115 | 3.891 | ppb | 2.35 | 20.0 | 40.00 | |
| 121 | Sb | 2 | 115 | -0.001 | ppb | 15.73 | 2.0 | 4.00 | |
| 137 | Ba | 2 | 115 | 0.075 | ppb | 10.38 | 2.0 | 8.00 | |
| 205 | Tl | 2 | 209 | 0.025 | ppb | 18.73 | 2.0 | 4.00 | |
| 208 | Pb | 2 | 209 | 0.045 | ppb | 0.86 | 0.4 | 1.20 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHig | -22.95 | 21.75 | 35.48 | -64.7 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 126317.22 | 0.72 | 138057.45 | 91.5 | 70 - 120 | |
| 45 | Sc | 2 | | 3500376.00 | 2.13 | 4152726.00 | 84.3 | 70 - 120 | |
| 72 | Ge | 1 | | 78277.06 | 1.35 | 86466.48 | 90.5 | 70 - 120 | |
| 115 | In | 2 | | 5718756.00 | 1.23 | 6053544.50 | 94.5 | 70 - 120 | |
| 209 | Bi | 2 | | 5375578.50 | 0.98 | 5465338.50 | 98.4 | 70 - 120 | |

# LCS QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\096_LCS.D\096_LCS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 08:30 pm | Sample Name: | **LCS-75216** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 205.50 | ppb | 0.51 | 200.00 | 80 - | 120 | 102.8 | |
| 9 | Be | 2 | 45 | 188.20 | ppb | 1.44 | 200.00 | 80 - | 120 | 94.1 | |
| 11 | B | 2 | 45 | 176.10 | ppb | 1.18 | 200.00 | 80 - | 120 | 88.1 | |
| 23 | Na | 1 | 45 | 5173.00 | ppb | 1.12 | 1000.00 | 80 - | 120 | 517.3 | Fail |
| 24 | Mg | 1 | 45 | 4928.00 | ppb | 1.19 | 1000.00 | 80 - | 120 | 492.8 | Fail |
| 27 | Al | 1 | 45 | 991.90 | ppb | 0.55 | 1000.00 | 80 - | 120 | 99.2 | |
| 39 | K | 1 | 45 | 5150.00 | ppb | 0.45 | 1000.00 | 80 - | 120 | 515.0 | Fail |
| 44 | Ca | 2 | 45 | 4914.00 | ppb | 1.52 | 1000.00 | 80 - | 120 | 491.4 | Fail |
| 47 | Ti | 1 | 45 | 200.50 | ppb | 2.70 | 200.00 | 80 - | 120 | 100.3 | |
| 51 | V | 1 | 45 | 196.40 | ppb | 1.13 | 200.00 | 80 - | 120 | 98.2 | |
| 52 | Cr | 1 | 45 | 197.10 | ppb | 1.61 | 200.00 | 80 - | 120 | 98.6 | |
| 55 | Mn | 1 | 45 | 201.70 | ppb | 1.45 | 200.00 | 80 - | 120 | 100.9 | |
| 56 | Fe | 1 | 72 | 10.30 | ppb | 0.81 | 1000.00 | 80 - | 120 | 1.0 | Fail |
| 59 | Co | 1 | 72 | 201.80 | ppb | 1.11 | 200.00 | 80 - | 120 | 100.9 | |
| 60 | Ni | 1 | 72 | 196.10 | ppb | 0.41 | 200.00 | 80 - | 120 | 98.1 | |
| 63 | Cu | 1 | 72 | 201.20 | ppb | 1.17 | 200.00 | 80 - | 120 | 100.6 | |
| 66 | Zn | 1 | 72 | 189.70 | ppb | 1.17 | 200.00 | 80 - | 120 | 94.9 | |
| 75 | As | 1 | 72 | 196.30 | ppb | 0.76 | 200.00 | 80 - | 120 | 98.2 | |
| 78 | Se | 1 | 72 | 187.40 | ppb | 1.34 | 200.00 | 80 - | 120 | 93.7 | |
| 88 | Sr | 2 | 115 | 205.70 | ppb | 0.97 | 200.00 | 80 - | 120 | 102.9 | |
| 95 | Mo | 2 | 115 | 188.50 | ppb | 1.44 | 200.00 | 80 - | 120 | 94.3 | |
| 107 | Ag | 2 | 115 | 191.30 | ppb | 1.78 | 200.00 | 80 - | 120 | 95.7 | |
| 111 | Cd | 2 | 115 | 186.50 | ppb | 1.79 | 200.00 | 80 - | 120 | 93.3 | |
| 118 | Sn | 2 | 115 | 201.20 | ppb | 2.36 | 200.00 | 80 - | 120 | 100.6 | |
| 121 | Sb | 2 | 115 | 192.70 | ppb | 1.93 | 200.00 | 80 - | 120 | 96.4 | |
| 137 | Ba | 2 | 115 | 198.50 | ppb | 2.29 | 200.00 | 80 - | 120 | 99.3 | |
| 205 | Tl | 2 | 209 | 206.20 | ppb | 2.20 | 200.00 | 80 - | 120 | 103.1 | |
| 208 | Pb | 2 | 209 | 201.30 | ppb | 1.54 | 200.00 | 80 - | 120 | 100.7 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -52739.15 | 0.35 | 35.48 | -148642.4 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 126782.71 | 0.15 | 138057.45 | 91.8 | 70 - | 120 | |
| 45 | Sc | 2 | 3463862.00 | 1.79 | 4152726.00 | 83.4 | 70 - | 120 | |
| 72 | Ge | 1 | 78198.08 | 0.52 | 86466.48 | 90.4 | 70 - | 120 | |
| 115 | In | 2 | 5623388.50 | 1.72 | 6053544.50 | 92.9 | 70 - | 120 | |
| 209 | Bi | 2 | 5141356.00 | 1.42 | 5465338.50 | 94.1 | 70 - | 120 | |

# LCS QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\097_LCS.D\097_LCS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 08:36 pm | Sample Name: | **LCSD-75216** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCSDICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 209.40 | ppb | 0.99 | 200.00 | 80 - | 120 | 104.7 | |
| 9 | Be | 2 | 45 | 189.60 | ppb | 0.82 | 200.00 | 80 - | 120 | 94.8 | |
| 11 | B | 2 | 45 | 181.80 | ppb | 0.76 | 200.00 | 80 - | 120 | 90.9 | |
| 23 | Na | 1 | 45 | 5246.00 | ppb | 0.53 | 1000.00 | 80 - | 120 | 524.6 | Fail |
| 24 | Mg | 1 | 45 | 5021.00 | ppb | 0.67 | 1000.00 | 80 - | 120 | 502.1 | Fail |
| 27 | Al | 1 | 45 | 1034.00 | ppb | 1.79 | 1000.00 | 80 - | 120 | 103.4 | |
| 39 | K | 1 | 45 | 5296.00 | ppb | 1.20 | 1000.00 | 80 - | 120 | 529.6 | Fail |
| 44 | Ca | 2 | 45 | 4975.00 | ppb | 1.42 | 1000.00 | 80 - | 120 | 497.5 | Fail |
| 47 | Ti | 1 | 45 | 206.90 | ppb | 1.92 | 200.00 | 80 - | 120 | 103.5 | |
| 51 | V | 1 | 45 | 200.50 | ppb | 0.79 | 200.00 | 80 - | 120 | 100.3 | |
| 52 | Cr | 1 | 45 | 200.20 | ppb | 1.25 | 200.00 | 80 - | 120 | 100.1 | |
| 55 | Mn | 1 | 45 | 207.60 | ppb | 1.22 | 200.00 | 80 - | 120 | 103.8 | |
| 56 | Fe | 1 | 72 | 8.36 | ppb | 1.47 | 1000.00 | 80 - | 120 | 0.8 | Fail |
| 59 | Co | 1 | 72 | 202.50 | ppb | 0.71 | 200.00 | 80 - | 120 | 101.3 | |
| 60 | Ni | 1 | 72 | 198.60 | ppb | 0.39 | 200.00 | 80 - | 120 | 99.3 | |
| 63 | Cu | 1 | 72 | 202.00 | ppb | 0.65 | 200.00 | 80 - | 120 | 101.0 | |
| 66 | Zn | 1 | 72 | 191.80 | ppb | 1.21 | 200.00 | 80 - | 120 | 95.9 | |
| 75 | As | 1 | 72 | 198.60 | ppb | 0.43 | 200.00 | 80 - | 120 | 99.3 | |
| 78 | Se | 1 | 72 | 190.70 | ppb | 0.59 | 200.00 | 80 - | 120 | 95.4 | |
| 88 | Sr | 2 | 115 | 205.30 | ppb | 1.12 | 200.00 | 80 - | 120 | 102.7 | |
| 95 | Mo | 2 | 115 | 188.20 | ppb | 1.54 | 200.00 | 80 - | 120 | 94.1 | |
| 107 | Ag | 2 | 115 | 189.40 | ppb | 1.42 | 200.00 | 80 - | 120 | 94.7 | |
| 111 | Cd | 2 | 115 | 186.00 | ppb | 1.88 | 200.00 | 80 - | 120 | 93.0 | |
| 118 | Sn | 2 | 115 | 199.90 | ppb | 2.14 | 200.00 | 80 - | 120 | 100.0 | |
| 121 | Sb | 2 | 115 | 191.50 | ppb | 1.24 | 200.00 | 80 - | 120 | 95.8 | |
| 137 | Ba | 2 | 115 | 199.30 | ppb | 0.67 | 200.00 | 80 - | 120 | 99.7 | |
| 205 | Tl | 2 | 209 | 209.00 | ppb | 0.54 | 200.00 | 80 - | 120 | 104.5 | |
| 208 | Pb | 2 | 209 | 204.60 | ppb | 1.50 | 200.00 | 80 - | 120 | 102.3 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -53672.47 | 1.02 | 35.48 | -151272.9 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 127889.62 | 1.19 | 138057.45 | 92.6 | 70 - | 120 | |
| 45 | Sc | 2 | 3469782.80 | 1.09 | 4152726.00 | 83.6 | 70 - | 120 | |
| 72 | Ge | 1 | 79083.59 | 0.45 | 86466.48 | 91.5 | 70 - | 120 | |
| 115 | In | 2 | 5679878.00 | 2.05 | 6053544.50 | 93.8 | 70 - | 120 | |
| 209 | Bi | 2 | 5172574.00 | 1.38 | 5465338.50 | 94.6 | 70 - | 120 | |

# DT QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\100DT1.D\100DT1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 08:54 pm | Sample Name: | **1605097-41A SD** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SD ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 25.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 25.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 12.27 | ppb | 0.57 | -1130.01 | 90 - 110 | -5.4 | |
| 9 | Be | 2 | 45 | 0.59 | ppb | 3.56 | 2.70 | 90 - 110 | 108.9 | GOOD |
| 11 | B | 2 | 45 | 14.11 | ppb | 1.63 | 68.62 | 90 - 110 | 102.8 | GOOD |
| 23 | Na | 1 | 45 | 177.10 | ppb | 3.03 | 1013.00 | 90 - 110 | 87.4 | |
| 24 | Mg | 1 | 45 | 2502.00 | ppb | 0.96 | 14400.00 | 90 - 110 | 86.9 | |
| 27 | Al | 1 | 45 | 14660.00 | ppb | 1.89 | 84070.00 | 90 - 110 | 87.2 | |
| 39 | K | 1 | 45 | 3403.00 | ppb | 1.30 | 19230.00 | 90 - 110 | 88.5 | |
| 44 | Ca | 2 | 45 | 9516.00 | ppb | 1.88 | 49050.00 | 90 - 110 | 97.0 | GOOD |
| 47 | Ti | 1 | 45 | 65.88 | ppb | 4.75 | 378.50 | 90 - 110 | 87.0 | |
| 51 | V | 1 | 45 | 21.59 | ppb | 1.89 | 121.40 | 90 - 110 | 88.9 | |
| 52 | Cr | 1 | 45 | 13.22 | ppb | 2.27 | 73.17 | 90 - 110 | 90.3 | GOOD |
| 55 | Mn | 1 | 45 | 124.20 | ppb | 2.14 | 690.10 | 90 - 110 | 90.0 | |
| 56 | Fe | 1 | 72 | 13040.00 | ppb | 1.35 | 74190.00 | 90 - 110 | 87.9 | |
| 59 | Co | 1 | 72 | 5.02 | ppb | 1.10 | 28.63 | 90 - 110 | 87.6 | |
| 60 | Ni | 1 | 72 | 7.87 | ppb | 3.00 | 42.50 | 90 - 110 | 92.5 | GOOD |
| 63 | Cu | 1 | 72 | 5.10 | ppb | 2.22 | 27.79 | 90 - 110 | 91.8 | GOOD |
| 66 | Zn | 1 | 72 | 44.88 | ppb | 2.43 | 229.20 | 90 - 110 | 97.9 | GOOD |
| 75 | As | 1 | 72 | 4.85 | ppb | 2.35 | 26.24 | 90 - 110 | 92.3 | GOOD |
| 78 | Se | 1 | 72 | 4.84 | ppb | 5.91 | 25.78 | 90 - 110 | 93.9 | GOOD |
| 88 | Sr | 2 | 115 | 50.41 | ppb | 0.80 | 291.00 | 90 - 110 | 86.6 | |
| 95 | Mo | 2 | 115 | 0.34 | ppb | 6.71 | 1.77 | 90 - 110 | 94.9 | GOOD |
| 107 | Ag | 2 | 115 | 0.08 | ppb | 6.97 | 0.26 | 90 - 110 | 148.7 | |
| 111 | Cd | 2 | 115 | 0.21 | ppb | 18.97 | 0.97 | 90 - 110 | 109.9 | GOOD |
| 118 | Sn | 2 | 115 | 1.07 | ppb | 4.43 | 5.87 | 90 - 110 | 90.7 | GOOD |
| 121 | Sb | 2 | 115 | 0.34 | ppb | 2.50 | 1.72 | 90 - 110 | 100.6 | GOOD |
| 137 | Ba | 2 | 115 | 81.32 | ppb | 2.19 | 450.80 | 90 - 110 | 90.2 | GOOD |
| 205 | Tl | 2 | 209 | 0.20 | ppb | 3.75 | 0.80 | 90 - 110 | 124.0 | |
| 208 | Pb | 2 | 209 | 10.20 | ppb | 1.33 | 56.67 | 90 - 110 | 90.0 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHig | -1130.01 | 15.39 | 35.48 | -3184.9 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | | 122021.13 | 0.44 | 138057.45 | 88.4 | 70 - | 120 | |
| 45 | Sc | 2 | | 3421712.80 | 1.50 | 4152726.00 | 82.4 | 70 - | 120 | |
| 72 | Ge | 1 | | 76179.46 | 1.09 | 86466.48 | 88.1 | 70 - | 120 | |
| 115 | In | 2 | | 5566847.00 | 1.75 | 6053544.50 | 92.0 | 70 - | 120 | |
| 209 | Bi | 2 | | 5026028.00 | 0.88 | 5465338.50 | 92.0 | 70 - | 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\109SMPL.D\109SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 09:48 pm | Sample Name: | **1605098-01A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 76.970 | ppb | #REF! | 1.01 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 3.897 | ppb | #REF! | 1.15 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 118.500 | ppb | #REF! | 2.38 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 5282.000 | ppb | #REF! | 0.69 | 25000.00 | >RL |
| 24 | Mg | 1 | 45 | 13990.000 | ppb | #REF! | 1.28 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 77130.000 | ppb | #REF! | 1.79 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 18210.000 | ppb | #REF! | 0.57 | 25000.00 | >RL |
| 44 | Ca | 2 | 45 | 73670.000 | ppb | #REF! | 2.15 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 193.900 | ppb | #REF! | 4.75 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 133.000 | ppb | #REF! | 0.95 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 82.280 | ppb | #REF! | 1.55 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 308.000 | ppb | #REF! | 1.01 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 139600.000 | ppb | #REF! | 1.66 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 20.880 | ppb | #REF! | 1.09 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 41.480 | ppb | #REF! | 1.09 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 17.100 | ppb | #REF! | 1.20 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 232.500 | ppb | #REF! | 0.36 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 35.750 | ppb | #REF! | 0.48 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 24.300 | ppb | #REF! | 1.17 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 626.800 | ppb | #REF! | 1.98 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 1.765 | ppb | #REF! | 2.90 | 2000.00 | ND |
| 107 | Ag | 2 | 115 | 0.112 | ppb | #REF! | 14.59 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.621 | ppb | #REF! | 3.17 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 5.999 | ppb | #REF! | 4.12 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.729 | ppb | #REF! | 7.40 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 296.300 | ppb | #REF! | 3.11 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.592 | ppb | #REF! | 1.35 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 104.000 | ppb | #REF! | 1.76 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -6432.59 | 5.97 | RHigh | 35.48 | -18129.9 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 115029.34 | 0.39 | | 138057.45 | 83.3 | 70 - 120 | |
| 45 | Sc | 2 | 3139111.80 | 2.39 | | 4152726.00 | 75.6 | 70 - 120 | |
| 72 | Ge | 1 | 69743.24 | 0.47 | | 86466.48 | 80.7 | 70 - 120 | |
| 115 | In | 2 | 5147311.00 | 2.17 | | 6053544.50 | 85.0 | 70 - 120 | |
| 209 | Bi | 2 | 4577313.00 | 1.83 | | 5465338.50 | 83.8 | 70 - 120 | |

# PDS QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\110_PDS.D\110_PDS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 09:54 pm | Sample Name: | **1605097-41A PDS** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | PDS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 248.50 | ppb | 1.54 | -26968.20 | 200 | 75-125 | ###### | Fail |
| 9 | Be | 2 | 45 | 174.50 | ppb | 2.13 | 2.70 | 200 | 75-125 | 85.9 | |
| 11 | B | 2 | 45 | 220.30 | ppb | 0.91 | 68.62 | 200 | 75-125 | 75.8 | |
| 23 | Na | 1 | 45 | 5882.00 | ppb | 0.62 | 1013.00 | 5000 | 75-125 | 97.4 | |
| 24 | Mg | 1 | 45 | 17770.00 | ppb | 1.16 | 14400.00 | 5000 | 75-125 | 67.4 | Fail |
| 27 | Al | 1 | 45 | 80070.00 | ppb | 1.59 | 84070.00 | 5000 | 75-125 | -80.0 | Fail |
| 39 | K | 1 | 45 | 21920.00 | ppb | 0.91 | 19230.00 | 5000 | 75-125 | 53.8 | Fail |
| 44 | Ca | 2 | 45 | 51890.00 | ppb | 1.73 | 49050.00 | 5000 | 75-125 | 56.8 | Fail |
| 47 | Ti | 1 | 45 | 541.80 | ppb | 1.23 | 378.50 | 200 | 75-125 | 81.7 | |
| 51 | V | 1 | 45 | 305.30 | ppb | 1.22 | 121.40 | 200 | 75-125 | 92.0 | |
| 52 | Cr | 1 | 45 | 261.30 | ppb | 1.64 | 73.17 | 200 | 75-125 | 94.1 | |
| 55 | Mn | 1 | 45 | 811.80 | ppb | 1.07 | 690.10 | 200 | 75-125 | 60.9 | Fail |
| 56 | Fe | 1 | 72 | 71300.00 | ppb | 1.47 | 74190.00 | 5000 | 75-125 | -57.8 | Fail |
| 59 | Co | 1 | 72 | 220.50 | ppb | 1.37 | 28.63 | 200 | 75-125 | 95.9 | |
| 60 | Ni | 1 | 72 | 224.80 | ppb | 0.63 | 42.50 | 200 | 75-125 | 91.2 | |
| 63 | Cu | 1 | 72 | 210.20 | ppb | 1.35 | 27.79 | 200 | 75-125 | 91.2 | |
| 66 | Zn | 1 | 72 | 388.70 | ppb | 1.12 | 229.20 | 200 | 75-125 | 79.8 | |
| 75 | As | 1 | 72 | 217.00 | ppb | 0.47 | 26.24 | 200 | 75-125 | 95.4 | |
| 78 | Se | 1 | 72 | 202.40 | ppb | 1.77 | 25.78 | 200 | 75-125 | 88.3 | |
| 88 | Sr | 2 | 115 | 472.10 | ppb | 1.56 | 291.00 | 200 | 75-125 | 90.6 | |
| 95 | Mo | 2 | 115 | 185.30 | ppb | 1.99 | 1.77 | 200 | 75-125 | 91.8 | |
| 107 | Ag | 2 | 115 | 175.00 | ppb | 2.02 | 0.26 | 200 | 75-125 | 87.4 | |
| 111 | Cd | 2 | 115 | 178.10 | ppb | 1.41 | 0.97 | 200 | 75-125 | 88.6 | |
| 118 | Sn | 2 | 115 | 202.50 | ppb | 1.84 | 5.87 | 200 | 75-125 | 98.3 | |
| 121 | Sb | 2 | 115 | 187.90 | ppb | 1.50 | 1.72 | 200 | 75-125 | 93.1 | |
| 137 | Ba | 2 | 115 | 632.10 | ppb | 1.81 | 450.80 | 200 | 75-125 | 90.7 | |
| 205 | Tl | 2 | 209 | 206.40 | ppb | 1.32 | 0.80 | 200 | 75-125 | 102.8 | |
| 208 | Pb | 2 | 209 | 254.60 | ppb | 0.94 | 56.67 | 200 | 75-125 | 99.0 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -26968.20 | 3.59 | 35.48 | -76008.4 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 112479.95 | 0.48 | 138057.45 | 81.5 | 70 - 120 | |
| 45 | Sc | 2 | 3149629.30 | 0.71 | 4152726.00 | 75.8 | 70 - 120 | |
| 72 | Ge | 1 | 68725.95 | 0.67 | 86466.48 | 79.5 | 70 - 120 | |
| 115 | In | 2 | 5207528.00 | 1.73 | 6053544.50 | 86.0 | 70 - 120 | |
| 209 | Bi | 2 | 4644441.00 | 0.81 | 5465338.50 | 85.0 | 70 - 120 | |

# MS/MSD QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\111_MS.D\111_MS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 10:00 pm | Sample Name: | **1605097-41A MS** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 250.20 | ppb | 1.04 | ######## | 200 | 80-120 | ###### | Fail |
| 9 | Be | 2 | 45 | 171.00 | ppb | 1.73 | 2.70 | 200 | 80-120 | 84.1 | |
| 11 | B | 2 | 45 | 222.40 | ppb | 2.19 | 68.62 | 200 | 80-120 | 76.9 | Fail |
| 23 | Na | 1 | 45 | 5947.00 | ppb | 0.72 | 1013.00 | 1000 | 80-120 | 493.4 | Fail |
| 24 | Mg | 1 | 45 | 18490.00 | ppb | 0.52 | 14400.00 | 1000 | 80-120 | 409.0 | Fail |
| 27 | Al | 1 | 45 | 85250.00 | ppb | 0.20 | 84070.00 | 1000 | 80-120 | 118.0 | |
| 39 | K | 1 | 45 | 24330.00 | ppb | 0.60 | 19230.00 | 1000 | 80-120 | 510.0 | Fail |
| 44 | Ca | 2 | 45 | 47780.00 | ppb | 1.44 | 49050.00 | 1000 | 80-120 | -127.0 | Fail |
| 47 | Ti | 1 | 45 | 568.50 | ppb | 1.03 | 378.50 | 200 | 80-120 | 95.0 | |
| 51 | V | 1 | 45 | 310.00 | ppb | 0.45 | 121.40 | 200 | 80-120 | 94.3 | |
| 52 | Cr | 1 | 45 | 259.90 | ppb | 0.75 | 73.17 | 200 | 80-120 | 93.4 | |
| 55 | Mn | 1 | 45 | 859.60 | ppb | 0.87 | 690.10 | 200 | 80-120 | 84.8 | |
| 56 | Fe | 1 | 72 | 70880.00 | ppb | 1.32 | 74190.00 | 1000 | 80-120 | -331.0 | Fail |
| 59 | Co | 1 | 72 | 220.70 | ppb | 0.75 | 28.63 | 200 | 80-120 | 96.0 | |
| 60 | Ni | 1 | 72 | 227.20 | ppb | 0.79 | 42.50 | 200 | 80-120 | 92.4 | |
| 63 | Cu | 1 | 72 | 211.80 | ppb | 0.65 | 27.79 | 200 | 80-120 | 92.0 | |
| 66 | Zn | 1 | 72 | 392.60 | ppb | 0.22 | 229.20 | 200 | 80-120 | 81.7 | |
| 75 | As | 1 | 72 | 213.90 | ppb | 0.17 | 26.24 | 200 | 80-120 | 93.8 | |
| 78 | Se | 1 | 72 | 205.20 | ppb | 0.70 | 25.78 | 200 | 80-120 | 89.7 | |
| 88 | Sr | 2 | 115 | 457.00 | ppb | 2.34 | 291.00 | 200 | 80-120 | 83.0 | |
| 95 | Mo | 2 | 115 | 169.60 | ppb | 1.78 | 1.77 | 200 | 80-120 | 83.9 | |
| 107 | Ag | 2 | 115 | 175.70 | ppb | 2.04 | 0.26 | 200 | 80-120 | 87.7 | |
| 111 | Cd | 2 | 115 | 176.10 | ppb | 2.55 | 0.97 | 200 | 80-120 | 87.6 | |
| 118 | Sn | 2 | 115 | 193.60 | ppb | 2.28 | 5.87 | 200 | 80-120 | 93.9 | |
| 121 | Sb | 2 | 115 | 65.07 | ppb | 1.84 | 1.72 | 200 | 80-120 | 31.7 | Fail |
| 137 | Ba | 2 | 115 | 649.80 | ppb | 2.98 | 450.80 | 200 | 80-120 | 99.5 | |
| 205 | Tl | 2 | 209 | 212.60 | ppb | 2.29 | 0.80 | 200 | 80-120 | 105.9 | |
| 208 | Pb | 2 | 209 | 262.50 | ppb | 0.98 | 56.67 | 200 | 80-120 | 102.9 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -49634.36 | 1.91 | 35.48 | ######## | 70 - 120 | ISFail |
| 45 | Sc | 1 | 115554.32 | 0.70 | 138057.45 | 83.7 | 70 - 120 | |
| 45 | Sc | 2 | 3186061.00 | 1.30 | 4152726.00 | 76.7 | 70 - 120 | |
| 72 | Ge | 1 | 70086.66 | 0.36 | 86466.48 | 81.1 | 70 - 120 | |
| 115 | In | 2 | 5291176.50 | 2.03 | 6053544.50 | 87.4 | 70 - 120 | |
| 209 | Bi | 2 | 4665717.00 | 1.03 | 5465338.50 | 85.4 | 70 - 120 | |

# MS/MSD QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\112_MS.D\112_MS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 10:06 pm | Sample Name: | **1605097-41A MSD** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MSD ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 245.30 | ppb | 1.87 | ######## | 200 | 80-120 | ###### | Fail |
| 9 | Be | 2 | 45 | 166.00 | ppb | 2.06 | 2.70 | 200 | 80-120 | 81.6 | |
| 11 | B | 2 | 45 | 219.00 | ppb | 2.04 | 68.62 | 200 | 80-120 | 75.2 | Fail |
| 23 | Na | 1 | 45 | 5778.00 | ppb | 0.54 | 1013.00 | 1000 | 80-120 | 476.5 | Fail |
| 24 | Mg | 1 | 45 | 18590.00 | ppb | 0.67 | 14400.00 | 1000 | 80-120 | 419.0 | Fail |
| 27 | Al | 1 | 45 | 84710.00 | ppb | 1.78 | 84070.00 | 1000 | 80-120 | 64.0 | Fail |
| 39 | K | 1 | 45 | 23710.00 | ppb | 2.04 | 19230.00 | 1000 | 80-120 | 448.0 | Fail |
| 44 | Ca | 2 | 45 | 48400.00 | ppb | 1.28 | 49050.00 | 1000 | 80-120 | -65.0 | Fail |
| 47 | Ti | 1 | 45 | 534.80 | ppb | 0.62 | 378.50 | 200 | 80-120 | 78.2 | Fail |
| 51 | V | 1 | 45 | 304.90 | ppb | 1.01 | 121.40 | 200 | 80-120 | 91.8 | |
| 52 | Cr | 1 | 45 | 254.50 | ppb | 1.16 | 73.17 | 200 | 80-120 | 90.7 | |
| 55 | Mn | 1 | 45 | 833.20 | ppb | 0.61 | 690.10 | 200 | 80-120 | 71.6 | Fail |
| 56 | Fe | 1 | 72 | 72900.00 | ppb | 0.71 | 74190.00 | 1000 | 80-120 | -129.0 | Fail |
| 59 | Co | 1 | 72 | 214.30 | ppb | 0.89 | 28.63 | 200 | 80-120 | 92.8 | |
| 60 | Ni | 1 | 72 | 221.30 | ppb | 1.18 | 42.50 | 200 | 80-120 | 89.4 | |
| 63 | Cu | 1 | 72 | 205.40 | ppb | 0.39 | 27.79 | 200 | 80-120 | 88.8 | |
| 66 | Zn | 1 | 72 | 390.90 | ppb | 1.30 | 229.20 | 200 | 80-120 | 80.9 | |
| 75 | As | 1 | 72 | 208.20 | ppb | 0.57 | 26.24 | 200 | 80-120 | 91.0 | |
| 78 | Se | 1 | 72 | 197.10 | ppb | 1.03 | 25.78 | 200 | 80-120 | 85.7 | |
| 88 | Sr | 2 | 115 | 461.40 | ppb | 2.79 | 291.00 | 200 | 80-120 | 85.2 | |
| 95 | Mo | 2 | 115 | 168.60 | ppb | 1.65 | 1.77 | 200 | 80-120 | 83.4 | |
| 107 | Ag | 2 | 115 | 174.40 | ppb | 2.38 | 0.26 | 200 | 80-120 | 87.1 | |
| 111 | Cd | 2 | 115 | 173.60 | ppb | 1.98 | 0.97 | 200 | 80-120 | 86.3 | |
| 118 | Sn | 2 | 115 | 192.50 | ppb | 2.49 | 5.87 | 200 | 80-120 | 93.3 | |
| 121 | Sb | 2 | 115 | 66.22 | ppb | 1.70 | 1.72 | 200 | 80-120 | 32.3 | Fail |
| 137 | Ba | 2 | 115 | 716.20 | ppb | 2.52 | 450.80 | 200 | 80-120 | 132.7 | Fail |
| 205 | Tl | 2 | 209 | 205.70 | ppb | 2.02 | 0.80 | 200 | 80-120 | 102.5 | |
| 208 | Pb | 2 | 209 | 254.30 | ppb | 1.43 | 56.67 | 200 | 80-120 | 98.8 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -48441.43 | 4.02 | 35.48 | ######## | 70 - 120 | ISFail |
| 45 | Sc | 1 | 111819.46 | 0.30 | 138057.45 | 81.0 | 70 - 120 | |
| 45 | Sc | 2 | 3199715.80 | 1.76 | 4152726.00 | 77.1 | 70 - 120 | |
| 72 | Ge | 1 | 67933.56 | 0.74 | 86466.48 | 78.6 | 70 - 120 | |
| 115 | In | 2 | 5270491.00 | 2.11 | 6053544.50 | 87.1 | 70 - 120 | |
| 209 | Bi | 2 | 4699666.50 | 1.20 | 5465338.50 | 86.0 | 70 - 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\114CCV1.D\114CCV1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 10:18 pm | Sample Name: | **CCV5-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCV ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 197.00 | ppb | 1.12 | 200.00 | 90 - | 110 | 98.5 | |
| 9 | Be | 2 | 45 | 187.70 | ppb | 1.80 | 200.00 | 90 - | 110 | 93.9 | |
| 11 | B | 2 | 45 | 174.30 | ppb | 0.67 | 200.00 | 90 - | 110 | 87.2 | Fail |
| 23 | Na | 1 | 45 | 5147.00 | ppb | 0.53 | 5000.00 | 90 - | 110 | 102.9 | |
| 24 | Mg | 1 | 45 | 4911.00 | ppb | 1.74 | 5000.00 | 90 - | 110 | 98.2 | |
| 27 | Al | 1 | 45 | 4933.00 | ppb | 2.51 | 5000.00 | 90 - | 110 | 98.7 | |
| 39 | K | 1 | 45 | 5234.00 | ppb | 0.52 | 5000.00 | 90 - | 110 | 104.7 | |
| 44 | Ca | 2 | 45 | 4982.00 | ppb | 1.66 | 5000.00 | 90 - | 110 | 99.6 | |
| 47 | Ti | 1 | 45 | 205.10 | ppb | 2.71 | 200.00 | 90 - | 110 | 102.6 | |
| 51 | V | 1 | 45 | 198.80 | ppb | 0.97 | 200.00 | 90 - | 110 | 99.4 | |
| 52 | Cr | 1 | 45 | 199.70 | ppb | 1.66 | 200.00 | 90 - | 110 | 99.9 | |
| 55 | Mn | 1 | 45 | 206.70 | ppb | 0.97 | 200.00 | 90 - | 110 | 103.4 | |
| 56 | Fe | 1 | 72 | 5045.00 | ppb | 2.05 | 5000.00 | 90 - | 110 | 100.9 | |
| 59 | Co | 1 | 72 | 201.80 | ppb | 0.75 | 200.00 | 90 - | 110 | 100.9 | |
| 60 | Ni | 1 | 72 | 197.40 | ppb | 1.01 | 200.00 | 90 - | 110 | 98.7 | |
| 63 | Cu | 1 | 72 | 202.00 | ppb | 0.91 | 200.00 | 90 - | 110 | 101.0 | |
| 66 | Zn | 1 | 72 | 204.80 | ppb | 0.85 | 200.00 | 90 - | 110 | 102.4 | |
| 75 | As | 1 | 72 | 210.60 | ppb | 1.01 | 200.00 | 90 - | 110 | 105.3 | |
| 78 | Se | 1 | 72 | 210.60 | ppb | 3.62 | 200.00 | 90 - | 110 | 105.3 | |
| 88 | Sr | 2 | 115 | 208.40 | ppb | 2.16 | 200.00 | 90 - | 110 | 104.2 | |
| 95 | Mo | 2 | 115 | 187.10 | ppb | 1.38 | 200.00 | 90 - | 110 | 93.6 | |
| 107 | Ag | 2 | 115 | 190.40 | ppb | 1.10 | 200.00 | 90 - | 110 | 95.2 | |
| 111 | Cd | 2 | 115 | 192.10 | ppb | 1.43 | 200.00 | 90 - | 110 | 96.1 | |
| 118 | Sn | 2 | 115 | 198.00 | ppb | 1.59 | 200.00 | 90 - | 110 | 99.0 | |
| 121 | Sb | 2 | 115 | 198.80 | ppb | 1.85 | 200.00 | 90 - | 110 | 99.4 | |
| 137 | Ba | 2 | 115 | 207.50 | ppb | 1.61 | 200.00 | 90 - | 110 | 103.8 | |
| 205 | Tl | 2 | 209 | 212.50 | ppb | 0.97 | 200.00 | 90 - | 110 | 106.3 | |
| 208 | Pb | 2 | 209 | 203.50 | ppb | 1.32 | 200.00 | 90 - | 110 | 101.8 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -46314.04 | 1.05 | 35.48 | -130533.6 | 70 - | 120 | | ISFail |
| 45 | Sc | 1 | 110748.88 | 1.03 | 138057.45 | 80.2 | 70 - | 120 | | |
| 45 | Sc | 2 | 3152866.00 | 0.92 | 4152726.00 | 75.9 | 70 - | 120 | | |
| 72 | Ge | 1 | 69207.07 | 0.50 | 86466.48 | 80.0 | 70 - | 120 | | |
| 115 | In | 2 | 5332633.00 | 1.05 | 6053544.50 | 88.1 | 70 - | 120 | | |
| 209 | Bi | 2 | 4925184.00 | 1.52 | 5465338.50 | 90.1 | 70 - | 120 | | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\116LCVL.D\116LCVL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 10:30 pm | Sample Name: | **LCVL5-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCVLICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 9.64 | ppb | 1.95 | 5.00 | 70 - | 130 | 192.8 | Fail |
| 9 | Be | 2 | 45 | 0.97 | ppb | 2.01 | 1.00 | 70 - | 130 | 97.2 | |
| 11 | B | 2 | 45 | 18.31 | ppb | 1.25 | 20.00 | 70 - | 130 | 91.6 | |
| 23 | Na | 1 | 45 | 96.59 | ppb | 1.25 | 100.00 | 70 - | 130 | 96.6 | |
| 24 | Mg | 1 | 45 | 99.01 | ppb | 0.20 | 100.00 | 70 - | 130 | 99.0 | |
| 27 | Al | 1 | 45 | 109.80 | ppb | 2.83 | 100.00 | 70 - | 130 | 109.8 | |
| 39 | K | 1 | 45 | 105.90 | ppb | 5.78 | 100.00 | 70 - | 130 | 105.9 | |
| 44 | Ca | 2 | 45 | 105.60 | ppb | 0.22 | 100.00 | 70 - | 130 | 105.6 | |
| 47 | Ti | 1 | 45 | 4.81 | ppb | 16.29 | 5.00 | 70 - | 130 | 96.2 | |
| 51 | V | 1 | 45 | 1.09 | ppb | 4.18 | 1.00 | 70 - | 130 | 108.5 | |
| 52 | Cr | 1 | 45 | 5.10 | ppb | 1.53 | 5.00 | 70 - | 130 | 102.0 | |
| 55 | Mn | 1 | 45 | 5.26 | ppb | 2.20 | 5.00 | 70 - | 130 | 105.3 | |
| 56 | Fe | 1 | 72 | 111.90 | ppb | 0.93 | 100.00 | 70 - | 130 | 111.9 | |
| 59 | Co | 1 | 72 | 5.06 | ppb | 1.60 | 5.00 | 70 - | 130 | 101.2 | |
| 60 | Ni | 1 | 72 | 4.91 | ppb | 1.66 | 5.00 | 70 - | 130 | 98.1 | |
| 63 | Cu | 1 | 72 | 5.02 | ppb | 1.09 | 5.00 | 70 - | 130 | 100.4 | |
| 66 | Zn | 1 | 72 | 4.64 | ppb | 5.57 | 5.00 | 70 - | 130 | 92.8 | |
| 75 | As | 1 | 72 | 5.10 | ppb | 2.61 | 5.00 | 70 - | 130 | 101.9 | |
| 78 | Se | 1 | 72 | 5.21 | ppb | 4.53 | 5.00 | 70 - | 130 | 104.2 | |
| 88 | Sr | 2 | 115 | 4.96 | ppb | 1.31 | 5.00 | 70 - | 130 | 99.2 | |
| 95 | Mo | 2 | 115 | 4.49 | ppb | 4.00 | 5.00 | 70 - | 130 | 89.7 | |
| 107 | Ag | 2 | 115 | 1.87 | ppb | 3.09 | 2.00 | 70 - | 130 | 93.3 | |
| 111 | Cd | 2 | 115 | 1.07 | ppb | 5.45 | 1.00 | 70 - | 130 | 106.7 | |
| 118 | Sn | 2 | 115 | 4.80 | ppb | 1.87 | 5.00 | 70 - | 130 | 95.9 | |
| 121 | Sb | 2 | 115 | 1.93 | ppb | 1.68 | 2.00 | 70 - | 130 | 96.6 | |
| 137 | Ba | 2 | 115 | 5.38 | ppb | 1.20 | 5.00 | 70 - | 130 | 107.6 | |
| 205 | Tl | 2 | 209 | 1.09 | ppb | 0.87 | 1.00 | 70 - | 130 | 109.2 | |
| 208 | Pb | 2 | 209 | 1.03 | ppb | 1.81 | 1.00 | 70 - | 130 | 102.9 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigl -1267.46 | 5.49 | 35.48 | -3572.3 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 108932.16 | 0.52 | 138057.45 | 78.9 | 70 - | 120 | |
| 45 | Sc | 2 | 3162863.30 | 0.98 | 4152726.00 | 76.2 | 70 - | 120 | |
| 72 | Ge | 1 | 69309.40 | 1.05 | 86466.48 | 80.2 | 70 - | 120 | |
| 115 | In | 2 | 5446255.00 | 0.81 | 6053544.50 | 90.0 | 70 - | 120 | |
| 209 | Bi | 2 | 5138521.00 | 2.04 | 5465338.50 | 94.0 | 70 - | 120 | |

# CCB QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\117_CCB.D\117_CCB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 10:36 pm | Sample Name: | **CCB5-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCB ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL S | MDL Aq | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.176 | ppb | 3.00 | 2.00 | 2.00 | |
| 9 | Be | 2 | 45 | 0.041 | ppb | 30.05 | 0.40 | 0.30 | |
| 11 | B | 2 | 45 | 3.393 | ppb | 2.05 | 10.00 | 10.00 | |
| 23 | Na | 1 | 45 | 4.638 | ppb | 3.36 | 50.00 | ##### | |
| 24 | Mg | 1 | 45 | 2.497 | ppb | 8.92 | 50.00 | ##### | |
| 27 | Al | 1 | 45 | 21.330 | ppb | 1.41 | 50.00 | 10.00 | FailAq |
| 39 | K | 1 | 45 | 9.270 | ppb | 6.66 | 50.00 | ##### | |
| 44 | Ca | 2 | 45 | 31.930 | ppb | 1.06 | 50.00 | ##### | |
| 47 | Ti | 1 | 45 | 0.276 | ppb | 45.83 | 4.00 | 3.00 | |
| 51 | V | 1 | 45 | 0.063 | ppb | 3.88 | 4.00 | 3.00 | |
| 52 | Cr | 1 | 45 | 0.070 | ppb | 3.65 | 2.00 | 2.00 | |
| 55 | Mn | 1 | 45 | 0.177 | ppb | 7.70 | 2.00 | 3.00 | |
| 56 | Fe | 1 | 72 | 12.190 | ppb | 4.45 | 50.00 | 30.00 | |
| 59 | Co | 1 | 72 | 0.044 | ppb | 11.67 | 2.00 | 3.00 | |
| 60 | Ni | 1 | 72 | 0.082 | ppb | 7.69 | 2.00 | 3.00 | |
| 63 | Cu | 1 | 72 | 0.070 | ppb | 0.90 | 2.00 | 2.00 | |
| 66 | Zn | 1 | 72 | 0.075 | ppb | 3.98 | 4.00 | 2.00 | |
| 75 | As | 1 | 72 | 0.081 | ppb | 13.06 | 2.00 | 2.00 | |
| 78 | Se | 1 | 72 | 0.223 | ppb | 32.76 | 0.60 | 2.00 | |
| 88 | Sr | 2 | 115 | 0.239 | ppb | 2.60 | 4.00 | 3.00 | |
| 95 | Mo | 2 | 115 | 0.063 | ppb | 13.89 | 2.00 | 2.00 | |
| 107 | Ag | 2 | 115 | 0.047 | ppb | 8.70 | 0.40 | 1.00 | |
| 111 | Cd | 2 | 115 | 0.040 | ppb | 29.51 | 0.40 | 0.30 | |
| 118 | Sn | 2 | 115 | 0.084 | ppb | 10.20 | 20.00 | 3.00 | |
| 121 | Sb | 2 | 115 | 0.063 | ppb | 11.78 | 2.00 | 0.80 | |
| 137 | Ba | 2 | 115 | 0.131 | ppb | 6.38 | 2.00 | 3.00 | |
| 205 | Tl | 2 | 209 | 0.094 | ppb | 2.33 | 2.00 | 0.50 | |
| 208 | Pb | 2 | 209 | 0.073 | ppb | 7.41 | 0.40 | 0.30 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigh | -19.20 | 114.84 | 35.48 | -54.1 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 108610.82 | 1.06 | 138057.45 | 78.7 | 70 - 120 | |
| 45 | Sc | 2 | | 3165561.00 | 1.22 | 4152726.00 | 76.2 | 70 - 120 | |
| 72 | Ge | 1 | | 68732.01 | 0.58 | 86466.48 | 79.5 | 70 - 120 | |
| 115 | In | 2 | | 5408195.00 | 0.98 | 6053544.50 | 89.3 | 70 - 120 | |
| 209 | Bi | 2 | | 5098436.00 | 1.12 | 5465338.50 | 93.3 | 70 - 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\118SMPL.D\118SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 10:42 pm | Sample Name: | **1605098-02A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 79.190 | ppb | #REF! | 1.63 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 5.080 | ppb | #REF! | 2.20 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 121.200 | ppb | #REF! | 1.01 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 5169.000 | ppb | #REF! | 1.25 | 25000.00 | >RL |
| 24 | Mg | 1 | 45 | 14830.000 | ppb | #REF! | 1.23 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 79010.000 | ppb | #REF! | 1.99 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 21600.000 | ppb | #REF! | 1.10 | 25000.00 | >RL |
| 44 | Ca | 2 | 45 | 69080.000 | ppb | #REF! | 1.70 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 167.200 | ppb | #REF! | 2.78 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 125.400 | ppb | #REF! | 1.92 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 85.540 | ppb | #REF! | 0.99 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 2717.000 | ppb | #REF! | 2.21 | 2000.00 | OUTCAL |
| 56 | Fe | 1 | 72 | 136600.000 | ppb | #REF! | 1.42 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 123.700 | ppb | #REF! | 1.21 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 150.100 | ppb | #REF! | 1.84 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 15.810 | ppb | #REF! | 1.25 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 499.200 | ppb | #REF! | 1.10 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 41.040 | ppb | #REF! | 1.35 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 66.090 | ppb | #REF! | 2.41 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 508.400 | ppb | #REF! | 2.76 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 2.827 | ppb | #REF! | 6.44 | 2000.00 | J |
| 107 | Ag | 2 | 115 | 0.114 | ppb | #REF! | 5.16 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 1.539 | ppb | #REF! | 6.05 | 2000.00 | >RL |
| 118 | Sn | 2 | 115 | 6.299 | ppb | #REF! | 4.21 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.635 | ppb | #REF! | 1.84 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 152.100 | ppb | #REF! | 2.78 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.932 | ppb | #REF! | 2.26 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 107.700 | ppb | #REF! | 1.09 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -6577.04 | 4.97 | 35.48 | -18537.0 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 112441.41 | 0.35 | 138057.45 | 81.4 | 70 - 120 | |
| 45 | Sc | 2 | 3157499.00 | 1.13 | 4152726.00 | 76.0 | 70 - 120 | |
| 72 | Ge | 1 | 68870.11 | 1.29 | 86466.48 | 79.6 | 70 - 120 | |
| 115 | In | 2 | 5160864.50 | 1.65 | 6053544.50 | 85.3 | 70 - 120 | |
| 209 | Bi | 2 | 4512421.00 | 0.34 | 5465338.50 | 82.6 | 70 - 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\119SMPL.D\119SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 10:48 pm | Sample Name: | **1605098-03A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 78.610 | ppb | #REF! | 0.30 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 5.481 | ppb | #REF! | 1.90 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 140.700 | ppb | #REF! | 2.10 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 6903.000 | ppb | #REF! | 0.97 | 25000.00 | >RL |
| 24 | Mg | 1 | 45 | 15450.000 | ppb | #REF! | 1.30 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 86280.000 | ppb | #REF! | 0.91 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 27030.000 | ppb | #REF! | 0.29 | 25000.00 | OUTCAL |
| 44 | Ca | 2 | 45 | 79160.000 | ppb | #REF! | 2.31 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 177.900 | ppb | #REF! | 1.21 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 144.200 | ppb | #REF! | 0.55 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 172.900 | ppb | #REF! | 0.97 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 1073.000 | ppb | #REF! | 0.89 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 162100.000 | ppb | #REF! | 0.81 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 60.570 | ppb | #REF! | 0.91 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 111.500 | ppb | #REF! | 0.72 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 17.710 | ppb | #REF! | 1.71 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 931.800 | ppb | #REF! | 0.37 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 58.530 | ppb | #REF! | 0.92 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 44.180 | ppb | #REF! | 1.85 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 724.200 | ppb | #REF! | 1.61 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 11.840 | ppb | #REF! | 0.45 | 2000.00 | >RL |
| 107 | Ag | 2 | 115 | 0.168 | ppb | #REF! | 4.51 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.991 | ppb | #REF! | 16.69 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 6.901 | ppb | #REF! | 2.87 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.454 | ppb | #REF! | 6.96 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 225.600 | ppb | #REF! | 1.59 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.834 | ppb | #REF! | 2.46 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 85.450 | ppb | #REF! | 1.83 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -7042.79 | 2.65 | 35.48 | -19849.7 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 113106.94 | 0.33 | 138057.45 | 81.9 | 70 - 120 | |
| 45 | Sc | 2 | 3184851.30 | 2.03 | 4152726.00 | 76.7 | 70 - 120 | |
| 72 | Ge | 1 | 68741.91 | 0.74 | 86466.48 | 79.5 | 70 - 120 | |
| 115 | In | 2 | 5228052.00 | 2.51 | 6053544.50 | 86.4 | 70 - 120 | |
| 209 | Bi | 2 | 4604245.50 | 1.44 | 5465338.50 | 84.2 | 70 - 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\120SMPL.D\120SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 10:54 pm | Sample Name: | **1605098-04A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 62.190 | ppb | #REF! | 0.86 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 4.393 | ppb | #REF! | 3.65 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 108.700 | ppb | #REF! | 1.31 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 10320.000 | ppb | #REF! | 0.69 | 25000.00 | >RL |
| 24 | Mg | 1 | 45 | 16190.000 | ppb | #REF! | 0.81 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 85440.000 | ppb | #REF! | 0.96 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 23130.000 | ppb | #REF! | 0.77 | 25000.00 | >RL |
| 44 | Ca | 2 | 45 | 57930.000 | ppb | #REF! | 2.34 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 118.300 | ppb | #REF! | 0.14 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 131.100 | ppb | #REF! | 0.54 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 86.810 | ppb | #REF! | 1.05 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 1212.000 | ppb | #REF! | 1.01 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 172200.000 | ppb | #REF! | 0.47 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 47.770 | ppb | #REF! | 0.11 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 68.210 | ppb | #REF! | 1.19 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 18.130 | ppb | #REF! | 0.39 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 287.300 | ppb | #REF! | 0.59 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 51.220 | ppb | #REF! | 0.49 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 41.860 | ppb | #REF! | 1.10 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 607.300 | ppb | #REF! | 2.42 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 3.764 | ppb | #REF! | 3.51 | 2000.00 | J |
| 107 | Ag | 2 | 115 | 0.091 | ppb | #REF! | 6.45 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.730 | ppb | #REF! | 4.76 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 6.284 | ppb | #REF! | 1.66 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.289 | ppb | #REF! | 7.51 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 119.000 | ppb | #REF! | 2.20 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.780 | ppb | #REF! | 3.79 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 77.230 | ppb | #REF! | 1.62 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -5112.73 | 5.99 | RHigh | 35.48 | -14409.9 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 110569.45 | 0.20 | | 138057.45 | 80.1 | 70 - 120 | |
| 45 | Sc | 2 | 3088906.30 | 2.20 | | 4152726.00 | 74.4 | 70 - 120 | |
| 72 | Ge | 1 | 67249.47 | 0.17 | | 86466.48 | 77.8 | 70 - 120 | |
| 115 | In | 2 | 5098047.00 | 2.80 | | 6053544.50 | 84.2 | 70 - 120 | |
| 209 | Bi | 2 | 4490354.50 | 1.99 | | 5465338.50 | 82.2 | 70 - 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\121SMPL.D\121SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 11:00 pm | Sample Name: | **1605098-05A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 53.470 | ppb | #REF! | 1.18 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 3.771 | ppb | #REF! | 4.17 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 101.600 | ppb | #REF! | 1.73 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 11940.000 | ppb | #REF! | 0.27 | 25000.00 | >RL |
| 24 | Mg | 1 | 45 | 15520.000 | ppb | #REF! | 1.16 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 84270.000 | ppb | #REF! | 0.99 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 26940.000 | ppb | #REF! | 1.36 | 25000.00 | OUTCAL |
| 44 | Ca | 2 | 45 | 54850.000 | ppb | #REF! | 1.78 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 126.600 | ppb | #REF! | 1.74 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 129.000 | ppb | #REF! | 0.99 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 81.820 | ppb | #REF! | 1.01 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 762.900 | ppb | #REF! | 1.54 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 157400.000 | ppb | #REF! | 1.69 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 29.400 | ppb | #REF! | 0.93 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 47.920 | ppb | #REF! | 0.75 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 16.830 | ppb | #REF! | 0.62 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 208.900 | ppb | #REF! | 1.03 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 50.860 | ppb | #REF! | 1.72 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 32.900 | ppb | #REF! | 3.15 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 881.200 | ppb | #REF! | 1.94 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 3.407 | ppb | #REF! | 5.73 | 2000.00 | J |
| 107 | Ag | 2 | 115 | 0.086 | ppb | #REF! | 4.24 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.715 | ppb | #REF! | 5.47 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 6.019 | ppb | #REF! | 2.43 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.224 | ppb | #REF! | 9.68 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 224.900 | ppb | #REF! | 2.01 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.738 | ppb | #REF! | 2.09 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 89.680 | ppb | #REF! | 2.14 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -4547.14 | 4.26 | 35.48 | -12815.9 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 110216.01 | 0.69 | 138057.45 | 79.8 | 70 - 120 | |
| 45 | Sc | 2 | 3056175.80 | 2.07 | 4152726.00 | 73.6 | 70 - 120 | |
| 72 | Ge | 1 | 67409.22 | 0.62 | 86466.48 | 78.0 | 70 - 120 | |
| 115 | In | 2 | 5104196.00 | 2.84 | 6053544.50 | 84.3 | 70 - 120 | |
| 209 | Bi | 2 | 4545985.50 | 2.67 | 5465338.50 | 83.2 | 70 - 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\122SMPL.D\122SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 11:06 pm | Sample Name: | **1605098-06A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 75.240 | ppb | #REF! | 0.77 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 3.564 | ppb | #REF! | 4.16 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 108.300 | ppb | #REF! | 1.63 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 6323.000 | ppb | #REF! | 0.68 | 25000.00 | >RL |
| 24 | Mg | 1 | 45 | 13410.000 | ppb | #REF! | 0.57 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 76180.000 | ppb | #REF! | 0.75 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 18020.000 | ppb | #REF! | 0.27 | 25000.00 | >RL |
| 44 | Ca | 2 | 45 | 79390.000 | ppb | #REF! | 2.37 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 149.600 | ppb | #REF! | 3.68 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 120.400 | ppb | #REF! | 1.14 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 78.260 | ppb | #REF! | 1.20 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 550.000 | ppb | #REF! | 0.76 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 127700.000 | ppb | #REF! | 0.65 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 22.320 | ppb | #REF! | 1.45 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 37.340 | ppb | #REF! | 1.18 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 14.480 | ppb | #REF! | 1.59 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 215.000 | ppb | #REF! | 0.45 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 33.830 | ppb | #REF! | 0.82 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 23.410 | ppb | #REF! | 5.76 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 756.600 | ppb | #REF! | 2.81 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 1.531 | ppb | #REF! | 6.11 | 2000.00 | ND |
| 107 | Ag | 2 | 115 | 0.090 | ppb | #REF! | 4.10 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.599 | ppb | #REF! | 8.47 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 5.673 | ppb | #REF! | 1.00 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.477 | ppb | #REF! | 3.02 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 134.100 | ppb | #REF! | 2.02 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.531 | ppb | #REF! | 1.22 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 57.240 | ppb | #REF! | 1.74 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -6336.36 | 0.74 | 35.48 | -17858.7 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 108811.77 | 0.47 | 138057.45 | 78.8 | 70 - 120 | |
| 45 | Sc | 2 | 2988021.80 | 2.39 | 4152726.00 | 72.0 | 70 - 120 | |
| 72 | Ge | 1 | 66238.20 | 0.64 | 86466.48 | 76.6 | 70 - 120 | |
| 115 | In | 2 | 5101345.50 | 1.06 | 6053544.50 | 84.3 | 70 - 120 | |
| 209 | Bi | 2 | 4578101.00 | 0.73 | 5465338.50 | 83.8 | 70 - 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\123SMPL.D\123SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 11:12 pm | Sample Name: | **1605098-07A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 70.340 | ppb | #REF! | 1.20 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 3.911 | ppb | #REF! | 3.89 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 102.700 | ppb | #REF! | 2.29 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 4242.000 | ppb | #REF! | 0.72 | 25000.00 | >RL |
| 24 | Mg | 1 | 45 | 12720.000 | ppb | #REF! | 1.60 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 70760.000 | ppb | #REF! | 0.24 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 19660.000 | ppb | #REF! | 0.25 | 25000.00 | >RL |
| 44 | Ca | 2 | 45 | 85740.000 | ppb | #REF! | 1.99 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 137.500 | ppb | #REF! | 2.94 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 117.100 | ppb | #REF! | 0.53 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 81.460 | ppb | #REF! | 1.56 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 275.400 | ppb | #REF! | 0.87 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 133300.000 | ppb | #REF! | 1.35 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 19.630 | ppb | #REF! | 0.80 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 33.170 | ppb | #REF! | 1.28 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 13.720 | ppb | #REF! | 0.65 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 200.900 | ppb | #REF! | 1.08 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 44.840 | ppb | #REF! | 0.82 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 21.480 | ppb | #REF! | 5.37 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 965.500 | ppb | #REF! | 2.03 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 3.385 | ppb | #REF! | 5.98 | 2000.00 | J |
| 107 | Ag | 2 | 115 | 0.093 | ppb | #REF! | 14.78 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.567 | ppb | #REF! | 6.39 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 5.551 | ppb | #REF! | 3.34 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.373 | ppb | #REF! | 6.08 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 227.700 | ppb | #REF! | 1.78 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.557 | ppb | #REF! | 1.41 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 68.640 | ppb | #REF! | 1.06 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -5577.47 | 1.51 | 35.48 | -15719.8 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 103970.59 | 0.16 | 138057.45 | 75.3 | 70 - 120 | |
| 45 | Sc | 2 | 2910280.30 | 2.09 | 4152726.00 | 70.1 | 70 - 120 | |
| 72 | Ge | 1 | 63693.28 | 0.34 | 86466.48 | 73.7 | 70 - 120 | |
| 115 | In | 2 | 4911031.00 | 1.46 | 6053544.50 | 81.1 | 70 - 120 | |
| 209 | Bi | 2 | 4406868.50 | 1.18 | 5465338.50 | 80.6 | 70 - 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\124SMPL.D\124SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 11:18 pm | Sample Name: | **1605098-08A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 68.850 | ppb | #REF! | 1.68 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 4.096 | ppb | #REF! | 4.76 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 112.900 | ppb | #REF! | 2.93 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 4947.000 | ppb | #REF! | 1.57 | 25000.00 | >RL |
| 24 | Mg | 1 | 45 | 13530.000 | ppb | #REF! | 1.59 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 69380.000 | ppb | #REF! | 1.63 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 22370.000 | ppb | #REF! | 1.05 | 25000.00 | >RL |
| 44 | Ca | 2 | 45 | 30030.000 | ppb | #REF! | 1.68 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 160.600 | ppb | #REF! | 2.17 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 110.000 | ppb | #REF! | 0.57 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 83.000 | ppb | #REF! | 0.53 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 258.700 | ppb | #REF! | 1.45 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 128300.000 | ppb | #REF! | 1.61 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 21.010 | ppb | #REF! | 0.88 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 31.100 | ppb | #REF! | 1.76 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 11.380 | ppb | #REF! | 1.21 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 180.200 | ppb | #REF! | 0.30 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 38.160 | ppb | #REF! | 1.11 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 21.660 | ppb | #REF! | 0.88 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 528.300 | ppb | #REF! | 2.27 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 3.989 | ppb | #REF! | 4.69 | 2000.00 | J |
| 107 | Ag | 2 | 115 | 0.100 | ppb | #REF! | 2.38 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.573 | ppb | #REF! | 13.06 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 5.708 | ppb | #REF! | 1.78 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.238 | ppb | #REF! | 14.06 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 265.000 | ppb | #REF! | 2.51 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.490 | ppb | #REF! | 4.50 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 43.070 | ppb | #REF! | 1.76 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -5750.42 | 2.81 | 35.48 | -16207.2 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 106699.74 | 0.74 | 138057.45 | 77.3 | 70 - 120 | |
| 45 | Sc | 2 | 3043686.30 | 2.83 | 4152726.00 | 73.3 | 70 - 120 | |
| 72 | Ge | 1 | 65561.46 | 0.68 | 86466.48 | 75.8 | 70 - 120 | |
| 115 | In | 2 | 5127644.50 | 0.82 | 6053544.50 | 84.7 | 70 - 120 | |
| 209 | Bi | 2 | 4604889.50 | 1.26 | 5465338.50 | 84.3 | 70 - 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\125SMPL.D\125SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 11:24 pm | Sample Name: | **1605098-09A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 56.560 | ppb | #REF! | 0.84 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 3.355 | ppb | #REF! | 3.34 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 111.900 | ppb | #REF! | 3.35 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 9754.000 | ppb | #REF! | 0.83 | 25000.00 | >RL |
| 24 | Mg | 1 | 45 | 16300.000 | ppb | #REF! | 1.09 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 86890.000 | ppb | #REF! | 0.92 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 26100.000 | ppb | #REF! | 0.70 | 25000.00 | OUTCAL |
| 44 | Ca | 2 | 45 | 29790.000 | ppb | #REF! | 1.88 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 137.100 | ppb | #REF! | 5.43 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 133.200 | ppb | #REF! | 1.01 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 86.670 | ppb | #REF! | 1.03 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 168.300 | ppb | #REF! | 1.04 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 148900.000 | ppb | #REF! | 1.12 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 12.930 | ppb | #REF! | 1.33 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 24.680 | ppb | #REF! | 0.76 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 18.320 | ppb | #REF! | 0.31 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 169.600 | ppb | #REF! | 1.36 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 47.310 | ppb | #REF! | 0.44 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 24.690 | ppb | #REF! | 1.71 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 684.100 | ppb | #REF! | 1.73 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 2.778 | ppb | #REF! | 3.22 | 2000.00 | J |
| 107 | Ag | 2 | 115 | 0.084 | ppb | #REF! | 6.48 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.580 | ppb | #REF! | 18.13 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 6.173 | ppb | #REF! | 1.57 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.231 | ppb | #REF! | 7.46 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 160.500 | ppb | #REF! | 3.40 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.610 | ppb | #REF! | 2.45 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 75.340 | ppb | #REF! | 0.45 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -4748.96 | 4.20 | 35.48 | -13384.7 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 109459.98 | 0.55 | 138057.45 | 79.3 | 70 - 120 | |
| 45 | Sc | 2 | 2980783.30 | 2.12 | 4152726.00 | 71.8 | 70 - 120 | |
| 72 | Ge | 1 | 65739.67 | 0.85 | 86466.48 | 76.0 | 70 - 120 | |
| 115 | In | 2 | 5082308.50 | 1.61 | 6053544.50 | 84.0 | 70 - 120 | |
| 209 | Bi | 2 | 4612249.00 | 0.80 | 5465338.50 | 84.4 | 70 - 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\126SMPL.D\126SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 11:30 pm | Sample Name: | **1605098-10A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 47.160 | ppb | #REF! | 1.17 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 2.886 | ppb | #REF! | 3.00 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 97.800 | ppb | #REF! | 2.31 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 12480.000 | ppb | #REF! | 0.66 | 25000.00 | >RL |
| 24 | Mg | 1 | 45 | 14740.000 | ppb | #REF! | 0.31 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 72110.000 | ppb | #REF! | 0.87 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 18130.000 | ppb | #REF! | 0.27 | 25000.00 | >RL |
| 44 | Ca | 2 | 45 | 23040.000 | ppb | #REF! | 2.43 | 25000.00 | >RL |
| 47 | Ti | 1 | 45 | 100.100 | ppb | #REF! | 2.19 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 102.800 | ppb | #REF! | 1.50 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 70.770 | ppb | #REF! | 1.24 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 133.100 | ppb | #REF! | 1.47 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 115800.000 | ppb | #REF! | 0.56 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 11.420 | ppb | #REF! | 1.02 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 22.200 | ppb | #REF! | 1.30 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 15.250 | ppb | #REF! | 1.48 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 133.500 | ppb | #REF! | 0.17 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 38.490 | ppb | #REF! | 0.31 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 24.120 | ppb | #REF! | 4.26 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 419.700 | ppb | #REF! | 2.11 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 2.186 | ppb | #REF! | 1.59 | 2000.00 | J |
| 107 | Ag | 2 | 115 | 0.068 | ppb | #REF! | 8.48 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.477 | ppb | #REF! | 24.05 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 5.434 | ppb | #REF! | 1.48 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.164 | ppb | #REF! | 6.94 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 96.110 | ppb | #REF! | 2.08 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.462 | ppb | #REF! | 2.17 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 56.730 | ppb | #REF! | 1.89 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -3852.52 | 13.06 | RHigh | 35.48 | -10858.1 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 104583.20 | 0.12 | | 138057.45 | 75.8 | 70 - 120 | |
| 45 | Sc | 2 | 2993465.00 | 1.84 | | 4152726.00 | 72.1 | 70 - 120 | |
| 72 | Ge | 1 | 63623.28 | 0.38 | | 86466.48 | 73.6 | 70 - 120 | |
| 115 | In | 2 | 5076633.00 | 1.99 | | 6053544.50 | 83.9 | 70 - 120 | |
| 209 | Bi | 2 | 4710348.00 | 1.73 | | 5465338.50 | 86.2 | 70 - 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\127SMPL.D\127SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 11:36 pm | Sample Name: | **1605098-11A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 81.470 | ppb | #REF! | 0.83 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 3.304 | ppb | #REF! | 3.85 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 104.200 | ppb | #REF! | 1.20 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 4514.000 | ppb | #REF! | 0.66 | 25000.00 | >RL |
| 24 | Mg | 1 | 45 | 12740.000 | ppb | #REF! | 0.54 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 72710.000 | ppb | #REF! | 1.10 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 17030.000 | ppb | #REF! | 0.48 | 25000.00 | >RL |
| 44 | Ca | 2 | 45 | 119400.000 | ppb | #REF! | 1.55 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 164.600 | ppb | #REF! | 0.52 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 118.000 | ppb | #REF! | 1.39 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 74.550 | ppb | #REF! | 1.76 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 257.100 | ppb | #REF! | 0.85 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 114900.000 | ppb | #REF! | 1.00 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 19.510 | ppb | #REF! | 0.96 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 35.210 | ppb | #REF! | 2.27 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 12.220 | ppb | #REF! | 1.17 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 213.500 | ppb | #REF! | 0.57 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 29.440 | ppb | #REF! | 0.53 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 23.650 | ppb | #REF! | 3.35 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 796.500 | ppb | #REF! | 2.61 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 1.205 | ppb | #REF! | 2.44 | 2000.00 | ND |
| 107 | Ag | 2 | 115 | 0.096 | ppb | #REF! | 5.93 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.651 | ppb | #REF! | 17.13 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 5.593 | ppb | #REF! | 4.96 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.451 | ppb | #REF! | 5.08 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 120.500 | ppb | #REF! | 4.02 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.524 | ppb | #REF! | 0.61 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 67.240 | ppb | #REF! | 1.28 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -6128.39 | 6.41 | RHigh | 35.48 | -17272.5 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 101063.06 | 0.13 | | 138057.45 | 73.2 | 70 - 120 | |
| 45 | Sc | 2 | 2854609.30 | 2.31 | | 4152726.00 | 68.7 | 70 - 120 | ISFail |
| 72 | Ge | 1 | 61999.52 | 0.59 | | 86466.48 | 71.7 | 70 - 120 | |
| 115 | In | 2 | 4877955.00 | 1.66 | | 6053544.50 | 80.6 | 70 - 120 | |
| 209 | Bi | 2 | 4414645.00 | 0.71 | | 5465338.50 | 80.8 | 70 - 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\128CCV1.D\128CCV1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 11:42 pm | Sample Name: | **CCV6-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCV ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 200.40 | ppb | 1.58 | 200.00 | 90 - | 110 | 100.2 | |
| 9 | Be | 2 | 45 | 185.30 | ppb | 1.16 | 200.00 | 90 - | 110 | 92.7 | |
| 11 | B | 2 | 45 | 168.70 | ppb | 1.35 | 200.00 | 90 - | 110 | 84.4 | Fail |
| 23 | Na | 1 | 45 | 5083.00 | ppb | 2.01 | 5000.00 | 90 - | 110 | 101.7 | |
| 24 | Mg | 1 | 45 | 4869.00 | ppb | 1.73 | 5000.00 | 90 - | 110 | 97.4 | |
| 27 | Al | 1 | 45 | 4873.00 | ppb | 2.60 | 5000.00 | 90 - | 110 | 97.5 | |
| 39 | K | 1 | 45 | 5179.00 | ppb | 1.25 | 5000.00 | 90 - | 110 | 103.6 | |
| 44 | Ca | 2 | 45 | 4980.00 | ppb | 1.82 | 5000.00 | 90 - | 110 | 99.6 | |
| 47 | Ti | 1 | 45 | 203.40 | ppb | 1.47 | 200.00 | 90 - | 110 | 101.7 | |
| 51 | V | 1 | 45 | 197.70 | ppb | 2.28 | 200.00 | 90 - | 110 | 98.9 | |
| 52 | Cr | 1 | 45 | 197.30 | ppb | 2.22 | 200.00 | 90 - | 110 | 98.7 | |
| 55 | Mn | 1 | 45 | 200.80 | ppb | 1.38 | 200.00 | 90 - | 110 | 100.4 | |
| 56 | Fe | 1 | 72 | 5155.00 | ppb | 2.47 | 5000.00 | 90 - | 110 | 103.1 | |
| 59 | Co | 1 | 72 | 199.80 | ppb | 1.54 | 200.00 | 90 - | 110 | 99.9 | |
| 60 | Ni | 1 | 72 | 196.80 | ppb | 1.13 | 200.00 | 90 - | 110 | 98.4 | |
| 63 | Cu | 1 | 72 | 201.70 | ppb | 1.44 | 200.00 | 90 - | 110 | 100.9 | |
| 66 | Zn | 1 | 72 | 199.80 | ppb | 1.34 | 200.00 | 90 - | 110 | 99.9 | |
| 75 | As | 1 | 72 | 208.90 | ppb | 1.23 | 200.00 | 90 - | 110 | 104.5 | |
| 78 | Se | 1 | 72 | 204.70 | ppb | 1.99 | 200.00 | 90 - | 110 | 102.4 | |
| 88 | Sr | 2 | 115 | 204.10 | ppb | 1.40 | 200.00 | 90 - | 110 | 102.1 | |
| 95 | Mo | 2 | 115 | 181.20 | ppb | 1.73 | 200.00 | 90 - | 110 | 90.6 | |
| 107 | Ag | 2 | 115 | 184.10 | ppb | 1.85 | 200.00 | 90 - | 110 | 92.1 | |
| 111 | Cd | 2 | 115 | 186.40 | ppb | 1.88 | 200.00 | 90 - | 110 | 93.2 | |
| 118 | Sn | 2 | 115 | 192.60 | ppb | 2.38 | 200.00 | 90 - | 110 | 96.3 | |
| 121 | Sb | 2 | 115 | 193.30 | ppb | 1.98 | 200.00 | 90 - | 110 | 96.7 | |
| 137 | Ba | 2 | 115 | 204.70 | ppb | 2.29 | 200.00 | 90 - | 110 | 102.4 | |
| 205 | Tl | 2 | 209 | 207.30 | ppb | 1.30 | 200.00 | 90 - | 110 | 103.7 | |
| 208 | Pb | 2 | 209 | 196.80 | ppb | 2.13 | 200.00 | 90 - | 110 | 98.4 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -42918.88 | 2.57 | 35.48 | -120964.5 | 70 - | 120 | | ISFail |
| 45 | Sc | 1 | 102410.13 | 1.68 | 138057.45 | 74.2 | 70 - | 120 | | |
| 45 | Sc | 2 | 2853647.30 | 1.74 | 4152726.00 | 68.7 | 70 - | 120 | | ISFail |
| 72 | Ge | 1 | 63865.52 | 0.78 | 86466.48 | 73.9 | 70 - | 120 | | |
| 115 | In | 2 | 5005018.50 | 1.35 | 6053544.50 | 82.7 | 70 - | 120 | | |
| 209 | Bi | 2 | 4670776.00 | 2.13 | 5465338.50 | 85.5 | 70 - | 120 | | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\130LCVL.D\130LCVL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 25 2016 11:54 pm | Sample Name: | **LCVL6-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCVLICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 9.32 | ppb | 3.31 | 5.00 | 70 - | 130 | 186.3 | Fail |
| 9 | Be | 2 | 45 | 0.92 | ppb | 0.29 | 1.00 | 70 - | 130 | 91.7 | |
| 11 | B | 2 | 45 | 17.25 | ppb | 2.32 | 20.00 | 70 - | 130 | 86.3 | |
| 23 | Na | 1 | 45 | 97.94 | ppb | 1.90 | 100.00 | 70 - | 130 | 97.9 | |
| 24 | Mg | 1 | 45 | 103.80 | ppb | 1.35 | 100.00 | 70 - | 130 | 103.8 | |
| 27 | Al | 1 | 45 | 133.70 | ppb | 0.79 | 100.00 | 70 - | 130 | 133.7 | Fail |
| 39 | K | 1 | 45 | 118.20 | ppb | 1.13 | 100.00 | 70 - | 130 | 118.2 | |
| 44 | Ca | 2 | 45 | 116.00 | ppb | 3.47 | 100.00 | 70 - | 130 | 116.0 | |
| 47 | Ti | 1 | 45 | 5.62 | ppb | 8.25 | 5.00 | 70 - | 130 | 112.3 | |
| 51 | V | 1 | 45 | 1.12 | ppb | 1.89 | 1.00 | 70 - | 130 | 111.8 | |
| 52 | Cr | 1 | 45 | 4.77 | ppb | 1.73 | 5.00 | 70 - | 130 | 95.3 | |
| 55 | Mn | 1 | 45 | 4.93 | ppb | 4.06 | 5.00 | 70 - | 130 | 98.5 | |
| 56 | Fe | 1 | 72 | 162.30 | ppb | 2.92 | 100.00 | 70 - | 130 | 162.3 | Fail |
| 59 | Co | 1 | 72 | 4.79 | ppb | 1.47 | 5.00 | 70 - | 130 | 95.8 | |
| 60 | Ni | 1 | 72 | 4.70 | ppb | 3.36 | 5.00 | 70 - | 130 | 94.0 | |
| 63 | Cu | 1 | 72 | 4.85 | ppb | 2.32 | 5.00 | 70 - | 130 | 97.0 | |
| 66 | Zn | 1 | 72 | 4.46 | ppb | 3.45 | 5.00 | 70 - | 130 | 89.2 | |
| 75 | As | 1 | 72 | 5.04 | ppb | 2.43 | 5.00 | 70 - | 130 | 100.8 | |
| 78 | Se | 1 | 72 | 5.60 | ppb | 4.06 | 5.00 | 70 - | 130 | 111.9 | |
| 88 | Sr | 2 | 115 | 4.79 | ppb | 2.80 | 5.00 | 70 - | 130 | 95.8 | |
| 95 | Mo | 2 | 115 | 4.16 | ppb | 5.94 | 5.00 | 70 - | 130 | 83.2 | |
| 107 | Ag | 2 | 115 | 1.75 | ppb | 2.69 | 2.00 | 70 - | 130 | 87.5 | |
| 111 | Cd | 2 | 115 | 0.89 | ppb | 5.04 | 1.00 | 70 - | 130 | 89.2 | |
| 118 | Sn | 2 | 115 | 4.65 | ppb | 2.58 | 5.00 | 70 - | 130 | 93.0 | |
| 121 | Sb | 2 | 115 | 1.80 | ppb | 3.19 | 2.00 | 70 - | 130 | 89.8 | |
| 137 | Ba | 2 | 115 | 5.09 | ppb | 4.08 | 5.00 | 70 - | 130 | 101.8 | |
| 205 | Tl | 2 | 209 | 0.97 | ppb | 3.13 | 1.00 | 70 - | 130 | 97.3 | |
| 208 | Pb | 2 | 209 | 0.98 | ppb | 3.77 | 1.00 | 70 - | 130 | 98.5 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigh | -945.40 | 16.32 | 35.48 | -2664.6 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | | 100837.95 | 0.46 | 138057.45 | 73.0 | 70 - | 120 | |
| 45 | Sc | 2 | | 2922297.00 | 0.68 | 4152726.00 | 70.4 | 70 - | 120 | |
| 72 | Ge | 1 | | 63381.90 | 0.99 | 86466.48 | 73.3 | 70 - | 120 | |
| 115 | In | 2 | | 5080630.00 | 0.49 | 6053544.50 | 83.9 | 70 - | 120 | |
| 209 | Bi | 2 | | 4998467.50 | 0.78 | 5465338.50 | 91.5 | 70 - | 120 | |

# CCB QC Report

C:\ICPCHEM\1\DATA\16E25k02.B\131_CCB.D\131_CCB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 12:00 am | Sample Name: | **CCB6-160525** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCB ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 25 2016 12:14 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL S | MDL Aq | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.157 | ppb | 5.80 | 2.00 | 2.00 | |
| 9 | Be | 2 | 45 | 0.028 | ppb | 27.61 | 0.40 | 0.30 | |
| 11 | B | 2 | 45 | 3.100 | ppb | 3.94 | 10.00 | 10.00 | |
| 23 | Na | 1 | 45 | 4.803 | ppb | 2.36 | 50.00 | ##### | |
| 24 | Mg | 1 | 45 | 4.184 | ppb | 15.33 | 50.00 | ##### | |
| 27 | Al | 1 | 45 | 28.580 | ppb | 4.22 | 50.00 | 10.00 | FailAq |
| 39 | K | 1 | 45 | 12.520 | ppb | 0.35 | 50.00 | ##### | |
| 44 | Ca | 2 | 45 | 36.670 | ppb | 3.07 | 50.00 | ##### | |
| 47 | Ti | 1 | 45 | 0.247 | ppb | 78.07 | 4.00 | 3.00 | |
| 51 | V | 1 | 45 | 0.080 | ppb | 23.07 | 4.00 | 3.00 | |
| 52 | Cr | 1 | 45 | 0.082 | ppb | 11.62 | 2.00 | 2.00 | |
| 55 | Mn | 1 | 45 | 0.121 | ppb | 9.69 | 2.00 | 3.00 | |
| 56 | Fe | 1 | 72 | 31.830 | ppb | 11.92 | 50.00 | 30.00 | FailAq |
| 59 | Co | 1 | 72 | 0.035 | ppb | 17.06 | 2.00 | 3.00 | |
| 60 | Ni | 1 | 72 | 0.072 | ppb | 9.58 | 2.00 | 3.00 | |
| 63 | Cu | 1 | 72 | 0.059 | ppb | 14.27 | 2.00 | 2.00 | |
| 66 | Zn | 1 | 72 | 0.073 | ppb | 15.34 | 4.00 | 2.00 | |
| 75 | As | 1 | 72 | 0.064 | ppb | 13.72 | 2.00 | 2.00 | |
| 78 | Se | 1 | 72 | 0.026 | ppb | 25.00 | 0.60 | 2.00 | |
| 88 | Sr | 2 | 115 | 0.310 | ppb | 11.15 | 4.00 | 3.00 | |
| 95 | Mo | 2 | 115 | 0.031 | ppb | 32.83 | 2.00 | 2.00 | |
| 107 | Ag | 2 | 115 | 0.028 | ppb | 36.98 | 0.40 | 1.00 | |
| 111 | Cd | 2 | 115 | 0.024 | ppb | 40.88 | 0.40 | 0.30 | |
| 118 | Sn | 2 | 115 | 0.055 | ppb | 4.52 | 20.00 | 3.00 | |
| 121 | Sb | 2 | 115 | 0.045 | ppb | 5.44 | 2.00 | 0.80 | |
| 137 | Ba | 2 | 115 | 0.084 | ppb | 16.82 | 2.00 | 3.00 | |
| 205 | Tl | 2 | 209 | 0.057 | ppb | 14.54 | 2.00 | 0.50 | |
| 208 | Pb | 2 | 209 | 0.068 | ppb | 4.36 | 0.40 | 0.30 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigh | -13.32 | 308.30 | 35.48 | -37.6 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 96951.78 | 1.05 | 138057.45 | 70.2 | 70 - 120 | |
| 45 | Sc | 2 | | 2859048.00 | 1.46 | 4152726.00 | 68.8 | 70 - 120 | ISFail |
| 72 | Ge | 1 | | 62246.74 | 0.70 | 86466.48 | 72.0 | 70 - 120 | |
| 115 | In | 2 | | 4955151.00 | 1.30 | 6053544.50 | 81.9 | 70 - 120 | |
| 209 | Bi | 2 | | 4765777.00 | 0.11 | 5465338.50 | 87.2 | 70 - 120 | |

# ICP-MS4
# For

# DHL Work Order
# 1605098

# ICP-MS4_160516B
# For

# DHL Work Order
# 1605098

# Lab Data Review Check List
## EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

| PROJECT AND BATCH NUMBERS ARE LISTED ON THE RUN LOG | Run ID: ICP-MS4_160516B<br>SOP: MET-ICPMS-01 | | | |
|---|---|---|---|---|
| **Review Item** | **Yes** | **No** | **N/A** | **2nd Level Review** |
| **Data Folder Contents**<br>1. Is the Prep Batch Report included?<br>***Check the Prep Start/End Dates, Sample Amounts, Bottle #s*** | X | | | x |
| 2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date?<br>***All standard/QC sample preparations shall be documented in LIMS*** | X | | | |
| 3. Is the Run Log and instrument sequence included?<br>***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time*** | X | | | |

## Daily Demonstration of Performance

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.**

| Review Item | Frequency | Limits | Pass | Fail (List Batch/Sample) **See Run Log** | | 2nd Level Review |
|---|---|---|---|---|---|---|
| Tune | Before ICAL | RSD ≤ 5% / Peak Width@10% <0.9amu | X | | | x |
| P/A Factor | Before ICAL | Increasing trend | X | | | |
| Initial Calibration Curve (ICAL) (Blank + 4 Standards) | Prior to samples and when ICV fails | R ≥ 0.995 (DoD)<br>R ≥ 0.998 (6020A) | X | | | |
| **Review Item** | **Frequency** | **Limits** | **Pass** | **Fail** | **N/A** | **Review** |
| ICSA (N/A for Method 200.8+U) | After calibration & every 12 hours | < RL (except Mn & Zn) | X | | | x |
| ICSAB (N/A for Method 200.8+U) | After calibration & every 12 hours | 80-120% (correct for ICSA result) | X | | | |
| **Note: LCVLs and ICSA/ICSAB are N/A for Method 200.8 or project-specific exceptions** | | | | | | |
| ICV (Second Source Verification) | After ICAL | 90-110% | X | | | x |
| ICB | After calibration | < MDL | X | | | |
| CCV | Every 10 samples | 90-110% | X | | | |
| CCB | Every 10 samples | < MDL (ALL + DoD) | X | | | |
| Internal Standards | Every sample and QC sample | > 70% (6020A)<br>60-125% (200.8)<br>30-120% (DoD) | X | | | |
| LCVL (6020A test code) | After ICAL, every 10 samples and end of run | 70-130% | | | X | |
| LCVL (All metals test codes except 200.8/6020A) | After ICAL and end of run | 70-130% | X | | | |
| Method Blank (MB) | Every Batch | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | X | | | |
| Filter/TCLP/SPLP Blank | Filter-Dissolved only TCLP / SPLP | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | | | X | |
| Lab Control Sample (LCS) | Every Batch | 80-120% | X | | | |
| Lab Control Sample Dup (LCSD) | Every Batch | 80-120% | X | | | |
| LCSD - RPD | Every LCS/LCSD | 15 (H2O) / 20 (Soil) | X | | | |
| Matrix Spike/ Matrix Spike Duplicate (MS/MSD) | Every Batch | 80-120% | X | | | |
| MSD - RPD | Every MS/MSD | 15 (H2O) / 20 (Soil) | X | | | |
| Dilution Test (SD) - RPD | Every Batch | 10 | X | | | |
| Post Digestion Spike (PDS) | Every Batch | 75-125 / 80-120 (6020A) | X | | | |

# Lab Data Review Check List
## EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

| Review Item | Criteria | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|---|
| **Sample Analysis**<br>1. Are all sample hold times met? | 6 months | X | | | x |
| 2. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed? | All results > high point of ICAL must be diluted | X | | | |
| **3. Are ALL reported analytes and reported results > MDL highlighted by the analyst?** | | X | **Confirm with analyst if LIMS result does not match Labcore** | | |

## VARIANCE REPORT

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.**

| NON-CONFORMANCES / VARIANCE | Criteria | Yes | No | N/A | 2nd Level |
|---|---|---|---|---|---|
| 1. Are all non-conformances and corrective actions included and noted? | All deviations from the method and SOP that affect data quality | | | X | x |
| 2. Does the variance require approval by the Technical Director/General Manager/QA Manager? | | | | X | |

TECHNICAL DIRECTOR / QA MANAGER APPROVAL
SIGNATURE AND DATE STAMP:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

| VARIANCE ITEM | REASON | CORRECTIVE ACTION |
|---|---|---|
| __ CCV out of control (± 10%) | __ Carryover from previous run | __ Reanalyze QC to confirm |
| __ CCB out of control (> MDL / >½ RL) | __ Cross contamination | __ Recalibrate |
| __ MB out of control (> RL / >½ RL) | __ Lab Artifact | __ Reprep/Reanalyze sample |
| __ LCS __ LCSD out of control (± 20%) | __ Prep Spike error (describe) | __ Reprep/Reanalyze Batch |
| __ MS __ MSD out of control (± 20%) | __ Matrix Effect | __ Reanalyze Batch/Sample/QC |
| __ RPD out of control for MS/MSD (15/25) | __ High Levels of Target Metals | __ Verify reagents are clean |
| __ Internal Standard(s) out of control (see Method) | __ Insufficient sample for QC | __ Reanalyze sample to confirm |
| __ No MS/MSD prepared - LCS/LCSD used instead | __ Digestion/Prep Error | __ Sample results ND w/ dilution |
| __ Missing QC (other than MS/MSD) | __ Analytical Error | __ Client notified and approved |
| __ QC sample(s) was mis-spiked | __ Client Request | __ Flag Data/ Case Narative |
| __ ICSA/ICSAB missing or out of control (± 20%) | | __ Accept data |
| __ LCVL out of control (± 30%) | | __ Cal Std high and sample ND |
| __ Other (describe below) | __ Other (describe below) | __ Other (describe below) |

**General Comments and Impact on Data**: See Run Log

Analyst: [signature] Date of Completion: 05/17/2016

Second-Level Review: Janice Whitt Date Stamp: 5/17/2016

REVIEWED BY
By Janice Whitt at 10:36:04 AM, 5/17/2016

**DHL Analytical, Inc.**

**Run ID:** **ICP-MS4_160516B** **Run No.:** 85839

**Analytical Run Date:** 5/16/2016 **InstrumentID:** ICP-MS4

**Analyst:** Ryan Oliver

| SampID | DF | TestCode | SampType | Batch ID | Analysis Date/Time | Q | Comments |
|---|---|---|---|---|---|---|---|
| BLANK STD 1 | 1 | ICPMS_TWDOD | CAL | R85839 | 5/16/2016 12:13:00 PM | | |
| L2-160516 | 1 | ICPMS_TWDOD | CAL | R85839 | 5/16/2016 12:15:00 PM | | |
| L-160516 | 1 | ICPMS_TWDOD | CAL | R85839 | 5/16/2016 12:17:00 PM | | |
| 10X-160516 | 1 | ICPMS_TWDOD | CAL | R85839 | 5/16/2016 12:19:00 PM | | |
| 5X-160516 | 1 | ICPMS_TWDOD | CAL | R85839 | 5/16/2016 12:21:00 PM | | |
| 2X-160516 | 1 | ICPMS_TWDOD | CAL | R85839 | 5/16/2016 12:23:00 PM | | |
| H-160516 | 1 | ICPMS_TWDOD | CAL | R85839 | 5/16/2016 12:25:00 PM | | |
| H2-160516 | 1 | ICPMS_TWDOD | CAL | R85839 | 5/16/2016 12:27:00 PM | | |
| ICSA-160516 | 1 | ICPMS_TWDOD | ICSA | R85839 | 5/16/2016 12:35:00 PM | | |
| ICSAB-160516 | 1 | ICPMS_TWDOD | ICSB | R85839 | 5/16/2016 12:37:00 PM | | |
| ICV-160516 | 1 | ICPMS_TWDOD | ICV | R85839 | 5/16/2016 12:45:00 PM | | |
| LCVL-160516 | 1 | ICPMS_TWDOD | LCVL | R85839 | 5/16/2016 1:04:00 PM | | |
| ICB-160516 | 1 | ICPMS_TWDOD | ICB | R85839 | 5/16/2016 1:08:00 PM | | |
| MB-75006 | 5 | ICPMS_TSDOD1 | MBLK | 75006 | 5/16/2016 1:10:00 PM | | |
| LCS-75006 | 5 | ICPMS_TSDOD1 | LCS | 75006 | 5/16/2016 1:12:00 PM | | |
| LCSD-75006 | 5 | ICPMS_TSDOD1 | LCSD | 75006 | 5/16/2016 1:14:00 PM | | |
| 1605034-09A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 1:18:00 PM | | |
| 1605034-09A SD | 25 | ICPMS_TSDOD1 | SD | 75006 | 5/16/2016 1:20:00 PM | | |
| 1605034-01A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 1:22:00 PM | | |
| 1605034-02A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 1:24:00 PM | | |
| 1605034-03A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 1:26:00 PM | | |
| 1605034-04A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 1:28:00 PM | | |
| 1605034-05A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 1:30:00 PM | | |
| 1605034-06A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 1:32:00 PM | | |
| 1605034-07A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 1:34:00 PM | | |
| 1605034-08A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 1:36:00 PM | | |
| 1605034-10A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 1:38:00 PM | | |
| 1605034-09A PDS | 5 | ICPMS_TSDOD1 | PDS | 75006 | 5/16/2016 1:40:00 PM | | |
| 1605034-09A MS | 5 | ICPMS_TSDOD1 | MS | 75006 | 5/16/2016 1:42:00 PM | | |
| 1605034-09A MSD | 5 | ICPMS_TSDOD1 | MSD | 75006 | 5/16/2016 1:44:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160426 | ICPMS CCV 200/5000 PPB | | 07/25/2016 |
| MET-H2CAL-1604 | ICPMS High Cal2 2000ppb std 8 | | 07/25/2016 |
| MET-HCAL-16042 | ICPMS High Cal 500ppb/10ppm s | | 07/25/2016 |
| MET-ICV-160426 | ICPMS ICV 100 ppb | | 07/25/2016 |
| MET-IS-160323 | INTERNAL STANDARD 1 PPM | | 06/21/2016 |
| MET-L2CAL-16042 | ICPMS Low Cal2 1/20ppb std 2 | | 07/25/2016 |
| MET-LCAL-160426 | ICPMS Low Cal 10/200ppb std 3 | | 07/25/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 07/25/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 07/25/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16042 | ICPMS Mid Cal 250/5000ppb std | | 07/25/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160502- | 10 PPM Ag+Sb PDS | | 07/31/2016 |
| MET-PDS-160502- | 10 PPM CUSTOM PDS SOLUTI | | 07/31/2016 |
| MET-PDS-160502- | 250 PPM Naturals+Al+Fe PDS | | 07/31/2016 |

**Run ID: ICP-MS4_160516B** **Run No.:** 85839

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CCV1-160516 | 1 | ICPMS_TWDOD | CCV | R85839 | 5/16/2016 1:46:00 PM | | |
| LCVL1-160516 | 1 | ICPMS_TWDOD | LCVL | R85839 | 5/16/2016 1:54:00 PM | | |
| CCB1-160516 | 1 | ICPMS_TWDOD | CCB | R85839 | 5/16/2016 1:58:00 PM | | |
| 1605034-11A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 2:00:00 PM | | |
| 1605034-12A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 2:02:00 PM | | |
| 1605034-13A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 2:04:00 PM | | |
| 1605034-14A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 2:06:00 PM | | |
| 1605034-15A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 2:08:00 PM | | |
| 1605034-16A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 2:10:00 PM | | |
| 1605034-17A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 2:12:00 PM | | |
| 1605034-18A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 2:14:00 PM | | |
| 1605034-19A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 2:16:00 PM | | |
| 1605034-20A | 5 | ICPMS_TSDOD1 | SAMP | 75006 | 5/16/2016 2:18:00 PM | | |
| CCV2-160516 | 1 | ICPMS_TWDOD | CCV | R85839 | 5/16/2016 2:20:00 PM | | |
| LCVL2-160516 | 1 | ICPMS_TWDOD | LCVL | R85839 | 5/16/2016 2:25:00 PM | | |
| CCB2-160516 | 1 | ICPMS_TWDOD | CCB | R85839 | 5/16/2016 2:30:00 PM | | |
| MB-75009 | 5 | ICPMS_TSDOD1 | MBLK | 75009 | 5/16/2016 2:32:00 PM | | |
| LCS-75009 | 5 | ICPMS_TSDOD1 | LCS | 75009 | 5/16/2016 2:34:00 PM | | |
| LCSD-75009 | 5 | ICPMS_TSDOD1 | LCSD | 75009 | 5/16/2016 2:36:00 PM | | |
| 1605047-03A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 2:40:00 PM | | |
| 1605047-03A SD | 25 | ICPMS_TSDOD1 | SD | 75009 | 5/16/2016 2:42:00 PM | | |
| 1605034-21A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 2:44:00 PM | | |
| 1605034-22A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 2:46:00 PM | | |
| 1605034-23A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 2:48:00 PM | | |
| 1605034-24A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 2:50:00 PM | | |
| 1605034-25A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 2:52:00 PM | | |
| 1605034-26A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 2:54:00 PM | | |
| 1605034-27A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 2:56:00 PM | | |
| 1605034-28A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 2:58:00 PM | | |
| 1605034-29A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 3:00:00 PM | | |
| 1605047-03A PDS | 5 | ICPMS_TSDOD1 | PDS | 75009 | 5/16/2016 3:02:00 PM | | |
| 1605047-03A MS | 5 | ICPMS_TSDOD1 | MS | 75009 | 5/16/2016 3:04:00 PM | | |
| 1605047-03A MSD | 5 | ICPMS_TSDOD1 | MSD | 75009 | 5/16/2016 3:06:00 PM | | |
| CCV3-160516 | 1 | ICPMS_TWDOD | CCV | R85839 | 5/16/2016 3:08:00 PM | | |
| LCVL3-160516 | 1 | ICPMS_TWDOD | LCVL | R85839 | 5/16/2016 3:12:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160426 | ICPMS CCV 200/5000 PPB | | 07/25/2016 |
| MET-H2CAL-1604 | ICPMS High Cal2 2000ppb std 8 | | 07/25/2016 |
| MET-HCAL-16042 | ICPMS High Cal 500ppb/10ppm s | | 07/25/2016 |
| MET-ICV-160426 | ICPMS ICV 100 ppb | | 07/25/2016 |
| MET-IS-160323 | INTERNAL STANDARD 1 PPM | | 06/21/2016 |
| MET-L2CAL-16042 | ICPMS Low Cal2 1/20ppb std 2 | | 07/25/2016 |
| MET-LCAL-160426 | ICPMS Low Cal 10/200ppb std 3 | | 07/25/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 07/25/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 07/25/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16042 | ICPMS Mid Cal 250/5000ppb std | | 07/25/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160502- | 10 PPM Ag+Sb PDS | | 07/31/2016 |
| MET-PDS-160502- | 10 PPM CUSTOM PDS SOLUTI | | 07/31/2016 |
| MET-PDS-160502- | 250 PPM Naturals+Al+Fe PDS | | 07/31/2016 |

**Run ID: ICP-MS4_160516B** **Run No.:** 85839

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CCB3-160516 | 1 | ICPMS_TWDOD | CCB | R85839 | 5/16/2016 3:14:00 PM | | |
| 1605034-30A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 3:16:00 PM | | |
| 1605047-01A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 3:18:00 PM | | |
| 1605047-02A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 3:20:00 PM | | |
| 1605047-04A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 3:22:00 PM | | |
| 1605047-05A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 3:24:00 PM | | |
| 1605047-06A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 3:26:00 PM | | |
| 1605047-07A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 3:28:00 PM | | |
| 1605047-08A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 3:30:00 PM | | |
| 1605047-09A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 3:33:00 PM | | |
| 1605047-10A | 5 | ICPMS_TSDOD1 | SAMP | 75009 | 5/16/2016 3:34:00 PM | | |
| CCV4-160516 | 1 | ICPMS_TWDOD | CCV | R85839 | 5/16/2016 3:36:00 PM | | |
| LCVL4-160516 | 1 | ICPMS_TWDOD | LCVL | R85839 | 5/16/2016 3:41:00 PM | | |
| CCB4-160516 | 1 | ICPMS_TWDOD | CCB | R85839 | 5/16/2016 3:43:00 PM | | |
| MB-75135 | 5 | ICPMS_TSDOD1 | MBLK | 75135 | 5/16/2016 3:45:00 PM | | |
| LCS-75135 | 5 | ICPMS_TSDOD1 | LCS | 75135 | 5/16/2016 3:47:00 PM | | |
| LCSD-75135 | 5 | ICPMS_TSDOD1 | LCSD | 75135 | 5/16/2016 3:49:00 PM | | |
| 1605098-41A | 5 | ICPMS_TSDOD1 | SAMP | 75135 | 5/16/2016 3:53:00 PM | | |
| 1605098-41A SD | 25 | ICPMS_TSDOD1 | SD | 75135 | 5/16/2016 3:55:00 PM | | |
| 1605097-20A | 5 | ICPMS_TSDOD1 | SAMP | 75135 | 5/16/2016 3:57:00 PM | | |
| 1605097-21A | 5 | ICPMS_TSDOD1 | SAMP | 75135 | 5/16/2016 3:59:00 PM | | |
| 1605097-23A | 5 | ICPMS_TSDOD1 | SAMP | 75135 | 5/16/2016 4:01:00 PM | | |
| 1605097-26A | 5 | ICPMS_TSDOD1 | SAMP | 75135 | 5/16/2016 4:03:00 PM | | |
| 1605098-31A | 5 | ICPMS_TSDOD1 | SAMP | 75135 | 5/16/2016 4:05:00 PM | | |
| 1605098-34A | 5 | ICPMS_TSDOD1 | SAMP | 75135 | 5/16/2016 4:07:00 PM | | |
| 1605098-37A | 5 | ICPMS_TSDOD1 | SAMP | 75135 | 5/16/2016 4:09:00 PM | | |
| 1605098-40A | 5 | ICPMS_TSDOD1 | SAMP | 75135 | 5/16/2016 4:11:00 PM | | |
| 1605098-41A PDS | 5 | ICPMS_TSDOD1 | PDS | 75135 | 5/16/2016 4:15:00 PM | | |
| 1605098-41A MS | 5 | ICPMS_TSDOD1 | MS | 75135 | 5/16/2016 4:17:00 PM | | |
| 1605098-41A MSD | 5 | ICPMS_TSDOD1 | MSD | 75135 | 5/16/2016 4:19:00 PM | | |
| CCV5-160516 | 1 | ICPMS_TWDOD | CCV | R85839 | 5/16/2016 4:25:00 PM | | |
| LCVL5-160516 | 1 | ICPMS_TWDOD | LCVL | R85839 | 5/16/2016 4:29:00 PM | | |
| CCB5-160516 | 1 | ICPMS_TWDOD | CCB | R85839 | 5/16/2016 4:31:00 PM | | |
| MB-75099 | 5 | ICPMS_TSDOD1 | MBLK | 75099 | 5/16/2016 4:33:00 PM | | |
| LCS-75099 | 5 | ICPMS_TSDOD1 | LCS | 75099 | 5/16/2016 4:36:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160426 | ICPMS CCV 200/5000 PPB | | 07/25/2016 |
| MET-H2CAL-1604 | ICPMS High Cal2 2000ppb std 8 | | 07/25/2016 |
| MET-HCAL-16042 | ICPMS High Cal 500ppb/10ppm s | | 07/25/2016 |
| MET-ICV-160426 | ICPMS ICV 100 ppb | | 07/25/2016 |
| MET-IS-160323 | INTERNAL STANDARD 1 PPM | | 06/21/2016 |
| MET-L2CAL-16042 | ICPMS Low Cal2 1/20ppb std 2 | | 07/25/2016 |
| MET-LCAL-160426 | ICPMS Low Cal 10/200ppb std 3 | | 07/25/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 07/25/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 07/25/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16042 | ICPMS Mid Cal 250/5000ppb std | | 07/25/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160502- | 10 PPM Ag+Sb PDS | | 07/31/2016 |
| MET-PDS-160502- | 10 PPM CUSTOM PDS SOLUTI | | 07/31/2016 |
| MET-PDS-160502- | 250 PPM Naturals+Al+Fe PDS | | 07/31/2016 |

**Run ID: ICP-MS4_160516B** **Run No.:** 85839

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| LCSD-75099 | 5 | ICPMS_TSDOD1 | LCSD | 75099 | 5/16/2016 4:38:00 PM | | |
| 1605071-17A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 4:42:00 PM | | |
| 1605071-17A SD | 25 | ICPMS_TSDOD1 | SD | 75099 | 5/16/2016 4:44:00 PM | | |
| 1605071-12A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 4:46:00 PM | | |
| 1605071-13A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 4:48:00 PM | | |
| 1605071-14A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 4:50:00 PM | | |
| 1605071-15A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 4:52:00 PM | | |
| 1605071-16A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 4:54:00 PM | | |
| 1605071-18A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 4:56:00 PM | | |
| 1605071-19A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 4:58:00 PM | | |
| 1605071-20A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 5:00:00 PM | | |
| 1605071-21A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 5:02:00 PM | | |
| 1605071-17A PDS | 5 | ICPMS_TSDOD1 | PDS | 75099 | 5/16/2016 5:04:00 PM | | |
| 1605071-17A MS | 5 | ICPMS_TSDOD1 | MS | 75099 | 5/16/2016 5:06:00 PM | | |
| 1605071-17A MSD | 5 | ICPMS_TSDOD1 | MSD | 75099 | 5/16/2016 5:08:00 PM | | |
| CCV6-160516 | 1 | ICPMS_TWDOD | CCV | R85839 | 5/16/2016 5:10:00 PM | | |
| LCVL6-160516 | 1 | ICPMS_TWDOD | LCVL | R85839 | 5/16/2016 5:14:00 PM | | |
| CCB6-160516 | 1 | ICPMS_TWDOD | CCB | R85839 | 5/16/2016 5:16:00 PM | | |
| 1605071-22A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 5:18:00 PM | | |
| 1605071-23A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 5:20:00 PM | | |
| 1605071-24A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 5:22:00 PM | | |
| 1605071-25A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 5:24:00 PM | | |
| 1605071-26A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 5:26:00 PM | | |
| 1605071-27A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 5:28:00 PM | | |
| 1605071-30A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 5:30:00 PM | | |
| 1605071-31A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 5:32:00 PM | | |
| 1605071-33A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 5:34:00 PM | | |
| 1605071-34A | 5 | ICPMS_TSDOD1 | SAMP | 75099 | 5/16/2016 5:36:00 PM | | |
| CCV7-160516 | 1 | ICPMS_TWDOD | CCV | R85839 | 5/16/2016 5:38:00 PM | | |
| LCVL7-160516 | 1 | ICPMS_TWDOD | LCVL | R85839 | 5/16/2016 5:42:00 PM | | |
| CCB7-160516 | 1 | ICPMS_TWDOD | CCB | R85839 | 5/16/2016 5:44:00 PM | | |
| MB-75104 | 5 | ICPMS_TSDOD1 | MBLK | 75104 | 5/16/2016 5:46:00 PM | | |
| LCS-75104 | 5 | ICPMS_TSDOD1 | LCS | 75104 | 5/16/2016 5:48:00 PM | | |
| LCSD-75104 | 5 | ICPMS_TSDOD1 | LCSD | 75104 | 5/16/2016 5:50:00 PM | | |
| 1605071-53A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 5:54:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160426 | ICPMS CCV 200/5000 PPB | | 07/25/2016 |
| MET-H2CAL-1604 | ICPMS High Cal2 2000ppb std 8 | | 07/25/2016 |
| MET-HCAL-16042 | ICPMS High Cal 500ppb/10ppm s | | 07/25/2016 |
| MET-ICV-160426 | ICPMS ICV 100 ppb | | 07/25/2016 |
| MET-IS-160323 | INTERNAL STANDARD 1 PPM | | 06/21/2016 |
| MET-L2CAL-16042 | ICPMS Low Cal2 1/20ppb std 2 | | 07/25/2016 |
| MET-LCAL-160426 | ICPMS Low Cal 10/200ppb std 3 | | 07/25/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 07/25/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 07/25/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16042 | ICPMS Mid Cal 250/5000ppb std | | 07/25/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160502- | 10 PPM Ag+Sb PDS | | 07/31/2016 |
| MET-PDS-160502- | 10 PPM CUSTOM PDS SOLUTI | | 07/31/2016 |
| MET-PDS-160502- | 250 PPM Naturals+Al+Fe PDS | | 07/31/2016 |

**DHL Analytical, Inc.**

**Run ID: ICP-MS4_160516B** **Run No.:** 85839

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1605071-53A SD | 25 | ICPMS_TSDOD1 | SD | 75104 | 5/16/2016 5:56:00 PM | | |
| 1605071-37A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 5:59:00 PM | | |
| 1605071-40A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:01:00 PM | | |
| 1605071-41A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:03:00 PM | | |
| 1605071-42A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:05:00 PM | | |
| 1605071-43A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:07:00 PM | | |
| 1605071-44A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:09:00 PM | | |
| 1605071-45A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:11:00 PM | | |
| 1605071-46A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:13:00 PM | | |
| 1605071-47A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:15:00 PM | | |
| 1605071-53A PDS | 5 | ICPMS_TSDOD1 | PDS | 75104 | 5/16/2016 6:17:00 PM | | |
| 1605071-53A MS | 5 | ICPMS_TSDOD1 | MS | 75104 | 5/16/2016 6:19:00 PM | | |
| 1605071-53A MSD | 5 | ICPMS_TSDOD1 | MSD | 75104 | 5/16/2016 6:21:00 PM | | |
| CCV8-160516 | 1 | ICPMS_TWDOD | CCV | R85839 | 5/16/2016 6:22:00 PM | | |
| LCVL8-160516 | 1 | ICPMS_TWDOD | LCVL | R85839 | 5/16/2016 6:27:00 PM | | |
| CCB8-160516 | 1 | ICPMS_TWDOD | CCB | R85839 | 5/16/2016 6:29:00 PM | | |
| 1605071-48A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:31:00 PM | | |
| 1605071-49A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:33:00 PM | | |
| 1605071-50A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:35:00 PM | | |
| 1605071-51A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:37:00 PM | | |
| 1605071-52A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:39:00 PM | | |
| 1605071-54A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:41:00 PM | | |
| 1605074-01A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:43:00 PM | | |
| 1605074-02A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:45:00 PM | | |
| 1605074-03A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:47:00 PM | | |
| 1605074-04A | 5 | ICPMS_TSDOD1 | SAMP | 75104 | 5/16/2016 6:49:00 PM | | |
| CCV9-160516 | 1 | ICPMS_TWDOD | CCV | R85839 | 5/16/2016 6:51:00 PM | | |
| LCVL9-160516 | 1 | ICPMS_TWDOD | LCVL | R85839 | 5/16/2016 6:55:00 PM | | |
| CCB9-160516 | 1 | ICPMS_TWDOD | CCB | R85839 | 5/16/2016 7:11:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160426 | ICPMS CCV 200/5000 PPB | | 07/25/2016 |
| MET-H2CAL-1604 | ICPMS High Cal2 2000ppb std 8 | | 07/25/2016 |
| MET-HCAL-16042 | ICPMS High Cal 500ppb/10ppm s | | 07/25/2016 |
| MET-ICV-160426 | ICPMS ICV 100 ppb | | 07/25/2016 |
| MET-IS-160323 | INTERNAL STANDARD 1 PPM | | 06/21/2016 |
| MET-L2CAL-16042 | ICPMS Low Cal2 1/20ppb std 2 | | 07/25/2016 |
| MET-LCAL-160426 | ICPMS Low Cal 10/200ppb std 3 | | 07/25/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 07/25/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 07/25/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16042 | ICPMS Mid Cal 250/5000ppb std | | 07/25/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160502- | 10 PPM Ag+Sb PDS | | 07/31/2016 |
| MET-PDS-160502- | 10 PPM CUSTOM PDS SOLUTI | | 07/31/2016 |
| MET-PDS-160502- | 250 PPM Naturals+Al+Fe PDS | | 07/31/2016 |

# Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\160516.b

## Acquisition Order

| # | Sequence Flow |
|---|---|
| 1 | Calibration Standards |
| 2 | Unknown Samples |
| 3 | Blank Samples |

**Calibration Standards:**

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 1 | CCB | | CAL ICPMS_TW | 1101 | |
| 2 | CCB | | CAL ICPMS_TW | 1101 | |
| 3 | CCB | | CAL ICPMS_TW | 1101 | |
| 4 | CCB | | CAL ICPMS_TW | 1102 | |
| 5 | CCB | | CAL ICPMS_TW | 1102 | |
| 6 | CCB | | CAL ICPMS_TW | 1102 | |
| 7 | CCB | | CAL ICPMS_TW | 1102 | |
| 8 | CCB | | CAL ICPMS_TW | 1103 | |
| 9 | CCB | | CAL ICPMS_TW | 1103 | |
| 10 | CCB | | CAL ICPMS_TW | 1103 | |
| 11 | CCB | | CAL ICPMS_TW | 1103 | |
| 12 | CalBlk | BLANK STD 1 | CAL ICPMS_TW | 2101 | |
| 13 | CalStd | L2-160516 | CAL ICPMS_TW | 2102 | |
| 14 | CalStd | L-160516 | CAL ICPMS_TW | 2103 | |
| 15 | CalStd | 10X-160516 | CAL ICPMS_TW | 2104 | |
| 16 | CalStd | 5X-160516 | CAL ICPMS_TW | 2105 | |
| 17 | CalStd | 2X-160516 | CAL ICPMS_TW | 2106 | |
| 18 | CalStd | H-160516 | CAL ICPMS_TW | 2107 | |
| 19 | CalStd | H2-160516 | CAL ICPMS_TW | 2108 | |
| 20 | ICB | BLANK | CCB ICPMS_TW | 1101 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 1 | | | Skip |
| 2 | | | Skip |
| 3 | | | Skip |
| 4 | | | Skip |
| 5 | | | Skip |
| 6 | | | Skip |
| 7 | | | Skip |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | 1 | | |
| 13 | 2 | | |
| 14 | 3 | | |
| 15 | 4 | | |
| 16 | 5 | | |
| 17 | 6 | | |
| 18 | 7 | | |
| 19 | 8 | | |

# Sample List

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 20 | | | | | |
| 21 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 22 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 23 | ICSA | ICSA-160516 | ICSAICPMS_TW | 2109 | |
| 24 | ICSB | ICSAB-160516 | ICSBICPMS_TW | 2110 | |
| 25 | ICB | BLANK | CCB ICPMS_TW | 1101 | |
| 26 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 27 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 28 | ICV | ICV-160516 | ICV ICPMS_TW | 2111 | |
| 29 | ICB | ICB-160516 | ICB ICPMS_TW | 1101 | |
| 30 | ICB | ICB-160516 | ICB ICPMS_TW | 1103 | |
| 31 | LLICV | LCVL-160516 | LCVLICPMS_TW | 2112 | |
| 32 | ICB | ICB-160516 | ICB ICPMS_TW | 1102 | |
| 33 | ICB | ICB-160516 | ICB ICPMS_TW | 1103 | |
| 34 | PB | MB-75006 | MBLKICPMS_TSDOD1 | 2201 | |
| 35 | LCS_S | LCS-75006 | LCS ICPMS_TSDOD1 | 2202 | |
| 36 | LCS_S | LCSD-75006 | LCSDICPMS_TSDOD1 | 2203 | |
| 37 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 38 | AllRef | 1605034-09A | SAMPICPMS_TSDOD1 | 2204 | |
| 39 | SD | 1605034-09A SD | SD ICPMS_TSDOD1 | 2205 | |
| 40 | Sample | 1605034-01A | SAMPICPMS_TSDOD1 | 2206 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 21 | | | |
| 22 | | | |
| 23 | | | |
| 24 | | | |
| 25 | | | |
| 26 | | | |
| 27 | | | |
| 28 | | | |
| 29 | | | |
| 30 | | | |
| 31 | | | |
| 32 | | | |
| 33 | | | |
| 34 | | 5 | |
| 35 | | 5 | |
| 36 | | 5 | |
| 37 | | | |
| 38 | | 5 | |
| 39 | | 25 | |
| 40 | | 5 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 41 | Sample | 1605034-02A | SAMPICPMS_TSDOD1 | 2207 | |
| 42 | Sample | 1605034-03A | SAMPICPMS_TSDOD1 | 2208 | |
| 43 | Sample | 1605034-04A | SAMPICPMS_TSDOD1 | 2209 | |
| 44 | Sample | 1605034-05A | SAMPICPMS_TSDOD1 | 2210 | |
| 45 | Sample | 1605034-06A | SAMPICPMS_TSDOD1 | 2211 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 46 | Sample | 1605034-07A | SAMPICPMS_TSDOD1 | 2212 |
| 47 | Sample | 1605034-08A | SAMPICPMS_TSDOD1 | 2301 |
| 48 | Sample | 1605034-10A | SAMPICPMS_TSDOD1 | 2302 |
| 49 | PDS | 1605034-09A PDS | PDS ICPMS_TSDOD1 | 2303 |
| 50 | MS_S | 1605034-09A MS | MS ICPMS_TSDOD1 | 2304 |
| 51 | MS_S | 1605034-09A MSD | MSD ICPMS_TSDOD1 | 2305 |
| 52 | CCV | CCV1-160516 | CCV ICPMS_TW | 1207 |
| 53 | CCB | CCB1-160516 | CCB ICPMS_TW | 1102 |
| 54 | LLCCV | LCVL1-160516 | LCVLICPMS_TW | 2112 |
| 55 | CCB | CCB1-160516 | CCB ICPMS_TW | 1103 |
| 56 | Sample | 1605034-11A | SAMPICPMS_TSDOD1 | 2306 |
| 57 | Sample | 1605034-12A | SAMPICPMS_TSDOD1 | 2307 |
| 58 | Sample | 1605034-13A | SAMPICPMS_TSDOD1 | 2308 |
| 59 | Sample | 1605034-14A | SAMPICPMS_TSDOD1 | 2309 |
| 60 | Sample | 1605034-15A | SAMPICPMS_TSDOD1 | 2310 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 41 | | 5 | |
| 42 | | 5 | |
| 43 | | 5 | |
| 44 | | 5 | |
| 45 | | 5 | |
| 46 | | 5 | |
| 47 | | 5 | |
| 48 | | 5 | |
| 49 | | 5 | |
| 50 | | 5 | |
| 51 | | 5 | |
| 52 | | | |
| 53 | | | |
| 54 | | | |
| 55 | | | |
| 56 | | 5 | |
| 57 | | 5 | |
| 58 | | 5 | |
| 59 | | 5 | |
| 60 | | 5 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 61 | Sample | 1605034-16A | SAMPICPMS_TSDOD1 | 2311 | |
| 62 | Sample | 1605034-17A | SAMPICPMS_TSDOD1 | 2312 | |
| 63 | Sample | 1605034-18A | SAMPICPMS_TSDOD1 | 2401 | |
| 64 | Sample | 1605034-19A | SAMPICPMS_TSDOD1 | 2402 | |
| 65 | Sample | 1605034-20A | SAMPICPMS_TSDOD1 | 2403 | |
| 66 | CCV | CCV2-160516 | CCV ICPMS_TW | 1207 | |
| 67 | CCB | CCB2-160516 | CCB ICPMS_TW | 1102 | |
| 68 | LLCCV | LCVL2-160516 | LCVLICPMS_TW | 2112 | |
| 69 | CCB | CCB2-160516 | CCB ICPMS_TW | 1103 | |
| 70 | PB | MB-75009 | MBLKICPMS_TSDOD1 | 3101 | |
| 71 | LCS_S | LCS-75009 | LCS ICPMS_TSDOD1 | 3102 | |
| 72 | LCS_S | LCSD-75009 | LCSDICPMS_TSDOD1 | 3103 | |
| 73 | CCB | RINSE | CCB ICPMS_TW | 1101 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 74 | AllRef | 1605047-03A | SAMPICPMS_TSDOD1 | 3104 |
| 75 | SD | 1605047-03A SD | SD ICPMS_TSDOD1 | 3105 |
| 76 | Sample | 1605034-21A | SAMPICPMS_TSDOD1 | 3106 |
| 77 | Sample | 1605034-22A | SAMPICPMS_TSDOD1 | 3107 |
| 78 | Sample | 1605034-23A | SAMPICPMS_TSDOD1 | 3108 |
| 79 | Sample | 1605034-24A | SAMPICPMS_TSDOD1 | 3109 |
| 80 | Sample | 1605034-25A | SAMPICPMS_TSDOD1 | 3110 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 61 | | 5 | |
| 62 | | 5 | |
| 63 | | 5 | |
| 64 | | 5 | |
| 65 | | 5 | |
| 66 | | | |
| 67 | | | |
| 68 | | | |
| 69 | | | |
| 70 | | 5 | |
| 71 | | 5 | |
| 72 | | 5 | |
| 73 | | | |
| 74 | | 5 | |
| 75 | | 25 | |
| 76 | | 5 | |
| 77 | | 5 | |
| 78 | | 5 | |
| 79 | | 5 | |
| 80 | | 5 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 81 | Sample | 1605034-26A | SAMPICPMS_TSDOD1 | 3111 | |
| 82 | Sample | 1605034-27A | SAMPICPMS_TSDOD1 | 3112 | |
| 83 | Sample | 1605034-28A | SAMPICPMS_TSDOD1 | 3201 | |
| 84 | Sample | 1605034-29A | SAMPICPMS_TSDOD1 | 3202 | |
| 85 | PDS | 1605047-03A PDS | PDS ICPMS_TSDOD1 | 3203 | |
| 86 | MS_S | 1605047-03A MS | MS ICPMS_TSDOD1 | 3204 | |
| 87 | MS_S | 1605047-03A MSD | MSD ICPMS_TSDOD1 | 3205 | |
| 88 | CCV | CCV3-160516 | CCV ICPMS_TW | 1207 | |
| 89 | CCB | CCB3-160516 | CCB ICPMS_TW | 1102 | |
| 90 | LLCCV | LCVL3-160516 | LCVLICPMS_TW | 2512 | |
| 91 | CCB | CCB3-160516 | CCB ICPMS_TW | 1103 | |
| 92 | Sample | 1605034-30A | SAMPICPMS_TSDOD1 | 3206 | |
| 93 | Sample | 1605047-01A | SAMPICPMS_TSDOD1 | 3207 | |
| 94 | Sample | 1605047-02A | SAMPICPMS_TSDOD1 | 3208 | |
| 95 | Sample | 1605047-04A | SAMPICPMS_TSDOD1 | 3209 | |
| 96 | Sample | 1605047-05A | SAMPICPMS_TSDOD1 | 3210 | |
| 97 | Sample | 1605047-06A | SAMPICPMS_TSDOD1 | 3211 | |
| 98 | Sample | 1605047-07A | SAMPICPMS_TSDOD1 | 3212 | |
| 99 | Sample | 1605047-08A | SAMPICPMS_TSDOD1 | 3301 | |
| 100 | Sample | 1605047-09A | SAMPICPMS_TSDOD1 | 3302 | |

# Sample List

| # | Level | Dilution | Skip |
|---|---|---|---|
| 81 | | 5 | |
| 82 | | 5 | |
| 83 | | 5 | |
| 84 | | 5 | |
| 85 | | 5 | |
| 86 | | 5 | |
| 87 | | 5 | |
| 88 | | | |
| 89 | | | |
| 90 | | | |
| 91 | | | |
| 92 | | 5 | |
| 93 | | 5 | |
| 94 | | 5 | |
| 95 | | 5 | |
| 96 | | 5 | |
| 97 | | 5 | |
| 98 | | 5 | |
| 99 | | 5 | |
| 100 | | 5 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 101 | Sample | 1605047-10A | SAMPICPMS_TSDOD1 | 3303 | |
| 102 | CCV | CCV4-160516 | CCV ICPMS_TW | 1207 | |
| 103 | CCB | CCB4-160516 | CCB ICPMS_TW | 1102 | |
| 104 | LLCCV | LCVL4-160516 | LCVLICPMS_TW | 2512 | |
| 105 | CCB | CCB4-160516 | CCB ICPMS_TW | 1103 | |
| 106 | PB | MB-75135 | MBLKICPMS_TSDOD1 | 3309 | |
| 107 | LCS_S | LCS-75135 | LCS ICPMS_TSDOD1 | 3310 | |
| 108 | LCS_S | LCSD-75135 | LCSDICPMS_TSDOD1 | 3311 | |
| 109 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 110 | AllRef | 1605098-41A | SAMPICPMS_TSDOD1 | 3312 | |
| 111 | SD | 1605098-41A SD | SD ICPMS_TSDOD1 | 3401 | |
| 112 | Sample | 1605097-20A | SAMPICPMS_TSDOD1 | 3402 | |
| 113 | Sample | 1605097-21A | SAMPICPMS_TSDOD1 | 3403 | |
| 114 | Sample | 1605097-23A | SAMPICPMS_TSDOD1 | 3404 | |
| 115 | Sample | 1605097-26A | SAMPICPMS_TSDOD1 | 3405 | |
| 116 | Sample | 1605098-31A | SAMPICPMS_TSDOD1 | 3406 | |
| 117 | Sample | 1605098-34A | SAMPICPMS_TSDOD1 | 3407 | |
| 118 | Sample | 1605098-37A | SAMPICPMS_TSDOD1 | 3408 | |
| 119 | Sample | 1605098-40A | SAMPICPMS_TSDOD1 | 3409 | |
| 120 | Sample | 1605030-02A | SAMP6020A_S | 3304 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 101 | | 5 | |
| 102 | | | |
| 103 | | | |
| 104 | | | |
| 105 | | | |
| 106 | | 5 | |
| 107 | | 5 | |

# Sample List

| | | |
|---|---|---|
| 108 | | 5 |
| 109 | | |
| 110 | | 5 |
| 111 | | 25 |
| 112 | | 5 |
| 113 | | 5 |
| 114 | | 5 |
| 115 | | 5 |
| 116 | | 5 |
| 117 | | 5 |
| 118 | | 5 |
| 119 | | 5 |
| 120 | | 500 |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 121 | PDS | 1605098-41A PDS | PDS ICPMS_TSDOD1 | 3410 | |
| 122 | MS_S | 1605098-41A MS | MS ICPMS_TSDOD1 | 3411 | |
| 123 | MS_S | 1605098-41A MSD | MSD ICPMS_TSDOD1 | 3412 | |
| 124 | CCV | CCV5-160516 | CCV ICPMS_TW | 1207 | |
| 125 | CCB | CCB5-160516 | CCB ICPMS_TW | 1102 | |
| 126 | LLCCV | LCVL5-160516 | LCVLICPMS_TW | 2511 | |
| 127 | CCB | CCB5-160516 | CCB ICPMS_TW | 1103 | |
| 128 | PB | MB-75099 | MBLKICPMS_TSDOD1 | 4101 | |
| 129 | LCS_S | LCS-75099 | LCS ICPMS_TSDOD1 | 4102 | |
| 130 | LCS_S | LCSD-75099 | LCSDICPMS_TSDOD1 | 4103 | |
| 131 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 132 | AllRef | 1605071-17A | SAMPICPMS_TSDOD1 | 4104 | |
| 133 | SD | 1605071-17A SD | SD ICPMS_TSDOD1 | 4105 | |
| 134 | Sample | 1605071-12A | SAMPICPMS_TSDOD1 | 4106 | |
| 135 | Sample | 1605071-13A | SAMPICPMS_TSDOD1 | 4107 | |
| 136 | Sample | 1605071-14A | SAMPICPMS_TSDOD1 | 4108 | |
| 137 | Sample | 1605071-15A | SAMPICPMS_TSDOD1 | 4109 | |
| 138 | Sample | 1605071-16A | SAMPICPMS_TSDOD1 | 4110 | |
| 139 | Sample | 1605071-18A | SAMPICPMS_TSDOD1 | 4111 | |
| 140 | Sample | 1605071-19A | SAMPICPMS_TSDOD1 | 4112 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 121 | | 5 | |
| 122 | | 5 | |
| 123 | | 5 | |
| 124 | | | |
| 125 | | | |
| 126 | | | |
| 127 | | | |
| 128 | | 5 | |
| 129 | | 5 | |
| 130 | | 5 | |
| 131 | | | |
| 132 | | 5 | |
| 133 | | 25 | |
| 134 | | 5 | |
| 135 | | 5 | |

# Sample List

| | | |
|---|---|---|
| 136 | | 5 |
| 137 | | 5 |
| 138 | | 5 |
| 139 | | 5 |
| 140 | | 5 |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 141 | Sample | 1605071-20A | SAMPICPMS_TSDOD1 | 4201 | |
| 142 | Sample | 1605071-21A | SAMPICPMS_TSDOD1 | 4202 | |
| 143 | PDS | 1605071-17A PDS | PDS ICPMS_TSDOD1 | 4203 | |
| 144 | MS_S | 1605071-17A MS | MS ICPMS_TSDOD1 | 4204 | |
| 145 | MS_S | 1605071-17A MSD | MSD ICPMS_TSDOD1 | 4205 | |
| 146 | CCV | CCV6-160516 | CCV ICPMS_TW | 1207 | |
| 147 | CCB | CCB6-160516 | CCB ICPMS_TW | 1102 | |
| 148 | LLCCV | LCVL6-160516 | LCVLICPMS_TW | 2511 | |
| 149 | CCB | CCB6-160516 | CCB ICPMS_TW | 1103 | |
| 150 | Sample | 1605071-22A | SAMPICPMS_TSDOD1 | 4206 | |
| 151 | Sample | 1605071-23A | SAMPICPMS_TSDOD1 | 4207 | |
| 152 | Sample | 1605071-24A | SAMPICPMS_TSDOD1 | 4208 | |
| 153 | Sample | 1605071-25A | SAMPICPMS_TSDOD1 | 4209 | |
| 154 | Sample | 1605071-26A | SAMPICPMS_TSDOD1 | 4210 | |
| 155 | Sample | 1605071-27A | SAMPICPMS_TSDOD1 | 4211 | |
| 156 | Sample | 1605071-30A | SAMPICPMS_TSDOD1 | 4212 | |
| 157 | Sample | 1605071-31A | SAMPICPMS_TSDOD1 | 4301 | |
| 158 | Sample | 1605071-33A | SAMPICPMS_TSDOD1 | 4302 | |
| 159 | Sample | 1605071-34A | SAMPICPMS_TSDOD1 | 4303 | |
| 160 | CCV | CCV7-160516 | CCV ICPMS_TW | 1207 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 141 | | 5 | |
| 142 | | 5 | |
| 143 | | 5 | |
| 144 | | 5 | |
| 145 | | 5 | |
| 146 | | | |
| 147 | | | |
| 148 | | | |
| 149 | | | |
| 150 | | 5 | |
| 151 | | 5 | |
| 152 | | 5 | |
| 153 | | 5 | |
| 154 | | 5 | |
| 155 | | 5 | |
| 156 | | 5 | |
| 157 | | 5 | |
| 158 | | 5 | |
| 159 | | 5 | |
| 160 | | | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 161 | CCB | CCB7-160516 | CCB ICPMS_TW | 1102 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 162 | LLCCV | LCVL7-160516 | LCVLICPMS_TW | 2510 |
| 163 | CCB | CCB7-160516 | CCB ICPMS_TW | 1102 |
| 164 | PB | MB-75104 | MBLKICPMS_TSDOD1 | 4310 |
| 165 | LCS_S | LCS-75104 | LCS ICPMS_TSDOD1 | 4311 |
| 166 | LCS_S | LCSD-75104 | LCSDICPMS_TSDOD1 | 4312 |
| 167 | CCB | RINSE | CCB ICPMS_TW | 1101 |
| 168 | AllRef | 1605071-53A | SAMPICPMS_TSDOD1 | 4401 |
| 169 | SD | 1605071-53A SD | SD ICPMS_TSDOD1 | 4402 |
| 170 | Sample | 1605071-37A | SAMPICPMS_TSDOD1 | 4403 |
| 171 | Sample | 1605071-40A | SAMPICPMS_TSDOD1 | 4404 |
| 172 | Sample | 1605071-41A | SAMPICPMS_TSDOD1 | 4405 |
| 173 | Sample | 1605071-42A | SAMPICPMS_TSDOD1 | 4406 |
| 174 | Sample | 1605071-43A | SAMPICPMS_TSDOD1 | 4407 |
| 175 | Sample | 1605071-44A | SAMPICPMS_TSDOD1 | 4408 |
| 176 | Sample | 1605071-45A | SAMPICPMS_TSDOD1 | 4409 |
| 177 | Sample | 1605071-46A | SAMPICPMS_TSDOD1 | 4410 |
| 178 | Sample | 1605071-47A | SAMPICPMS_TSDOD1 | 4411 |
| 179 | PDS | 1605071-53A PDS | PDS ICPMS_TSDOD1 | 4412 |
| 180 | MS_S | 1605071-53A MS | MS ICPMS_TSDOD1 | 4501 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 161 | | | |
| 162 | | | |
| 163 | | | |
| 164 | | 5 | |
| 165 | | 5 | |
| 166 | | 5 | |
| 167 | | | |
| 168 | | 5 | |
| 169 | | 25 | |
| 170 | | 5 | |
| 171 | | 5 | |
| 172 | | 5 | |
| 173 | | 5 | |
| 174 | | 5 | |
| 175 | | 5 | |
| 176 | | 5 | |
| 177 | | 5 | |
| 178 | | 5 | |
| 179 | | 5 | |
| 180 | | 5 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 181 | MS_S | 1605071-53A MSD | MSD ICPMS_TSDOD1 | 4502 | |
| 182 | CCV | CCV8-160516 | CCV ICPMS_TW | 1207 | |
| 183 | CCB | CCB8-160516 | CCB ICPMS_TW | 1102 | |
| 184 | LLCCV | LCVL8-160516 | LCVLICPMS_TW | 2510 | |
| 185 | CCB | CCB8-160516 | CCB ICPMS_TW | 1103 | |
| 186 | Sample | 1605071-48A | SAMPICPMS_TSDOD1 | 4503 | |
| 187 | Sample | 1605071-49A | SAMPICPMS_TSDOD1 | 4504 | |
| 188 | Sample | 1605071-50A | SAMPICPMS_TSDOD1 | 4505 | |
| 189 | Sample | 1605071-51A | SAMPICPMS_TSDOD1 | 4506 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 190 | Sample | 1605071-52A | SAMPICPMS_TSDOD1 | 4507 |
| 191 | Sample | 1605071-54A | SAMPICPMS_TSDOD1 | 4508 |
| 192 | Sample | 1605074-01A | SAMPICPMS_TSDOD1 | 4509 |
| 193 | Sample | 1605074-02A | SAMPICPMS_TSDOD1 | 4510 |
| 194 | Sample | 1605074-03A | SAMPICPMS_TSDOD1 | 4511 |
| 195 | Sample | 1605074-04A | SAMPICPMS_TSDOD1 | 4512 |
| 196 | CCV | CCV9-160516 | CCV ICPMS_TW | 1207 |
| 197 | CCB | CCB9-160516 | CCB ICPMS_TW | 1102 |
| 198 | LLCCV | LCVL9-160516 | LCVLICPMS_TW | 2511 |
| 199 | CCB | CCB9-160516 | CCB ICPMS_TW | 1102 |
| 200 | CCB | CCB9-160516 | CCB ICPMS_TW | 1102 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 181 | | 5 | |
| 182 | | | |
| 183 | | | |
| 184 | | | |
| 185 | | | |
| 186 | | 5 | |
| 187 | | 5 | |
| 188 | | 5 | |
| 189 | | 5 | |
| 190 | | 5 | |
| 191 | | 5 | |
| 192 | | 5 | |
| 193 | | 5 | |
| 194 | | 5 | |
| 195 | | 5 | |
| 196 | | | |
| 197 | | | |
| 198 | | | |
| 199 | | | |
| 200 | | | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 201 | CCB | CCB9-160516 | CCB ICPMS_TW | 1102 | |
| 202 | CCB | CCB9-160516 | CCB ICPMS_TW | 1102 | |
| 203 | CCB | CCB9-160516 | CCB ICPMS_TW | 1103 | |
| 204 | CCB | CCB9-160516 | CCB ICPMS_TW | 1103 | |
| 205 | CCB | CCB9-160516 | CCB ICPMS_TW | 1103 | |
| 206 | CCB | CCB9-160516 | CCB ICPMS_TW | 1103 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 201 | | | |
| 202 | | | |
| 203 | | | |
| 204 | | | |
| 205 | | | |
| 206 | | | |

**Unknown Samples:**

# Sample List

**Blank Samples:**

## Periodic Block

| # | Block Name | Period | Unit | Reset By |
|---|---|---|---|---|

## Sublist

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/12/2016 11:29:00 AM**
Digestion:
Prep End Date:

Prep Batch **75135** Prep Code: **3050_IDOD** Technician: **Will Boston**

Prep Factor Units: **mL/g**

| Equipment List |
|---|
| Hot Block #3 |
| Thermometer #71 |
| Balance #20 |
| Pipette #P-01 |
| Pipette#-P-09 |

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605097-20A | Soil | | 1.12 | 50 | 50.000 | 1 of 1 | |
| 1605097-21A | Soil | | 1.09 | 50 | 50.000 | 1 of 1 | |
| 1605097-23A | Soil | | 1.03 | 50 | 50.000 | 1 of 1 | |
| 1605097-26A | Soil | | 1.08 | 50 | 50.000 | 1 of 1 | |
| 1605098-31A | Soil | | 1.14 | 50 | 50.000 | 1 of 1 | |
| 1605098-34A | Soil | | 1.10 | 50 | 50.000 | 1 of 1 | |
| 1605098-37A | Soil | | 1.06 | 50 | 50.000 | 1 of 1 | |
| 1605098-40A | Soil | | 1.06 | 50 | 50.000 | 1 of 1 | |
| 1605098-41A | Soil | | 1.09 | 50 | 50.000 | 1 of 1 | |
| LCS-75135 | Soil | | 1 | 50 | 50.000 | of | |
| LCSD-75135 | Soil | | 1 | 50 | 50.000 | of | |
| MB-75135 | Soil | | 1 | 50 | 50.000 | of | |
| MS | | | 1.03 | | | | |
| MSD | | | 1.06 | | | | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 9974 | Hydrogen Peroxide | 3 | ml | 01/20/2026 |
| 10056 | Digestion Vessels | 1 | vessel | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 10 | ml | 01/10/2026 |
| 10137 | Hydrochloric Acid (trace metal grade) | 5 | ml | 01/10/2026 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160406-1 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.5 | 07/05/2016 |
| MET-SPIKE-160509-4 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 1 | 08/07/2016 |
| MET-SPIKE-160509-5 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 1 | 08/07/2016 |

12:28 - 12:38
14:40 - 14:40
15:00 - 17:00
17:08 - 17:23

05/13/16

REVIEWED BY
By Janice Whitt at 10:14:20 AM, 5/17/2016

# MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

| | | | | |
|---|---|---|---|---|
| **ANALYST:** | CVD | **BALANCE #:** | 26 | |
| **TEST DATE:** | 05/12/2016 | **Water is at Room Temperatue (70-73°F) / (21-23°C)** | | |
| **PIPETTER LAB ID:** | P-01, P-09 | **WATER TEMP (°C):** | **21-23°C** | |
| **TEST VOLUME:** | See Below | **WATER DENSITY:** | **0.998** | **(0.9980-0.9976)** |

| | |
|---|---|
| **REFERENCE:** | DoD QSM 5.0 |
| **# of REPLICATES:** | 3 |
| **LABWARE TYPE:** | MECHANICAL VOLUMETRIC PIPETTE |
| **FREQUENCY:** | DAILY BEFORE USE |
| **MEAN CRITERIA:** | ± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME) |
| **RSD CRITERIA:** | < 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS) |

**1) RECORD ROOM AND WATER TEMPERATURE**
**2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.**
**3) WEIGH 3 REPLICATES AT THE TEST VOLUME.**
**4) DETERMINE TOTAL WT.**
**5) CALCULATE VOLUME OF H2O AT °C (in mL)**

**% TEST VOL = Volume of H2O at °C/Test Volume * 100**

**%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100**

**VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY**

| | | | | | BIAS | PRECISION |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-01** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | **5.00** | 5.0090 | 4.9990 | **99.98** | **PASS** | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| 2 | | 5.0017 | 4.9917 | **99.83** | | |
| 3 | | 4.9996 | 4.9896 | **99.79** | | |
| **AVERAGE (MEAN)** | | **5.003** | **4.993** | **99.87** | | **0.099** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-09** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | **0.20** | 0.2021 | 0.2017 | **100.85** | **PASS** | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| 2 | | 0.2026 | 0.2022 | **101.10** | | |
| 3 | | 0.2006 | 0.2002 | **100.10** | | |
| **AVERAGE (MEAN)** | | **0.202** | **0.201** | **100.68** | | **0.516** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID:** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | | | | | | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| 2 | | | | | | |
| 3 | | | | | | |
| **AVERAGE (MEAN)** | | | | | | |
| | | | | | | |

5/12/16
Analyst / Date

REVIEWED BY
By Janice Whitt at 10:13:05 AM, 5/17/2016
Review and Approved / Date

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/12/2016 11:29:00 AM**
Digestion: **Start: 5/12/2016 12:28:00 PM / Stop: 5/12/2016 5:23:00 PM**
Prep End Date: **5/13/2016 9:05:48 AM**

Prep Batch **75135** Prep Code: **3050_IDOD** Technician: **Will Boston**

Prep Factor Units: **mL/g**

**Equipment List**

- Hot Block #3
- Thermometer #71
- Balance #20
- Pipette #P-01
- Pipette#-P-09

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605097-20A | Soil | | 1.12 | 50 | 44.643 | 1 of 1 | |
| 1605097-21A | Soil | | 1.09 | 50 | 45.872 | 1 of 1 | |
| 1605097-23A | Soil | | 1.03 | 50 | 48.544 | 1 of 1 | |
| 1605097-26A | Soil | | 1.08 | 50 | 46.296 | 1 of 1 | |
| 1605098-31A | Soil | | 1.14 | 50 | 43.860 | 1 of 1 | |
| 1605098-34A | Soil | | 1.1 | 50 | 45.455 | 1 of 1 | |
| 1605098-37A | Soil | | 1.06 | 50 | 47.170 | 1 of 1 | |
| 1605098-40A | Soil | | 1.06 | 50 | 47.170 | 1 of 1 | |
| 1605098-41A | Soil | | 1.09 | 50 | 45.872 | 1 of 1 | |
| 1605098-41A MS | Soil | | 1.03 | 50 | 48.544 | of | |
| 1605098-41A MSD | Soil | | 1.06 | 50 | 47.170 | of | |
| 1605098-41A PDS | Soil | | 1.09 | 50 | 45.872 | of | |
| 1605098-41A SD | Soil | | 1.09 | 50 | 45.872 | of | |
| LCS-75135 | Soil | | 1 | 50 | 50.000 | of | |
| LCSD-75135 | Soil | | 1 | 50 | 50.000 | of | |
| MB-75135 | Soil | | 1 | 50 | 50.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 9974 | Hydrogen Peroxide | 3 | ml | 01/20/2026 |
| 10056 | Digestion Vessels | 1 | vessel | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 10 | ml | 01/10/2026 |
| 10137 | Hydrochloric Acid (trace metal grade) | 5 | ml | 01/10/2026 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160406-1 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.5 | 07/05/2016 |
| MET-SPIKE-160511-1 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 1 | 08/09/2016 |
| MET-SPIKE-160511-2 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 1 | 08/09/2016 |

***REVIEWED BY***
*By Janice Whitt at 10:14:23 AM, 5/17/2016*

# Calibration Summary Report

**Date Acquired** 5/16/2016 12:13
**Data Batch** 160516.b

| Level | Calibration File Name |
|---|---|
| 1 | 034CALB.d |
| 2 | 035CALS.d |
| 3 | 036CALS.d |
| 4 | 037CALS.d |
| 5 | 038CALS.d |
| 6 | 039CALS.d |
| 7 | 040CALS.d |
| 8 | 041CALS.d |

**Calibration Table**

| Ele | Corr Coef | Curve Equation |
|---|---|---|
| As | 1.0000 | y = 0.0013 * x + 2.1604E-004 |
| Be | 1.0000 | y = 6.4330E-005 * x + 2.0153E-006 |
| B | 0.9999 | y = 2.0450E-005 * x + 1.5046E-004 |
| Na | 1.0000 | y = 7.6435E-004 * x + 0.0537 |
| Mg | 1.0000 | y = 3.7787E-004 * x + 7.7363E-004 |
| Al | 0.9999 | y = 1.3498E-004 * x + 1.9756E-004 |
| K | 1.0000 | y = 3.8112E-004 * x + 0.0514 |
| Ca | 0.9999 | y = 2.1721E-005 * x + 2.3138E-004 |
| Ti | 1.0000 | y = 1.4560E-004 * x + 2.2346E-006 |
| V | 1.0000 | y = 0.0050 * x + 0.0025 |
| Cr | 1.0000 | y = 0.0060 * x + 0.0021 |
| Mn | 1.0000 | y = 0.0032 * x + 9.1295E-004 |
| Fe | 1.0000 | y = 0.0051 * x + 0.0175 |
| Co | 1.0000 | y = 0.0129 * x + 1.7398E-004 |
| Ni | 1.0000 | y = 0.0036 * x + 5.7511E-004 |
| Cu | 1.0000 | y = 0.0098 * x + 0.0049 |
| Zn | 1.0000 | y = 0.0016 * x + 4.3144E-004 |
| Se | 1.0000 | y = 7.5403E-005 * x + 1.0251E-004 |
| Sr | 1.0000 | y = 6.4423E-004 * x + 2.2509E-005 |
| Mo | 1.0000 | y = 5.9258E-004 * x + 7.2626E-006 |
| Ag | 0.9999 | y = 0.0019 * x + 1.4898E-005 |
| Cd | 1.0000 | y = 2.6872E-004 * x + 1.5289E-006 |
| Sn | 1.0000 | y = 5.5204E-004 * x + 1.8213E-004 |
| Sb | 0.9999 | y = 8.5259E-004 * x + 3.1272E-005 |
| Tl | 1.0000 | y = 0.0016 * x + 1.9351E-005 |
| Ba | 1.0000 | y = 2.6911E-004 * x + 5.0734E-006 |
| Pb | 1.0000 | y = 0.0022 * x + 3.1769E-004 |
| Li | 1.0000 | y = 4.8609E-005 * x + 1.9222E-005 |

REVIEWED BY
By Janice Whitt at 9:32:33 AM, 5/17/2016

# Calibration Summary Report

**Level 7 Cal**

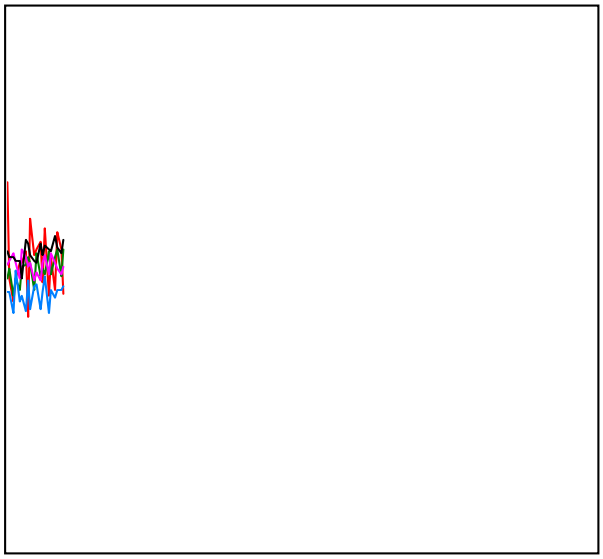
| Ele | Conc | Calc | %Rec |
|---|---|---|---|
| As | 500 | 494.73 | 99 |
| Be | 500 | 505.30 | 101 |
| B | 500 | 518.78 | 104 |
| Na | 10000 | 10141.06 | 101 |
| Mg | 10000 | 10196.11 | 102 |
| Al | 10000 | 10049.08 | 100 |
| K | 10000 | 10164.23 | 102 |
| Ca | 10000 | 9672.61 | 97 |
| Ti | 500 | 507.22 | 101 |
| V | 500 | 502.82 | 101 |
| Cr | 500 | 504.88 | 101 |
| Mn | 500 | 498.41 | 100 |
| Fe | 10000 | 10015.95 | 100 |
| Co | 500 | 501.56 | 100 |
| Ni | 500 | 502.25 | 100 |
| Cu | 500 | 503.81 | 101 |
| Zn | 500 | 497.18 | 99 |
| Se | 500 | 495.31 | 99 |
| Sr | 500 | 495.73 | 99 |
| Mo | 500 | 494.04 | 99 |
| Ag | 500 | 502.57 | 101 |
| Cd | 500 | 497.12 | 99 |
| Sn | 500 | 493.81 | 99 |
| Sb | 500 | 503.35 | 101 |
| Tl | 500 | 513.35 | 103 |
| Ba | 500 | 496.71 | 99 |
| Pb | 500 | 500.73 | 100 |

**Level 8 Cal**

| Ele | Conc | Calc | %Rec |
|---|---|---|---|
| As | 2000 | 2001.70 | 100 |
| Be | 2000 | 1998.96 | 100 |
| B | 2000 | 1994.14 | 100 |
| Na | 25000 | 24916.54 | 100 |
| Mg | 25000 | 24905.02 | 100 |
| K | 25000 | 24930.40 | 100 |
| Ca | 25000 | 25173.08 | 99 |
| Ti | 2000 | 1998.19 | 100 |
| V | 2000 | 1999.64 | 100 |
| Cr | 2000 | 1999.12 | 100 |
| Mn | 2000 | 2001.04 | 100 |
| Co | 2000 | 1999.34 | 100 |
| Ni | 2000 | 1999.12 | 100 |
| Cu | 2000 | 1998.30 | 100 |
| Zn | 2000 | 2000.57 | 100 |
| Se | 2000 | 2001.36 | 100 |
| Sr | 2000 | 2002.63 | 100 |
| Mo | 2000 | 2003.15 | 100 |
| Cd | 2000 | 2001.51 | 100 |
| Sn | 2000 | 2002.77 | 100 |
| Tl | 2000 | 1996.39 | 100 |
| Ba | 2000 | 2002.28 | 100 |
| Pb | 2000 | 2000.05 | 100 |
| Li | 2000 | 1997.30 | 100 |

REVIEWED BY
By Janice Whitt at 9:32:37 AM, 5/17/2016

# Current Signal



| Mass | Range | Count | Avg. Count | RSD [%] |
|---|---|---|---|---|
| 51 | 200 | 95 | 106.6 | 11.12 |
| 59 | 2000 | 1109 | 1037.2 | 4.91 |
| 89 | 2000 | 978 | 946.7 | 4.83 |
| 140 | 5000 | 2619 | 2627.2 | 3.15 |
| 205 | 5000 | 2855 | 2745.7 | 3.20 |
| 156/140 | 1 | 0.267 % | 0.281 % | 38.48 |
| 75 | 200 | 14 | 20.2 | 100.82 |
| 78 | 20 | 5 | 7.7 | 42.78 |
| 56 | 5000 | 2302 | 2186.5 | 4.18 |
| 31 | 200 | 94 | 119.5 | 15.15 |

**Integration Time [sec]** 0.10

**## Plasma Parameters ##**

| | | | |
|---|---|---|---|
| RF Power | 1550 | Carrier Gas | 0.53 |
| RF Matching | 1.90 | Option Gas | 0.0 |
| Smpl Depth | 8.0 | Nebulizer Pump | 0.10 |
| S/C Temp | 2 | | |

**## Lenses Parameters ##**

| | | | |
|---|---|---|---|
| Extract 1 | 0.0 | Omega Lens | 6.3 |
| Extract 2 | -200.0 | Cell Entrance | -40 |
| Omega Bias | -90 | Cell Exit | -60 |
| Deflect | 2.6 | | |

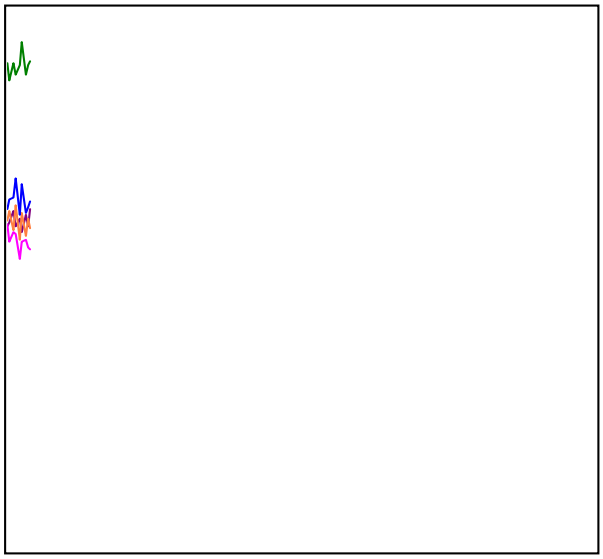
**## Cell Parameters ##**

| | | | |
|---|---|---|---|
| Use Gas | true | 3rd Gas Flow | 0 |
| He Flow | 4.7 | OctP Bias | -18.0 |
| H2 Flow | 0.0 | OctP RF | 200 |
| Energy Discrimination | 3.0 | | |

**Meters**

| | | | | | |
|---|---|---|---|---|---|
| IF/BK Press | 2.36E+2 | Pa | Carrier Gas(BP) | 1.99E+2 | kPa |
| Analyzer Press | 2.11E-4 | Pa | Reflected Power | 2 | W |
| Forward Power | 1551 | W | | | |

# Current Signal



| Mass | Range | Count | Avg. Count | RSD [%] |
|---|---|---|---|---|
| 7 | 2000 | 1259 | 1214.6 | 2.40 |
| 59 | 2000 | 1799 | 1786.0 | 2.24 |
| 89 | 5000 | 2971 | 3021.6 | 3.65 |
| 140 | 5000 | 2768 | 2851.1 | 3.27 |
| 205 | 5000 | 1987 | 2069.0 | 3.42 |
| 156/140 | 2 | 1.265 % | 1.084 % | 10.85 |
| 78 | 5000 | 2298 | 2330.2 | 2.02 |
| 63 | 1000 | 644 | 644.6 | 3.48 |
| 75 | 10000 | 6167 | 6160.6 | 1.98 |
| **Integration Time [sec]** | | 0.10 | | |

**## Plasma Parameters ##**

| | | | |
|---|---|---|---|
| RF Power | 1550 | Carrier Gas | 0.53 |
| RF Matching | 1.90 | Option Gas | 0.0 |
| Smpl Depth | 8.0 | Nebulizer Pump | 0.10 |
| S/C Temp | 2 | | |

**## Lenses Parameters ##**

| | | | |
|---|---|---|---|
| Extract 1 | 0.0 | Omega Lens | 6.3 |
| Extract 2 | -200.0 | Cell Entrance | -40 |
| Omega Bias | -90 | Cell Exit | -60 |
| Deflect | 7.0 | | |

**## Cell Parameters ##**

| | | | |
|---|---|---|---|
| Use Gas | false | 3rd Gas Flow | 0 |
| He Flow | 4.2 | OctP Bias | -18.0 |
| H2 Flow | 0.0 | OctP RF | 200 |
| Energy Discrimination | 3.0 | | |

**Meters**

| | | | | | |
|---|---|---|---|---|---|
| IF/BK Press | 2.35E+2 | Pa | Carrier Gas(BP) | 2.01E+2 | kPa |
| Analyzer Press | 1.25E-4 | Pa | Reflected Power | 2 | W |
| Forward Power | 1549 | W | | | |

# US EPA Tune Check Sample Report

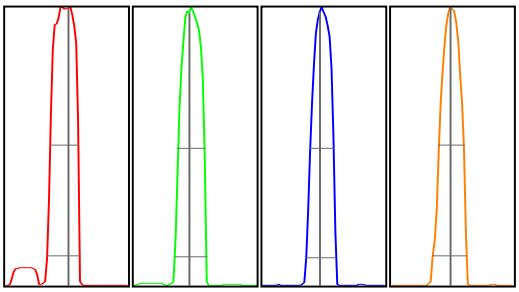
**Batch Folder** C:\Agilent\ICPMH\1\DATA\DHL TEMPLATE Li.b
**Report Comment**
**Instrument Name** ICPMS4 JP12361998

**[No gas]**

| Mass | Count (Mean) | RSD% (Actual) | RSD% (Required) | RSD% (Flag) |
|---|---|---|---|---|
| 7 | 804620 | 0.70 | 5.00 | |
| 59 | 1068250 | 1.07 | 5.00 | |
| 115 | 1403611 | 0.41 | 5.00 | |
| 205 | 1211243 | 1.76 | 5.00 | |

| Mass | Replicate 1 Count | Replicate 2 Count | Replicate 3 Count | Replicate 4 Count | Replicate 5 Count |
|---|---|---|---|---|---|
| 7 | 805420 | 812074 | 797893 | 800352 | 807359 |
| 59 | 1087360 | 1060308 | 1070307 | 1062123 | 1061152 |
| 115 | 1411650 | 1403412 | 1406438 | 1398545 | 1398009 |
| 205 | 1244073 | 1221795 | 1196407 | 1198551 | 1195389 |

**Integration Time [sec] =** 0.1



| Mass | Peak Height | Axis (Actual) | Axis (Required) | Axis (Flag) | Width-X% (Actual) | Width-X% (Required) | Width-X% (Flag) |
|---|---|---|---|---|---|---|---|
| 7 | 121133 | 7.05 | 6.9 - 7.1 | | 0.789 | 0.850 | |
| 59 | 176131 | 58.90 | 58.9 - 59.1 | | 0.762 | 0.850 | |
| 115 | 262817 | 114.95 | 114.9 - 115.1 | | 0.726 | 0.850 | |
| 205 | 217175 | 205.00 | 204.9 - 205.1 | | 0.820 | 0.850 | |

**X% =** 10 **Int Time [sec] =** 0.1 **Acq Time [sec] =** 135.05 **Y Axis =** Linear

**Tune Parameters**

**## Plasma Paramters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| RF Power | 1550 | W | Nebulizer Pump | 0.10 | rps |
| RF Matching | 1.90 | V | S/C Temp | 2 | ℃ |
| Smpl Depth | 8.0 | mm | Gas Switch | Dilution Gas | |
| Carrier Gas | 0.53 | L/min | Makeup/Dilution Gas | 0.52 | L/min |
| Option Gas | 0.0 | % | | | |

**## Lenses Parameters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| Extract 1 | 0.0 | V | Cell Entrance | -40 | V |
| Extract 2 | -200.0 | V | Cell Exit | -60 | V |
| Omega Bias | -90 | V | Deflect | 7.0 | V |
| Omega Lens | 6.3 | V | Plate Bias | -60 | V |

REVIEWED BY
By Janice Whitt at 9:32:42 AM, 5/17/2016

**## Cell Parameters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| Use Gas | false | | OctP Bias | -18.0 | V |
| He Flow | 0.0 | mL/min | OctP RF | 200 | V |
| H2 Flow | 0.0 | mL/min | Energy Discrimination | 3.0 | V |
| 3rd Gas Flow | 0 | % | | | |

# P/A Factor Tuning Report

## Current Sample

Sample Name: BLANK STD 1
Data File: 034CALB.d
Acquired: 05/16/2016 12:13:29

## Detector Parameters and P/A Factors

Discriminator: 4.5 mV
AnalogHV: 1760 V
PulseHV: 1210 V

Acquired: 05/16/2016 10:47:39

| Mass[u] | Element | P/A Factor |
|---|---|---|
| 6 | Li | 0.098496 |
| 9 | Be | 0.112338 |
| 23 | Na | 0.119180 |
| 24 | Mg | 0.123864 |
| 27 | Al | 0.128284 |
| 39 | K | 0.130182 |
| 45 | Sc | 0.131718 |
| 48 | | 0.131992 |
| 51 | V | 0.133425 |
| 52 | Cr | 0.136299 |
| 55 | Mn | 0.138470 |
| 59 | Co | 0.141580 |
| 60 | Ni | 0.142019 |
| 63 | Cu | 0.145427 |
| 66 | Zn | 0.144313 |
| 72 | | 0.143606 |
| 74 | Ge | 0.144250 |
| 75 | As | 0.143445 |
| 88 | Sr | 0.144615 |
| 89 | | 0.143433 |
| 95 | | 0.143749 |
| 97 | Mo | 0.143776 |
| 98 | Mo | 0.144291 |
| 99 | [Mo] | 0.145862 |
| 101 | | 0.145734 |
| 105 | | 0.148493 |
| 111 | Cd | 0.149753 |
| 114 | Cd | 0.150176 |
| 115 | In | 0.149972 |
| 118 | Sn | 0.149689 |
| 121 | | 0.149797 |
| 123 | Sb | 0.149409 |
| 135 | Ba | 0.149385 |
| 138 | | 0.150991 |
| 175 | | 0.154667 |
| 193 | | 0.155688 |
| 205 | Tl | 0.156379 |
| 206 | [Pb] | 0.156315 |
| 207 | [Pb] | 0.156903 |
| 208 | Pb | 0.157338 |
| 209 | Bi | 0.157512 |
| 232 | | 0.157913 |
| 238 | U | 0.157505 |
| 44 | Ca | Signal too low |
| 78 | Se | Signal too low |
| 107 | Ag | Signal too low |
| 172 | | Signal too low |

REVIEWED BY
By Janice Whitt at 9:32:46 AM, 5/17/2016

# Calibration Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 12:13 | Sample Name | BLANK STD 1 |
| Data Batch | 160516.b | Comment | CAL ICPMS_TW |
| Data File Name | 034CALB.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 19 | 27.85 |
| 9 | Be | 45 | 2 | 50.00 |
| 11 | B | 45 | 149 | 19.04 |
| 23 | Na | 45 | 53132 | 1.44 |
| 24 | Mg | 45 | 766 | 2.40 |
| 27 | Al | 45 | 196 | 6.45 |
| 39 | K | 45 | 50902 | 0.38 |
| 44 | Ca | 45 | 229 | 21.81 |
| 47 | Ti | 45 | 2 | 173.21 |
| 51 | V | 45 | 2487 | 1.93 |
| 52 | Cr | 45 | 2071 | 4.20 |
| 55 | Mn | 45 | 903 | 3.52 |
| 56 | Fe | 45 | 17343 | 1.25 |
| 59 | Co | 72 | 129 | 26.04 |
| 60 | Ni | 72 | 426 | 16.10 |
| 63 | Cu | 72 | 3644 | 4.38 |
| 66 | Zn | 72 | 319 | 18.83 |
| 75 | As | 72 | 160 | 7.23 |
| 78 | Se | 72 | 76 | 16.17 |
| 88 | Sr | 115 | 148 | 9.12 |
| 95 | Mo | 115 | 48 | 38.42 |
| 107 | Ag | 115 | 98 | 18.78 |
| 111 | Cd | 115 | 10 | 57.72 |
| 118 | Sn | 115 | 1196 | 2.25 |
| 121 | Sb | 115 | 206 | 22.02 |
| 137 | Ba | 115 | 33 | 20.00 |
| 205 | Tl | 209 | 294 | 9.22 |
| 208 | Pb | 209 | 4836 | 1.04 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD |
|---|---|---|---|
| 45 | Sc | 989663 | 0.96 |
| 72 | Ge | 739879 | 0.79 |
| 115 | In | 6565136 | 0.89 |
| 209 | Bi | 15222533 | 1.19 |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 12:15 | Sample Name | L2-160516 |
| Data Batch | 160516.b | Comment | CAL ICPMS_TW |
| Data File Name | 035CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 52 | 8.81 |
| 9 | Be | 45 | 59 | 10.58 |
| 11 | B | 45 | 124 | 19.00 |
| 23 | Na | 45 | 71682 | 0.85 |
| 24 | Mg | 45 | 8137 | 1.03 |
| 27 | Al | 45 | 2891 | 2.94 |
| 39 | K | 45 | 59356 | 0.32 |
| 44 | Ca | 45 | 756 | 8.57 |
| 47 | Ti | 45 | 128 | 26.26 |
| 51 | V | 45 | 7186 | 1.96 |
| 52 | Cr | 45 | 8019 | 2.41 |
| 55 | Mn | 45 | 3640 | 8.86 |
| 56 | Fe | 45 | 113349 | 1.91 |
| 59 | Co | 72 | 10004 | 3.73 |
| 60 | Ni | 72 | 3400 | 3.10 |
| 63 | Cu | 72 | 10884 | 1.65 |
| 66 | Zn | 72 | 1648 | 6.72 |
| 75 | As | 72 | 1181 | 3.38 |
| 78 | Se | 72 | 134 | 9.83 |
| 88 | Sr | 115 | 4270 | 4.86 |
| 95 | Mo | 115 | 3778 | 3.97 |
| 107 | Ag | 115 | 12176 | 1.65 |
| 111 | Cd | 115 | 1718 | 7.71 |
| 118 | Sn | 115 | 4740 | 1.89 |
| 121 | Sb | 115 | 5570 | 2.20 |
| 137 | Ba | 115 | 1688 | 3.37 |
| 205 | Tl | 209 | 24540 | 1.05 |
| 208 | Pb | 209 | 37281 | 1.63 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 969970 | 0.87 | 989663 | 98.01 | 70 | 120 | |
| 72 | Ge | 734187 | 0.45 | 739879 | 99.23 | 70 | 120 | |
| 115 | In | 6588367 | 0.10 | 6565136 | 100.35 | 70 | 120 | |
| 209 | Bi | 15295093 | 1.60 | 15222533 | 100.48 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 12:17 | Sample Name | L-160516 |
| Data Batch | 160516.b | Comment | CAL ICPMS_TW |
| Data File Name | 036CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 495 | 3.85 |
| 9 | Be | 45 | 597 | 8.29 |
| 11 | B | 45 | 312 | 5.05 |
| 23 | Na | 45 | 205126 | 0.48 |
| 24 | Mg | 45 | 74731 | 0.07 |
| 27 | Al | 45 | 26279 | 1.15 |
| 39 | K | 45 | 123721 | 0.29 |
| 44 | Ca | 45 | 4301 | 1.84 |
| 47 | Ti | 45 | 1460 | 1.95 |
| 51 | V | 45 | 50191 | 1.05 |
| 52 | Cr | 45 | 58887 | 0.52 |
| 55 | Mn | 45 | 31167 | 2.81 |
| 56 | Fe | 45 | 971108 | 0.61 |
| 59 | Co | 72 | 95222 | 0.74 |
| 60 | Ni | 72 | 26831 | 1.92 |
| 63 | Cu | 72 | 76207 | 0.55 |
| 66 | Zn | 72 | 12242 | 0.84 |
| 75 | As | 72 | 9915 | 1.71 |
| 78 | Se | 72 | 595 | 9.12 |
| 88 | Sr | 115 | 41031 | 1.31 |
| 95 | Mo | 115 | 36831 | 1.59 |
| 107 | Ag | 115 | 119481 | 0.70 |
| 111 | Cd | 115 | 17216 | 0.66 |
| 118 | Sn | 115 | 35887 | 2.89 |
| 121 | Sb | 115 | 54655 | 0.34 |
| 137 | Ba | 115 | 17381 | 2.11 |
| 205 | Tl | 209 | 240935 | 0.41 |
| 208 | Pb | 209 | 327437 | 0.60 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 959742 | 0.61 | 989663 | 96.98 | 70 | 120 | |
| 72 | Ge | 723998 | 0.63 | 739879 | 97.85 | 70 | 120 | |
| 115 | In | 6490295 | 1.02 | 6565136 | 98.86 | 70 | 120 | |
| 209 | Bi | 15205984 | 2.69 | 15222533 | 99.89 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 12:19 | Sample Name | 10X-160516 |
| Data Batch | 160516.b | Comment | CAL ICPMS_TW |
| Data File Name | 037CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 2322 | 3.95 |
| 9 | Be | 45 | 3052 | 2.16 |
| 11 | B | 45 | 1149 | 7.19 |
| 23 | Na | 45 | 799876 | 0.39 |
| 24 | Mg | 45 | 367858 | 0.41 |
| 27 | Al | 45 | 127462 | 0.27 |
| 39 | K | 45 | 418941 | 0.74 |
| 44 | Ca | 45 | 20262 | 1.18 |
| 47 | Ti | 45 | 7058 | 1.16 |
| 51 | V | 45 | 240041 | 1.06 |
| 52 | Cr | 45 | 290373 | 0.87 |
| 55 | Mn | 45 | 154609 | 0.91 |
| 56 | Fe | 45 | 4864100 | 0.46 |
| 59 | Co | 72 | 478327 | 0.93 |
| 60 | Ni | 72 | 131742 | 0.81 |
| 63 | Cu | 72 | 369411 | 0.32 |
| 66 | Zn | 72 | 59301 | 1.84 |
| 75 | As | 72 | 48628 | 0.99 |
| 78 | Se | 72 | 2822 | 3.23 |
| 88 | Sr | 115 | 204443 | 0.59 |
| 95 | Mo | 115 | 186130 | 1.18 |
| 107 | Ag | 115 | 606219 | 0.29 |
| 111 | Cd | 115 | 86359 | 0.73 |
| 118 | Sn | 115 | 177055 | 0.68 |
| 121 | Sb | 115 | 273825 | 0.97 |
| 137 | Ba | 115 | 85357 | 0.50 |
| 205 | Tl | 209 | 1200243 | 0.79 |
| 208 | Pb | 209 | 1625521 | 1.26 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 965684 | 0.40 | 989663 | 97.58 | 70 | 120 | |
| 72 | Ge | 726561 | 0.51 | 739879 | 98.20 | 70 | 120 | |
| 115 | In | 6502907 | 1.15 | 6565136 | 99.05 | 70 | 120 | |
| 209 | Bi | 15363317 | 2.30 | 15222533 | 100.92 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 12:21 | Sample Name | 5X-160516 |
| Data Batch | 160516.b | Comment | CAL ICPMS_TW |
| Data File Name | 038CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 4748 | 1.40 |
| 9 | Be | 45 | 6059 | 0.27 |
| 11 | B | 45 | 2143 | 2.91 |
| 23 | Na | 45 | 1559150 | 0.34 |
| 24 | Mg | 45 | 742202 | 0.21 |
| 27 | Al | 45 | 258296 | 0.93 |
| 39 | K | 45 | 795677 | 0.41 |
| 44 | Ca | 45 | 40346 | 1.20 |
| 47 | Ti | 45 | 13950 | 0.34 |
| 51 | V | 45 | 478438 | 0.52 |
| 52 | Cr | 45 | 574104 | 0.42 |
| 55 | Mn | 45 | 304849 | 0.39 |
| 56 | Fe | 45 | 9711093 | 0.83 |
| 59 | Co | 72 | 951253 | 0.55 |
| 60 | Ni | 72 | 262622 | 0.59 |
| 63 | Cu | 72 | 733309 | 0.46 |
| 66 | Zn | 72 | 117365 | 0.32 |
| 75 | As | 72 | 97474 | 0.40 |
| 78 | Se | 72 | 5569 | 2.50 |
| 88 | Sr | 115 | 412067 | 0.70 |
| 95 | Mo | 115 | 375370 | 0.89 |
| 107 | Ag | 115 | 1214271 | 0.47 |
| 111 | Cd | 115 | 174217 | 1.11 |
| 118 | Sn | 115 | 354830 | 0.90 |
| 121 | Sb | 115 | 554782 | 0.12 |
| 137 | Ba | 115 | 172424 | 0.56 |
| 205 | Tl | 209 | 2464090 | 0.70 |
| 208 | Pb | 209 | 3268962 | 0.35 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 970285 | 0.25 | 989663 | 98.04 | 70 | 120 | |
| 72 | Ge | 727408 | 0.46 | 739879 | 98.31 | 70 | 120 | |
| 115 | In | 6520475 | 2.66 | 6565136 | 99.32 | 70 | 120 | |
| 209 | Bi | 15160200 | 1.63 | 15222533 | 99.59 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 12:23 | Sample Name | 2X-160516 |
| Data Batch | 160516.b | Comment | CAL ICPMS_TW |
| Data File Name | 039CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 11895 | 0.36 |
| 9 | Be | 45 | 15606 | 0.20 |
| 11 | B | 45 | 5304 | 5.31 |
| 23 | Na | 45 | 3863011 | 0.24 |
| 24 | Mg | 45 | 1867398 | 0.89 |
| 27 | Al | 45 | 646706 | 0.73 |
| 39 | K | 45 | 1910456 | 0.88 |
| 44 | Ca | 45 | 102550 | 1.48 |
| 47 | Ti | 45 | 35516 | 0.05 |
| 51 | V | 45 | 1206201 | 0.56 |
| 52 | Cr | 45 | 1444024 | 0.77 |
| 55 | Mn | 45 | 769961 | 0.65 |
| 56 | Fe | 45 | 24931975 | 0.46 |
| 59 | Co | 72 | 2390685 | 0.36 |
| 60 | Ni | 72 | 660422 | 0.83 |
| 63 | Cu | 72 | 1847014 | 0.29 |
| 66 | Zn | 72 | 294429 | 0.55 |
| 75 | As | 72 | 245969 | 0.54 |
| 78 | Se | 72 | 13903 | 1.73 |
| 88 | Sr | 115 | 1032756 | 0.51 |
| 95 | Mo | 115 | 948565 | 0.69 |
| 107 | Ag | 115 | 3067540 | 0.35 |
| 111 | Cd | 115 | 440590 | 0.22 |
| 118 | Sn | 115 | 895873 | 0.74 |
| 121 | Sb | 115 | 1395441 | 1.19 |
| 137 | Ba | 115 | 432794 | 1.07 |
| 205 | Tl | 209 | 6236297 | 0.22 |
| 208 | Pb | 209 | 8321908 | 0.74 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 973916 | 0.73 | 989663 | 98.41 | 70 | 120 | |
| 72 | Ge | 738284 | 1.03 | 739879 | 99.78 | 70 | 120 | |
| 115 | In | 6720201 | 0.86 | 6565136 | 102.36 | 70 | 120 | |
| 209 | Bi | 15434354 | 1.75 | 15222533 | 101.39 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 12:25 | Sample Name | H-160516 |
| Data Batch | 160516.b | Comment | CAL ICPMS_TW |
| Data File Name | 040CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 23890 | 0.39 |
| 9 | Be | 45 | 31279 | 0.04 |
| 11 | B | 45 | 10353 | 1.63 |
| 23 | Na | 45 | 7510621 | 3.10 |
| 24 | Mg | 45 | 3707935 | 0.17 |
| 27 | Al | 45 | 1305356 | 0.40 |
| 39 | K | 45 | 3776973 | 0.76 |
| 44 | Ca | 45 | 202385 | 1.53 |
| 47 | Ti | 45 | 71062 | 0.10 |
| 51 | V | 45 | 2413827 | 0.54 |
| 52 | Cr | 45 | 2904600 | 1.41 |
| 55 | Mn | 45 | 1540539 | 1.08 |
| 56 | Fe | 45 | 49403441 | 1.28 |
| 59 | Co | 72 | 4783151 | 0.37 |
| 60 | Ni | 72 | 1320488 | 0.64 |
| 63 | Cu | 72 | 3658397 | 1.04 |
| 66 | Zn | 72 | 585875 | 0.13 |
| 75 | As | 72 | 493223 | 0.26 |
| 78 | Se | 72 | 27720 | 0.17 |
| 88 | Sr | 115 | 2074048 | 0.70 |
| 95 | Mo | 115 | 1901227 | 0.86 |
| 107 | Ag | 115 | 6083712 | 0.42 |
| 111 | Cd | 115 | 867531 | 0.98 |
| 118 | Sn | 115 | 1771469 | 1.23 |
| 121 | Sb | 115 | 2787137 | 1.45 |
| 137 | Ba | 115 | 868070 | 0.81 |
| 205 | Tl | 209 | 12606041 | 2.70 |
| 208 | Pb | 209 | 16616909 | 1.05 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 962220 | 0.53 | 989663 | 97.23 | 70 | 120 | |
| 72 | Ge | 740203 | 0.39 | 739879 | 100.04 | 70 | 120 | |
| 115 | In | 6493983 | 0.74 | 6565136 | 98.92 | 70 | 120 | |
| 209 | Bi | 15306948 | 1.93 | 15222533 | 100.55 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 12:27 | Sample Name | H2-160516 |
| Data Batch | 160516.b | Comment | CAL ICPMS_TW |
| Data File Name | 041CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 94360 | 0.15 |
| 9 | Be | 45 | 124959 | 1.20 |
| 11 | B | 45 | 39777 | 1.09 |
| 23 | Na | 45 | 18560536 | 1.58 |
| 24 | Mg | 45 | 9144615 | 2.14 |
| 27 | Al | 45 | 2090 | 11.76 |
| 39 | K | 45 | 9282861 | 0.46 |
| 44 | Ca | 45 | 531593 | 1.29 |
| 47 | Ti | 45 | 282740 | 1.21 |
| 51 | V | 45 | 9688266 | 1.64 |
| 52 | Cr | 45 | 11609230 | 0.52 |
| 55 | Mn | 45 | 6243744 | 0.55 |
| 56 | Fe | 45 | 53024 | 13.58 |
| 59 | Co | 72 | 18953981 | 0.49 |
| 60 | Ni | 72 | 5223729 | 0.31 |
| 63 | Cu | 72 | 14414170 | 0.84 |
| 66 | Zn | 72 | 2342558 | 0.44 |
| 75 | As | 72 | 1983313 | 0.39 |
| 78 | Se | 72 | 111116 | 0.41 |
| 88 | Sr | 115 | 8400397 | 2.43 |
| 95 | Mo | 115 | 7728986 | 0.21 |
| 107 | Ag | 115 | 2097 | 23.47 |
| 111 | Cd | 115 | 3502037 | 0.15 |
| 118 | Sn | 115 | 7200028 | 0.67 |
| 121 | Sb | 115 | 4263 | 0.91 |
| 137 | Ba | 115 | 3508378 | 0.98 |
| 205 | Tl | 209 | 49941925 | 0.91 |
| 208 | Pb | 209 | 67594172 | 1.11 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 971821 | 1.15 | 989663 | 98.20 | 70 | 120 | |
| 72 | Ge | 735820 | 0.24 | 739879 | 99.45 | 70 | 120 | |
| 115 | In | 6511206 | 0.33 | 6565136 | 99.18 | 70 | 120 | |
| 209 | Bi | 15593242 | 1.38 | 15222533 | 102.44 | 70 | 120 | |

# Interference Check Solution A (ICS-A) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 12:35 | Sample Name | ICSA-160516 |
| Data Batch | 160516.b | Comment | ICSAICPMS_TW |
| Data File Name | 045ICSA.d | Dilution | 1 |

| Mass | Name | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|
| 9 | Be | 0.070 | 6 | 72.6 | 1.2 | 0.8 | |
| 11 | B | 13.327 | 389 | 1.3 | 30 | 30 | |
| 51 | V | -0.061 | 2029 | 8.2 | 10 | 10 | |
| 52 | Cr | 0.433 | 4304 | 0.4 | 8 | 5 | |
| 55 | Mn | 1.249 | 4525 | 1.7 | 8 | 10 | |
| 59 | Co | 0.564 | 5136 | 0.7 | 8 | 10 | |
| 60 | Ni | 0.462 | 1530 | 7.8 | 8 | 10 | |
| 63 | Cu | 0.750 | 8480 | 4.6 | 8 | 10 | |
| 66 | Zn | 1.702 | 2168 | 2.6 | 10 | 5 | |
| 75 | As | 0.707 | 807 | 6.2 | 4 | 5 | |
| 78 | Se | 0.297 | 86 | 2.0 | 2 | 5 | |
| 88 | Sr | 1.472 | 5996 | 1.7 | 10 | 10 | |
| 107 | Ag | 0.164 | 1976 | 2.6 | 0.8 | 2 | |
| 111 | Cd | 0.489 | 822 | 11.4 | 1.2 | 1 | |
| 118 | Sn | 0.633 | 3287 | 7.3 | 10 | 10 | |
| 121 | Sb | 0.403 | 2317 | 4.2 | 4 | 2.5 | |
| 137 | Ba | 0.344 | 602 | 2.6 | 8 | 10 | |
| 205 | Tl | 0.167 | 4113 | 7.2 | 4 | 1.5 | |
| 208 | Pb | 0.423 | 17708 | 3.8 | 1.2 | 1 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 919349 | 0.18 | 989663 | 92.90 | 70 | 120 | |
| 72 | Ge | 690788 | 0.75 | 739879 | 93.37 | 70 | 120 | |
| 115 | In | 6178274 | 2.21 | 6565136 | 94.11 | 70 | 120 | |
| 209 | Bi | 14330312 | 1.00 | 15222533 | 94.14 | 70 | 120 | |

# Interference Check Solution AB (ICS-AB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 12:37 | Sample Name | ICSAB-160516 |
| Data Batch | 160516.b | Comment | ICSBICPMS_TW |
| Data File Name | 046ICSB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 51 | V | 45 | 40.920 | 188413 | 1.25 | 40 | 102.3 | 80 | 120 | |
| 52 | Cr | 45 | 21.538 | 119346 | 1.23 | 20 | 107.7 | 80 | 120 | |
| 55 | Mn | 45 | 19.546 | 58095 | 0.39 | 20 | 97.7 | 80 | 120 | |
| 59 | Co | 72 | 40.820 | 364572 | 0.76 | 40 | 102.0 | 80 | 120 | |
| 60 | Ni | 72 | 38.796 | 95861 | 0.69 | 40 | 97.0 | 80 | 120 | |
| 63 | Cu | 72 | 20.922 | 145497 | 1.14 | 20 | 104.6 | 80 | 120 | |
| 66 | Zn | 72 | 20.159 | 22525 | 1.25 | 20 | 100.8 | 80 | 120 | |
| 75 | As | 72 | 20.311 | 19101 | 0.64 | 20 | 101.6 | 80 | 120 | |
| 78 | Se | 72 | 19.952 | 1114 | 4.41 | 20 | 99.8 | 80 | 120 | |
| 107 | Ag | 115 | 18.823 | 217557 | 0.91 | 20 | 94.1 | 80 | 120 | |
| 111 | Cd | 115 | 10.001 | 16661 | 2.33 | 10 | 100.0 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 912523 | 0.80 | 989663 | 92.21 | 70 | 120 | |
| 72 | Ge | 692993 | 0.59 | 739879 | 93.66 | 70 | 120 | |
| 115 | In | 6198552 | 1.89 | 6565136 | 94.42 | 70 | 120 | |
| 209 | Bi | 14414928 | 2.43 | 15222533 | 94.69 | 70 | 120 | |

# Initial Calibration Verification (ICV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 12:45 | Sample Name | ICV-160516 |
| Data Batch | 160516.b | Comment | ICV ICPMS_TW |
| Data File Name | 050_ICV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 102.036 | 4901 | 1.27 | 100 | 102.0 | 90 | 110 | |
| 9 | Be | 45 | 101.265 | 6415 | 2.24 | 100 | 101.3 | 90 | 110 | |
| 11 | B | 45 | 105.632 | 2275 | 3.87 | 100 | 105.6 | 90 | 110 | |
| 23 | Na | 45 | 2641.859 | 2040670 | 0.44 | 2500 | 105.7 | 90 | 110 | |
| 24 | Mg | 45 | 2627.634 | 978183 | 0.43 | 2500 | 105.1 | 90 | 110 | |
| 27 | Al | 45 | 2529.069 | 336250 | 0.45 | 2500 | 101.2 | 90 | 110 | |
| 39 | K | 45 | 2571.354 | 1015339 | 0.69 | 2500 | 102.9 | 90 | 110 | |
| 44 | Ca | 45 | 2404.069 | 51631 | 0.85 | 2500 | 96.2 | 90 | 110 | |
| 47 | Ti | 45 | 100.717 | 14438 | 1.01 | 100 | 100.7 | 90 | 110 | |
| 51 | V | 45 | 102.938 | 507538 | 1.36 | 100 | 102.9 | 90 | 110 | |
| 52 | Cr | 45 | 108.084 | 637805 | 0.16 | 100 | 108.1 | 90 | 110 | |
| 55 | Mn | 45 | 100.675 | 319085 | 1.43 | 100 | 100.7 | 90 | 110 | |
| 56 | Fe | 45 | 2559.298 | 12927694 | 1.12 | 2500 | 102.4 | 90 | 110 | |
| 59 | Co | 72 | 105.570 | 1020966 | 0.69 | 100 | 105.6 | 90 | 110 | |
| 60 | Ni | 72 | 107.126 | 285930 | 1.50 | 100 | 107.1 | 90 | 110 | |
| 63 | Cu | 72 | 103.286 | 763431 | 0.92 | 100 | 103.3 | 90 | 110 | |
| 66 | Zn | 72 | 104.068 | 124607 | 2.02 | 100 | 104.1 | 90 | 110 | |
| 75 | As | 72 | 101.470 | 102703 | 0.07 | 100 | 101.5 | 90 | 110 | |
| 78 | Se | 72 | 101.426 | 5817 | 1.69 | 100 | 101.4 | 90 | 110 | |
| 88 | Sr | 115 | 100.132 | 432908 | 0.62 | 100 | 100.1 | 90 | 110 | |
| 95 | Mo | 115 | 97.187 | 386430 | 0.14 | 100 | 97.2 | 90 | 110 | |
| 107 | Ag | 115 | 97.927 | 1224850 | 0.49 | 100 | 97.9 | 90 | 110 | |
| 111 | Cd | 115 | 99.729 | 179816 | 0.44 | 100 | 99.7 | 90 | 110 | |
| 118 | Sn | 115 | 102.527 | 380996 | 1.21 | 100 | 102.5 | 90 | 110 | |
| 121 | Sb | 115 | 99.369 | 568617 | 0.55 | 100 | 99.4 | 90 | 110 | |
| 137 | Ba | 115 | 98.986 | 178765 | 1.21 | 100 | 99.0 | 90 | 110 | |
| 205 | Tl | 209 | 101.079 | 2558610 | 1.05 | 100 | 101.1 | 90 | 110 | |
| 208 | Pb | 209 | 101.129 | 3463213 | 1.15 | 100 | 101.1 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 984407 | 0.20 | 989663 | 99.47 | 70 | 120 | |
| 72 | Ge | 750542 | 0.33 | 739879 | 101.44 | 70 | 120 | |
| 115 | In | 6712010 | 2.48 | 6565136 | 102.24 | 70 | 120 | |
| 209 | Bi | 15780912 | 2.94 | 15222533 | 103.67 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 13:04 | Sample Name | LCVL-160516 |
| Data Batch | 160516.b | Comment | LCVLICPMS_TW |
| Data File Name | 053LICV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.085 | 497 | 6.39 | 10 | 100.8 | 70 | 130 | |
| 9 | Be | 45 | 1.110 | 72 | 10.47 | 1 | 111.0 | 70 | 130 | |
| 11 | B | 45 | 23.217 | 610 | 6.44 | 20 | 116.1 | 70 | 130 | |
| 23 | Na | 45 | 101.480 | 128091 | 0.99 | 100 | 101.5 | 70 | 130 | |
| 24 | Mg | 45 | 100.262 | 37729 | 0.40 | 100 | 100.3 | 70 | 130 | |
| 27 | Al | 45 | 100.461 | 13428 | 1.73 | 100 | 100.5 | 70 | 130 | |
| 39 | K | 45 | 103.524 | 88702 | 0.46 | 100 | 103.5 | 70 | 130 | |
| 44 | Ca | 45 | 102.198 | 2392 | 1.67 | 100 | 102.2 | 70 | 130 | |
| 47 | Ti | 45 | 4.941 | 704 | 5.44 | 5 | 98.8 | 70 | 130 | |
| 51 | V | 45 | 1.016 | 7394 | 1.69 | 1 | 101.6 | 70 | 130 | |
| 52 | Cr | 45 | 5.074 | 31630 | 0.88 | 5 | 101.5 | 70 | 130 | |
| 55 | Mn | 45 | 4.672 | 15531 | 2.01 | 5 | 93.4 | 70 | 130 | |
| 56 | Fe | 45 | 96.898 | 501663 | 1.07 | 100 | 96.9 | 70 | 130 | |
| 59 | Co | 72 | 5.113 | 49253 | 2.39 | 5 | 102.3 | 70 | 130 | |
| 60 | Ni | 72 | 5.281 | 14413 | 2.97 | 5 | 105.6 | 70 | 130 | |
| 63 | Cu | 72 | 5.054 | 40605 | 1.89 | 5 | 101.1 | 70 | 130 | |
| 66 | Zn | 72 | 5.152 | 6435 | 3.09 | 5 | 103.0 | 70 | 130 | |
| 75 | As | 72 | 4.955 | 5136 | 1.31 | 5 | 99.1 | 70 | 130 | |
| 78 | Se | 72 | 5.352 | 377 | 10.14 | 5 | 107.0 | 70 | 130 | |
| 88 | Sr | 115 | 4.896 | 21492 | 0.69 | 5 | 97.9 | 70 | 130 | |
| 95 | Mo | 115 | 4.707 | 18923 | 1.22 | 5 | 94.1 | 70 | 130 | |
| 107 | Ag | 115 | 1.880 | 23820 | 0.84 | 2 | 94.0 | 70 | 130 | |
| 111 | Cd | 115 | 0.943 | 1725 | 0.80 | 1 | 94.3 | 70 | 130 | |
| 118 | Sn | 115 | 4.941 | 19687 | 0.90 | 5 | 98.8 | 70 | 130 | |
| 121 | Sb | 115 | 1.895 | 11143 | 1.50 | 2 | 94.7 | 70 | 130 | |
| 137 | Ba | 115 | 4.844 | 8856 | 2.19 | 5 | 96.9 | 70 | 130 | |
| 205 | Tl | 209 | 0.990 | 24961 | 1.27 | 1 | 99.0 | 70 | 130 | |
| 208 | Pb | 209 | 0.965 | 37433 | 0.96 | 1 | 96.5 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 975960 | 0.75 | 989663 | 98.62 | 70 | 120 | |
| 72 | Ge | 745697 | 0.56 | 739879 | 100.79 | 70 | 120 | |
| 115 | In | 6766926 | 1.32 | 6565136 | 103.07 | 70 | 120 | |
| 209 | Bi | 15530111 | 0.87 | 15222533 | 102.02 | 70 | 120 | |

# Initial Calibration Blank (ICB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 13:08 | Sample Name | ICB-160516 |
| Data Batch | 160516.b | Comment | ICB ICPMS_TW |
| Data File Name | 055_ICB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | -0.209 | 9 | 33.3 | 2 | 5 | |
| 9 | Be | 45 | 0.016 | 3 | 145.3 | 0.4 | 0.3 | |
| 11 | B | 45 | 0.800 | 166 | 4.2 | 10 | 10 | |
| 23 | Na | 45 | -0.159 | 53162 | 0.6 | 50 | 100 | |
| 24 | Mg | 45 | -1.218 | 311 | 2.2 | 50 | 100 | |
| 27 | Al | 45 | 0.038 | 201 | 20.1 | 50 | 10 | |
| 39 | K | 45 | 1.719 | 51697 | 1.1 | 50 | 100 | |
| 44 | Ca | 45 | 0.906 | 249 | 10.0 | 50 | 100 | |
| 47 | Ti | 45 | -0.008 | 1 | 173.2 | 4 | 3 | |
| 51 | V | 45 | -0.036 | 2316 | 8.1 | 4 | 3 | |
| 52 | Cr | 45 | -0.016 | 1983 | 3.7 | 2 | 2 | |
| 55 | Mn | 45 | -0.171 | 360 | 12.1 | 2 | 3 | |
| 56 | Fe | 45 | -1.175 | 11419 | 2.5 | 50 | 50 | |
| 59 | Co | 72 | -0.004 | 93 | 3.6 | 2 | 3 | |
| 60 | Ni | 72 | 0.008 | 453 | 3.7 | 2 | 3 | |
| 63 | Cu | 72 | -0.129 | 2740 | 7.3 | 2 | 2 | |
| 66 | Zn | 72 | 0.047 | 379 | 9.2 | 4 | 2 | |
| 75 | As | 72 | -0.007 | 154 | 16.5 | 2 | 2 | |
| 78 | Se | 72 | 0.011 | 77 | 18.9 | 1 | 2 | |
| 88 | Sr | 115 | -0.008 | 116 | 28.9 | 4 | 3 | |
| 95 | Mo | 115 | -0.003 | 36 | 37.9 | 2 | 2 | |
| 107 | Ag | 115 | 0.002 | 122 | 22.0 | 0.4 | 1 | |
| 111 | Cd | 115 | -0.001 | 8 | 107.8 | 0.4 | 0.3 | |
| 118 | Sn | 115 | -0.027 | 1132 | 6.9 | 4 | 3 | |
| 121 | Sb | 115 | -0.005 | 180 | 38.3 | 2 | 0.8 | |
| 137 | Ba | 115 | -0.007 | 22 | 48.2 | 2 | 3 | |
| 205 | Tl | 209 | -0.004 | 194 | 12.9 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.030 | 3948 | 5.4 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 992459 | 0.15 | 989663 | 100.28 | 70 | 120 | |
| 72 | Ge | 749087 | 0.80 | 739879 | 101.24 | 70 | 120 | |
| 115 | In | 6765962 | 1.39 | 6565136 | 103.06 | 70 | 120 | |
| 209 | Bi | 15607134 | 1.04 | 15222533 | 102.53 | 70 | 120 | |

# Method Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/16 1:10 PM | Sample Name | MB-75006 |
| Data Batch | 160516.b | Comment | MBLKICPMS_TSDOD1 |
| Data File Name | 056_PB.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | -0.146 | 12 | 50.00 | | |
| 9 | Be | 45 | 0.005 | 2 | 65.47 | | |
| 11 | B | 45 | 2.415 | 198 | 10.83 | | |
| 23 | Na | 45 | 6.305 | 57904 | 1.24 | | |
| 24 | Mg | 45 | 1.447 | 1307 | 7.45 | | |
| 27 | Al | 45 | 6.560 | 1072 | 10.13 | | |
| 39 | K | 45 | 4.983 | 52785 | 1.07 | | |
| 44 | Ca | 45 | 25.949 | 787 | 4.64 | | |
| 47 | Ti | 45 | 0.193 | 30 | 11.10 | | |
| 51 | V | 45 | 0.012 | 2545 | 7.63 | | |
| 52 | Cr | 45 | -0.019 | 1957 | 3.40 | | |
| 55 | Mn | 45 | -0.169 | 366 | 12.04 | | |
| 56 | Fe | 45 | 1.612 | 25517 | 1.62 | | |
| 59 | Co | 72 | -0.001 | 122 | 41.39 | | |
| 60 | Ni | 72 | 0.896 | 2752 | 6.12 | | |
| 63 | Cu | 72 | 0.027 | 3805 | 4.06 | | |
| 66 | Zn | 72 | 2.641 | 3396 | 3.83 | | |
| 75 | As | 72 | 0.006 | 164 | 15.30 | | |
| 78 | Se | 72 | 0.019 | 76 | 11.54 | | |
| 88 | Sr | 115 | 0.105 | 603 | 7.25 | | |
| 95 | Mo | 115 | 0.015 | 107 | 29.81 | | |
| 107 | Ag | 115 | 0.003 | 132 | 16.21 | | |
| 111 | Cd | 115 | 0.001 | 11 | 45.82 | | |
| 118 | Sn | 115 | 3.710 | 14888 | 0.24 | | |
| 121 | Sb | 115 | 0.015 | 292 | 11.71 | | |
| 137 | Ba | 115 | 0.033 | 93 | 14.29 | | |
| 205 | Tl | 209 | -0.003 | 228 | 16.18 | | |
| 208 | Pb | 209 | 0.087 | 8113 | 4.64 | | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 989768 | 0.68 | 989663 | 100.01 | 70 | 120 | |
| 72 | Ge | 732862 | 0.79 | 739879 | 99.05 | 70 | 120 | |
| 115 | In | 6675589 | 0.28 | 6565136 | 101.68 | 70 | 120 | |
| 209 | Bi | 16015037 | 1.36 | 15222533 | 105.21 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 13:12 | Sample Name | LCS-75006 |
| Data Batch | 160516.b | Comment | LCS ICPMS_TSDOD1 |
| Data File Name | 057_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 209.944 | 9921 | 1.65 | 200 | 105.0 | 80 | 120 | |
| 9 | Be | 45 | 206.367 | 12884 | 1.01 | 200 | 103.2 | 80 | 120 | |
| 11 | B | 45 | 208.122 | 4276 | 1.34 | 200 | 104.1 | 80 | 120 | |
| 23 | Na | 45 | 5237.709 | 3936752 | 1.49 | 1000 | 523.8 | 80 | 120 | Fail |
| 24 | Mg | 45 | 5226.543 | 1917199 | 0.61 | 1000 | 522.7 | 80 | 120 | Fail |
| 27 | Al | 45 | 1023.887 | 134300 | 0.46 | 1000 | 102.4 | 80 | 120 | |
| 39 | K | 45 | 5185.325 | 1967489 | 1.09 | 1000 | 518.5 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4923.988 | 104003 | 1.35 | 1000 | 492.4 | 80 | 120 | Fail |
| 47 | Ti | 45 | 207.009 | 29250 | 1.03 | 200 | 103.5 | 80 | 120 | |
| 51 | V | 45 | 208.631 | 1011485 | 0.38 | 200 | 104.3 | 80 | 120 | |
| 52 | Cr | 45 | 210.321 | 1221452 | 0.44 | 200 | 105.2 | 80 | 120 | |
| 55 | Mn | 45 | 204.962 | 639471 | 1.17 | 200 | 102.5 | 80 | 120 | |
| 56 | Fe | 45 | 1005.837 | 5018600 | 0.96 | 1000 | 100.6 | 80 | 120 | |
| 59 | Co | 72 | 212.928 | 2009387 | 0.97 | 200 | 106.5 | 80 | 120 | |
| 60 | Ni | 72 | 213.025 | 554460 | 0.43 | 200 | 106.5 | 80 | 120 | |
| 63 | Cu | 72 | 211.182 | 1519571 | 0.47 | 200 | 105.6 | 80 | 120 | |
| 66 | Zn | 72 | 209.961 | 245013 | 0.37 | 200 | 105.0 | 80 | 120 | |
| 75 | As | 72 | 206.420 | 203729 | 0.78 | 200 | 103.2 | 80 | 120 | |
| 78 | Se | 72 | 207.574 | 11540 | 0.76 | 200 | 103.8 | 80 | 120 | |
| 88 | Sr | 115 | 201.554 | 843090 | 0.77 | 200 | 100.8 | 80 | 120 | |
| 95 | Mo | 115 | 203.315 | 782237 | 0.32 | 200 | 101.7 | 80 | 120 | |
| 107 | Ag | 115 | 204.282 | 2472298 | 0.23 | 200 | 102.1 | 80 | 120 | |
| 111 | Cd | 115 | 206.011 | 359420 | 0.15 | 200 | 103.0 | 80 | 120 | |
| 118 | Sn | 115 | 211.760 | 760125 | 0.88 | 200 | 105.9 | 80 | 120 | |
| 121 | Sb | 115 | 203.526 | 1126727 | 0.71 | 200 | 101.8 | 80 | 120 | |
| 137 | Ba | 115 | 206.707 | 361137 | 1.07 | 200 | 103.4 | 80 | 120 | |
| 205 | Tl | 209 | 208.998 | 5189092 | 0.67 | 200 | 104.5 | 80 | 120 | |
| 208 | Pb | 209 | 205.479 | 6898435 | 1.16 | 200 | 102.7 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 970404 | 0.80 | 989663 | 98.05 | 70 | 120 | |
| 72 | Ge | 732468 | 0.57 | 739879 | 99.00 | 70 | 120 | |
| 115 | In | 6493298 | 1.62 | 6565136 | 98.91 | 70 | 120 | |
| 209 | Bi | 15481261 | 2.76 | 15222533 | 101.70 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 13:14 | Sample Name | LCSD-75006 |
| Data Batch | 160516.b | Comment | LCSDICPMS_TSDOD1 |
| Data File Name | 058_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 207.884 | 9790 | 1.78 | 200 | 103.9 | 80 | 120 | |
| 9 | Be | 45 | 209.962 | 13063 | 0.88 | 200 | 105.0 | 80 | 120 | |
| 11 | B | 45 | 208.625 | 4272 | 5.15 | 200 | 104.3 | 80 | 120 | |
| 23 | Na | 45 | 5183.054 | 3882782 | 0.22 | 1000 | 518.3 | 80 | 120 | Fail |
| 24 | Mg | 45 | 5157.745 | 1885329 | 0.26 | 1000 | 515.8 | 80 | 120 | Fail |
| 27 | Al | 45 | 1012.501 | 132349 | 0.21 | 1000 | 101.3 | 80 | 120 | |
| 39 | K | 45 | 5106.947 | 1931794 | 0.83 | 1000 | 510.7 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4900.715 | 103151 | 1.63 | 1000 | 490.1 | 80 | 120 | Fail |
| 47 | Ti | 45 | 204.847 | 28844 | 1.06 | 200 | 102.4 | 80 | 120 | |
| 51 | V | 45 | 206.156 | 996055 | 1.12 | 200 | 103.1 | 80 | 120 | |
| 52 | Cr | 45 | 207.067 | 1198447 | 0.64 | 200 | 103.5 | 80 | 120 | |
| 55 | Mn | 45 | 202.790 | 630455 | 0.61 | 200 | 101.4 | 80 | 120 | |
| 56 | Fe | 45 | 998.242 | 4963385 | 0.31 | 1000 | 99.8 | 80 | 120 | |
| 59 | Co | 72 | 213.369 | 1984897 | 0.53 | 200 | 106.7 | 80 | 120 | |
| 60 | Ni | 72 | 214.072 | 549238 | 1.47 | 200 | 107.0 | 80 | 120 | |
| 63 | Cu | 72 | 210.965 | 1496329 | 0.84 | 200 | 105.5 | 80 | 120 | |
| 66 | Zn | 72 | 209.358 | 240821 | 0.60 | 200 | 104.7 | 80 | 120 | |
| 75 | As | 72 | 205.413 | 199838 | 0.76 | 200 | 102.7 | 80 | 120 | |
| 78 | Se | 72 | 205.781 | 11277 | 0.65 | 200 | 102.9 | 80 | 120 | |
| 88 | Sr | 115 | 197.382 | 832329 | 0.24 | 200 | 98.7 | 80 | 120 | |
| 95 | Mo | 115 | 198.127 | 768348 | 0.52 | 200 | 99.1 | 80 | 120 | |
| 107 | Ag | 115 | 201.339 | 2456251 | 0.68 | 200 | 100.7 | 80 | 120 | |
| 111 | Cd | 115 | 203.225 | 357380 | 0.59 | 200 | 101.6 | 80 | 120 | |
| 118 | Sn | 115 | 207.461 | 750676 | 0.31 | 200 | 103.7 | 80 | 120 | |
| 121 | Sb | 115 | 201.420 | 1124074 | 0.55 | 200 | 100.7 | 80 | 120 | |
| 137 | Ba | 115 | 201.315 | 354570 | 0.64 | 200 | 100.7 | 80 | 120 | |
| 205 | Tl | 209 | 209.481 | 5110641 | 1.07 | 200 | 104.7 | 80 | 120 | |
| 208 | Pb | 209 | 208.125 | 6864665 | 0.12 | 200 | 104.1 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 966996 | 0.53 | 989663 | 97.71 | 70 | 120 | |
| 72 | Ge | 722003 | 0.48 | 739879 | 97.58 | 70 | 120 | |
| 115 | In | 6545303 | 1.51 | 6565136 | 99.70 | 70 | 120 | |
| 209 | Bi | 15205868 | 0.85 | 15222533 | 99.89 | 70 | 120 | |

# Dilution Sample (Dil) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 13:20 | Sample Name | 1605034-09A SD |
| Data Batch | 160516.b | Comment | SD ICPMS_TSDOD1 |
| Data File Name | 061_SD.d | Dilution | 25 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Value | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 26.640 | 1276 | 2.83 | 134.8 | 98.8 | 110 | 90 | Good |
| 9 | Be | 45 | 0.673 | 44 | 17.75 | 3.3 | 102.3 | 110 | 90 | Good |
| 11 | B | 45 | 35.106 | 843 | 2.05 | 175.1 | 100.3 | 110 | 90 | Good |
| 23 | Na | 45 | 1341.138 | 1047781 | 1.49 | 6535.8 | 102.6 | 110 | 90 | Good |
| 24 | Mg | 45 | 3494.518 | 1283260 | 1.37 | 16837.3 | 103.8 | 110 | 90 | Good |
| 27 | Al | 45 | 14690.969 | 1926174 | 0.39 | 73374.6 | 100.1 | 110 | 90 | Good |
| 39 | K | 45 | 3527.955 | 1355883 | 1.85 | 17339.4 | 101.7 | 110 | 90 | Good |
| 44 | Ca | 45 | 12320.196 | 260127 | 0.90 | 60377.4 | 102.0 | 110 | 90 | Good |
| 47 | Ti | 45 | 34.854 | 4931 | 3.30 | 169.9 | 102.5 | 110 | 90 | Good |
| 51 | V | 45 | 24.533 | 121203 | 0.96 | 120.9 | 101.5 | 110 | 90 | Good |
| 52 | Cr | 45 | 17.126 | 101420 | 1.31 | 83.9 | 102.1 | 110 | 90 | Good |
| 55 | Mn | 45 | 28.811 | 90727 | 2.44 | 139.3 | 103.4 | 110 | 90 | Good |
| 56 | Fe | 45 | 20147.777 | 100294176 | 1.66 | 98301.1 | 102.5 | 110 | 90 | Good |
| 59 | Co | 72 | 3.980 | 37400 | 1.12 | 19.4 | 102.8 | 110 | 90 | Good |
| 60 | Ni | 72 | 7.622 | 20089 | 0.89 | 37.0 | 103.1 | 110 | 90 | Good |
| 63 | Cu | 72 | 3.147 | 25995 | 1.12 | 15.5 | 101.6 | 110 | 90 | Good |
| 66 | Zn | 72 | 44.997 | 52356 | 1.83 | 213.7 | 105.3 | 110 | 90 | Good |
| 75 | As | 72 | 4.484 | 4546 | 2.63 | 22.1 | 101.5 | 110 | 90 | Good |
| 78 | Se | 72 | 1.288 | 145 | 16.44 | 4.8 | 132.8 | 110 | 90 | |
| 88 | Sr | 115 | 131.704 | 559348 | 0.67 | 658.1 | 100.1 | 110 | 90 | Good |
| 95 | Mo | 115 | 0.163 | 686 | 4.41 | 0.8 | 106.6 | 110 | 90 | Good |
| 107 | Ag | 115 | 0.015 | 281 | 20.96 | 0.0 | 213.5 | 110 | 90 | |
| 111 | Cd | 115 | 0.019 | 44 | 33.82 | 0.1 | 96.8 | 110 | 90 | Good |
| 118 | Sn | 115 | 0.928 | 4576 | 2.48 | 5.4 | 86.0 | 110 | 90 | |
| 121 | Sb | 115 | 0.052 | 497 | 12.54 | 0.2 | 141.5 | 110 | 90 | |
| 137 | Ba | 115 | 16.132 | 28651 | 2.10 | 81.5 | 99.0 | 110 | 90 | Good |
| 205 | Tl | 209 | 0.091 | 2566 | 0.20 | 0.4 | 107.4 | 110 | 90 | Good |
| 208 | Pb | 209 | 8.477 | 290720 | 0.93 | 42.2 | 100.5 | 110 | 90 | Good |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 971239 | 0.33 | 989663 | 98.14 | 70 | 120 | |
| 72 | Ge | 726881 | 0.26 | 739879 | 98.24 | 70 | 120 | |
| 115 | In | 6592914 | 2.11 | 6565136 | 100.42 | 70 | 120 | |
| 209 | Bi | 15555554 | 1.23 | 15222533 | 102.19 | 70 | 120 | |

# Post Digestion Spike Sample (PDS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 13:40 | Sample Name | 1605034-09A PDS |
| Data Batch | 160516.b | Comment | PDS ICPMS_TSDOD1 |
| Data File Name | 071_PDS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 333.603 | 14929 | 0.57 | 134.8 | 200 | 99.4 | 75 | 125 | |
| 9 | Be | 45 | 199.550 | 11806 | 0.84 | 3.3 | 200 | 98.1 | 75 | 125 | |
| 11 | B | 45 | 363.902 | 6980 | 2.96 | 175.1 | 200 | 94.4 | 75 | 125 | |
| 23 | Na | 45 | 11259.262 | 7963257 | 2.07 | 6535.8 | 5000 | 94.5 | 75 | 125 | |
| 24 | Mg | 45 | 21484.494 | 7465063 | 3.08 | 16837.3 | 5000 | 92.9 | 75 | 125 | |
| 27 | Al | 45 | 76254.063 | 9464344 | 1.62 | 73374.6 | 5000 | 57.6 | 75 | 125 | Fail |
| 39 | K | 45 | 22399.065 | 7897508 | 0.83 | 17339.4 | 5000 | 101.2 | 75 | 125 | |
| 44 | Ca | 45 | 64626.998 | 1291046 | 0.41 | 60377.4 | 5000 | 85.0 | 75 | 125 | |
| 47 | Ti | 45 | 368.848 | 49389 | 1.00 | 169.9 | 200 | 99.5 | 75 | 125 | |
| 51 | V | 45 | 319.957 | 1468813 | 0.62 | 120.9 | 200 | 99.5 | 75 | 125 | |
| 52 | Cr | 45 | 284.913 | 1567370 | 0.63 | 83.9 | 200 | 100.5 | 75 | 125 | |
| 55 | Mn | 45 | 325.385 | 961526 | 1.10 | 139.3 | 200 | 93.0 | 75 | 125 | |
| 56 | Fe | 45 | ######## | 483426221 | 1.94 | 98301.1 | 5000 | 85.5 | 75 | 125 | |
| 59 | Co | 72 | 219.507 | 1933532 | 1.74 | 19.4 | 200 | 100.1 | 75 | 125 | |
| 60 | Ni | 72 | 231.557 | 562479 | 1.26 | 37.0 | 200 | 97.3 | 75 | 125 | |
| 63 | Cu | 72 | 207.702 | 1394917 | 0.67 | 15.5 | 200 | 96.1 | 75 | 125 | |
| 66 | Zn | 72 | 408.096 | 444204 | 0.95 | 213.7 | 200 | 97.2 | 75 | 125 | |
| 75 | As | 72 | 221.100 | 203668 | 1.34 | 22.1 | 200 | 99.5 | 75 | 125 | |
| 78 | Se | 72 | 198.308 | 10292 | 0.87 | 4.8 | 200 | 96.7 | 75 | 125 | |
| 88 | Sr | 115 | 864.726 | 3346085 | 1.40 | 658.1 | 200 | 103.3 | 75 | 125 | |
| 95 | Mo | 115 | 197.110 | 701583 | 0.78 | 0.8 | 200 | 98.2 | 75 | 125 | |
| 107 | Ag | 115 | 184.889 | 2070097 | 0.89 | 0.0 | 200 | 92.4 | 75 | 125 | |
| 111 | Cd | 115 | 192.671 | 310976 | 0.84 | 0.1 | 200 | 96.3 | 75 | 125 | |
| 118 | Sn | 115 | 212.209 | 704715 | 0.27 | 5.4 | 200 | 103.4 | 75 | 125 | |
| 121 | Sb | 115 | 199.393 | 1021239 | 0.53 | 0.2 | 200 | 99.6 | 75 | 125 | |
| 137 | Ba | 115 | 280.531 | 453461 | 0.67 | 81.5 | 200 | 99.5 | 75 | 125 | |
| 205 | Tl | 209 | 204.741 | 4567036 | 0.97 | 0.4 | 200 | 102.2 | 75 | 125 | |
| 208 | Pb | 209 | 245.105 | 7390663 | 0.39 | 42.2 | 200 | 101.5 | 75 | 125 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 919593 | 0.91 | 989663 | 92.92 | 70 | 120 | |
| 72 | Ge | 683645 | 1.04 | 739879 | 92.40 | 70 | 120 | |
| 115 | In | 6006664 | 0.89 | 6565136 | 91.49 | 70 | 120 | |
| 209 | Bi | 13902007 | 0.54 | 15222533 | 91.33 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 13:42 | Sample Name | 1605034-09A MS |
| Data Batch | 160516.b | Comment | MS ICPMS_TSDOD1 |
| Data File Name | 072_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 334.787 | 15092 | 0.78 | 134.8 | 200 | 100.0 | 80 | 120 | |
| 9 | Be | 45 | 196.459 | 11710 | 0.95 | 3.3 | 200 | 96.6 | 80 | 120 | |
| 11 | B | 45 | 364.078 | 7037 | 2.00 | 175.1 | 200 | 94.5 | 80 | 120 | |
| 23 | Na | 45 | 12070.592 | 8596574 | 0.79 | 6535.8 | 1000 | 553.5 | 80 | 120 | Fail |
| 24 | Mg | 45 | 22789.795 | 7977364 | 1.24 | 16837.3 | 1000 | 595.2 | 80 | 120 | Fail |
| 27 | Al | 45 | 85785.137 | 10726957 | 0.60 | 73374.6 | 1000 | 1241.1 | 80 | 120 | Fail |
| 39 | K | 45 | 22708.720 | 8065917 | 2.30 | 17339.4 | 1000 | 536.9 | 80 | 120 | Fail |
| 44 | Ca | 45 | 73115.949 | 1471358 | 0.30 | 60377.4 | 1000 | 1273.9 | 80 | 120 | Fail |
| 47 | Ti | 45 | 258.838 | 34916 | 2.92 | 169.9 | 200 | 44.5 | 80 | 120 | Fail |
| 51 | V | 45 | 334.371 | 1546245 | 1.11 | 120.9 | 200 | 106.7 | 80 | 120 | |
| 52 | Cr | 45 | 289.487 | 1604306 | 1.20 | 83.9 | 200 | 102.8 | 80 | 120 | |
| 55 | Mn | 45 | 329.353 | 980435 | 1.48 | 139.3 | 200 | 95.0 | 80 | 120 | |
| 56 | Fe | 45 | ######## | 534186859 | 2.86 | 98301.1 | 1000 | 1421.2 | 80 | 120 | Fail |
| 59 | Co | 72 | 220.444 | 1946431 | 1.24 | 19.4 | 200 | 100.5 | 80 | 120 | |
| 60 | Ni | 72 | 236.094 | 574920 | 1.17 | 37.0 | 200 | 99.6 | 80 | 120 | |
| 63 | Cu | 72 | 215.249 | 1449006 | 0.66 | 15.5 | 200 | 99.9 | 80 | 120 | |
| 66 | Zn | 72 | 431.091 | 470375 | 1.05 | 213.7 | 200 | 108.7 | 80 | 120 | |
| 75 | As | 72 | 224.408 | 207200 | 0.51 | 22.1 | 200 | 101.2 | 80 | 120 | |
| 78 | Se | 72 | 196.949 | 10247 | 0.74 | 4.8 | 200 | 96.1 | 80 | 120 | |
| 88 | Sr | 115 | 787.560 | 3061934 | 0.66 | 658.1 | 200 | 64.8 | 80 | 120 | Fail |
| 95 | Mo | 115 | 177.496 | 634779 | 0.35 | 0.8 | 200 | 88.4 | 80 | 120 | |
| 107 | Ag | 115 | 194.406 | 2187046 | 0.62 | 0.0 | 200 | 97.2 | 80 | 120 | |
| 111 | Cd | 115 | 196.122 | 318047 | 0.82 | 0.1 | 200 | 98.0 | 80 | 120 | |
| 118 | Sn | 115 | 202.110 | 674396 | 1.40 | 5.4 | 200 | 98.4 | 80 | 120 | |
| 121 | Sb | 115 | 59.744 | 307567 | 2.24 | 0.2 | 200 | 29.8 | 80 | 120 | Fail |
| 137 | Ba | 115 | 282.677 | 459086 | 1.14 | 81.5 | 200 | 100.6 | 80 | 120 | |
| 205 | Tl | 209 | 199.998 | 4584911 | 0.51 | 0.4 | 200 | 99.8 | 80 | 120 | |
| 208 | Pb | 209 | 243.308 | 7540652 | 0.99 | 42.2 | 200 | 100.6 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 926378 | 0.96 | 989663 | 93.61 | 70 | 120 | |
| 72 | Ge | 685316 | 0.91 | 739879 | 92.63 | 70 | 120 | |
| 115 | In | 6034722 | 0.26 | 6565136 | 91.92 | 70 | 120 | |
| 209 | Bi | 14293476 | 2.72 | 15222533 | 93.90 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 13:44 | Sample Name | 1605034-09A MSD |
| Data Batch | 160516.b | Comment | MSD ICPMS_TSDOD1 |
| Data File Name | 073_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 334.807 | 15319 | 0.79 | 134.8 | 200 | 100.0 | 80 | 120 | |
| 9 | Be | 45 | 197.628 | 11955 | 0.63 | 3.3 | 200 | 97.2 | 80 | 120 | |
| 11 | B | 45 | 367.083 | 7199 | 1.24 | 175.1 | 200 | 96.0 | 80 | 120 | |
| 23 | Na | 45 | 12120.945 | 8761353 | 2.21 | 6535.8 | 1000 | 558.5 | 80 | 120 | Fail |
| 24 | Mg | 45 | 22881.031 | 8129418 | 0.65 | 16837.3 | 1000 | 604.4 | 80 | 120 | Fail |
| 27 | Al | 45 | 81820.065 | 10384114 | 1.50 | 73374.6 | 1000 | 844.6 | 80 | 120 | Fail |
| 39 | K | 45 | 22745.606 | 8199060 | 2.36 | 17339.4 | 1000 | 540.6 | 80 | 120 | Fail |
| 44 | Ca | 45 | 64325.791 | 1313856 | 1.03 | 60377.4 | 1000 | 394.8 | 80 | 120 | Fail |
| 47 | Ti | 45 | 272.580 | 37316 | 2.10 | 169.9 | 200 | 51.3 | 80 | 120 | Fail |
| 51 | V | 45 | 327.263 | 1535923 | 0.43 | 120.9 | 200 | 103.2 | 80 | 120 | |
| 52 | Cr | 45 | 285.177 | 1603976 | 0.11 | 83.9 | 200 | 100.7 | 80 | 120 | |
| 55 | Mn | 45 | 335.991 | 1015037 | 0.17 | 139.3 | 200 | 98.3 | 80 | 120 | |
| 56 | Fe | 45 | ######## | 505742540 | 1.83 | 98301.1 | 1000 | 666.7 | 80 | 120 | Fail |
| 59 | Co | 72 | 220.595 | 1969623 | 1.18 | 19.4 | 200 | 100.6 | 80 | 120 | |
| 60 | Ni | 72 | 235.750 | 580505 | 0.47 | 37.0 | 200 | 99.4 | 80 | 120 | |
| 63 | Cu | 72 | 213.306 | 1452078 | 0.35 | 15.5 | 200 | 98.9 | 80 | 120 | |
| 66 | Zn | 72 | 419.979 | 463373 | 0.88 | 213.7 | 200 | 103.2 | 80 | 120 | |
| 75 | As | 72 | 220.613 | 205993 | 0.30 | 22.1 | 200 | 99.3 | 80 | 120 | |
| 78 | Se | 72 | 198.769 | 10457 | 1.41 | 4.8 | 200 | 97.0 | 80 | 120 | |
| 88 | Sr | 115 | 790.029 | 3117285 | 0.26 | 658.1 | 200 | 66.0 | 80 | 120 | Fail |
| 95 | Mo | 115 | 175.082 | 635454 | 0.42 | 0.8 | 200 | 87.2 | 80 | 120 | |
| 107 | Ag | 115 | 194.843 | 2224669 | 0.75 | 0.0 | 200 | 97.4 | 80 | 120 | |
| 111 | Cd | 115 | 196.720 | 323764 | 0.60 | 0.1 | 200 | 98.3 | 80 | 120 | |
| 118 | Sn | 115 | 199.467 | 675482 | 0.30 | 5.4 | 200 | 97.0 | 80 | 120 | |
| 121 | Sb | 115 | 57.570 | 300801 | 0.31 | 0.2 | 200 | 28.7 | 80 | 120 | Fail |
| 137 | Ba | 115 | 287.418 | 473748 | 0.86 | 81.5 | 200 | 103.0 | 80 | 120 | |
| 205 | Tl | 209 | 203.827 | 4601821 | 0.90 | 0.4 | 200 | 101.7 | 80 | 120 | |
| 208 | Pb | 209 | 249.705 | 7621002 | 1.25 | 42.2 | 200 | 103.8 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 940177 | 0.43 | 989663 | 95.00 | 70 | 120 | |
| 72 | Ge | 692978 | 0.20 | 739879 | 93.66 | 70 | 120 | |
| 115 | In | 6124954 | 1.14 | 6565136 | 93.30 | 70 | 120 | |
| 209 | Bi | 14071667 | 1.48 | 15222533 | 92.44 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 13:46 | Sample Name | CCV1-160516 |
| Data Batch | 160516.b | Comment | CCV ICPMS_TW |
| Data File Name | 074_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 209.695 | 9481 | 0.51 | 200 | 104.8 | 90 | 110 | |
| 9 | Be | 45 | 205.110 | 12253 | 0.74 | 200 | 102.6 | 90 | 110 | |
| 11 | B | 45 | 206.377 | 4057 | 4.27 | 200 | 103.2 | 90 | 110 | |
| 23 | Na | 45 | 5106.625 | 3673844 | 0.35 | 5000 | 102.1 | 90 | 110 | |
| 24 | Mg | 45 | 5020.981 | 1762261 | 0.22 | 5000 | 100.4 | 90 | 110 | |
| 27 | Al | 45 | 4809.347 | 602962 | 1.31 | 5000 | 96.2 | 90 | 110 | |
| 39 | K | 45 | 4998.473 | 1816524 | 0.30 | 5000 | 100.0 | 90 | 110 | |
| 44 | Ca | 45 | 4653.452 | 94065 | 1.15 | 5000 | 93.1 | 90 | 110 | |
| 47 | Ti | 45 | 200.562 | 27114 | 1.25 | 200 | 100.3 | 90 | 110 | |
| 51 | V | 45 | 199.852 | 927228 | 0.75 | 200 | 99.9 | 90 | 110 | |
| 52 | Cr | 45 | 202.006 | 1122662 | 0.98 | 200 | 101.0 | 90 | 110 | |
| 55 | Mn | 45 | 196.971 | 588019 | 0.76 | 200 | 98.5 | 90 | 110 | |
| 56 | Fe | 45 | 4984.138 | 23730162 | 0.88 | 5000 | 99.7 | 90 | 110 | |
| 59 | Co | 72 | 206.099 | 1856924 | 0.63 | 200 | 103.0 | 90 | 110 | |
| 60 | Ni | 72 | 207.112 | 514673 | 0.72 | 200 | 103.6 | 90 | 110 | |
| 63 | Cu | 72 | 206.916 | 1421556 | 0.21 | 200 | 103.5 | 90 | 110 | |
| 66 | Zn | 72 | 205.297 | 228724 | 0.68 | 200 | 102.6 | 90 | 110 | |
| 75 | As | 72 | 201.853 | 190213 | 0.43 | 200 | 100.9 | 90 | 110 | |
| 78 | Se | 72 | 198.619 | 10545 | 0.60 | 200 | 99.3 | 90 | 110 | |
| 88 | Sr | 115 | 192.983 | 791908 | 0.15 | 200 | 96.5 | 90 | 110 | |
| 95 | Mo | 115 | 195.082 | 736231 | 0.53 | 200 | 97.5 | 90 | 110 | |
| 107 | Ag | 115 | 201.631 | 2393789 | 0.25 | 200 | 100.8 | 90 | 110 | |
| 111 | Cd | 115 | 198.022 | 338891 | 0.76 | 200 | 99.0 | 90 | 110 | |
| 118 | Sn | 115 | 196.732 | 692801 | 0.28 | 200 | 98.4 | 90 | 110 | |
| 121 | Sb | 115 | 198.003 | 1075274 | 0.65 | 200 | 99.0 | 90 | 110 | |
| 137 | Ba | 115 | 194.735 | 333740 | 1.62 | 200 | 97.4 | 90 | 110 | |
| 205 | Tl | 209 | 201.942 | 4866803 | 0.48 | 200 | 101.0 | 90 | 110 | |
| 208 | Pb | 209 | 198.484 | 6466924 | 0.23 | 200 | 99.2 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 928507 | 0.89 | 989663 | 93.82 | 70 | 120 | |
| 72 | Ge | 699337 | 0.87 | 739879 | 94.52 | 70 | 120 | |
| 115 | In | 6368736 | 0.83 | 6565136 | 97.01 | 70 | 120 | |
| 209 | Bi | 15021348 | 1.41 | 15222533 | 98.68 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 13:54 | Sample Name | LCVL1-160516 |
| Data Batch | 160516.b | Comment | LCVLICPMS_TW |
| Data File Name | 076LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.263 | 471 | 7.65 | 10 | 102.6 | 70 | 130 | |
| 9 | Be | 45 | 1.052 | 63 | 9.12 | 1 | 105.2 | 70 | 130 | |
| 11 | B | 45 | 23.964 | 582 | 6.18 | 20 | 119.8 | 70 | 130 | |
| 23 | Na | 45 | 106.088 | 122505 | 0.07 | 100 | 106.1 | 70 | 130 | |
| 24 | Mg | 45 | 101.096 | 35425 | 2.20 | 100 | 101.1 | 70 | 130 | |
| 27 | Al | 45 | 100.459 | 12505 | 1.58 | 100 | 100.5 | 70 | 130 | |
| 39 | K | 45 | 95.468 | 79821 | 1.13 | 100 | 95.5 | 70 | 130 | |
| 44 | Ca | 45 | 102.467 | 2233 | 4.69 | 100 | 102.5 | 70 | 130 | |
| 47 | Ti | 45 | 5.686 | 754 | 0.92 | 5 | 113.7 | 70 | 130 | |
| 51 | V | 45 | 0.895 | 6337 | 2.56 | 1 | 89.5 | 70 | 130 | |
| 52 | Cr | 45 | 5.191 | 30094 | 1.68 | 5 | 103.8 | 70 | 130 | |
| 55 | Mn | 45 | 4.733 | 14641 | 0.97 | 5 | 94.7 | 70 | 130 | |
| 56 | Fe | 45 | 96.494 | 465380 | 0.29 | 100 | 96.5 | 70 | 130 | |
| 59 | Co | 72 | 5.193 | 46491 | 2.05 | 5 | 103.9 | 70 | 130 | |
| 60 | Ni | 72 | 5.211 | 13222 | 0.39 | 5 | 104.2 | 70 | 130 | |
| 63 | Cu | 72 | 5.077 | 37896 | 0.35 | 5 | 101.5 | 70 | 130 | |
| 66 | Zn | 72 | 5.065 | 5884 | 1.66 | 5 | 101.3 | 70 | 130 | |
| 75 | As | 72 | 4.981 | 4797 | 1.58 | 5 | 99.6 | 70 | 130 | |
| 78 | Se | 72 | 5.124 | 339 | 6.38 | 5 | 102.5 | 70 | 130 | |
| 88 | Sr | 115 | 4.889 | 19577 | 1.64 | 5 | 97.8 | 70 | 130 | |
| 95 | Mo | 115 | 4.784 | 17541 | 1.98 | 5 | 95.7 | 70 | 130 | |
| 107 | Ag | 115 | 1.925 | 22237 | 1.79 | 2 | 96.2 | 70 | 130 | |
| 111 | Cd | 115 | 0.948 | 1582 | 5.17 | 1 | 94.8 | 70 | 130 | |
| 118 | Sn | 115 | 4.834 | 17596 | 0.91 | 5 | 96.7 | 70 | 130 | |
| 121 | Sb | 115 | 1.958 | 10494 | 2.37 | 2 | 97.9 | 70 | 130 | |
| 137 | Ba | 115 | 4.925 | 8211 | 3.17 | 5 | 98.5 | 70 | 130 | |
| 205 | Tl | 209 | 1.037 | 23711 | 1.77 | 1 | 103.7 | 70 | 130 | |
| 208 | Pb | 209 | 1.008 | 35274 | 2.34 | 1 | 100.8 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 908967 | 0.56 | 989663 | 91.85 | 70 | 120 | |
| 72 | Ge | 693086 | 1.07 | 739879 | 93.68 | 70 | 120 | |
| 115 | In | 6172107 | 0.18 | 6565136 | 94.01 | 70 | 120 | |
| 209 | Bi | 14093720 | 2.54 | 15222533 | 92.58 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 13:58 | Sample Name | CCB1-160516 |
| Data Batch | 160516.b | Comment | CCB ICPMS_TW |
| Data File Name | 077_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | -0.178 | 10 | 31.6 | 2 | 5 | |
| 9 | Be | 45 | 0.031 | 4 | 87.7 | 0.4 | 0.3 | |
| 11 | B | 45 | 2.793 | 190 | 29.3 | 10 | 10 | |
| 23 | Na | 45 | 5.850 | 53156 | 0.4 | 50 | 100 | |
| 24 | Mg | 45 | -1.195 | 294 | 8.2 | 50 | 100 | |
| 27 | Al | 45 | 0.177 | 202 | 17.2 | 50 | 10 | |
| 39 | K | 45 | -2.921 | 45993 | 0.6 | 50 | 100 | |
| 44 | Ca | 45 | 4.532 | 301 | 13.9 | 50 | 100 | |
| 47 | Ti | 45 | 0.018 | 4 | 43.4 | 4 | 3 | |
| 51 | V | 45 | -0.137 | 1673 | 3.4 | 4 | 3 | |
| 52 | Cr | 45 | 0.000 | 1912 | 3.3 | 2 | 2 | |
| 55 | Mn | 45 | -0.151 | 390 | 5.6 | 2 | 3 | |
| 56 | Fe | 45 | -0.961 | 11519 | 2.0 | 50 | 50 | |
| 59 | Co | 72 | -0.005 | 72 | 46.2 | 2 | 3 | |
| 60 | Ni | 72 | 0.019 | 447 | 18.7 | 2 | 3 | |
| 63 | Cu | 72 | -0.092 | 2800 | 6.5 | 2 | 2 | |
| 66 | Zn | 72 | 0.080 | 389 | 12.5 | 4 | 2 | |
| 75 | As | 72 | -0.039 | 114 | 6.0 | 2 | 2 | |
| 78 | Se | 72 | 0.347 | 90 | 7.0 | 1 | 2 | |
| 88 | Sr | 115 | -0.002 | 132 | 11.4 | 4 | 3 | |
| 95 | Mo | 115 | 0.002 | 53 | 59.6 | 2 | 2 | |
| 107 | Ag | 115 | 0.008 | 183 | 4.8 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.002 | 12 | 68.7 | 0.4 | 0.3 | |
| 118 | Sn | 115 | -0.093 | 811 | 1.0 | 4 | 3 | |
| 121 | Sb | 115 | 0.029 | 349 | 19.0 | 2 | 0.8 | |
| 137 | Ba | 115 | -0.007 | 20 | 66.7 | 2 | 3 | |
| 205 | Tl | 209 | 0.006 | 407 | 3.0 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.006 | 4324 | 2.7 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 913989 | 0.76 | 989663 | 92.35 | 70 | 120 | |
| 72 | Ge | 695826 | 1.03 | 739879 | 94.05 | 70 | 120 | |
| 115 | In | 6207349 | 1.28 | 6565136 | 94.55 | 70 | 120 | |
| 209 | Bi | 14220201 | 0.47 | 15222533 | 93.42 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 14:20 | Sample Name | CCV2-160516 |
| Data Batch | 160516.b | Comment | CCV ICPMS_TW |
| Data File Name | 088_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 213.033 | 9240 | 0.78 | 200 | 106.5 | 90 | 110 | |
| 9 | Be | 45 | 213.059 | 12210 | 1.37 | 200 | 106.5 | 90 | 110 | |
| 11 | B | 45 | 210.257 | 3965 | 5.16 | 200 | 105.1 | 90 | 110 | |
| 23 | Na | 45 | 5186.963 | 3578726 | 0.72 | 5000 | 103.7 | 90 | 110 | |
| 24 | Mg | 45 | 5136.646 | 1729446 | 1.20 | 5000 | 102.7 | 90 | 110 | |
| 27 | Al | 45 | 4901.582 | 589439 | 0.63 | 5000 | 98.0 | 90 | 110 | |
| 39 | K | 45 | 5108.327 | 1779741 | 0.55 | 5000 | 102.2 | 90 | 110 | |
| 44 | Ca | 45 | 4758.506 | 92256 | 0.35 | 5000 | 95.2 | 90 | 110 | |
| 47 | Ti | 45 | 202.045 | 26202 | 1.44 | 200 | 101.0 | 90 | 110 | |
| 51 | V | 45 | 203.964 | 907653 | 0.60 | 200 | 102.0 | 90 | 110 | |
| 52 | Cr | 45 | 206.157 | 1098834 | 0.46 | 200 | 103.1 | 90 | 110 | |
| 55 | Mn | 45 | 201.004 | 575528 | 0.37 | 200 | 100.5 | 90 | 110 | |
| 56 | Fe | 45 | 5062.950 | 23120077 | 1.09 | 5000 | 101.3 | 90 | 110 | |
| 59 | Co | 72 | 208.057 | 1823033 | 0.48 | 200 | 104.0 | 90 | 110 | |
| 60 | Ni | 72 | 207.396 | 501213 | 0.47 | 200 | 103.7 | 90 | 110 | |
| 63 | Cu | 72 | 208.061 | 1390045 | 0.62 | 200 | 104.0 | 90 | 110 | |
| 66 | Zn | 72 | 205.378 | 222535 | 0.99 | 200 | 102.7 | 90 | 110 | |
| 75 | As | 72 | 204.385 | 187302 | 0.95 | 200 | 102.2 | 90 | 110 | |
| 78 | Se | 72 | 199.465 | 10299 | 2.59 | 200 | 99.7 | 90 | 110 | |
| 88 | Sr | 115 | 193.617 | 766049 | 0.24 | 200 | 96.8 | 90 | 110 | |
| 95 | Mo | 115 | 196.104 | 713617 | 0.18 | 200 | 98.1 | 90 | 110 | |
| 107 | Ag | 115 | 202.307 | 2315877 | 0.31 | 200 | 101.2 | 90 | 110 | |
| 111 | Cd | 115 | 197.206 | 325392 | 0.77 | 200 | 98.6 | 90 | 110 | |
| 118 | Sn | 115 | 197.488 | 670571 | 1.04 | 200 | 98.7 | 90 | 110 | |
| 121 | Sb | 115 | 200.009 | 1047389 | 0.79 | 200 | 100.0 | 90 | 110 | |
| 137 | Ba | 115 | 194.789 | 321899 | 0.74 | 200 | 97.4 | 90 | 110 | |
| 205 | Tl | 209 | 202.318 | 4673824 | 0.52 | 200 | 101.2 | 90 | 110 | |
| 208 | Pb | 209 | 199.925 | 6244306 | 0.31 | 200 | 100.0 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 890725 | 1.58 | 989663 | 90.00 | 70 | 120 | |
| 72 | Ge | 680078 | 0.51 | 739879 | 91.92 | 70 | 120 | |
| 115 | In | 6141454 | 1.52 | 6565136 | 93.55 | 70 | 120 | |
| 209 | Bi | 14398494 | 0.91 | 15222533 | 94.59 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 14:25 | Sample Name | LCVL2-160516 |
| Data Batch | 160516.b | Comment | LCVLICPMS_TW |
| Data File Name | 090LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.684 | 508 | 6.14 | 10 | 106.8 | 70 | 130 | |
| 9 | Be | 45 | 0.913 | 57 | 12.86 | 1 | 91.3 | 70 | 130 | |
| 11 | B | 45 | 25.649 | 637 | 4.16 | 20 | 128.2 | 70 | 130 | |
| 23 | Na | 45 | 101.337 | 123703 | 0.30 | 100 | 101.3 | 70 | 130 | |
| 24 | Mg | 45 | 98.535 | 35850 | 0.56 | 100 | 98.5 | 70 | 130 | |
| 27 | Al | 45 | 95.191 | 12306 | 1.03 | 100 | 95.2 | 70 | 130 | |
| 39 | K | 45 | 94.245 | 82395 | 1.70 | 100 | 94.2 | 70 | 130 | |
| 44 | Ca | 45 | 96.283 | 2191 | 2.65 | 100 | 96.3 | 70 | 130 | |
| 47 | Ti | 45 | 4.772 | 658 | 11.27 | 5 | 95.4 | 70 | 130 | |
| 51 | V | 45 | 0.872 | 6468 | 3.31 | 1 | 87.2 | 70 | 130 | |
| 52 | Cr | 45 | 5.122 | 30844 | 1.45 | 5 | 102.4 | 70 | 130 | |
| 55 | Mn | 45 | 4.683 | 15045 | 2.31 | 5 | 93.7 | 70 | 130 | |
| 56 | Fe | 45 | 97.005 | 485419 | 0.45 | 100 | 97.0 | 70 | 130 | |
| 59 | Co | 72 | 5.216 | 48012 | 0.86 | 5 | 104.3 | 70 | 130 | |
| 60 | Ni | 72 | 5.377 | 14016 | 0.74 | 5 | 107.5 | 70 | 130 | |
| 63 | Cu | 72 | 5.035 | 38673 | 0.28 | 5 | 100.7 | 70 | 130 | |
| 66 | Zn | 72 | 5.111 | 6105 | 6.53 | 5 | 102.2 | 70 | 130 | |
| 75 | As | 72 | 5.104 | 5051 | 0.63 | 5 | 102.1 | 70 | 130 | |
| 78 | Se | 72 | 4.867 | 335 | 14.84 | 5 | 97.3 | 70 | 130 | |
| 88 | Sr | 115 | 4.930 | 20190 | 1.55 | 5 | 98.6 | 70 | 130 | |
| 95 | Mo | 115 | 4.782 | 17932 | 1.64 | 5 | 95.6 | 70 | 130 | |
| 107 | Ag | 115 | 1.968 | 23257 | 3.54 | 2 | 98.4 | 70 | 130 | |
| 111 | Cd | 115 | 0.982 | 1675 | 1.55 | 1 | 98.2 | 70 | 130 | |
| 118 | Sn | 115 | 4.833 | 17991 | 0.43 | 5 | 96.7 | 70 | 130 | |
| 121 | Sb | 115 | 1.965 | 10774 | 4.26 | 2 | 98.3 | 70 | 130 | |
| 137 | Ba | 115 | 4.941 | 8425 | 3.09 | 5 | 98.8 | 70 | 130 | |
| 205 | Tl | 209 | 0.968 | 23957 | 0.43 | 1 | 96.8 | 70 | 130 | |
| 208 | Pb | 209 | 0.937 | 35793 | 1.11 | 1 | 93.7 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 943274 | 0.57 | 989663 | 95.31 | 70 | 120 | |
| 72 | Ge | 712639 | 0.65 | 739879 | 96.32 | 70 | 120 | |
| 115 | In | 6312100 | 0.56 | 6565136 | 96.15 | 70 | 120 | |
| 209 | Bi | 15245130 | 2.67 | 15222533 | 100.15 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 14:30 | Sample Name | CCB2-160516 |
| Data Batch | 160516.b | Comment | CCB ICPMS_TW |
| Data File Name | 091_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | -0.129 | 12 | 50.7 | 2 | 5 | |
| 9 | Be | 45 | 0.019 | 3 | 33.3 | 0.4 | 0.3 | |
| 11 | B | 45 | 3.155 | 199 | 4.2 | 10 | 10 | |
| 23 | Na | 45 | 3.498 | 52147 | 2.0 | 50 | 100 | |
| 24 | Mg | 45 | -1.081 | 338 | 21.7 | 50 | 100 | |
| 27 | Al | 45 | 0.164 | 203 | 13.4 | 50 | 10 | |
| 39 | K | 45 | -4.378 | 46046 | 1.4 | 50 | 100 | |
| 44 | Ca | 45 | 1.363 | 241 | 22.1 | 50 | 100 | |
| 47 | Ti | 45 | 0.042 | 8 | 89.2 | 4 | 3 | |
| 51 | V | 45 | -0.173 | 1527 | 5.6 | 4 | 3 | |
| 52 | Cr | 45 | -0.004 | 1912 | 1.4 | 2 | 2 | |
| 55 | Mn | 45 | -0.165 | 356 | 11.8 | 2 | 3 | |
| 56 | Fe | 45 | -0.836 | 12254 | 2.8 | 50 | 50 | |
| 59 | Co | 72 | -0.007 | 54 | 18.7 | 2 | 3 | |
| 60 | Ni | 72 | 0.009 | 424 | 9.6 | 2 | 3 | |
| 63 | Cu | 72 | -0.108 | 2702 | 1.7 | 2 | 2 | |
| 66 | Zn | 72 | 0.029 | 333 | 16.7 | 4 | 2 | |
| 75 | As | 72 | -0.046 | 108 | 7.9 | 2 | 2 | |
| 78 | Se | 72 | 0.271 | 86 | 9.2 | 1 | 2 | |
| 88 | Sr | 115 | -0.003 | 128 | 13.4 | 4 | 3 | |
| 95 | Mo | 115 | -0.002 | 39 | 47.2 | 2 | 2 | |
| 107 | Ag | 115 | 0.004 | 140 | 14.5 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.004 | 16 | 24.8 | 0.4 | 0.3 | |
| 118 | Sn | 115 | -0.139 | 660 | 3.6 | 4 | 3 | |
| 121 | Sb | 115 | -0.001 | 189 | 24.3 | 2 | 0.8 | |
| 137 | Ba | 115 | -0.008 | 18 | 43.3 | 2 | 3 | |
| 205 | Tl | 209 | -0.001 | 274 | 7.9 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.045 | 3275 | 2.7 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 925238 | 0.43 | 989663 | 93.49 | 70 | 120 | |
| 72 | Ge | 698858 | 0.63 | 739879 | 94.46 | 70 | 120 | |
| 115 | In | 6255951 | 2.77 | 6565136 | 95.29 | 70 | 120 | |
| 209 | Bi | 14909903 | 2.36 | 15222533 | 97.95 | 70 | 120 | |

# Method Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/16 2:32 PM | Sample Name | MB-75009 |
| Data Batch | 160516.b | Comment | MBLKICPMS_TSDOD1 |
| Data File Name | 092_PB.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.027 | 19 | 32.73 | | |
| 9 | Be | 45 | 0.009 | 2 | 65.47 | | |
| 11 | B | 45 | 2.637 | 186 | 23.92 | | |
| 23 | Na | 45 | 6.956 | 53588 | 2.18 | | |
| 24 | Mg | 45 | 2.038 | 1402 | 4.55 | | |
| 27 | Al | 45 | 8.923 | 1273 | 3.40 | | |
| 39 | K | 45 | 2.983 | 47748 | 0.98 | | |
| 44 | Ca | 45 | 36.523 | 930 | 11.30 | | |
| 47 | Ti | 45 | 0.153 | 22 | 31.22 | | |
| 51 | V | 45 | -0.142 | 1638 | 2.06 | | |
| 52 | Cr | 45 | -0.018 | 1805 | 8.99 | | |
| 55 | Mn | 45 | -0.072 | 620 | 3.88 | | |
| 56 | Fe | 45 | 3.338 | 31454 | 2.81 | | |
| 59 | Co | 72 | -0.005 | 73 | 25.31 | | |
| 60 | Ni | 72 | 0.023 | 453 | 5.15 | | |
| 63 | Cu | 72 | 0.026 | 3572 | 4.89 | | |
| 66 | Zn | 72 | 2.765 | 3328 | 3.78 | | |
| 75 | As | 72 | -0.042 | 110 | 16.39 | | |
| 78 | Se | 72 | 0.144 | 78 | 17.13 | | |
| 88 | Sr | 115 | 0.109 | 580 | 12.29 | | |
| 95 | Mo | 115 | 0.009 | 80 | 4.16 | | |
| 107 | Ag | 115 | 0.005 | 154 | 10.65 | | |
| 111 | Cd | 115 | -0.004 | 2 | 86.60 | | |
| 118 | Sn | 115 | 3.533 | 13375 | 1.33 | | |
| 121 | Sb | 115 | 0.026 | 336 | 8.45 | | |
| 137 | Ba | 115 | 0.051 | 118 | 26.30 | | |
| 205 | Tl | 209 | -0.003 | 224 | 18.15 | | |
| 208 | Pb | 209 | 0.049 | 6332 | 6.50 | | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 908247 | 0.34 | 989663 | 91.77 | 70 | 120 | |
| 72 | Ge | 688962 | 0.91 | 739879 | 93.12 | 70 | 120 | |
| 115 | In | 6273036 | 1.35 | 6565136 | 95.55 | 70 | 120 | |
| 209 | Bi | 14910407 | 0.24 | 15222533 | 97.95 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 14:34 | Sample Name | LCS-75009 |
| Data Batch | 160516.b | Comment | LCS ICPMS_TSDOD1 |
| Data File Name | 093_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 208.024 | 9142 | 1.19 | 200 | 104.0 | 80 | 120 | |
| 9 | Be | 45 | 205.622 | 11939 | 3.25 | 200 | 102.8 | 80 | 120 | |
| 11 | B | 45 | 194.547 | 3726 | 1.82 | 200 | 97.3 | 80 | 120 | |
| 23 | Na | 45 | 5164.230 | 3610071 | 0.08 | 1000 | 516.4 | 80 | 120 | Fail |
| 24 | Mg | 45 | 5067.667 | 1728543 | 1.12 | 1000 | 506.8 | 80 | 120 | Fail |
| 27 | Al | 45 | 983.135 | 119920 | 0.60 | 1000 | 98.3 | 80 | 120 | |
| 39 | K | 45 | 5059.248 | 1786212 | 0.29 | 1000 | 505.9 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4753.182 | 93367 | 0.49 | 1000 | 475.3 | 80 | 120 | Fail |
| 47 | Ti | 45 | 200.060 | 26287 | 1.96 | 200 | 100.0 | 80 | 120 | |
| 51 | V | 45 | 203.459 | 917352 | 1.03 | 200 | 101.7 | 80 | 120 | |
| 52 | Cr | 45 | 204.354 | 1103705 | 0.95 | 200 | 102.2 | 80 | 120 | |
| 55 | Mn | 45 | 197.674 | 573523 | 1.48 | 200 | 98.8 | 80 | 120 | |
| 56 | Fe | 45 | 985.714 | 4573618 | 0.63 | 1000 | 98.6 | 80 | 120 | |
| 59 | Co | 72 | 208.060 | 1826727 | 0.33 | 200 | 104.0 | 80 | 120 | |
| 60 | Ni | 72 | 208.232 | 504243 | 0.33 | 200 | 104.1 | 80 | 120 | |
| 63 | Cu | 72 | 207.062 | 1386187 | 1.33 | 200 | 103.5 | 80 | 120 | |
| 66 | Zn | 72 | 205.376 | 222975 | 2.04 | 200 | 102.7 | 80 | 120 | |
| 75 | As | 72 | 200.553 | 184155 | 0.52 | 200 | 100.3 | 80 | 120 | |
| 78 | Se | 72 | 194.783 | 10078 | 0.11 | 200 | 97.4 | 80 | 120 | |
| 88 | Sr | 115 | 192.224 | 755668 | 0.80 | 200 | 96.1 | 80 | 120 | |
| 95 | Mo | 115 | 198.636 | 718181 | 0.25 | 200 | 99.3 | 80 | 120 | |
| 107 | Ag | 115 | 198.125 | 2253487 | 0.63 | 200 | 99.1 | 80 | 120 | |
| 111 | Cd | 115 | 198.571 | 325603 | 0.77 | 200 | 99.3 | 80 | 120 | |
| 118 | Sn | 115 | 200.894 | 677734 | 0.30 | 200 | 100.4 | 80 | 120 | |
| 121 | Sb | 115 | 195.706 | 1018319 | 0.64 | 200 | 97.9 | 80 | 120 | |
| 137 | Ba | 115 | 193.616 | 317914 | 0.78 | 200 | 96.8 | 80 | 120 | |
| 205 | Tl | 209 | 200.363 | 4622373 | 0.35 | 200 | 100.2 | 80 | 120 | |
| 208 | Pb | 209 | 198.232 | 6183218 | 0.67 | 200 | 99.1 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 902361 | 1.03 | 989663 | 91.18 | 70 | 120 | |
| 72 | Ge | 681425 | 0.16 | 739879 | 92.10 | 70 | 120 | |
| 115 | In | 6103148 | 2.16 | 6565136 | 92.96 | 70 | 120 | |
| 209 | Bi | 14379141 | 0.99 | 15222533 | 94.46 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 14:36 | Sample Name | LCSD-75009 |
| Data Batch | 160516.b | Comment | LCSDICPMS_TSDOD1 |
| Data File Name | 094_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 213.775 | 9357 | 0.60 | 200 | 106.9 | 80 | 120 | |
| 9 | Be | 45 | 209.701 | 12126 | 0.95 | 200 | 104.9 | 80 | 120 | |
| 11 | B | 45 | 207.676 | 3953 | 2.69 | 200 | 103.8 | 80 | 120 | |
| 23 | Na | 45 | 5184.619 | 3609957 | 0.78 | 1000 | 518.5 | 80 | 120 | Fail |
| 24 | Mg | 45 | 5093.188 | 1730354 | 1.10 | 1000 | 509.3 | 80 | 120 | Fail |
| 27 | Al | 45 | 993.991 | 120770 | 0.64 | 1000 | 99.4 | 80 | 120 | |
| 39 | K | 45 | 5114.530 | 1798199 | 0.45 | 1000 | 511.5 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4805.621 | 94033 | 2.30 | 1000 | 480.6 | 80 | 120 | Fail |
| 47 | Ti | 45 | 204.026 | 26702 | 0.92 | 200 | 102.0 | 80 | 120 | |
| 51 | V | 45 | 207.397 | 931357 | 0.62 | 200 | 103.7 | 80 | 120 | |
| 52 | Cr | 45 | 208.941 | 1123987 | 0.60 | 200 | 104.5 | 80 | 120 | |
| 55 | Mn | 45 | 201.998 | 583733 | 0.85 | 200 | 101.0 | 80 | 120 | |
| 56 | Fe | 45 | 997.168 | 4608469 | 0.43 | 1000 | 99.7 | 80 | 120 | |
| 59 | Co | 72 | 212.817 | 1861920 | 0.25 | 200 | 106.4 | 80 | 120 | |
| 60 | Ni | 72 | 211.812 | 511122 | 0.96 | 200 | 105.9 | 80 | 120 | |
| 63 | Cu | 72 | 210.355 | 1403204 | 0.22 | 200 | 105.2 | 80 | 120 | |
| 66 | Zn | 72 | 209.372 | 226501 | 0.23 | 200 | 104.7 | 80 | 120 | |
| 75 | As | 72 | 205.183 | 187733 | 0.36 | 200 | 102.6 | 80 | 120 | |
| 78 | Se | 72 | 197.546 | 10184 | 0.69 | 200 | 98.8 | 80 | 120 | |
| 88 | Sr | 115 | 196.237 | 764524 | 0.11 | 200 | 98.1 | 80 | 120 | |
| 95 | Mo | 115 | 200.506 | 718468 | 1.30 | 200 | 100.3 | 80 | 120 | |
| 107 | Ag | 115 | 201.869 | 2275549 | 1.58 | 200 | 100.9 | 80 | 120 | |
| 111 | Cd | 115 | 201.161 | 326874 | 1.08 | 200 | 100.6 | 80 | 120 | |
| 118 | Sn | 115 | 206.658 | 690902 | 0.40 | 200 | 103.3 | 80 | 120 | |
| 121 | Sb | 115 | 198.886 | 1025421 | 0.45 | 200 | 99.4 | 80 | 120 | |
| 137 | Ba | 115 | 197.484 | 321364 | 0.37 | 200 | 98.7 | 80 | 120 | |
| 205 | Tl | 209 | 205.510 | 4676829 | 1.02 | 200 | 102.8 | 80 | 120 | |
| 208 | Pb | 209 | 204.328 | 6286160 | 0.22 | 200 | 102.2 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 898812 | 0.74 | 989663 | 90.82 | 70 | 120 | |
| 72 | Ge | 679059 | 0.95 | 739879 | 91.78 | 70 | 120 | |
| 115 | In | 6046732 | 1.04 | 6565136 | 92.10 | 70 | 120 | |
| 209 | Bi | 14185433 | 1.91 | 15222533 | 93.19 | 70 | 120 | |

# Dilution Sample (Dil) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 14:42 | Sample Name | 1605047-03A SD |
| Data Batch | 160516.b | Comment | SD ICPMS_TSDOD1 |
| Data File Name | 097_SD.d | Dilution | 25 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Value | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 13.410 | 616 | 3.67 | 68.1 | 98.4 | 110 | 90 | Good |
| 9 | Be | 45 | 0.680 | 42 | 16.50 | 3.0 | 112.5 | 110 | 90 | |
| 11 | B | 45 | 25.201 | 611 | 2.46 | 101.6 | 124.0 | 110 | 90 | |
| 23 | Na | 45 | 864.633 | 655835 | 0.43 | 4220.6 | 102.4 | 110 | 90 | Good |
| 24 | Mg | 45 | 2725.860 | 946078 | 0.37 | 13257.3 | 102.8 | 110 | 90 | Good |
| 27 | Al | 45 | 9615.652 | 1191431 | 0.81 | 47193.0 | 101.9 | 110 | 90 | Good |
| 39 | K | 45 | 2757.478 | 1011743 | 0.48 | 13489.0 | 102.2 | 110 | 90 | Good |
| 44 | Ca | 45 | 35496.402 | 707830 | 0.43 | 174560.5 | 101.7 | 110 | 90 | Good |
| 47 | Ti | 45 | 30.376 | 4062 | 1.93 | 144.6 | 105.0 | 110 | 90 | Good |
| 51 | V | 45 | 18.986 | 89161 | 0.42 | 94.5 | 100.4 | 110 | 90 | Good |
| 52 | Cr | 45 | 12.532 | 70643 | 0.57 | 62.5 | 100.2 | 110 | 90 | Good |
| 55 | Mn | 45 | 215.981 | 637257 | 0.32 | 1054.3 | 102.4 | 110 | 90 | Good |
| 56 | Fe | 45 | 13146.525 | 61841811 | 2.17 | 63421.0 | 103.6 | 110 | 90 | Good |
| 59 | Co | 72 | 5.251 | 46870 | 0.39 | 26.0 | 100.9 | 110 | 90 | Good |
| 60 | Ni | 72 | 7.315 | 18345 | 0.88 | 36.3 | 100.6 | 110 | 90 | Good |
| 63 | Cu | 72 | 1.542 | 13846 | 1.20 | 8.4 | 91.7 | 110 | 90 | Good |
| 66 | Zn | 72 | 27.250 | 30260 | 1.39 | 134.4 | 101.3 | 110 | 90 | Good |
| 75 | As | 72 | 3.586 | 3485 | 2.75 | 18.1 | 99.2 | 110 | 90 | Good |
| 78 | Se | 72 | 1.545 | 151 | 9.83 | 5.0 | 154.3 | 110 | 90 | |
| 88 | Sr | 115 | 80.592 | 325660 | 0.35 | 418.9 | 96.2 | 110 | 90 | Good |
| 95 | Mo | 115 | 0.394 | 1510 | 8.55 | 2.0 | 99.3 | 110 | 90 | Good |
| 107 | Ag | 115 | 0.016 | 277 | 9.10 | 0.0 | 199.4 | 110 | 90 | |
| 111 | Cd | 115 | 0.035 | 68 | 2.84 | 0.2 | 86.8 | 110 | 90 | |
| 118 | Sn | 115 | 0.674 | 3478 | 11.05 | 4.2 | 81.2 | 110 | 90 | |
| 121 | Sb | 115 | 0.036 | 387 | 13.47 | 0.2 | 89.2 | 110 | 90 | |
| 137 | Ba | 115 | 93.091 | 157093 | 0.43 | 473.7 | 98.3 | 110 | 90 | Good |
| 205 | Tl | 209 | 0.078 | 2115 | 1.50 | 0.4 | 106.4 | 110 | 90 | Good |
| 208 | Pb | 209 | 4.626 | 151787 | 0.51 | 23.5 | 98.5 | 110 | 90 | Good |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 917829 | 0.67 | 989663 | 92.74 | 70 | 120 | |
| 72 | Ge | 691021 | 0.38 | 739879 | 93.40 | 70 | 120 | |
| 115 | In | 6270566 | 1.51 | 6565136 | 95.51 | 70 | 120 | |
| 209 | Bi | 14670653 | 0.75 | 15222533 | 96.37 | 70 | 120 | |

# Post Digestion Spike Sample (PDS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 15:02 | Sample Name | 1605047-03A PDS |
| Data Batch | 160516.b | Comment | PDS ICPMS_TSDOD1 |
| Data File Name | 107_PDS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 282.252 | 11626 | 1.83 | 68.1 | 200 | 107.1 | 75 | 125 | |
| 9 | Be | 45 | 212.962 | 11596 | 2.26 | 3.0 | 200 | 105.0 | 75 | 125 | |
| 11 | B | 45 | 320.548 | 5673 | 1.66 | 101.6 | 200 | 109.5 | 75 | 125 | |
| 23 | Na | 45 | 9315.548 | 6070779 | 1.11 | 4220.6 | 5000 | 101.9 | 75 | 125 | |
| 24 | Mg | 45 | 18371.461 | 5874203 | 1.70 | 13257.3 | 5000 | 102.3 | 75 | 125 | |
| 27 | Al | 45 | 53645.260 | 6128017 | 1.22 | 47193.0 | 5000 | 129.0 | 75 | 125 | Fail |
| 39 | K | 45 | 18732.800 | 6083848 | 1.27 | 13489.0 | 5000 | 104.9 | 75 | 125 | |
| 44 | Ca | 45 | ######## | 3388838 | 0.79 | 174560.5 | 5000 | 196.1 | 75 | 125 | Fail |
| 47 | Ti | 45 | 354.886 | 43727 | 0.95 | 144.6 | 200 | 105.1 | 75 | 125 | |
| 51 | V | 45 | 303.996 | 1284201 | 0.47 | 94.5 | 200 | 104.7 | 75 | 125 | |
| 52 | Cr | 45 | 273.854 | 1386360 | 1.01 | 62.5 | 200 | 105.7 | 75 | 125 | |
| 55 | Mn | 45 | 1296.284 | 3522368 | 0.76 | 1054.3 | 200 | 121.0 | 75 | 125 | |
| 56 | Fe | 45 | 71675.280 | 310799197 | 0.37 | 63421.0 | 5000 | 165.1 | 75 | 125 | Fail |
| 59 | Co | 72 | 237.740 | 1924720 | 1.05 | 26.0 | 200 | 105.9 | 75 | 125 | |
| 60 | Ni | 72 | 241.924 | 540132 | 1.04 | 36.3 | 200 | 102.8 | 75 | 125 | |
| 63 | Cu | 72 | 210.477 | 1299125 | 0.27 | 8.4 | 200 | 101.0 | 75 | 125 | |
| 66 | Zn | 72 | 341.710 | 341884 | 0.35 | 134.4 | 200 | 103.6 | 75 | 125 | |
| 75 | As | 72 | 224.272 | 189863 | 1.06 | 18.1 | 200 | 103.1 | 75 | 125 | |
| 78 | Se | 72 | 209.328 | 9983 | 2.44 | 5.0 | 200 | 102.2 | 75 | 125 | |
| 88 | Sr | 115 | 634.602 | 2295721 | 0.40 | 418.9 | 200 | 107.8 | 75 | 125 | |
| 95 | Mo | 115 | 206.122 | 685878 | 0.78 | 2.0 | 200 | 102.1 | 75 | 125 | |
| 107 | Ag | 115 | 190.222 | 1991138 | 0.45 | 0.0 | 200 | 95.1 | 75 | 125 | |
| 111 | Cd | 115 | 199.687 | 301306 | 1.30 | 0.2 | 200 | 99.7 | 75 | 125 | |
| 118 | Sn | 115 | 216.081 | 670802 | 0.86 | 4.2 | 200 | 106.0 | 75 | 125 | |
| 121 | Sb | 115 | 208.283 | 997303 | 0.51 | 0.2 | 200 | 104.0 | 75 | 125 | |
| 137 | Ba | 115 | 712.227 | 1076238 | 1.00 | 473.7 | 200 | 119.3 | 75 | 125 | |
| 205 | Tl | 209 | 204.644 | 4473080 | 0.77 | 0.4 | 200 | 102.1 | 75 | 125 | |
| 208 | Pb | 209 | 228.069 | 6738590 | 0.43 | 23.5 | 200 | 102.3 | 75 | 125 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 846267 | 1.45 | 989663 | 85.51 | 70 | 120 | |
| 72 | Ge | 628386 | 1.56 | 739879 | 84.93 | 70 | 120 | |
| 115 | In | 5615055 | 0.28 | 6565136 | 85.53 | 70 | 120 | |
| 209 | Bi | 13624114 | 1.72 | 15222533 | 89.50 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 15:04 | Sample Name | 1605047-03A MS |
| Data Batch | 160516.b | Comment | MS ICPMS_TSDOD1 |
| Data File Name | 108_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 281.458 | 11850 | 1.03 | 68.1 | 200 | 106.7 | 80 | 120 | |
| 9 | Be | 45 | 210.176 | 11697 | 1.50 | 3.0 | 200 | 103.6 | 80 | 120 | |
| 11 | B | 45 | 308.377 | 5585 | 4.63 | 101.6 | 200 | 103.4 | 80 | 120 | |
| 23 | Na | 45 | 9465.008 | 6304207 | 1.76 | 4220.6 | 1000 | 524.4 | 80 | 120 | Fail |
| 24 | Mg | 45 | 19328.400 | 6318243 | 1.87 | 13257.3 | 1000 | 607.1 | 80 | 120 | Fail |
| 27 | Al | 45 | 56169.246 | 6558457 | 1.73 | 47193.0 | 1000 | 897.6 | 80 | 120 | Fail |
| 39 | K | 45 | 19767.611 | 6560292 | 1.65 | 13489.0 | 1000 | 627.9 | 80 | 120 | Fail |
| 44 | Ca | 45 | ######## | 3605089 | 0.99 | 174560.5 | 1000 | 1731.9 | 80 | 120 | Fail |
| 47 | Ti | 45 | 311.679 | 39251 | 1.55 | 144.6 | 200 | 83.5 | 80 | 120 | |
| 51 | V | 45 | 310.840 | 1342239 | 0.49 | 94.5 | 200 | 108.2 | 80 | 120 | |
| 52 | Cr | 45 | 270.665 | 1400667 | 0.70 | 62.5 | 200 | 104.1 | 80 | 120 | |
| 55 | Mn | 45 | 1302.154 | 3616723 | 0.38 | 1054.3 | 200 | 123.9 | 80 | 120 | Fail |
| 56 | Fe | 45 | 70661.973 | 313189410 | 1.15 | 63421.0 | 1000 | 724.1 | 80 | 120 | Fail |
| 59 | Co | 72 | 229.945 | 1906373 | 0.56 | 26.0 | 200 | 102.0 | 80 | 120 | |
| 60 | Ni | 72 | 239.028 | 546515 | 0.54 | 36.3 | 200 | 101.3 | 80 | 120 | |
| 63 | Cu | 72 | 208.029 | 1315024 | 0.49 | 8.4 | 200 | 99.8 | 80 | 120 | |
| 66 | Zn | 72 | 340.197 | 348573 | 1.04 | 134.4 | 200 | 102.9 | 80 | 120 | |
| 75 | As | 72 | 219.918 | 190668 | 0.62 | 18.1 | 200 | 100.9 | 80 | 120 | |
| 78 | Se | 72 | 199.818 | 9761 | 1.95 | 5.0 | 200 | 97.4 | 80 | 120 | |
| 88 | Sr | 115 | 647.704 | 2373714 | 0.46 | 418.9 | 200 | 114.4 | 80 | 120 | |
| 95 | Mo | 115 | 192.975 | 650580 | 0.85 | 2.0 | 200 | 95.5 | 80 | 120 | |
| 107 | Ag | 115 | 198.544 | 2105668 | 1.02 | 0.0 | 200 | 99.3 | 80 | 120 | |
| 111 | Cd | 115 | 200.323 | 306243 | 1.74 | 0.2 | 200 | 100.1 | 80 | 120 | |
| 118 | Sn | 115 | 206.509 | 649526 | 0.95 | 4.2 | 200 | 101.2 | 80 | 120 | |
| 121 | Sb | 115 | 63.768 | 309417 | 0.79 | 0.2 | 200 | 31.8 | 80 | 120 | Fail |
| 137 | Ba | 115 | 674.685 | 1032828 | 1.11 | 473.7 | 200 | 100.5 | 80 | 120 | |
| 205 | Tl | 209 | 203.357 | 4496542 | 0.77 | 0.4 | 200 | 101.5 | 80 | 120 | |
| 208 | Pb | 209 | 224.379 | 6706910 | 0.44 | 23.5 | 200 | 100.5 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 864954 | 0.67 | 989663 | 87.40 | 70 | 120 | |
| 72 | Ge | 643468 | 0.48 | 739879 | 86.97 | 70 | 120 | |
| 115 | In | 5689651 | 1.83 | 6565136 | 86.66 | 70 | 120 | |
| 209 | Bi | 13781458 | 1.35 | 15222533 | 90.53 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 15:06 | Sample Name | 1605047-03A MSD |
| Data Batch | 160516.b | Comment | MSD ICPMS_TSDOD1 |
| Data File Name | 109_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 293.951 | 12432 | 0.34 | 68.1 | 200 | 112.9 | 80 | 120 | |
| 9 | Be | 45 | 213.874 | 11957 | 0.77 | 3.0 | 200 | 105.4 | 80 | 120 | |
| 11 | B | 45 | 311.980 | 5674 | 0.79 | 101.6 | 200 | 105.2 | 80 | 120 | |
| 23 | Na | 45 | 9817.862 | 6567309 | 1.12 | 4220.6 | 1000 | 559.7 | 80 | 120 | Fail |
| 24 | Mg | 45 | 20331.783 | 6676917 | 2.89 | 13257.3 | 1000 | 707.4 | 80 | 120 | Fail |
| 27 | Al | 45 | 60908.582 | 7143914 | 0.71 | 47193.0 | 1000 | 1371.6 | 80 | 120 | Fail |
| 39 | K | 45 | 20149.595 | 6717039 | 0.72 | 13489.0 | 1000 | 666.1 | 80 | 120 | Fail |
| 44 | Ca | 45 | ######## | 3806997 | 0.91 | 174560.5 | 1000 | 2714.0 | 80 | 120 | Fail |
| 47 | Ti | 45 | 315.850 | 39962 | 1.61 | 144.6 | 200 | 85.6 | 80 | 120 | |
| 51 | V | 45 | 319.241 | 1384822 | 1.35 | 94.5 | 200 | 112.4 | 80 | 120 | |
| 52 | Cr | 45 | 276.258 | 1436103 | 0.60 | 62.5 | 200 | 106.9 | 80 | 120 | |
| 55 | Mn | 45 | 1262.937 | 3523882 | 0.64 | 1054.3 | 200 | 104.3 | 80 | 120 | |
| 56 | Fe | 45 | 76179.357 | 339178467 | 2.23 | 63421.0 | 1000 | 1275.8 | 80 | 120 | Fail |
| 59 | Co | 72 | 233.362 | 1966638 | 0.83 | 26.0 | 200 | 103.7 | 80 | 120 | |
| 60 | Ni | 72 | 241.608 | 561532 | 0.61 | 36.3 | 200 | 102.6 | 80 | 120 | |
| 63 | Cu | 72 | 208.702 | 1341099 | 0.98 | 8.4 | 200 | 100.1 | 80 | 120 | |
| 66 | Zn | 72 | 349.098 | 363628 | 0.50 | 134.4 | 200 | 107.3 | 80 | 120 | |
| 75 | As | 72 | 222.315 | 195933 | 1.31 | 18.1 | 200 | 102.1 | 80 | 120 | |
| 78 | Se | 72 | 197.588 | 9814 | 1.28 | 5.0 | 200 | 96.3 | 80 | 120 | |
| 88 | Sr | 115 | 670.708 | 2497394 | 1.21 | 418.9 | 200 | 125.9 | 80 | 120 | Fail |
| 95 | Mo | 115 | 193.859 | 663950 | 1.19 | 2.0 | 200 | 95.9 | 80 | 120 | |
| 107 | Ag | 115 | 197.129 | 2123802 | 0.49 | 0.0 | 200 | 98.5 | 80 | 120 | |
| 111 | Cd | 115 | 198.055 | 307585 | 0.29 | 0.2 | 200 | 98.9 | 80 | 120 | |
| 118 | Sn | 115 | 206.433 | 659642 | 0.61 | 4.2 | 200 | 101.1 | 80 | 120 | |
| 121 | Sb | 115 | 63.510 | 313124 | 0.95 | 0.2 | 200 | 31.7 | 80 | 120 | Fail |
| 137 | Ba | 115 | 722.393 | 1123557 | 0.98 | 473.7 | 200 | 124.3 | 80 | 120 | Fail |
| 205 | Tl | 209 | 205.472 | 4551958 | 0.59 | 0.4 | 200 | 102.6 | 80 | 120 | |
| 208 | Pb | 209 | 229.111 | 6861346 | 0.08 | 23.5 | 200 | 102.8 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 868908 | 0.67 | 989663 | 87.80 | 70 | 120 | |
| 72 | Ge | 654177 | 1.16 | 739879 | 88.42 | 70 | 120 | |
| 115 | In | 5779347 | 0.64 | 6565136 | 88.03 | 70 | 120 | |
| 209 | Bi | 13809348 | 1.67 | 15222533 | 90.72 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 15:08 | Sample Name | CCV3-160516 |
| Data Batch | 160516.b | Comment | CCV ICPMS_TW |
| Data File Name | 110_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 216.864 | 9324 | 1.06 | 200 | 108.4 | 90 | 110 | |
| 9 | Be | 45 | 214.637 | 12193 | 0.88 | 200 | 107.3 | 90 | 110 | |
| 11 | B | 45 | 211.711 | 3955 | 1.45 | 200 | 105.9 | 90 | 110 | |
| 23 | Na | 45 | 5181.433 | 3543946 | 0.85 | 5000 | 103.6 | 90 | 110 | |
| 24 | Mg | 45 | 5114.814 | 1707034 | 0.26 | 5000 | 102.3 | 90 | 110 | |
| 27 | Al | 45 | 4854.345 | 578666 | 0.40 | 5000 | 97.1 | 90 | 110 | |
| 39 | K | 45 | 5050.532 | 1744742 | 0.86 | 5000 | 101.0 | 90 | 110 | |
| 44 | Ca | 45 | 4764.941 | 91582 | 0.89 | 5000 | 95.3 | 90 | 110 | |
| 47 | Ti | 45 | 203.393 | 26148 | 1.76 | 200 | 101.7 | 90 | 110 | |
| 51 | V | 45 | 203.565 | 898018 | 0.72 | 200 | 101.8 | 90 | 110 | |
| 52 | Cr | 45 | 206.027 | 1088757 | 1.54 | 200 | 103.0 | 90 | 110 | |
| 55 | Mn | 45 | 199.041 | 564995 | 0.40 | 200 | 99.5 | 90 | 110 | |
| 56 | Fe | 45 | 4996.050 | 22620042 | 2.05 | 5000 | 99.9 | 90 | 110 | |
| 59 | Co | 72 | 207.892 | 1798397 | 0.90 | 200 | 103.9 | 90 | 110 | |
| 60 | Ni | 72 | 207.218 | 494403 | 0.60 | 200 | 103.6 | 90 | 110 | |
| 63 | Cu | 72 | 207.983 | 1371854 | 0.70 | 200 | 104.0 | 90 | 110 | |
| 66 | Zn | 72 | 203.785 | 217977 | 0.95 | 200 | 101.9 | 90 | 110 | |
| 75 | As | 72 | 204.118 | 184666 | 0.53 | 200 | 102.1 | 90 | 110 | |
| 78 | Se | 72 | 199.995 | 10193 | 1.33 | 200 | 100.0 | 90 | 110 | |
| 88 | Sr | 115 | 192.356 | 755939 | 0.94 | 200 | 96.2 | 90 | 110 | |
| 95 | Mo | 115 | 197.357 | 713336 | 0.47 | 200 | 98.7 | 90 | 110 | |
| 107 | Ag | 115 | 203.576 | 2314645 | 0.52 | 200 | 101.8 | 90 | 110 | |
| 111 | Cd | 115 | 198.099 | 324686 | 0.72 | 200 | 99.0 | 90 | 110 | |
| 118 | Sn | 115 | 195.109 | 658038 | 0.50 | 200 | 97.6 | 90 | 110 | |
| 121 | Sb | 115 | 198.275 | 1031237 | 1.25 | 200 | 99.1 | 90 | 110 | |
| 137 | Ba | 115 | 195.746 | 321320 | 0.61 | 200 | 97.9 | 90 | 110 | |
| 205 | Tl | 209 | 201.803 | 4656789 | 0.76 | 200 | 100.9 | 90 | 110 | |
| 208 | Pb | 209 | 200.216 | 6246472 | 0.59 | 200 | 100.1 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 882899 | 0.82 | 989663 | 89.21 | 70 | 120 | |
| 72 | Ge | 671409 | 0.78 | 739879 | 90.75 | 70 | 120 | |
| 115 | In | 6099239 | 0.39 | 6565136 | 92.90 | 70 | 120 | |
| 209 | Bi | 14383100 | 1.15 | 15222533 | 94.49 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 15:12 | Sample Name | LCVL3-160516 |
| Data Batch | 160516.b | Comment | LCVLICPMS_TW |
| Data File Name | 112LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.284 | 457 | 5.86 | 10 | 102.8 | 70 | 130 | |
| 9 | Be | 45 | 0.911 | 53 | 41.60 | 1 | 91.1 | 70 | 130 | |
| 11 | B | 45 | 29.694 | 667 | 16.26 | 20 | 148.5 | 70 | 130 | Fail |
| 23 | Na | 45 | 103.321 | 116708 | 0.27 | 100 | 103.3 | 70 | 130 | |
| 24 | Mg | 45 | 101.462 | 34409 | 1.30 | 100 | 101.5 | 70 | 130 | |
| 27 | Al | 45 | 98.606 | 11883 | 1.75 | 100 | 98.6 | 70 | 130 | |
| 39 | K | 45 | 104.646 | 80337 | 0.24 | 100 | 104.6 | 70 | 130 | |
| 44 | Ca | 45 | 99.546 | 2106 | 4.03 | 100 | 99.5 | 70 | 130 | |
| 47 | Ti | 45 | 5.398 | 693 | 3.47 | 5 | 108.0 | 70 | 130 | |
| 51 | V | 45 | 0.861 | 5988 | 3.42 | 1 | 86.1 | 70 | 130 | |
| 52 | Cr | 45 | 5.302 | 29712 | 0.98 | 5 | 106.0 | 70 | 130 | |
| 55 | Mn | 45 | 4.758 | 14243 | 0.41 | 5 | 95.2 | 70 | 130 | |
| 56 | Fe | 45 | 98.346 | 458768 | 0.53 | 100 | 98.3 | 70 | 130 | |
| 59 | Co | 72 | 5.210 | 45254 | 0.38 | 5 | 104.2 | 70 | 130 | |
| 60 | Ni | 72 | 5.377 | 13227 | 0.30 | 5 | 107.5 | 70 | 130 | |
| 63 | Cu | 72 | 5.109 | 36981 | 1.89 | 5 | 102.2 | 70 | 130 | |
| 66 | Zn | 72 | 5.187 | 5840 | 0.34 | 5 | 103.7 | 70 | 130 | |
| 75 | As | 72 | 5.099 | 4762 | 1.06 | 5 | 102.0 | 70 | 130 | |
| 78 | Se | 72 | 6.386 | 393 | 7.14 | 5 | 127.7 | 70 | 130 | |
| 88 | Sr | 115 | 4.855 | 19053 | 1.29 | 5 | 97.1 | 70 | 130 | |
| 95 | Mo | 115 | 4.783 | 17185 | 1.92 | 5 | 95.7 | 70 | 130 | |
| 107 | Ag | 115 | 1.977 | 22380 | 1.11 | 2 | 98.8 | 70 | 130 | |
| 111 | Cd | 115 | 0.987 | 1615 | 10.05 | 1 | 98.7 | 70 | 130 | |
| 118 | Sn | 115 | 4.940 | 17593 | 1.08 | 5 | 98.8 | 70 | 130 | |
| 121 | Sb | 115 | 2.047 | 10743 | 1.42 | 2 | 102.3 | 70 | 130 | |
| 137 | Ba | 115 | 4.909 | 8018 | 4.05 | 5 | 98.2 | 70 | 130 | |
| 205 | Tl | 209 | 1.070 | 24582 | 1.20 | 1 | 107.0 | 70 | 130 | |
| 208 | Pb | 209 | 0.994 | 34998 | 1.97 | 1 | 99.4 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 879743 | 0.17 | 989663 | 88.89 | 70 | 120 | |
| 72 | Ge | 672492 | 0.43 | 739879 | 90.89 | 70 | 120 | |
| 115 | In | 6048948 | 1.50 | 6565136 | 92.14 | 70 | 120 | |
| 209 | Bi | 14161166 | 1.15 | 15222533 | 93.03 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 15:14 | Sample Name | CCB3-160516 |
| Data Batch | 160516.b | Comment | CCB ICPMS_TW |
| Data File Name | 113_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.041 | 19 | 31.4 | 2 | 5 | |
| 9 | Be | 45 | 0.063 | 5 | 10.8 | 0.4 | 0.3 | |
| 11 | B | 45 | 6.906 | 257 | 11.2 | 10 | 10 | |
| 23 | Na | 45 | 2.473 | 48917 | 0.8 | 50 | 100 | |
| 24 | Mg | 45 | -1.012 | 344 | 26.3 | 50 | 100 | |
| 27 | Al | 45 | 0.398 | 221 | 2.3 | 50 | 10 | |
| 39 | K | 45 | 2.272 | 46033 | 1.1 | 50 | 100 | |
| 44 | Ca | 45 | 3.876 | 278 | 11.8 | 50 | 100 | |
| 47 | Ti | 45 | 0.028 | 6 | 124.9 | 4 | 3 | |
| 51 | V | 45 | -0.180 | 1421 | 9.2 | 4 | 3 | |
| 52 | Cr | 45 | 0.012 | 1907 | 5.2 | 2 | 2 | |
| 55 | Mn | 45 | -0.134 | 424 | 8.4 | 2 | 3 | |
| 56 | Fe | 45 | -0.438 | 13448 | 1.4 | 50 | 50 | |
| 59 | Co | 72 | -0.001 | 104 | 9.2 | 2 | 3 | |
| 60 | Ni | 72 | 0.033 | 461 | 11.5 | 2 | 3 | |
| 63 | Cu | 72 | -0.138 | 2379 | 6.0 | 2 | 2 | |
| 66 | Zn | 72 | 0.094 | 388 | 8.7 | 4 | 2 | |
| 75 | As | 72 | -0.028 | 119 | 22.8 | 2 | 2 | |
| 78 | Se | 72 | 0.338 | 85 | 4.1 | 1 | 2 | |
| 88 | Sr | 115 | 0.005 | 159 | 21.5 | 4 | 3 | |
| 95 | Mo | 115 | 0.011 | 83 | 8.0 | 2 | 2 | |
| 107 | Ag | 115 | 0.012 | 226 | 4.7 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.000 | 10 | 66.7 | 0.4 | 0.3 | |
| 118 | Sn | 115 | -0.116 | 720 | 3.8 | 4 | 3 | |
| 121 | Sb | 115 | 0.023 | 312 | 20.2 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.015 | 56 | 9.2 | 2 | 3 | |
| 205 | Tl | 209 | 0.034 | 1038 | 10.8 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.013 | 4114 | 3.0 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 880130 | 0.24 | 989663 | 88.93 | 70 | 120 | |
| 72 | Ge | 666505 | 0.25 | 739879 | 90.08 | 70 | 120 | |
| 115 | In | 6113700 | 2.32 | 6565136 | 93.12 | 70 | 120 | |
| 209 | Bi | 14165135 | 1.63 | 15222533 | 93.05 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 15:36 | Sample Name | CCV4-160516 |
| Data Batch | 160516.b | Comment | CCV ICPMS_TW |
| Data File Name | 124_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 224.410 | 9148 | 1.48 | 200 | 112.2 | 90 | 110 | Fail |
| 9 | Be | 45 | 220.810 | 11894 | 2.13 | 200 | 110.4 | 90 | 110 | Fail |
| 11 | B | 45 | 212.634 | 3766 | 0.57 | 200 | 106.3 | 90 | 110 | |
| 23 | Na | 45 | 5342.109 | 3463214 | 0.04 | 5000 | 106.8 | 90 | 110 | |
| 24 | Mg | 45 | 5267.668 | 1666938 | 0.68 | 5000 | 105.4 | 90 | 110 | |
| 27 | Al | 45 | 5001.773 | 565380 | 0.27 | 5000 | 100.0 | 90 | 110 | |
| 39 | K | 45 | 5193.221 | 1700014 | 0.33 | 5000 | 103.9 | 90 | 110 | |
| 44 | Ca | 45 | 4857.498 | 88528 | 1.18 | 5000 | 97.1 | 90 | 110 | |
| 47 | Ti | 45 | 205.408 | 25041 | 1.86 | 200 | 102.7 | 90 | 110 | |
| 51 | V | 45 | 209.520 | 876379 | 0.78 | 200 | 104.8 | 90 | 110 | |
| 52 | Cr | 45 | 210.707 | 1055728 | 0.34 | 200 | 105.4 | 90 | 110 | |
| 55 | Mn | 45 | 206.588 | 556043 | 0.76 | 200 | 103.3 | 90 | 110 | |
| 56 | Fe | 45 | 5210.511 | 22368586 | 2.60 | 5000 | 104.2 | 90 | 110 | |
| 59 | Co | 72 | 211.145 | 1778364 | 0.67 | 200 | 105.6 | 90 | 110 | |
| 60 | Ni | 72 | 209.121 | 485777 | 0.38 | 200 | 104.6 | 90 | 110 | |
| 63 | Cu | 72 | 209.794 | 1347254 | 0.53 | 200 | 104.9 | 90 | 110 | |
| 66 | Zn | 72 | 206.275 | 214830 | 0.52 | 200 | 103.1 | 90 | 110 | |
| 75 | As | 72 | 204.214 | 179879 | 0.25 | 200 | 102.1 | 90 | 110 | |
| 78 | Se | 72 | 201.271 | 9987 | 2.17 | 200 | 100.6 | 90 | 110 | |
| 88 | Sr | 115 | 194.821 | 736962 | 0.63 | 200 | 97.4 | 90 | 110 | |
| 95 | Mo | 115 | 199.494 | 693991 | 1.03 | 200 | 99.7 | 90 | 110 | |
| 107 | Ag | 115 | 205.509 | 2248881 | 0.40 | 200 | 102.8 | 90 | 110 | |
| 111 | Cd | 115 | 201.282 | 317525 | 0.45 | 200 | 100.6 | 90 | 110 | |
| 118 | Sn | 115 | 201.325 | 653580 | 1.29 | 200 | 100.7 | 90 | 110 | |
| 121 | Sb | 115 | 204.940 | 1025935 | 0.31 | 200 | 102.5 | 90 | 110 | |
| 137 | Ba | 115 | 201.758 | 318761 | 0.46 | 200 | 100.9 | 90 | 110 | |
| 205 | Tl | 209 | 205.312 | 4588353 | 0.03 | 200 | 102.7 | 90 | 110 | |
| 208 | Pb | 209 | 203.072 | 6135497 | 0.73 | 200 | 101.5 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 837252 | 1.41 | 989663 | 84.60 | 70 | 120 | |
| 72 | Ge | 653686 | 0.29 | 739879 | 88.35 | 70 | 120 | |
| 115 | In | 5871806 | 1.99 | 6565136 | 89.44 | 70 | 120 | |
| 209 | Bi | 13929813 | 1.34 | 15222533 | 91.51 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 15:41 | Sample Name | LCVL4-160516 |
| Data Batch | 160516.b | Comment | LCVLICPMS_TW |
| Data File Name | 126LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 11.374 | 502 | 9.57 | 10 | 113.7 | 70 | 130 | |
| 9 | Be | 45 | 1.008 | 59 | 22.89 | 1 | 100.8 | 70 | 130 | |
| 11 | B | 45 | 27.691 | 629 | 11.43 | 20 | 138.5 | 70 | 130 | Fail |
| 23 | Na | 45 | 101.963 | 115499 | 0.46 | 100 | 102.0 | 70 | 130 | |
| 24 | Mg | 45 | 100.373 | 33960 | 0.92 | 100 | 100.4 | 70 | 130 | |
| 27 | Al | 45 | 95.963 | 11540 | 2.07 | 100 | 96.0 | 70 | 130 | |
| 39 | K | 45 | 101.973 | 79237 | 0.32 | 100 | 102.0 | 70 | 130 | |
| 44 | Ca | 45 | 96.103 | 2035 | 1.02 | 100 | 96.1 | 70 | 130 | |
| 47 | Ti | 45 | 4.933 | 632 | 3.89 | 5 | 98.7 | 70 | 130 | |
| 51 | V | 45 | 0.865 | 5988 | 3.20 | 1 | 86.5 | 70 | 130 | |
| 52 | Cr | 45 | 5.198 | 29089 | 0.17 | 5 | 104.0 | 70 | 130 | |
| 55 | Mn | 45 | 4.802 | 14330 | 0.81 | 5 | 96.0 | 70 | 130 | |
| 56 | Fe | 45 | 98.288 | 457336 | 0.28 | 100 | 98.3 | 70 | 130 | |
| 59 | Co | 72 | 5.218 | 44802 | 0.75 | 5 | 104.4 | 70 | 130 | |
| 60 | Ni | 72 | 5.289 | 12868 | 1.09 | 5 | 105.8 | 70 | 130 | |
| 63 | Cu | 72 | 5.043 | 36126 | 0.63 | 5 | 100.9 | 70 | 130 | |
| 66 | Zn | 72 | 5.259 | 5850 | 2.54 | 5 | 105.2 | 70 | 130 | |
| 75 | As | 72 | 5.049 | 4663 | 2.16 | 5 | 101.0 | 70 | 130 | |
| 78 | Se | 72 | 5.656 | 352 | 3.23 | 5 | 113.1 | 70 | 130 | |
| 88 | Sr | 115 | 4.842 | 19027 | 2.14 | 5 | 96.8 | 70 | 130 | |
| 95 | Mo | 115 | 4.750 | 17094 | 1.79 | 5 | 95.0 | 70 | 130 | |
| 107 | Ag | 115 | 1.962 | 22254 | 1.53 | 2 | 98.1 | 70 | 130 | |
| 111 | Cd | 115 | 1.011 | 1655 | 4.04 | 1 | 101.1 | 70 | 130 | |
| 118 | Sn | 115 | 4.861 | 17352 | 3.40 | 5 | 97.2 | 70 | 130 | |
| 121 | Sb | 115 | 1.983 | 10434 | 1.22 | 2 | 99.2 | 70 | 130 | |
| 137 | Ba | 115 | 4.867 | 7966 | 3.12 | 5 | 97.3 | 70 | 130 | |
| 205 | Tl | 209 | 1.027 | 23862 | 1.70 | 1 | 102.7 | 70 | 130 | |
| 208 | Pb | 209 | 0.968 | 34594 | 0.27 | 1 | 96.8 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 877488 | 0.15 | 989663 | 88.67 | 70 | 120 | |
| 72 | Ge | 664769 | 0.40 | 739879 | 89.85 | 70 | 120 | |
| 115 | In | 6060456 | 2.56 | 6565136 | 92.31 | 70 | 120 | |
| 209 | Bi | 14322636 | 1.51 | 15222533 | 94.09 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 15:43 | Sample Name | CCB4-160516 |
| Data Batch | 160516.b | Comment | CCB ICPMS_TW |
| Data File Name | 127_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.218 | 26 | 12.2 | 2 | 5 | |
| 9 | Be | 45 | -0.014 | 1 | 100.0 | 0.4 | 0.3 | |
| 11 | B | 45 | 7.323 | 264 | 16.0 | 10 | 10 | |
| 23 | Na | 45 | 0.413 | 47620 | 0.8 | 50 | 100 | |
| 24 | Mg | 45 | -1.201 | 282 | 16.8 | 50 | 100 | |
| 27 | Al | 45 | 0.040 | 179 | 14.9 | 50 | 10 | |
| 39 | K | 45 | 7.200 | 47778 | 1.3 | 50 | 100 | |
| 44 | Ca | 45 | 1.169 | 227 | 21.5 | 50 | 100 | |
| 47 | Ti | 45 | 0.011 | 3 | 100.1 | 4 | 3 | |
| 51 | V | 45 | -0.151 | 1550 | 2.6 | 4 | 3 | |
| 52 | Cr | 45 | 0.034 | 2026 | 4.7 | 2 | 2 | |
| 55 | Mn | 45 | -0.178 | 301 | 10.3 | 2 | 3 | |
| 56 | Fe | 45 | -0.294 | 14124 | 1.8 | 50 | 50 | |
| 59 | Co | 72 | -0.003 | 92 | 16.7 | 2 | 3 | |
| 60 | Ni | 72 | 0.037 | 481 | 16.0 | 2 | 3 | |
| 63 | Cu | 72 | -0.120 | 2550 | 3.6 | 2 | 2 | |
| 66 | Zn | 72 | 0.003 | 297 | 7.8 | 4 | 2 | |
| 75 | As | 72 | -0.030 | 119 | 9.6 | 2 | 2 | |
| 78 | Se | 72 | 0.277 | 84 | 7.9 | 1 | 2 | |
| 88 | Sr | 115 | 0.005 | 159 | 34.6 | 4 | 3 | |
| 95 | Mo | 115 | 0.000 | 46 | 30.5 | 2 | 2 | |
| 107 | Ag | 115 | 0.005 | 148 | 31.1 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.000 | 9 | 78.1 | 0.4 | 0.3 | |
| 118 | Sn | 115 | -0.117 | 724 | 14.6 | 4 | 3 | |
| 121 | Sb | 115 | 0.019 | 293 | 18.8 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.001 | 33 | 10.0 | 2 | 3 | |
| 205 | Tl | 209 | 0.013 | 578 | 10.2 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.027 | 3748 | 2.9 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 881830 | 1.06 | 989663 | 89.10 | 70 | 120 | |
| 72 | Ge | 680733 | 0.48 | 739879 | 92.01 | 70 | 120 | |
| 115 | In | 6172345 | 0.67 | 6565136 | 94.02 | 70 | 120 | |
| 209 | Bi | 14448499 | 0.64 | 15222533 | 94.92 | 70 | 120 | |

# Method Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/16 3:45 PM | Sample Name | MB-75135 |
| Data Batch | 160516.b | Comment | MBLKICPMS_TSDOD1 |
| Data File Name | 128_PB.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.619 | 43 | 11.08 | | |
| 9 | Be | 45 | -0.013 | 1 | 100.00 | | |
| 11 | B | 45 | 10.299 | 312 | 15.15 | | J |
| 23 | Na | 45 | 734905.569 | 486094398 | 0.82 | | FAIL |
| 24 | Mg | 45 | 1.740 | 1238 | 3.16 | | |
| 27 | Al | 45 | 8.364 | 1148 | 13.30 | | |
| 39 | K | 45 | 93.009 | 75173 | 1.14 | | FAIL |
| 44 | Ca | 45 | 43.116 | 1010 | 5.83 | | |
| 47 | Ti | 45 | 0.152 | 21 | 48.24 | | |
| 51 | V | 45 | -0.178 | 1409 | 10.30 | | |
| 52 | Cr | 45 | 2.620 | 15352 | 2.37 | | J |
| 55 | Mn | 45 | 0.453 | 2048 | 5.75 | | |
| 56 | Fe | 45 | 15.607 | 84359 | 0.26 | | |
| 59 | Co | 72 | 0.028 | 352 | 3.82 | | |
| 60 | Ni | 72 | 5.062 | 12190 | 1.90 | | J |
| 63 | Cu | 72 | 0.397 | 5793 | 3.74 | | |
| 66 | Zn | 72 | 1.991 | 2366 | 2.61 | | |
| 75 | As | 72 | -0.015 | 128 | 12.00 | | |
| 78 | Se | 72 | 0.467 | 91 | 9.83 | | |
| 88 | Sr | 115 | 0.215 | 949 | 8.67 | | |
| 95 | Mo | 115 | 0.072 | 294 | 12.21 | | |
| 107 | Ag | 115 | 0.045 | 581 | 9.88 | | |
| 111 | Cd | 115 | 0.001 | 11 | 91.66 | | |
| 118 | Sn | 115 | 4.069 | 14302 | 0.93 | | J |
| 121 | Sb | 115 | 0.017 | 271 | 24.97 | | |
| 137 | Ba | 115 | 0.068 | 138 | 9.78 | | |
| 205 | Tl | 209 | 0.005 | 353 | 8.17 | | |
| 208 | Pb | 209 | -0.001 | 4130 | 2.74 | | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 865387 | 1.61 | 989663 | 87.44 | 70 | 120 | |
| 72 | Ge | 657188 | 0.54 | 739879 | 88.82 | 70 | 120 | |
| 115 | In | 5890096 | 1.14 | 6565136 | 89.72 | 70 | 120 | |
| 209 | Bi | 13132845 | 0.29 | 15222533 | 86.27 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 15:47 | Sample Name | LCS-75135 |
| Data Batch | 160516.b | Comment | LCS ICPMS_TSDOD1 |
| Data File Name | 129_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 198.362 | 8604 | 0.75 | 200 | 99.2 | 80 | 120 | |
| 9 | Be | 45 | 197.528 | 11318 | 0.99 | 200 | 98.8 | 80 | 120 | |
| 11 | B | 45 | 201.122 | 3796 | 2.73 | 200 | 100.6 | 80 | 120 | |
| 23 | Na | 45 | 679309.210 | 462512604 | 1.88 | 1000 | ##### | 80 | 120 | Fail |
| 24 | Mg | 45 | 4878.738 | 1642643 | 1.56 | 1000 | 487.9 | 80 | 120 | Fail |
| 27 | Al | 45 | 967.115 | 116443 | 1.24 | 1000 | 96.7 | 80 | 120 | |
| 39 | K | 45 | 5022.195 | 1750579 | 1.49 | 1000 | 502.2 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4758.500 | 92260 | 1.46 | 1000 | 475.9 | 80 | 120 | Fail |
| 47 | Ti | 45 | 199.898 | 25923 | 0.88 | 200 | 99.9 | 80 | 120 | |
| 51 | V | 45 | 199.811 | 889145 | 0.31 | 200 | 99.9 | 80 | 120 | |
| 52 | Cr | 45 | 194.745 | 1038157 | 0.50 | 200 | 97.4 | 80 | 120 | |
| 55 | Mn | 45 | 190.016 | 544146 | 1.00 | 200 | 95.0 | 80 | 120 | |
| 56 | Fe | 45 | 953.343 | 4366605 | 1.24 | 1000 | 95.3 | 80 | 120 | |
| 59 | Co | 72 | 198.205 | 1704422 | 1.10 | 200 | 99.1 | 80 | 120 | |
| 60 | Ni | 72 | 197.795 | 469150 | 1.74 | 200 | 98.9 | 80 | 120 | |
| 63 | Cu | 72 | 193.731 | 1270485 | 0.92 | 200 | 96.9 | 80 | 120 | |
| 66 | Zn | 72 | 199.601 | 212251 | 0.20 | 200 | 99.8 | 80 | 120 | |
| 75 | As | 72 | 202.962 | 182533 | 0.69 | 200 | 101.5 | 80 | 120 | |
| 78 | Se | 72 | 200.786 | 10173 | 1.52 | 200 | 100.4 | 80 | 120 | |
| 88 | Sr | 115 | 191.774 | 741276 | 1.54 | 200 | 95.9 | 80 | 120 | |
| 95 | Mo | 115 | 195.792 | 696024 | 0.94 | 200 | 97.9 | 80 | 120 | |
| 107 | Ag | 115 | 188.937 | 2112785 | 0.42 | 200 | 94.5 | 80 | 120 | |
| 111 | Cd | 115 | 191.277 | 308338 | 0.59 | 200 | 95.6 | 80 | 120 | |
| 118 | Sn | 115 | 201.128 | 667107 | 0.57 | 200 | 100.6 | 80 | 120 | |
| 121 | Sb | 115 | 197.546 | 1010535 | 1.18 | 200 | 98.8 | 80 | 120 | |
| 137 | Ba | 115 | 195.823 | 316149 | 1.03 | 200 | 97.9 | 80 | 120 | |
| 205 | Tl | 209 | 195.168 | 4315424 | 0.69 | 200 | 97.6 | 80 | 120 | |
| 208 | Pb | 209 | 195.844 | 5854296 | 0.73 | 200 | 97.9 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 890635 | 1.23 | 989663 | 89.99 | 70 | 120 | |
| 72 | Ge | 667410 | 0.46 | 739879 | 90.21 | 70 | 120 | |
| 115 | In | 5998629 | 0.65 | 6565136 | 91.37 | 70 | 120 | |
| 209 | Bi | 13785028 | 2.56 | 15222533 | 90.56 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 15:49 | Sample Name | LCSD-75135 |
| Data Batch | 160516.b | Comment | LCSDICPMS_TSDOD1 |
| Data File Name | 130_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 183.483 | 7785 | 1.88 | 200 | 91.7 | 80 | 120 | |
| 9 | Be | 45 | 181.005 | 10143 | 2.46 | 200 | 90.5 | 80 | 120 | |
| 11 | B | 45 | 195.514 | 3614 | 3.37 | 200 | 97.8 | 80 | 120 | |
| 23 | Na | 45 | 670047.494 | 446099938 | 1.37 | 1000 | ##### | 80 | 120 | Fail |
| 24 | Mg | 45 | 4951.178 | 1630126 | 1.34 | 1000 | 495.1 | 80 | 120 | Fail |
| 27 | Al | 45 | 989.925 | 116548 | 0.92 | 1000 | 99.0 | 80 | 120 | |
| 39 | K | 45 | 5160.438 | 1757736 | 1.41 | 1000 | 516.0 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4814.865 | 91289 | 1.73 | 1000 | 481.5 | 80 | 120 | Fail |
| 47 | Ti | 45 | 184.650 | 23416 | 1.21 | 200 | 92.3 | 80 | 120 | |
| 51 | V | 45 | 186.649 | 812468 | 1.65 | 200 | 93.3 | 80 | 120 | |
| 52 | Cr | 45 | 182.647 | 952294 | 0.91 | 200 | 91.3 | 80 | 120 | |
| 55 | Mn | 45 | 175.236 | 490813 | 1.59 | 200 | 87.6 | 80 | 120 | |
| 56 | Fe | 45 | 964.517 | 4319874 | 1.26 | 1000 | 96.5 | 80 | 120 | |
| 59 | Co | 72 | 181.768 | 1537382 | 0.93 | 200 | 90.9 | 80 | 120 | |
| 60 | Ni | 72 | 182.449 | 425659 | 1.10 | 200 | 91.2 | 80 | 120 | |
| 63 | Cu | 72 | 181.484 | 1170785 | 0.95 | 200 | 90.7 | 80 | 120 | |
| 66 | Zn | 72 | 183.545 | 192000 | 1.59 | 200 | 91.8 | 80 | 120 | |
| 75 | As | 72 | 188.183 | 166468 | 0.96 | 200 | 94.1 | 80 | 120 | |
| 78 | Se | 72 | 181.114 | 9034 | 3.54 | 200 | 90.6 | 80 | 120 | |
| 88 | Sr | 115 | 181.458 | 678979 | 1.39 | 200 | 90.7 | 80 | 120 | |
| 95 | Mo | 115 | 183.680 | 632067 | 0.94 | 200 | 91.8 | 80 | 120 | |
| 107 | Ag | 115 | 193.727 | 2097189 | 1.51 | 200 | 96.9 | 80 | 120 | |
| 111 | Cd | 115 | 177.411 | 276833 | 0.97 | 200 | 88.7 | 80 | 120 | |
| 118 | Sn | 115 | 189.445 | 608347 | 1.12 | 200 | 94.7 | 80 | 120 | |
| 121 | Sb | 115 | 205.687 | 1018453 | 0.29 | 200 | 102.8 | 80 | 120 | |
| 137 | Ba | 115 | 181.803 | 284119 | 1.18 | 200 | 90.9 | 80 | 120 | |
| 205 | Tl | 209 | 184.139 | 3856669 | 0.36 | 200 | 92.1 | 80 | 120 | |
| 208 | Pb | 209 | 184.660 | 5229916 | 0.99 | 200 | 92.3 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 870940 | 1.10 | 989663 | 88.00 | 70 | 120 | |
| 72 | Ge | 656446 | 1.08 | 739879 | 88.72 | 70 | 120 | |
| 115 | In | 5807204 | 1.47 | 6565136 | 88.46 | 70 | 120 | |
| 209 | Bi | 13059865 | 2.73 | 15222533 | 85.79 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/16 3:53 PM | Sample Name | 1605098-41A |
| Data Batch | 160516.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 132_ARF.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 65.639 | 2766 | 0.88 | 2000 | >RL |
| 9 | Be | 45 | 2.241 | 126 | 11.69 | 2000 | >RL |
| 11 | B | 45 | 87.276 | 1668 | 7.76 | 2000 | >RL |
| 23 | Na | 45 | 735299.871 | 484300087 | 0.39 | 25000 | OUTCAL |
| 24 | Mg | 45 | 10866.983 | 3538690 | 0.60 | 25000 | >RL |
| 27 | Al | 45 | 55771.402 | 6486542 | 0.80 | 10000 | OUTCAL |
| 39 | K | 45 | 12204.828 | 4052248 | 0.70 | 25000 | >RL |
| 44 | Ca | 45 | 94381.532 | 1766549 | 0.25 | 25000 | OUTCAL |
| 47 | Ti | 45 | 195.127 | 24481 | 0.27 | 2000 | >RL |
| 51 | V | 45 | 92.825 | 400815 | 0.56 | 2000 | >RL |
| 52 | Cr | 45 | 66.405 | 343688 | 1.12 | 2000 | >RL |
| 55 | Mn | 45 | 510.397 | 1412707 | 0.21 | 2000 | >RL |
| 56 | Fe | 45 | 57124.259 | 252226701 | 0.73 | 10000 | OUTCAL |
| 59 | Co | 72 | 23.503 | 191962 | 0.28 | 2000 | >RL |
| 60 | Ni | 72 | 44.731 | 101000 | 0.95 | 2000 | >RL |
| 63 | Cu | 72 | 16.730 | 107006 | 1.72 | 2000 | >RL |
| 66 | Zn | 72 | 189.039 | 190839 | 0.72 | 2000 | >RL |
| 75 | As | 72 | 19.070 | 16404 | 0.89 | 2000 | >RL |
| 78 | Se | 72 | 5.119 | 309 | 3.12 | 2000 | >RL |
| 88 | Sr | 115 | 310.993 | 1126882 | 0.63 | 2000 | >RL |
| 95 | Mo | 115 | 1.428 | 4795 | 6.82 | 2000 | |
| 107 | Ag | 115 | 0.103 | 1159 | 2.31 | 500 | |
| 111 | Cd | 115 | 0.380 | 583 | 4.88 | 2000 | |
| 118 | Sn | 115 | 4.863 | 16119 | 2.66 | 2000 | >RL |
| 121 | Sb | 115 | 2.012 | 9823 | 3.59 | 500 | >RL |
| 137 | Ba | 115 | 683.165 | 1033840 | 0.79 | 2000 | >RL |
| 205 | Tl | 209 | 0.490 | 10472 | 3.15 | 2000 | |
| 208 | Pb | 209 | 71.230 | 2009026 | 0.82 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 861632 | 0.50 | 989663 | 87.06 | 70 | 120 | |
| 72 | Ge | 633576 | 0.42 | 739879 | 85.63 | 70 | 120 | |
| 115 | In | 5624413 | 1.51 | 6565136 | 85.67 | 70 | 120 | |
| 209 | Bi | 12986517 | 1.94 | 15222533 | 85.31 | 70 | 120 | |

# Dilution Sample (Dil) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 15:55 | Sample Name | 1605098-41A SD |
| Data Batch | 160516.b | Comment | SD ICPMS_TSDOD1 |
| Data File Name | 133_SD.d | Dilution | 25 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Value | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 13.732 | 610 | 3.33 | 65.6 | 104.6 | 110 | 90 | Good |
| 9 | Be | 45 | 0.429 | 26 | 28.50 | 2.2 | 95.7 | 110 | 90 | Good |
| 11 | B | 45 | 18.748 | 474 | 7.04 | 87.3 | 107.4 | 110 | 90 | Good |
| 23 | Na | 45 | 153535.007 | 104303520 | 1.99 | 735299.9 | 104.4 | 110 | 90 | Good |
| 24 | Mg | 45 | 2252.734 | 756965 | 0.73 | 10867.0 | 103.7 | 110 | 90 | Good |
| 27 | Al | 45 | 11368.988 | 1363580 | 1.29 | 55771.4 | 101.9 | 110 | 90 | Good |
| 39 | K | 45 | 2502.022 | 892876 | 0.96 | 12204.8 | 102.5 | 110 | 90 | Good |
| 44 | Ca | 45 | 19456.488 | 375662 | 1.17 | 94381.5 | 103.1 | 110 | 90 | Good |
| 47 | Ti | 45 | 39.614 | 5126 | 2.25 | 195.1 | 101.5 | 110 | 90 | Good |
| 51 | V | 45 | 18.977 | 86269 | 0.78 | 92.8 | 102.2 | 110 | 90 | Good |
| 52 | Cr | 45 | 13.472 | 73380 | 1.17 | 66.4 | 101.4 | 110 | 90 | Good |
| 55 | Mn | 45 | 105.959 | 303045 | 0.56 | 510.4 | 103.8 | 110 | 90 | Good |
| 56 | Fe | 45 | 11930.117 | 54329471 | 1.26 | 57124.3 | 104.4 | 110 | 90 | Good |
| 59 | Co | 72 | 4.877 | 41927 | 0.33 | 23.5 | 103.7 | 110 | 90 | Good |
| 60 | Ni | 72 | 9.268 | 22284 | 2.63 | 44.7 | 103.6 | 110 | 90 | Good |
| 63 | Cu | 72 | 3.455 | 25807 | 2.17 | 16.7 | 103.3 | 110 | 90 | Good |
| 66 | Zn | 72 | 39.665 | 42289 | 1.13 | 189.0 | 104.9 | 110 | 90 | Good |
| 75 | As | 72 | 3.871 | 3613 | 0.56 | 19.1 | 101.5 | 110 | 90 | Good |
| 78 | Se | 72 | 1.465 | 142 | 10.02 | 5.1 | 143.1 | 110 | 90 | |
| 88 | Sr | 115 | 60.952 | 240478 | 0.97 | 311.0 | 98.0 | 110 | 90 | Good |
| 95 | Mo | 115 | 0.278 | 1054 | 4.02 | 1.4 | 97.5 | 110 | 90 | Good |
| 107 | Ag | 115 | 0.023 | 358 | 17.91 | 0.1 | 113.7 | 110 | 90 | |
| 111 | Cd | 115 | 0.077 | 136 | 5.12 | 0.4 | 100.8 | 110 | 90 | Good |
| 118 | Sn | 115 | 0.837 | 3944 | 1.26 | 4.9 | 86.1 | 110 | 90 | |
| 121 | Sb | 115 | 0.383 | 2190 | 7.71 | 2.0 | 95.1 | 110 | 90 | Good |
| 137 | Ba | 115 | 134.801 | 222052 | 1.12 | 683.2 | 98.7 | 110 | 90 | Good |
| 205 | Tl | 209 | 0.101 | 2568 | 5.13 | 0.5 | 103.3 | 110 | 90 | Good |
| 208 | Pb | 209 | 14.215 | 439648 | 0.21 | 71.2 | 99.8 | 110 | 90 | Good |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 888480 | 0.69 | 989663 | 89.78 | 70 | 120 | |
| 72 | Ge | 665520 | 1.04 | 739879 | 89.95 | 70 | 120 | |
| 115 | In | 6121311 | 1.28 | 6565136 | 93.24 | 70 | 120 | |
| 209 | Bi | 14122912 | 0.83 | 15222533 | 92.78 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/16 4:05 PM | Sample Name | 1605098-31A |
| Data Batch | 160516.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 138SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 70.377 | 3212 | 2.90 | 2000 | >RL |
| 9 | Be | 45 | 3.205 | 194 | 12.92 | 2000 | >RL |
| 11 | B | 45 | 84.715 | 1758 | 4.38 | 2000 | >RL |
| 23 | Na | 45 | 45036.472 | 32187791 | 1.06 | 25000 | OUTCAL |
| 24 | Mg | 45 | 14334.607 | 5057603 | 1.44 | 25000 | >RL |
| 27 | Al | 45 | 76348.132 | 9621543 | 3.02 | 10000 | OUTCAL |
| 39 | K | 45 | 16757.839 | 6010659 | 0.64 | 25000 | >RL |
| 44 | Ca | 45 | 57455.420 | 1165311 | 0.67 | 25000 | OUTCAL |
| 47 | Ti | 45 | 215.472 | 29291 | 1.52 | 2000 | >RL |
| 51 | V | 45 | 128.815 | 601761 | 1.31 | 2000 | >RL |
| 52 | Cr | 45 | 70.996 | 397989 | 0.83 | 2000 | >RL |
| 55 | Mn | 45 | 564.476 | 1692797 | 0.41 | 2000 | >RL |
| 56 | Fe | 45 | 75506.067 | 361241443 | 0.26 | 10000 | OUTCAL |
| 59 | Co | 72 | 27.206 | 243583 | 0.86 | 2000 | >RL |
| 60 | Ni | 72 | 46.808 | 115841 | 1.25 | 2000 | >RL |
| 63 | Cu | 72 | 26.058 | 180809 | 1.44 | 2000 | >RL |
| 66 | Zn | 72 | 244.124 | 270103 | 0.63 | 2000 | >RL |
| 75 | As | 72 | 25.377 | 23884 | 0.59 | 2000 | >RL |
| 78 | Se | 72 | 5.972 | 384 | 10.49 | 2000 | >RL |
| 88 | Sr | 115 | 570.518 | 2307410 | 0.73 | 2000 | >RL |
| 95 | Mo | 115 | 1.744 | 6534 | 2.76 | 2000 | |
| 107 | Ag | 115 | 0.108 | 1358 | 2.09 | 500 | |
| 111 | Cd | 115 | 0.547 | 933 | 10.28 | 2000 | >RL |
| 118 | Sn | 115 | 5.461 | 20070 | 1.70 | 2000 | >RL |
| 121 | Sb | 115 | 2.565 | 13924 | 1.46 | 500 | >RL |
| 137 | Ba | 115 | 849.757 | 1435602 | 1.22 | 2000 | >RL |
| 205 | Tl | 209 | 0.636 | 14886 | 1.09 | 2000 | |
| 208 | Pb | 209 | 78.238 | 2432003 | 0.69 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 933589 | 0.11 | 989663 | 94.33 | 70 | 120 | |
| 72 | Ge | 694596 | 0.67 | 739879 | 93.88 | 70 | 120 | |
| 115 | In | 6277648 | 0.54 | 6565136 | 95.62 | 70 | 120 | |
| 209 | Bi | 14313112 | 0.18 | 15222533 | 94.03 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/16 4:07 PM | Sample Name | 1605098-34A |
| Data Batch | 160516.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 139SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 68.104 | 2986 | 0.35 | 2000 | >RL |
| 9 | Be | 45 | 2.569 | 150 | 2.31 | 2000 | >RL |
| 11 | B | 45 | 93.791 | 1855 | 5.63 | 2000 | >RL |
| 23 | Na | 45 | 441991.831 | 303071579 | 1.18 | 25000 | OUTCAL |
| 24 | Mg | 45 | 12856.199 | 4357682 | 0.28 | 25000 | >RL |
| 27 | Al | 45 | 62281.814 | 7540972 | 0.79 | 10000 | OUTCAL |
| 39 | K | 45 | 15016.749 | 5179070 | 0.38 | 25000 | >RL |
| 44 | Ca | 45 | 105011.090 | 2046101 | 1.07 | 25000 | OUTCAL |
| 47 | Ti | 45 | 173.596 | 22673 | 1.80 | 2000 | >RL |
| 51 | V | 45 | 105.814 | 475313 | 0.82 | 2000 | >RL |
| 52 | Cr | 45 | 60.341 | 325265 | 0.55 | 2000 | >RL |
| 55 | Mn | 45 | 595.798 | 1716492 | 0.34 | 2000 | >RL |
| 56 | Fe | 45 | 62839.178 | 288828317 | 0.06 | 10000 | OUTCAL |
| 59 | Co | 72 | 23.976 | 203622 | 1.03 | 2000 | >RL |
| 60 | Ni | 72 | 39.362 | 92460 | 1.24 | 2000 | >RL |
| 63 | Cu | 72 | 21.277 | 140620 | 0.69 | 2000 | >RL |
| 66 | Zn | 72 | 215.064 | 225734 | 0.51 | 2000 | >RL |
| 75 | As | 72 | 21.707 | 19398 | 0.26 | 2000 | >RL |
| 78 | Se | 72 | 5.454 | 339 | 5.72 | 2000 | >RL |
| 88 | Sr | 115 | 320.298 | 1224056 | 0.79 | 2000 | >RL |
| 95 | Mo | 115 | 1.654 | 5858 | 2.40 | 2000 | |
| 107 | Ag | 115 | 0.092 | 1103 | 3.18 | 500 | |
| 111 | Cd | 115 | 0.488 | 787 | 1.12 | 2000 | >RL |
| 118 | Sn | 115 | 5.404 | 18776 | 1.17 | 2000 | >RL |
| 121 | Sb | 115 | 2.660 | 13640 | 2.51 | 500 | >RL |
| 137 | Ba | 115 | 642.380 | 1025397 | 0.41 | 2000 | >RL |
| 205 | Tl | 209 | 0.500 | 11331 | 1.73 | 2000 | |
| 208 | Pb | 209 | 115.872 | 3468423 | 0.20 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 897033 | 1.51 | 989663 | 90.64 | 70 | 120 | |
| 72 | Ge | 658835 | 0.63 | 739879 | 89.05 | 70 | 120 | |
| 115 | In | 5931532 | 0.66 | 6565136 | 90.35 | 70 | 120 | |
| 209 | Bi | 13793051 | 1.25 | 15222533 | 90.61 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/16 4:09 PM | Sample Name | 1605098-37A |
| Data Batch | 160516.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 140SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 58.723 | 2603 | 1.60 | 2000 | >RL |
| 9 | Be | 45 | 2.566 | 151 | 4.40 | 2000 | >RL |
| 11 | B | 45 | 108.102 | 2139 | 3.60 | 2000 | >RL |
| 23 | Na | 45 | 676772.030 | 468666897 | 0.68 | 25000 | OUTCAL |
| 24 | Mg | 45 | 11834.512 | 4051838 | 0.21 | 25000 | >RL |
| 27 | Al | 45 | 59029.577 | 7218411 | 0.09 | 10000 | OUTCAL |
| 39 | K | 45 | 15596.003 | 5431395 | 1.98 | 25000 | >RL |
| 44 | Ca | 45 | 80787.703 | 1589825 | 0.92 | 25000 | OUTCAL |
| 47 | Ti | 45 | 249.432 | 32902 | 0.66 | 2000 | >RL |
| 51 | V | 45 | 98.075 | 445115 | 1.22 | 2000 | >RL |
| 52 | Cr | 45 | 59.712 | 325107 | 0.80 | 2000 | >RL |
| 55 | Mn | 45 | 605.265 | 1761234 | 0.54 | 2000 | >RL |
| 56 | Fe | 45 | 57822.804 | 268434256 | 1.31 | 10000 | OUTCAL |
| 59 | Co | 72 | 23.261 | 199627 | 0.77 | 2000 | >RL |
| 60 | Ni | 72 | 40.211 | 95436 | 0.70 | 2000 | >RL |
| 63 | Cu | 72 | 31.843 | 211028 | 1.29 | 2000 | >RL |
| 66 | Zn | 72 | 353.779 | 375014 | 0.74 | 2000 | >RL |
| 75 | As | 72 | 19.952 | 18029 | 1.55 | 2000 | >RL |
| 78 | Se | 72 | 4.792 | 309 | 2.40 | 2000 | >RL |
| 88 | Sr | 115 | 284.618 | 1112411 | 0.84 | 2000 | >RL |
| 95 | Mo | 115 | 1.614 | 5844 | 1.26 | 2000 | |
| 107 | Ag | 115 | 0.153 | 1823 | 1.28 | 500 | |
| 111 | Cd | 115 | 0.598 | 983 | 8.52 | 2000 | >RL |
| 118 | Sn | 115 | 5.296 | 18841 | 0.41 | 2000 | >RL |
| 121 | Sb | 115 | 4.229 | 22063 | 1.66 | 500 | >RL |
| 137 | Ba | 115 | 696.066 | 1136382 | 0.77 | 2000 | >RL |
| 205 | Tl | 209 | 0.478 | 10633 | 1.84 | 2000 | |
| 208 | Pb | 209 | 146.383 | 4291030 | 0.31 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 905915 | 0.38 | 989663 | 91.54 | 70 | 120 | |
| 72 | Ge | 665763 | 0.93 | 739879 | 89.98 | 70 | 120 | |
| 115 | In | 6067174 | 1.47 | 6565136 | 92.42 | 70 | 120 | |
| 209 | Bi | 13511231 | 1.26 | 15222533 | 88.76 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/16 4:11 PM | Sample Name | 1605098-40A |
| Data Batch | 160516.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 141SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 64.002 | 2861 | 1.23 | 2000 | >RL |
| 9 | Be | 45 | 2.584 | 154 | 12.04 | 2000 | >RL |
| 11 | B | 45 | 90.796 | 1835 | 2.47 | 2000 | >RL |
| 23 | Na | 45 | 735935.481 | 514161260 | 1.38 | 25000 | OUTCAL |
| 24 | Mg | 45 | 12870.138 | 4445377 | 0.74 | 25000 | >RL |
| 27 | Al | 45 | 64307.764 | 7933807 | 2.29 | 10000 | OUTCAL |
| 39 | K | 45 | 15414.500 | 5415996 | 0.19 | 25000 | >RL |
| 44 | Ca | 45 | 106136.018 | 2107056 | 0.68 | 25000 | OUTCAL |
| 47 | Ti | 45 | 193.573 | 25761 | 1.85 | 2000 | >RL |
| 51 | V | 45 | 106.499 | 487421 | 0.92 | 2000 | >RL |
| 52 | Cr | 45 | 61.889 | 339873 | 0.13 | 2000 | >RL |
| 55 | Mn | 45 | 772.942 | 2268810 | 0.80 | 2000 | >RL |
| 56 | Fe | 45 | 63041.751 | 295262139 | 1.41 | 10000 | OUTCAL |
| 59 | Co | 72 | 24.108 | 207200 | 0.41 | 2000 | >RL |
| 60 | Ni | 72 | 41.023 | 97503 | 1.09 | 2000 | >RL |
| 63 | Cu | 72 | 20.866 | 139627 | 1.95 | 2000 | >RL |
| 66 | Zn | 72 | 212.519 | 225738 | 0.90 | 2000 | >RL |
| 75 | As | 72 | 21.613 | 19545 | 1.94 | 2000 | >RL |
| 78 | Se | 72 | 5.004 | 320 | 3.59 | 2000 | >RL |
| 88 | Sr | 115 | 315.419 | 1219783 | 1.23 | 2000 | >RL |
| 95 | Mo | 115 | 2.079 | 7437 | 2.83 | 2000 | >RL |
| 107 | Ag | 115 | 0.102 | 1230 | 11.00 | 500 | |
| 111 | Cd | 115 | 0.476 | 777 | 7.17 | 2000 | >RL |
| 118 | Sn | 115 | 5.732 | 20088 | 2.05 | 2000 | >RL |
| 121 | Sb | 115 | 2.927 | 15165 | 1.73 | 500 | >RL |
| 137 | Ba | 115 | 815.752 | 1317779 | 0.34 | 2000 | >RL |
| 205 | Tl | 209 | 0.516 | 11428 | 4.57 | 2000 | |
| 208 | Pb | 209 | 126.743 | 3712156 | 0.40 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 913930 | 0.63 | 989663 | 92.35 | 70 | 120 | |
| 72 | Ge | 666781 | 0.91 | 739879 | 90.12 | 70 | 120 | |
| 115 | In | 6003708 | 1.72 | 6565136 | 91.45 | 70 | 120 | |
| 209 | Bi | 13496603 | 0.94 | 15222533 | 88.66 | 70 | 120 | |

# Post Digestion Spike Sample (PDS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 16:15 | Sample Name | 1605098-41A PDS |
| Data Batch | 160516.b | Comment | PDS ICPMS_TSDOD1 |
| Data File Name | 143_PDS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 256.613 | 11136 | 0.48 | 65.6 | 200 | 95.5 | 75 | 125 | |
| 9 | Be | 45 | 198.218 | 11369 | 1.66 | 2.2 | 200 | 98.0 | 75 | 125 | |
| 11 | B | 45 | 280.582 | 5249 | 7.40 | 87.3 | 200 | 96.7 | 75 | 125 | |
| 23 | Na | 45 | ######## | 528983108 | 0.71 | 735299.9 | 5000 | 820.4 | 75 | 125 | Fail |
| 24 | Mg | 45 | 16616.877 | 5597919 | 1.96 | 10867.0 | 5000 | 115.0 | 75 | 125 | |
| 27 | Al | 45 | 64561.025 | 7768596 | 1.04 | 55771.4 | 5000 | 175.8 | 75 | 125 | Fail |
| 39 | K | 45 | 18033.773 | 6173158 | 2.61 | 12204.8 | 5000 | 116.6 | 75 | 125 | |
| 44 | Ca | 45 | ######## | 2031241 | 2.14 | 94381.5 | 5000 | 210.2 | 75 | 125 | Fail |
| 47 | Ti | 45 | 407.883 | 52938 | 1.61 | 195.1 | 200 | 106.4 | 75 | 125 | |
| 51 | V | 45 | 302.038 | 1344224 | 0.91 | 92.8 | 200 | 104.6 | 75 | 125 | |
| 52 | Cr | 45 | 269.474 | 1437179 | 0.94 | 66.4 | 200 | 101.5 | 75 | 125 | |
| 55 | Mn | 45 | 730.992 | 2092873 | 0.68 | 510.4 | 200 | 110.3 | 75 | 125 | |
| 56 | Fe | 45 | 63846.894 | 291653713 | 0.53 | 57124.3 | 5000 | 134.5 | 75 | 125 | Fail |
| 59 | Co | 72 | 229.911 | 1938411 | 1.01 | 23.5 | 200 | 103.2 | 75 | 125 | |
| 60 | Ni | 72 | 243.798 | 566856 | 0.97 | 44.7 | 200 | 99.5 | 75 | 125 | |
| 63 | Cu | 72 | 212.546 | 1366314 | 1.19 | 16.7 | 200 | 97.9 | 75 | 125 | |
| 66 | Zn | 72 | 399.528 | 416286 | 1.95 | 189.0 | 200 | 105.2 | 75 | 125 | |
| 75 | As | 72 | 230.685 | 203388 | 1.43 | 19.1 | 200 | 105.8 | 75 | 125 | |
| 78 | Se | 72 | 212.903 | 10572 | 0.56 | 5.1 | 200 | 103.9 | 75 | 125 | |
| 88 | Sr | 115 | 545.437 | 2013784 | 1.36 | 311.0 | 200 | 117.2 | 75 | 125 | |
| 95 | Mo | 115 | 207.217 | 703693 | 1.34 | 1.4 | 200 | 102.9 | 75 | 125 | |
| 107 | Ag | 115 | 185.792 | 1984767 | 1.52 | 0.1 | 200 | 92.8 | 75 | 125 | |
| 111 | Cd | 115 | 200.192 | 308302 | 0.28 | 0.4 | 200 | 99.9 | 75 | 125 | |
| 118 | Sn | 115 | 217.883 | 690368 | 0.50 | 4.9 | 200 | 106.5 | 75 | 125 | |
| 121 | Sb | 115 | 219.447 | 1072368 | 1.36 | 2.0 | 200 | 108.7 | 75 | 125 | |
| 137 | Ba | 115 | 935.547 | 1442775 | 1.83 | 683.2 | 200 | 126.2 | 75 | 125 | Fail |
| 205 | Tl | 209 | 205.746 | 4313643 | 1.08 | 0.5 | 200 | 102.6 | 75 | 125 | |
| 208 | Pb | 209 | 283.997 | 8048616 | 1.14 | 71.2 | 200 | 106.4 | 75 | 125 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 891413 | 0.77 | 989663 | 90.07 | 70 | 120 | |
| 72 | Ge | 654359 | 0.78 | 739879 | 88.44 | 70 | 120 | |
| 115 | In | 5731271 | 1.07 | 6565136 | 87.30 | 70 | 120 | |
| 209 | Bi | 13068234 | 1.17 | 15222533 | 85.85 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 16:17 | Sample Name | 1605098-41A MS |
| Data Batch | 160516.b | Comment | MS ICPMS_TSDOD1 |
| Data File Name | 144_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 254.204 | 10677 | 0.62 | 65.6 | 200 | 94.3 | 80 | 120 | |
| 9 | Be | 45 | 188.856 | 10483 | 1.46 | 2.2 | 200 | 93.3 | 80 | 120 | |
| 11 | B | 45 | 273.766 | 4961 | 3.56 | 87.3 | 200 | 93.2 | 80 | 120 | |
| 23 | Na | 45 | ######## | 443263387 | 1.01 | 735299.9 | 1000 | ##### | 80 | 120 | Fail |
| 24 | Mg | 45 | 16140.179 | 5262475 | 1.30 | 10867.0 | 1000 | 527.3 | 80 | 120 | Fail |
| 27 | Al | 45 | 65308.102 | 7605936 | 1.16 | 55771.4 | 1000 | 953.7 | 80 | 120 | Fail |
| 39 | K | 45 | 18021.943 | 5970758 | 2.07 | 12204.8 | 1000 | 581.7 | 80 | 120 | Fail |
| 44 | Ca | 45 | 72937.999 | 1367071 | 1.19 | 94381.5 | 1000 | ##### | 80 | 120 | Fail |
| 47 | Ti | 45 | 421.259 | 52920 | 1.60 | 195.1 | 200 | 113.1 | 80 | 120 | |
| 51 | V | 45 | 298.703 | 1286682 | 1.67 | 92.8 | 200 | 102.9 | 80 | 120 | |
| 52 | Cr | 45 | 257.379 | 1328553 | 1.27 | 66.4 | 200 | 95.5 | 80 | 120 | |
| 55 | Mn | 45 | 668.029 | 1851181 | 1.83 | 510.4 | 200 | 78.8 | 80 | 120 | Fail |
| 56 | Fe | 45 | 62302.156 | 275442585 | 1.69 | 57124.3 | 1000 | 517.8 | 80 | 120 | Fail |
| 59 | Co | 72 | 220.781 | 1787351 | 1.10 | 23.5 | 200 | 98.6 | 80 | 120 | |
| 60 | Ni | 72 | 236.550 | 528158 | 1.18 | 44.7 | 200 | 95.9 | 80 | 120 | |
| 63 | Cu | 72 | 209.289 | 1291978 | 1.22 | 16.7 | 200 | 96.3 | 80 | 120 | |
| 66 | Zn | 72 | 382.631 | 382814 | 0.71 | 189.0 | 200 | 96.8 | 80 | 120 | |
| 75 | As | 72 | 221.342 | 187411 | 1.49 | 19.1 | 200 | 101.1 | 80 | 120 | |
| 78 | Se | 72 | 203.777 | 9719 | 2.01 | 5.1 | 200 | 99.3 | 80 | 120 | |
| 88 | Sr | 115 | 485.758 | 1727743 | 0.87 | 311.0 | 200 | 87.4 | 80 | 120 | |
| 95 | Mo | 115 | 190.112 | 621994 | 1.73 | 1.4 | 200 | 94.3 | 80 | 120 | |
| 107 | Ag | 115 | 191.711 | 1973026 | 1.36 | 0.1 | 200 | 95.8 | 80 | 120 | |
| 111 | Cd | 115 | 194.408 | 288423 | 1.89 | 0.4 | 200 | 97.0 | 80 | 120 | |
| 118 | Sn | 115 | 204.909 | 625499 | 1.39 | 4.9 | 200 | 100.0 | 80 | 120 | |
| 121 | Sb | 115 | 68.660 | 323342 | 1.28 | 2.0 | 200 | 33.3 | 80 | 120 | Fail |
| 137 | Ba | 115 | 726.397 | 1079180 | 1.10 | 683.2 | 200 | 21.6 | 80 | 120 | Fail |
| 205 | Tl | 209 | 202.015 | 4080858 | 2.33 | 0.5 | 200 | 100.8 | 80 | 120 | |
| 208 | Pb | 209 | 262.652 | 7171405 | 1.65 | 71.2 | 200 | 95.7 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 862772 | 1.00 | 989663 | 87.18 | 70 | 120 | |
| 72 | Ge | 628395 | 1.53 | 739879 | 84.93 | 70 | 120 | |
| 115 | In | 5520546 | 0.68 | 6565136 | 84.09 | 70 | 120 | |
| 209 | Bi | 12591981 | 2.95 | 15222533 | 82.72 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 16:19 | Sample Name | 1605098-41A MSD |
| Data Batch | 160516.b | Comment | MSD ICPMS_TSDOD1 |
| Data File Name | 145_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 255.246 | 10865 | 1.98 | 65.6 | 200 | 94.8 | 80 | 120 | |
| 9 | Be | 45 | 190.808 | 10734 | 0.41 | 2.2 | 200 | 94.3 | 80 | 120 | |
| 11 | B | 45 | 293.327 | 5376 | 4.19 | 87.3 | 200 | 103.0 | 80 | 120 | |
| 23 | Na | 45 | ######## | 435652756 | 2.06 | 735299.9 | 1000 | ##### | 80 | 120 | Fail |
| 24 | Mg | 45 | 16531.024 | 5462352 | 1.97 | 10867.0 | 1000 | 566.4 | 80 | 120 | Fail |
| 27 | Al | 45 | 65256.561 | 7701913 | 1.89 | 55771.4 | 1000 | 948.5 | 80 | 120 | Fail |
| 39 | K | 45 | 18310.868 | 6146779 | 1.38 | 12204.8 | 1000 | 610.6 | 80 | 120 | Fail |
| 44 | Ca | 45 | 95161.372 | 1807428 | 0.75 | 94381.5 | 1000 | 78.0 | 80 | 120 | Fail |
| 47 | Ti | 45 | 405.280 | 51595 | 0.82 | 195.1 | 200 | 105.1 | 80 | 120 | |
| 51 | V | 45 | 296.933 | 1296195 | 0.64 | 92.8 | 200 | 102.1 | 80 | 120 | |
| 52 | Cr | 45 | 258.645 | 1353051 | 0.66 | 66.4 | 200 | 96.1 | 80 | 120 | |
| 55 | Mn | 45 | 796.809 | 2237525 | 1.54 | 510.4 | 200 | 143.2 | 80 | 120 | Fail |
| 56 | Fe | 45 | 63861.319 | 286144140 | 2.28 | 57124.3 | 1000 | 673.7 | 80 | 120 | Fail |
| 59 | Co | 72 | 221.383 | 1831911 | 1.24 | 23.5 | 200 | 98.9 | 80 | 120 | |
| 60 | Ni | 72 | 241.232 | 550492 | 0.77 | 44.7 | 200 | 98.3 | 80 | 120 | |
| 63 | Cu | 72 | 209.235 | 1320141 | 0.99 | 16.7 | 200 | 96.3 | 80 | 120 | |
| 66 | Zn | 72 | 389.022 | 397817 | 1.32 | 189.0 | 200 | 100.0 | 80 | 120 | |
| 75 | As | 72 | 219.842 | 190245 | 1.11 | 19.1 | 200 | 100.4 | 80 | 120 | |
| 78 | Se | 72 | 201.744 | 9835 | 1.09 | 5.1 | 200 | 98.3 | 80 | 120 | |
| 88 | Sr | 115 | 530.621 | 1957423 | 0.58 | 311.0 | 200 | 109.8 | 80 | 120 | |
| 95 | Mo | 115 | 187.342 | 635679 | 0.55 | 1.4 | 200 | 93.0 | 80 | 120 | |
| 107 | Ag | 115 | 187.037 | 1996398 | 0.41 | 0.1 | 200 | 93.5 | 80 | 120 | |
| 111 | Cd | 115 | 192.011 | 295441 | 0.68 | 0.4 | 200 | 95.8 | 80 | 120 | |
| 118 | Sn | 115 | 200.532 | 634858 | 0.74 | 4.9 | 200 | 97.8 | 80 | 120 | |
| 121 | Sb | 115 | 62.566 | 305611 | 1.27 | 2.0 | 200 | 30.3 | 80 | 120 | Fail |
| 137 | Ba | 115 | 741.540 | 1142634 | 1.14 | 683.2 | 200 | 29.2 | 80 | 120 | Fail |
| 205 | Tl | 209 | 199.436 | 4203781 | 0.71 | 0.5 | 200 | 99.5 | 80 | 120 | |
| 208 | Pb | 209 | 259.312 | 7389600 | 0.40 | 71.2 | 200 | 94.0 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 874334 | 0.26 | 989663 | 88.35 | 70 | 120 | |
| 72 | Ge | 642228 | 0.62 | 739879 | 86.80 | 70 | 120 | |
| 115 | In | 5726650 | 1.46 | 6565136 | 87.23 | 70 | 120 | |
| 209 | Bi | 13144669 | 2.77 | 15222533 | 86.35 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 16:25 | Sample Name | CCV5-160516 |
| Data Batch | 160516.b | Comment | CCV ICPMS_TW |
| Data File Name | 146_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 206.323 | 9457 | 1.56 | 200 | 103.2 | 90 | 110 | |
| 9 | Be | 45 | 201.793 | 12219 | 1.03 | 200 | 100.9 | 90 | 110 | |
| 11 | B | 45 | 199.736 | 3986 | 4.71 | 200 | 99.9 | 90 | 110 | |
| 23 | Na | 45 | 5194.867 | 3787479 | 0.52 | 5000 | 103.9 | 90 | 110 | |
| 24 | Mg | 45 | 5035.842 | 1791603 | 0.36 | 5000 | 100.7 | 90 | 110 | |
| 27 | Al | 45 | 4892.202 | 621693 | 0.53 | 5000 | 97.8 | 90 | 110 | |
| 39 | K | 45 | 5097.711 | 1876924 | 0.39 | 5000 | 102.0 | 90 | 110 | |
| 44 | Ca | 45 | 4707.355 | 96450 | 1.70 | 5000 | 94.1 | 90 | 110 | |
| 47 | Ti | 45 | 198.296 | 27174 | 1.17 | 200 | 99.1 | 90 | 110 | |
| 51 | V | 45 | 202.995 | 954642 | 1.55 | 200 | 101.5 | 90 | 110 | |
| 52 | Cr | 45 | 204.436 | 1151646 | 1.23 | 200 | 102.2 | 90 | 110 | |
| 55 | Mn | 45 | 199.017 | 602232 | 0.90 | 200 | 99.5 | 90 | 110 | |
| 56 | Fe | 45 | 5006.943 | 24164590 | 1.11 | 5000 | 100.1 | 90 | 110 | |
| 59 | Co | 72 | 204.633 | 1895027 | 0.34 | 200 | 102.3 | 90 | 110 | |
| 60 | Ni | 72 | 204.929 | 523438 | 0.87 | 200 | 102.5 | 90 | 110 | |
| 63 | Cu | 72 | 204.331 | 1442904 | 1.15 | 200 | 102.2 | 90 | 110 | |
| 66 | Zn | 72 | 203.991 | 233596 | 0.50 | 200 | 102.0 | 90 | 110 | |
| 75 | As | 72 | 204.799 | 198340 | 0.59 | 200 | 102.4 | 90 | 110 | |
| 78 | Se | 72 | 201.947 | 11018 | 1.35 | 200 | 101.0 | 90 | 110 | |
| 88 | Sr | 115 | 192.449 | 816604 | 1.12 | 200 | 96.2 | 90 | 110 | |
| 95 | Mo | 115 | 191.230 | 746260 | 0.18 | 200 | 95.6 | 90 | 110 | |
| 107 | Ag | 115 | 197.611 | 2425915 | 0.25 | 200 | 98.8 | 90 | 110 | |
| 111 | Cd | 115 | 196.765 | 348225 | 0.80 | 200 | 98.4 | 90 | 110 | |
| 118 | Sn | 115 | 195.719 | 712818 | 1.83 | 200 | 97.9 | 90 | 110 | |
| 121 | Sb | 115 | 198.547 | 1114972 | 0.65 | 200 | 99.3 | 90 | 110 | |
| 137 | Ba | 115 | 195.085 | 345725 | 0.55 | 200 | 97.5 | 90 | 110 | |
| 205 | Tl | 209 | 196.802 | 4879191 | 0.89 | 200 | 98.4 | 90 | 110 | |
| 208 | Pb | 209 | 194.162 | 6508257 | 0.20 | 200 | 97.1 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 941156 | 0.45 | 989663 | 95.10 | 70 | 120 | |
| 72 | Ge | 718752 | 0.68 | 739879 | 97.14 | 70 | 120 | |
| 115 | In | 6586431 | 1.72 | 6565136 | 100.32 | 70 | 120 | |
| 209 | Bi | 15451891 | 0.40 | 15222533 | 101.51 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 16:29 | Sample Name | LCVL5-160516 |
| Data Batch | 160516.b | Comment | LCVLICPMS_TW |
| Data File Name | 148LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 11.164 | 511 | 8.30 | 10 | 111.6 | 70 | 130 | |
| 9 | Be | 45 | 1.182 | 71 | 24.44 | 1 | 118.2 | 70 | 130 | |
| 11 | B | 45 | 24.283 | 589 | 6.44 | 20 | 121.4 | 70 | 130 | |
| 23 | Na | 45 | 194.307 | 184043 | 0.99 | 100 | 194.3 | 70 | 130 | Fail |
| 24 | Mg | 45 | 101.507 | 35615 | 1.15 | 100 | 101.5 | 70 | 130 | |
| 27 | Al | 45 | 100.026 | 12468 | 1.60 | 100 | 100.0 | 70 | 130 | |
| 39 | K | 45 | 98.303 | 80915 | 0.97 | 100 | 98.3 | 70 | 130 | |
| 44 | Ca | 45 | 97.785 | 2144 | 2.59 | 100 | 97.8 | 70 | 130 | |
| 47 | Ti | 45 | 5.123 | 681 | 14.33 | 5 | 102.5 | 70 | 130 | |
| 51 | V | 45 | 0.866 | 6215 | 4.38 | 1 | 86.6 | 70 | 130 | |
| 52 | Cr | 45 | 5.192 | 30140 | 2.12 | 5 | 103.8 | 70 | 130 | |
| 55 | Mn | 45 | 4.706 | 14581 | 1.02 | 5 | 94.1 | 70 | 130 | |
| 56 | Fe | 45 | 97.048 | 468580 | 1.20 | 100 | 97.0 | 70 | 130 | |
| 59 | Co | 72 | 5.101 | 46233 | 0.45 | 5 | 102.0 | 70 | 130 | |
| 60 | Ni | 72 | 5.130 | 13184 | 1.41 | 5 | 102.6 | 70 | 130 | |
| 63 | Cu | 72 | 4.965 | 37595 | 0.43 | 5 | 99.3 | 70 | 130 | |
| 66 | Zn | 72 | 5.039 | 5929 | 1.87 | 5 | 100.8 | 70 | 130 | |
| 75 | As | 72 | 5.160 | 5026 | 1.50 | 5 | 103.2 | 70 | 130 | |
| 78 | Se | 72 | 5.547 | 365 | 11.38 | 5 | 110.9 | 70 | 130 | |
| 88 | Sr | 115 | 4.771 | 19965 | 0.60 | 5 | 95.4 | 70 | 130 | |
| 95 | Mo | 115 | 4.670 | 17893 | 2.01 | 5 | 93.4 | 70 | 130 | |
| 107 | Ag | 115 | 1.914 | 23111 | 2.39 | 2 | 95.7 | 70 | 130 | |
| 111 | Cd | 115 | 1.024 | 1785 | 5.62 | 1 | 102.4 | 70 | 130 | |
| 118 | Sn | 115 | 4.787 | 18217 | 1.29 | 5 | 95.7 | 70 | 130 | |
| 121 | Sb | 115 | 1.985 | 11114 | 1.51 | 2 | 99.2 | 70 | 130 | |
| 137 | Ba | 115 | 4.865 | 8476 | 0.79 | 5 | 97.3 | 70 | 130 | |
| 205 | Tl | 209 | 0.985 | 24064 | 1.38 | 1 | 98.5 | 70 | 130 | |
| 208 | Pb | 209 | 0.940 | 35435 | 0.67 | 1 | 94.0 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 910164 | 0.31 | 989663 | 91.97 | 70 | 120 | |
| 72 | Ge | 701664 | 1.19 | 739879 | 94.83 | 70 | 120 | |
| 115 | In | 6448967 | 0.50 | 6565136 | 98.23 | 70 | 120 | |
| 209 | Bi | 15047127 | 0.89 | 15222533 | 98.85 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 16:31 | Sample Name | CCB5-160516 |
| Data Batch | 160516.b | Comment | CCB ICPMS_TW |
| Data File Name | 149_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.406 | 35 | 15.9 | 2 | 5 | |
| 9 | Be | 45 | 0.003 | 2 | 132.3 | 0.4 | 0.3 | |
| 11 | B | 45 | 2.921 | 189 | 10.6 | 10 | 10 | |
| 23 | Na | 45 | 94.470 | 113138 | 0.2 | 50 | 100 | FailSoil |
| 24 | Mg | 45 | -1.121 | 314 | 8.0 | 50 | 100 | |
| 27 | Al | 45 | -0.236 | 149 | 7.9 | 50 | 10 | |
| 39 | K | 45 | 7.526 | 48801 | 0.7 | 50 | 100 | |
| 44 | Ca | 45 | 4.265 | 291 | 16.9 | 50 | 100 | |
| 47 | Ti | 45 | -0.015 | 0 | #DIV/0! | 4 | 3 | |
| 51 | V | 45 | -0.147 | 1600 | 7.5 | 4 | 3 | |
| 52 | Cr | 45 | 0.000 | 1882 | 5.1 | 2 | 2 | |
| 55 | Mn | 45 | -0.175 | 317 | 2.8 | 2 | 3 | |
| 56 | Fe | 45 | -0.720 | 12432 | 2.0 | 50 | 50 | |
| 59 | Co | 72 | 0.001 | 133 | 32.5 | 2 | 3 | |
| 60 | Ni | 72 | 0.034 | 482 | 4.9 | 2 | 3 | |
| 63 | Cu | 72 | -0.094 | 2782 | 5.9 | 2 | 2 | |
| 66 | Zn | 72 | 0.148 | 463 | 8.8 | 4 | 2 | |
| 75 | As | 72 | -0.038 | 114 | 11.7 | 2 | 2 | |
| 78 | Se | 72 | 0.213 | 82 | 22.7 | 1 | 2 | |
| 88 | Sr | 115 | 0.001 | 149 | 2.6 | 4 | 3 | |
| 95 | Mo | 115 | 0.007 | 72 | 21.3 | 2 | 2 | |
| 107 | Ag | 115 | 0.010 | 216 | 18.6 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.003 | 14 | 48.0 | 0.4 | 0.3 | |
| 118 | Sn | 115 | -0.080 | 874 | 5.4 | 4 | 3 | |
| 121 | Sb | 115 | 0.012 | 264 | 34.6 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.008 | 46 | 30.5 | 2 | 3 | |
| 205 | Tl | 209 | 0.011 | 549 | 2.5 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.047 | 3159 | 4.0 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 898656 | 0.09 | 989663 | 90.80 | 70 | 120 | |
| 72 | Ge | 694759 | 0.65 | 739879 | 93.90 | 70 | 120 | |
| 115 | In | 6347033 | 0.63 | 6565136 | 96.68 | 70 | 120 | |
| 209 | Bi | 14584411 | 0.90 | 15222533 | 95.81 | 70 | 120 | |

# Method Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/16 4:33 PM | Sample Name | MB-75099 |
| Data Batch | 160516.b | Comment | MBLKICPMS_TSDOD1 |
| Data File Name | 150_PB.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.545 | 41 | 20.91 | | |
| 9 | Be | 45 | -0.020 | 1 | 86.60 | | |
| 11 | B | 45 | 4.659 | 219 | 3.17 | | |
| 23 | Na | 45 | 97.635 | 114280 | 0.75 | | FAIL |
| 24 | Mg | 45 | 3.322 | 1807 | 5.10 | | |
| 27 | Al | 45 | 8.779 | 1231 | 3.61 | | |
| 39 | K | 45 | 6.840 | 48129 | 1.70 | | |
| 44 | Ca | 45 | 123.383 | 2592 | 4.93 | | FAIL |
| 47 | Ti | 45 | 0.174 | 24 | 68.62 | | |
| 51 | V | 45 | -0.122 | 1696 | 5.70 | | |
| 52 | Cr | 45 | 0.227 | 3070 | 4.64 | | |
| 55 | Mn | 45 | 0.024 | 880 | 5.34 | | |
| 56 | Fe | 45 | 11.621 | 68647 | 0.97 | | |
| 59 | Co | 72 | 0.004 | 152 | 11.02 | | |
| 60 | Ni | 72 | 0.146 | 734 | 3.44 | | |
| 63 | Cu | 72 | 0.076 | 3812 | 1.19 | | |
| 66 | Zn | 72 | 4.223 | 4805 | 3.44 | | J |
| 75 | As | 72 | -0.016 | 131 | 6.29 | | |
| 78 | Se | 72 | 0.408 | 90 | 7.13 | | |
| 88 | Sr | 115 | 0.174 | 826 | 12.16 | | |
| 95 | Mo | 115 | 0.016 | 102 | 27.74 | | |
| 107 | Ag | 115 | 0.010 | 203 | 17.35 | | |
| 111 | Cd | 115 | 0.001 | 11 | 148.01 | | |
| 118 | Sn | 115 | 3.912 | 14367 | 1.96 | | |
| 121 | Sb | 115 | 0.011 | 250 | 30.75 | | |
| 137 | Ba | 115 | 0.056 | 123 | 22.12 | | |
| 205 | Tl | 209 | 0.005 | 413 | 6.40 | | |
| 208 | Pb | 209 | 0.005 | 4959 | 3.30 | | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 890707 | 1.02 | 989663 | 90.00 | 70 | 120 | |
| 72 | Ge | 672082 | 0.88 | 739879 | 90.84 | 70 | 120 | |
| 115 | In | 6136501 | 0.90 | 6565136 | 93.47 | 70 | 120 | |
| 209 | Bi | 15100168 | 1.28 | 15222533 | 99.20 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 16:36 | Sample Name | LCS-75099 |
| Data Batch | 160516.b | Comment | LCS ICPMS_TSDOD1 |
| Data File Name | 151_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 211.417 | 9070 | 1.58 | 200 | 105.7 | 80 | 120 | |
| 9 | Be | 45 | 206.616 | 11712 | 2.23 | 200 | 103.3 | 80 | 120 | |
| 11 | B | 45 | 209.458 | 3906 | 2.41 | 200 | 104.7 | 80 | 120 | |
| 23 | Na | 45 | 5216.669 | 3559748 | 0.48 | 1000 | 521.7 | 80 | 120 | Fail |
| 24 | Mg | 45 | 5032.793 | 1675945 | 0.86 | 1000 | 503.3 | 80 | 120 | Fail |
| 27 | Al | 45 | 992.967 | 118244 | 0.53 | 1000 | 99.3 | 80 | 120 | |
| 39 | K | 45 | 5065.025 | 1745729 | 0.15 | 1000 | 506.5 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4738.137 | 90862 | 0.95 | 1000 | 473.8 | 80 | 120 | Fail |
| 47 | Ti | 45 | 200.775 | 25753 | 1.43 | 200 | 100.4 | 80 | 120 | |
| 51 | V | 45 | 202.937 | 893252 | 0.77 | 200 | 101.5 | 80 | 120 | |
| 52 | Cr | 45 | 202.975 | 1070242 | 1.15 | 200 | 101.5 | 80 | 120 | |
| 55 | Mn | 45 | 198.795 | 563039 | 0.59 | 200 | 99.4 | 80 | 120 | |
| 56 | Fe | 45 | 978.989 | 4434513 | 0.39 | 1000 | 97.9 | 80 | 120 | |
| 59 | Co | 72 | 205.339 | 1785326 | 1.04 | 200 | 102.7 | 80 | 120 | |
| 60 | Ni | 72 | 204.811 | 491138 | 0.26 | 200 | 102.4 | 80 | 120 | |
| 63 | Cu | 72 | 203.963 | 1352186 | 0.51 | 200 | 102.0 | 80 | 120 | |
| 66 | Zn | 72 | 201.647 | 216805 | 0.59 | 200 | 100.8 | 80 | 120 | |
| 75 | As | 72 | 201.727 | 183429 | 0.41 | 200 | 100.9 | 80 | 120 | |
| 78 | Se | 72 | 198.881 | 10189 | 0.98 | 200 | 99.4 | 80 | 120 | |
| 88 | Sr | 115 | 193.026 | 759204 | 1.01 | 200 | 96.5 | 80 | 120 | |
| 95 | Mo | 115 | 195.396 | 706820 | 0.94 | 200 | 97.7 | 80 | 120 | |
| 107 | Ag | 115 | 196.949 | 2241090 | 1.35 | 200 | 98.5 | 80 | 120 | |
| 111 | Cd | 115 | 196.589 | 322473 | 1.19 | 200 | 98.3 | 80 | 120 | |
| 118 | Sn | 115 | 203.437 | 686623 | 0.65 | 200 | 101.7 | 80 | 120 | |
| 121 | Sb | 115 | 198.244 | 1031908 | 1.48 | 200 | 99.1 | 80 | 120 | |
| 137 | Ba | 115 | 198.057 | 325371 | 0.96 | 200 | 99.0 | 80 | 120 | |
| 205 | Tl | 209 | 204.721 | 4686722 | 1.10 | 200 | 102.4 | 80 | 120 | |
| 208 | Pb | 209 | 200.685 | 6211983 | 0.79 | 200 | 100.3 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 880920 | 0.93 | 989663 | 89.01 | 70 | 120 | |
| 72 | Ge | 674825 | 0.74 | 739879 | 91.21 | 70 | 120 | |
| 115 | In | 6104033 | 0.35 | 6565136 | 92.98 | 70 | 120 | |
| 209 | Bi | 14271697 | 1.64 | 15222533 | 93.75 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 16:38 | Sample Name | LCSD-75099 |
| Data Batch | 160516.b | Comment | LCSDICPMS_TSDOD1 |
| Data File Name | 152_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 218.452 | 9280 | 0.17 | 200 | 109.2 | 80 | 120 | |
| 9 | Be | 45 | 210.604 | 11821 | 1.70 | 200 | 105.3 | 80 | 120 | |
| 11 | B | 45 | 211.020 | 3896 | 3.69 | 200 | 105.5 | 80 | 120 | |
| 23 | Na | 45 | 5320.224 | 3594373 | 0.28 | 1000 | 532.0 | 80 | 120 | Fail |
| 24 | Mg | 45 | 5177.795 | 1707513 | 0.81 | 1000 | 517.8 | 80 | 120 | Fail |
| 27 | Al | 45 | 1003.022 | 118285 | 0.41 | 1000 | 100.3 | 80 | 120 | |
| 39 | K | 45 | 5163.498 | 1761669 | 0.74 | 1000 | 516.3 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4834.228 | 91805 | 1.62 | 1000 | 483.4 | 80 | 120 | Fail |
| 47 | Ti | 45 | 207.478 | 26355 | 1.98 | 200 | 103.7 | 80 | 120 | |
| 51 | V | 45 | 211.478 | 921732 | 0.45 | 200 | 105.7 | 80 | 120 | |
| 52 | Cr | 45 | 210.424 | 1098676 | 0.66 | 200 | 105.2 | 80 | 120 | |
| 55 | Mn | 45 | 205.083 | 575201 | 0.43 | 200 | 102.5 | 80 | 120 | |
| 56 | Fe | 45 | 1004.460 | 4505623 | 0.66 | 1000 | 100.4 | 80 | 120 | |
| 59 | Co | 72 | 209.572 | 1808551 | 0.32 | 200 | 104.8 | 80 | 120 | |
| 60 | Ni | 72 | 208.938 | 497291 | 1.17 | 200 | 104.5 | 80 | 120 | |
| 63 | Cu | 72 | 210.672 | 1386181 | 0.54 | 200 | 105.3 | 80 | 120 | |
| 66 | Zn | 72 | 209.169 | 223198 | 0.58 | 200 | 104.6 | 80 | 120 | |
| 75 | As | 72 | 205.081 | 185089 | 0.54 | 200 | 102.5 | 80 | 120 | |
| 78 | Se | 72 | 198.397 | 10088 | 2.47 | 200 | 99.2 | 80 | 120 | |
| 88 | Sr | 115 | 195.305 | 772806 | 0.53 | 200 | 97.7 | 80 | 120 | |
| 95 | Mo | 115 | 196.504 | 715150 | 1.11 | 200 | 98.3 | 80 | 120 | |
| 107 | Ag | 115 | 199.059 | 2278955 | 0.83 | 200 | 99.5 | 80 | 120 | |
| 111 | Cd | 115 | 201.106 | 331894 | 0.30 | 200 | 100.6 | 80 | 120 | |
| 118 | Sn | 115 | 207.469 | 704471 | 0.34 | 200 | 103.7 | 80 | 120 | |
| 121 | Sb | 115 | 200.288 | 1048884 | 0.28 | 200 | 100.1 | 80 | 120 | |
| 137 | Ba | 115 | 200.495 | 331372 | 0.23 | 200 | 100.2 | 80 | 120 | |
| 205 | Tl | 209 | 207.267 | 4756871 | 0.74 | 200 | 103.6 | 80 | 120 | |
| 208 | Pb | 209 | 203.447 | 6313124 | 0.87 | 200 | 101.7 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 872384 | 0.27 | 989663 | 88.15 | 70 | 120 | |
| 72 | Ge | 669778 | 0.37 | 739879 | 90.53 | 70 | 120 | |
| 115 | In | 6141658 | 1.07 | 6565136 | 93.55 | 70 | 120 | |
| 209 | Bi | 14305373 | 1.16 | 15222533 | 93.97 | 70 | 120 | |

# Dilution Sample (Dil) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 16:44 | Sample Name | 1605071-17A SD |
| Data Batch | 160516.b | Comment | SD ICPMS_TSDOD1 |
| Data File Name | 155_SD.d | Dilution | 25 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Value | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.644 | 493 | 1.33 | 52.0 | 102.3 | 110 | 90 | Good |
| 9 | Be | 45 | 0.380 | 24 | 31.92 | 1.9 | 101.4 | 110 | 90 | Good |
| 11 | B | 45 | 16.536 | 449 | 7.62 | 61.0 | 135.6 | 110 | 90 | |
| 23 | Na | 45 | 209.019 | 196095 | 0.29 | 784.5 | 133.2 | 110 | 90 | |
| 24 | Mg | 45 | 1999.766 | 694904 | 0.76 | 9739.2 | 102.7 | 110 | 90 | Good |
| 27 | Al | 45 | 9813.836 | 1217167 | 0.56 | 47702.7 | 102.9 | 110 | 90 | Good |
| 39 | K | 45 | 2321.700 | 860141 | 0.67 | 11378.3 | 102.0 | 110 | 90 | Good |
| 44 | Ca | 45 | 13060.789 | 260829 | 0.68 | 64190.3 | 101.7 | 110 | 90 | Good |
| 47 | Ti | 45 | 73.855 | 9881 | 1.87 | 363.5 | 101.6 | 110 | 90 | Good |
| 51 | V | 45 | 16.007 | 75604 | 0.97 | 80.1 | 99.9 | 110 | 90 | Good |
| 52 | Cr | 45 | 9.576 | 54484 | 1.61 | 46.9 | 102.1 | 110 | 90 | Good |
| 55 | Mn | 45 | 124.007 | 366588 | 0.11 | 604.1 | 102.6 | 110 | 90 | Good |
| 56 | Fe | 45 | 10236.620 | 48202027 | 1.06 | 49589.4 | 103.2 | 110 | 90 | Good |
| 59 | Co | 72 | 3.386 | 30289 | 1.22 | 16.5 | 102.5 | 110 | 90 | Good |
| 60 | Ni | 72 | 6.581 | 16557 | 1.07 | 32.0 | 102.9 | 110 | 90 | Good |
| 63 | Cu | 72 | 6.002 | 44084 | 1.39 | 29.3 | 102.5 | 110 | 90 | Good |
| 66 | Zn | 72 | 56.711 | 62701 | 0.85 | 271.8 | 104.3 | 110 | 90 | Good |
| 75 | As | 72 | 3.156 | 3088 | 1.26 | 15.3 | 103.2 | 110 | 90 | Good |
| 78 | Se | 72 | 0.926 | 119 | 12.77 | 3.7 | 123.6 | 110 | 90 | |
| 88 | Sr | 115 | 55.717 | 233086 | 1.27 | 283.2 | 98.4 | 110 | 90 | Good |
| 95 | Mo | 115 | 0.299 | 1197 | 3.64 | 1.5 | 98.3 | 110 | 90 | Good |
| 107 | Ag | 115 | 0.028 | 437 | 11.85 | 0.1 | 124.8 | 110 | 90 | |
| 111 | Cd | 115 | 0.093 | 173 | 30.22 | 0.5 | 99.3 | 110 | 90 | Good |
| 118 | Sn | 115 | 0.834 | 4170 | 3.85 | 5.1 | 81.8 | 110 | 90 | |
| 121 | Sb | 115 | 0.312 | 1928 | 5.18 | 1.5 | 101.2 | 110 | 90 | Good |
| 137 | Ba | 115 | 85.819 | 149905 | 0.66 | 440.6 | 97.4 | 110 | 90 | Good |
| 205 | Tl | 209 | 0.110 | 2994 | 1.93 | 0.5 | 109.1 | 110 | 90 | Good |
| 208 | Pb | 209 | 9.430 | 316254 | 0.56 | 47.8 | 98.6 | 110 | 90 | Good |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 918751 | 1.19 | 989663 | 92.83 | 70 | 120 | |
| 72 | Ge | 691568 | 0.91 | 739879 | 93.47 | 70 | 120 | |
| 115 | In | 6490438 | 1.19 | 6565136 | 98.86 | 70 | 120 | |
| 209 | Bi | 15236152 | 0.99 | 15222533 | 100.09 | 70 | 120 | |

# Post Digestion Spike Sample (PDS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 17:04 | Sample Name | 1605071-17A PDS |
| Data Batch | 160516.b | Comment | PDS ICPMS_TSDOD1 |
| Data File Name | 165_PDS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 247.200 | 10816 | 1.06 | 52.0 | 200 | 97.6 | 75 | 125 | |
| 9 | Be | 45 | 201.085 | 11627 | 1.56 | 1.9 | 200 | 99.6 | 75 | 125 | |
| 11 | B | 45 | 260.938 | 4931 | 1.67 | 61.0 | 200 | 100.0 | 75 | 125 | |
| 23 | Na | 45 | 5691.224 | 3957682 | 0.25 | 784.5 | 5000 | 98.1 | 75 | 125 | |
| 24 | Mg | 45 | 14724.088 | 5001014 | 1.43 | 9739.2 | 5000 | 99.7 | 75 | 125 | |
| 27 | Al | 45 | 52838.696 | 6409687 | 1.93 | 47702.7 | 5000 | 102.7 | 75 | 125 | |
| 39 | K | 45 | 16274.772 | 5620821 | 1.18 | 11378.3 | 5000 | 97.9 | 75 | 125 | |
| 44 | Ca | 45 | 68260.052 | 1332674 | 0.72 | 64190.3 | 5000 | 81.4 | 75 | 125 | |
| 47 | Ti | 45 | 553.090 | 72373 | 1.07 | 363.5 | 200 | 94.8 | 75 | 125 | |
| 51 | V | 45 | 276.843 | 1242357 | 0.98 | 80.1 | 200 | 98.4 | 75 | 125 | |
| 52 | Cr | 45 | 245.300 | 1319097 | 0.74 | 46.9 | 200 | 99.2 | 75 | 125 | |
| 55 | Mn | 45 | 786.718 | 2270785 | 0.23 | 604.1 | 200 | 91.3 | 75 | 125 | |
| 56 | Fe | 45 | 53618.491 | 246945012 | 0.33 | 49589.4 | 5000 | 80.6 | 75 | 125 | |
| 59 | Co | 72 | 217.711 | 1882782 | 0.89 | 16.5 | 200 | 100.6 | 75 | 125 | |
| 60 | Ni | 72 | 227.089 | 541640 | 0.92 | 32.0 | 200 | 97.6 | 75 | 125 | |
| 63 | Cu | 72 | 221.704 | 1461757 | 0.72 | 29.3 | 200 | 96.2 | 75 | 125 | |
| 66 | Zn | 72 | 464.756 | 496641 | 0.12 | 271.8 | 200 | 96.5 | 75 | 125 | |
| 75 | As | 72 | 213.879 | 193445 | 1.44 | 15.3 | 200 | 99.3 | 75 | 125 | |
| 78 | Se | 72 | 196.894 | 10033 | 1.20 | 3.7 | 200 | 96.6 | 75 | 125 | |
| 88 | Sr | 115 | 465.379 | 1862168 | 0.98 | 283.2 | 200 | 91.1 | 75 | 125 | |
| 95 | Mo | 115 | 185.975 | 684465 | 0.53 | 1.5 | 200 | 92.2 | 75 | 125 | |
| 107 | Ag | 115 | 175.247 | 2029028 | 0.89 | 0.1 | 200 | 87.6 | 75 | 125 | |
| 111 | Cd | 115 | 183.985 | 307061 | 0.35 | 0.5 | 200 | 91.8 | 75 | 125 | |
| 118 | Sn | 115 | 201.479 | 691897 | 0.29 | 5.1 | 200 | 98.2 | 75 | 125 | |
| 121 | Sb | 115 | 195.454 | 1035088 | 0.54 | 1.5 | 200 | 97.0 | 75 | 125 | |
| 137 | Ba | 115 | 621.791 | 1039225 | 0.11 | 440.6 | 200 | 90.6 | 75 | 125 | |
| 205 | Tl | 209 | 195.396 | 4520825 | 0.47 | 0.5 | 200 | 97.4 | 75 | 125 | |
| 208 | Pb | 209 | 241.036 | 7539582 | 0.33 | 47.8 | 200 | 96.6 | 75 | 125 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 898721 | 0.50 | 989663 | 90.81 | 70 | 120 | |
| 72 | Ge | 671245 | 0.93 | 739879 | 90.72 | 70 | 120 | |
| 115 | In | 6210825 | 0.96 | 6565136 | 94.60 | 70 | 120 | |
| 209 | Bi | 14426342 | 2.48 | 15222533 | 94.77 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 17:06 | Sample Name | 1605071-17A MS |
| Data Batch | 160516.b | Comment | MS ICPMS_TSDOD1 |
| Data File Name | 166_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 259.919 | 11261 | 0.27 | 52.0 | 200 | 104.0 | 80 | 120 | |
| 9 | Be | 45 | 205.351 | 11758 | 0.77 | 1.9 | 200 | 101.7 | 80 | 120 | |
| 11 | B | 45 | 264.827 | 4954 | 3.62 | 61.0 | 200 | 101.9 | 80 | 120 | |
| 23 | Na | 45 | 5809.770 | 3999911 | 0.80 | 784.5 | 1000 | 502.5 | 80 | 120 | Fail |
| 24 | Mg | 45 | 15702.101 | 5281388 | 2.15 | 9739.2 | 1000 | 596.3 | 80 | 120 | Fail |
| 27 | Al | 45 | 56480.714 | 6784995 | 1.73 | 47702.7 | 1000 | 877.8 | 80 | 120 | Fail |
| 39 | K | 45 | 17651.641 | 6032955 | 0.80 | 11378.3 | 1000 | 627.3 | 80 | 120 | Fail |
| 44 | Ca | 45 | 74337.558 | 1437204 | 0.75 | 64190.3 | 1000 | 1014.7 | 80 | 120 | Fail |
| 47 | Ti | 45 | 616.579 | 79899 | 1.04 | 363.5 | 200 | 126.5 | 80 | 120 | Fail |
| 51 | V | 45 | 288.140 | 1280393 | 0.96 | 80.1 | 200 | 104.0 | 80 | 120 | |
| 52 | Cr | 45 | 251.182 | 1337574 | 0.62 | 46.9 | 200 | 102.1 | 80 | 120 | |
| 55 | Mn | 45 | 857.618 | 2451308 | 0.48 | 604.1 | 200 | 126.7 | 80 | 120 | Fail |
| 56 | Fe | 45 | 53563.507 | 244289599 | 0.26 | 49589.4 | 1000 | 397.4 | 80 | 120 | Fail |
| 59 | Co | 72 | 221.300 | 1904045 | 0.96 | 16.5 | 200 | 102.4 | 80 | 120 | |
| 60 | Ni | 72 | 236.366 | 560880 | 1.04 | 32.0 | 200 | 102.2 | 80 | 120 | |
| 63 | Cu | 72 | 230.447 | 1511523 | 0.24 | 29.3 | 200 | 100.6 | 80 | 120 | |
| 66 | Zn | 72 | 494.493 | 525728 | 0.14 | 271.8 | 200 | 111.4 | 80 | 120 | |
| 75 | As | 72 | 216.185 | 194542 | 1.08 | 15.3 | 200 | 100.4 | 80 | 120 | |
| 78 | Se | 72 | 198.317 | 10055 | 1.11 | 3.7 | 200 | 97.3 | 80 | 120 | |
| 88 | Sr | 115 | 511.202 | 1986730 | 0.56 | 283.2 | 200 | 114.0 | 80 | 120 | |
| 95 | Mo | 115 | 184.004 | 657776 | 0.73 | 1.5 | 200 | 91.2 | 80 | 120 | |
| 107 | Ag | 115 | 191.184 | 2149938 | 0.67 | 0.1 | 200 | 95.5 | 80 | 120 | |
| 111 | Cd | 115 | 193.934 | 314409 | 1.29 | 0.5 | 200 | 96.7 | 80 | 120 | |
| 118 | Sn | 115 | 199.653 | 665913 | 0.28 | 5.1 | 200 | 97.3 | 80 | 120 | |
| 121 | Sb | 115 | 62.302 | 320538 | 0.84 | 1.5 | 200 | 30.4 | 80 | 120 | Fail |
| 137 | Ba | 115 | 651.855 | 1058110 | 0.32 | 440.6 | 200 | 105.6 | 80 | 120 | |
| 205 | Tl | 209 | 196.854 | 4554672 | 0.54 | 0.5 | 200 | 98.2 | 80 | 120 | |
| 208 | Pb | 209 | 245.079 | 7665397 | 0.43 | 47.8 | 200 | 98.6 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 889967 | 0.37 | 989663 | 89.93 | 70 | 120 | |
| 72 | Ge | 667863 | 1.10 | 739879 | 90.27 | 70 | 120 | |
| 115 | In | 6034223 | 2.49 | 6565136 | 91.91 | 70 | 120 | |
| 209 | Bi | 14421481 | 1.04 | 15222533 | 94.74 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 17:08 | Sample Name | 1605071-17A MSD |
| Data Batch | 160516.b | Comment | MSD ICPMS_TSDOD1 |
| Data File Name | 167_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 267.374 | 11574 | 0.76 | 52.0 | 200 | 107.7 | 80 | 120 | |
| 9 | Be | 45 | 214.885 | 12295 | 0.67 | 1.9 | 200 | 106.5 | 80 | 120 | |
| 11 | B | 45 | 261.468 | 4887 | 3.98 | 61.0 | 200 | 100.3 | 80 | 120 | |
| 23 | Na | 45 | 5834.218 | 4013119 | 0.78 | 784.5 | 1000 | 505.0 | 80 | 120 | Fail |
| 24 | Mg | 45 | 15041.203 | 5054659 | 0.58 | 9739.2 | 1000 | 530.2 | 80 | 120 | Fail |
| 27 | Al | 45 | 52391.073 | 6288694 | 0.74 | 47702.7 | 1000 | 468.8 | 80 | 120 | Fail |
| 39 | K | 45 | 17092.843 | 5838489 | 2.44 | 11378.3 | 1000 | 571.5 | 80 | 120 | Fail |
| 44 | Ca | 45 | 69132.409 | 1335607 | 1.23 | 64190.3 | 1000 | 494.2 | 80 | 120 | Fail |
| 47 | Ti | 45 | 604.194 | 78237 | 0.96 | 363.5 | 200 | 120.3 | 80 | 120 | Fail |
| 51 | V | 45 | 287.227 | 1275272 | 0.44 | 80.1 | 200 | 103.6 | 80 | 120 | |
| 52 | Cr | 45 | 254.161 | 1352350 | 0.43 | 46.9 | 200 | 103.6 | 80 | 120 | |
| 55 | Mn | 45 | 802.887 | 2293341 | 1.12 | 604.1 | 200 | 99.4 | 80 | 120 | |
| 56 | Fe | 45 | 50659.655 | 230907360 | 1.85 | 49589.4 | 1000 | 107.0 | 80 | 120 | |
| 59 | Co | 72 | 225.222 | 1934550 | 0.59 | 16.5 | 200 | 104.4 | 80 | 120 | |
| 60 | Ni | 72 | 238.956 | 566054 | 0.32 | 32.0 | 200 | 103.5 | 80 | 120 | |
| 63 | Cu | 72 | 236.095 | 1545826 | 0.93 | 29.3 | 200 | 103.4 | 80 | 120 | |
| 66 | Zn | 72 | 478.406 | 507761 | 0.23 | 271.8 | 200 | 103.3 | 80 | 120 | |
| 75 | As | 72 | 220.736 | 198292 | 1.08 | 15.3 | 200 | 102.7 | 80 | 120 | |
| 78 | Se | 72 | 206.160 | 10432 | 0.24 | 3.7 | 200 | 101.2 | 80 | 120 | |
| 88 | Sr | 115 | 484.923 | 1912374 | 0.52 | 283.2 | 200 | 100.9 | 80 | 120 | |
| 95 | Mo | 115 | 186.415 | 676222 | 0.61 | 1.5 | 200 | 92.4 | 80 | 120 | |
| 107 | Ag | 115 | 191.941 | 2190250 | 0.78 | 0.1 | 200 | 95.9 | 80 | 120 | |
| 111 | Cd | 115 | 197.494 | 324862 | 0.61 | 0.5 | 200 | 98.5 | 80 | 120 | |
| 118 | Sn | 115 | 201.437 | 681793 | 0.55 | 5.1 | 200 | 98.2 | 80 | 120 | |
| 121 | Sb | 115 | 61.972 | 323605 | 0.25 | 1.5 | 200 | 30.2 | 80 | 120 | Fail |
| 137 | Ba | 115 | 626.837 | 1032576 | 1.08 | 440.6 | 200 | 93.1 | 80 | 120 | |
| 205 | Tl | 209 | 203.906 | 4723800 | 1.16 | 0.5 | 200 | 101.7 | 80 | 120 | |
| 208 | Pb | 209 | 246.677 | 7725494 | 0.58 | 47.8 | 200 | 99.4 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 889383 | 1.43 | 989663 | 89.87 | 70 | 120 | |
| 72 | Ge | 666687 | 0.57 | 739879 | 90.11 | 70 | 120 | |
| 115 | In | 6121127 | 0.48 | 6565136 | 93.24 | 70 | 120 | |
| 209 | Bi | 14439468 | 0.76 | 15222533 | 94.86 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 17:10 | Sample Name | CCV6-160516 |
| Data Batch | 160516.b | Comment | CCV ICPMS_TW |
| Data File Name | 168_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 213.408 | 9181 | 1.38 | 200 | 106.7 | 90 | 110 | |
| 9 | Be | 45 | 209.990 | 11935 | 0.20 | 200 | 105.0 | 90 | 110 | |
| 11 | B | 45 | 213.840 | 3996 | 0.84 | 200 | 106.9 | 90 | 110 | |
| 23 | Na | 45 | 5171.083 | 3539097 | 0.44 | 5000 | 103.4 | 90 | 110 | |
| 24 | Mg | 45 | 5086.882 | 1698736 | 0.49 | 5000 | 101.7 | 90 | 110 | |
| 27 | Al | 45 | 4842.871 | 577658 | 0.77 | 5000 | 96.9 | 90 | 110 | |
| 39 | K | 45 | 5045.732 | 1744250 | 0.57 | 5000 | 100.9 | 90 | 110 | |
| 44 | Ca | 45 | 4718.312 | 90740 | 1.17 | 5000 | 94.4 | 90 | 110 | |
| 47 | Ti | 45 | 200.612 | 25805 | 0.82 | 200 | 100.3 | 90 | 110 | |
| 51 | V | 45 | 201.521 | 889543 | 0.73 | 200 | 100.8 | 90 | 110 | |
| 52 | Cr | 45 | 203.307 | 1074995 | 0.58 | 200 | 101.7 | 90 | 110 | |
| 55 | Mn | 45 | 198.168 | 562858 | 1.38 | 200 | 99.1 | 90 | 110 | |
| 56 | Fe | 45 | 5027.582 | 22774697 | 1.66 | 5000 | 100.6 | 90 | 110 | |
| 59 | Co | 72 | 208.093 | 1786647 | 0.63 | 200 | 104.0 | 90 | 110 | |
| 60 | Ni | 72 | 207.703 | 491836 | 0.30 | 200 | 103.9 | 90 | 110 | |
| 63 | Cu | 72 | 209.231 | 1369624 | 0.46 | 200 | 104.6 | 90 | 110 | |
| 66 | Zn | 72 | 206.124 | 218823 | 0.46 | 200 | 103.1 | 90 | 110 | |
| 75 | As | 72 | 205.667 | 184669 | 0.58 | 200 | 102.8 | 90 | 110 | |
| 78 | Se | 72 | 202.565 | 10246 | 1.71 | 200 | 101.3 | 90 | 110 | |
| 88 | Sr | 115 | 189.324 | 757736 | 0.18 | 200 | 94.7 | 90 | 110 | |
| 95 | Mo | 115 | 192.790 | 709739 | 0.87 | 200 | 96.4 | 90 | 110 | |
| 107 | Ag | 115 | 198.503 | 2298708 | 1.16 | 200 | 99.3 | 90 | 110 | |
| 111 | Cd | 115 | 193.880 | 323642 | 0.69 | 200 | 96.9 | 90 | 110 | |
| 118 | Sn | 115 | 194.979 | 669765 | 1.08 | 200 | 97.5 | 90 | 110 | |
| 121 | Sb | 115 | 196.776 | 1042390 | 0.76 | 200 | 98.4 | 90 | 110 | |
| 137 | Ba | 115 | 194.044 | 324379 | 0.70 | 200 | 97.0 | 90 | 110 | |
| 205 | Tl | 209 | 199.953 | 4622761 | 0.61 | 200 | 100.0 | 90 | 110 | |
| 208 | Pb | 209 | 199.348 | 6230635 | 0.30 | 200 | 99.7 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 883401 | 0.02 | 989663 | 89.26 | 70 | 120 | |
| 72 | Ge | 666377 | 0.90 | 739879 | 90.07 | 70 | 120 | |
| 115 | In | 6213763 | 2.37 | 6565136 | 94.65 | 70 | 120 | |
| 209 | Bi | 14408785 | 0.75 | 15222533 | 94.65 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 17:14 | Sample Name | LCVL6-160516 |
| Data Batch | 160516.b | Comment | LCVLICPMS_TW |
| Data File Name | 170LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 11.588 | 503 | 7.46 | 10 | 115.9 | 70 | 130 | |
| 9 | Be | 45 | 1.211 | 69 | 16.71 | 1 | 121.1 | 70 | 130 | |
| 11 | B | 45 | 23.866 | 551 | 8.26 | 20 | 119.3 | 70 | 130 | |
| 23 | Na | 45 | 147.871 | 143854 | 0.30 | 100 | 147.9 | 70 | 130 | Fail |
| 24 | Mg | 45 | 100.455 | 33419 | 2.27 | 100 | 100.5 | 70 | 130 | |
| 27 | Al | 45 | 95.751 | 11322 | 3.30 | 100 | 95.8 | 70 | 130 | |
| 39 | K | 45 | 99.537 | 77117 | 0.07 | 100 | 99.5 | 70 | 130 | |
| 44 | Ca | 45 | 101.553 | 2103 | 9.19 | 100 | 101.6 | 70 | 130 | |
| 47 | Ti | 45 | 5.098 | 642 | 9.81 | 5 | 102.0 | 70 | 130 | |
| 51 | V | 45 | 0.829 | 5732 | 5.08 | 1 | 82.9 | 70 | 130 | |
| 52 | Cr | 45 | 5.265 | 28950 | 0.91 | 5 | 105.3 | 70 | 130 | |
| 55 | Mn | 45 | 4.732 | 13897 | 2.00 | 5 | 94.6 | 70 | 130 | |
| 56 | Fe | 45 | 97.688 | 447073 | 0.50 | 100 | 97.7 | 70 | 130 | |
| 59 | Co | 72 | 5.197 | 44135 | 0.84 | 5 | 103.9 | 70 | 130 | |
| 60 | Ni | 72 | 5.183 | 12477 | 0.63 | 5 | 103.7 | 70 | 130 | |
| 63 | Cu | 72 | 5.007 | 35499 | 1.88 | 5 | 100.1 | 70 | 130 | |
| 66 | Zn | 72 | 5.313 | 5841 | 4.84 | 5 | 106.3 | 70 | 130 | |
| 75 | As | 72 | 5.103 | 4660 | 1.42 | 5 | 102.1 | 70 | 130 | |
| 78 | Se | 72 | 5.529 | 342 | 0.72 | 5 | 110.6 | 70 | 130 | |
| 88 | Sr | 115 | 4.865 | 19052 | 1.73 | 5 | 97.3 | 70 | 130 | |
| 95 | Mo | 115 | 4.802 | 17216 | 1.23 | 5 | 96.0 | 70 | 130 | |
| 107 | Ag | 115 | 1.889 | 21347 | 1.23 | 2 | 94.5 | 70 | 130 | |
| 111 | Cd | 115 | 1.007 | 1642 | 8.09 | 1 | 100.7 | 70 | 130 | |
| 118 | Sn | 115 | 4.920 | 17492 | 1.45 | 5 | 98.4 | 70 | 130 | |
| 121 | Sb | 115 | 1.994 | 10448 | 0.24 | 2 | 99.7 | 70 | 130 | |
| 137 | Ba | 115 | 4.812 | 7845 | 1.44 | 5 | 96.2 | 70 | 130 | |
| 205 | Tl | 209 | 1.077 | 24577 | 1.17 | 1 | 107.7 | 70 | 130 | |
| 208 | Pb | 209 | 0.940 | 33131 | 0.60 | 1 | 94.0 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 862900 | 0.58 | 989663 | 87.19 | 70 | 120 | |
| 72 | Ge | 657469 | 0.73 | 739879 | 88.86 | 70 | 120 | |
| 115 | In | 6035394 | 0.32 | 6565136 | 91.93 | 70 | 120 | |
| 209 | Bi | 14076246 | 2.11 | 15222533 | 92.47 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 17:16 | Sample Name | CCB6-160516 |
| Data Batch | 160516.b | Comment | CCB ICPMS_TW |
| Data File Name | 171_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.442 | 35 | 14.5 | 2 | 5 | |
| 9 | Be | 45 | 0.023 | 3 | 0.0 | 0.4 | 0.3 | |
| 11 | B | 45 | 1.888 | 161 | 10.2 | 10 | 10 | |
| 23 | Na | 45 | 50.705 | 78783 | 1.0 | 50 | 100 | FailSoil |
| 24 | Mg | 45 | -1.015 | 332 | 19.0 | 50 | 100 | |
| 27 | Al | 45 | 0.219 | 193 | 27.1 | 50 | 10 | |
| 39 | K | 45 | 7.289 | 46205 | 0.6 | 50 | 100 | |
| 44 | Ca | 45 | 2.941 | 251 | 14.3 | 50 | 100 | |
| 47 | Ti | 45 | 0.056 | 9 | 21.6 | 4 | 3 | |
| 51 | V | 45 | -0.149 | 1507 | 2.9 | 4 | 3 | |
| 52 | Cr | 45 | -0.011 | 1725 | 3.4 | 2 | 2 | |
| 55 | Mn | 45 | -0.154 | 358 | 20.1 | 2 | 3 | |
| 56 | Fe | 45 | -0.338 | 13462 | 3.4 | 50 | 50 | |
| 59 | Co | 72 | 0.000 | 118 | 18.8 | 2 | 3 | |
| 60 | Ni | 72 | 0.071 | 540 | 3.4 | 2 | 3 | |
| 63 | Cu | 72 | -0.181 | 2059 | 0.2 | 2 | 2 | |
| 66 | Zn | 72 | 0.170 | 459 | 16.8 | 4 | 2 | |
| 75 | As | 72 | -0.012 | 130 | 15.8 | 2 | 2 | |
| 78 | Se | 72 | 0.088 | 71 | 20.7 | 1 | 2 | |
| 88 | Sr | 115 | -0.005 | 113 | 15.6 | 4 | 3 | |
| 95 | Mo | 115 | 0.005 | 60 | 33.8 | 2 | 2 | |
| 107 | Ag | 115 | 0.011 | 204 | 19.7 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.001 | 10 | 33.3 | 0.4 | 0.3 | |
| 118 | Sn | 115 | -0.122 | 672 | 0.8 | 4 | 3 | |
| 121 | Sb | 115 | 0.017 | 267 | 17.7 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.013 | 50 | 40.5 | 2 | 3 | |
| 205 | Tl | 209 | 0.044 | 1247 | 11.2 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.054 | 2775 | 5.0 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 852332 | 1.06 | 989663 | 86.12 | 70 | 120 | |
| 72 | Ge | 653355 | 0.84 | 739879 | 88.31 | 70 | 120 | |
| 115 | In | 5871850 | 2.36 | 6565136 | 89.44 | 70 | 120 | |
| 209 | Bi | 13867207 | 0.86 | 15222533 | 91.10 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 17:38 | Sample Name | CCV7-160516 |
| Data Batch | 160516.b | Comment | CCV ICPMS_TW |
| Data File Name | 182_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 216.848 | 8948 | 0.27 | 200 | 108.4 | 90 | 110 | |
| 9 | Be | 45 | 210.738 | 11489 | 2.67 | 200 | 105.4 | 90 | 110 | |
| 11 | B | 45 | 209.770 | 3763 | 4.04 | 200 | 104.9 | 90 | 110 | |
| 23 | Na | 45 | 5239.304 | 3439015 | 1.19 | 5000 | 104.8 | 90 | 110 | |
| 24 | Mg | 45 | 5123.893 | 1641326 | 0.85 | 5000 | 102.5 | 90 | 110 | |
| 27 | Al | 45 | 5004.156 | 572553 | 0.80 | 5000 | 100.1 | 90 | 110 | |
| 39 | K | 45 | 5155.804 | 1708647 | 0.71 | 5000 | 103.1 | 90 | 110 | |
| 44 | Ca | 45 | 4888.281 | 90169 | 1.01 | 5000 | 97.8 | 90 | 110 | |
| 47 | Ti | 45 | 197.926 | 24421 | 1.17 | 200 | 99.0 | 90 | 110 | |
| 51 | V | 45 | 202.794 | 858621 | 0.50 | 200 | 101.4 | 90 | 110 | |
| 52 | Cr | 45 | 202.971 | 1029441 | 0.11 | 200 | 101.5 | 90 | 110 | |
| 55 | Mn | 45 | 198.523 | 540873 | 1.33 | 200 | 99.3 | 90 | 110 | |
| 56 | Fe | 45 | 5066.456 | 22014587 | 0.27 | 5000 | 101.3 | 90 | 110 | |
| 59 | Co | 72 | 203.517 | 1709552 | 0.13 | 200 | 101.8 | 90 | 110 | |
| 60 | Ni | 72 | 202.583 | 469370 | 0.32 | 200 | 101.3 | 90 | 110 | |
| 63 | Cu | 72 | 203.016 | 1300410 | 1.01 | 200 | 101.5 | 90 | 110 | |
| 66 | Zn | 72 | 202.687 | 210560 | 1.04 | 200 | 101.3 | 90 | 110 | |
| 75 | As | 72 | 203.221 | 178552 | 1.23 | 200 | 101.6 | 90 | 110 | |
| 78 | Se | 72 | 200.940 | 9946 | 1.59 | 200 | 100.5 | 90 | 110 | |
| 88 | Sr | 115 | 191.847 | 735348 | 0.49 | 200 | 95.9 | 90 | 110 | |
| 95 | Mo | 115 | 192.891 | 680000 | 0.37 | 200 | 96.4 | 90 | 110 | |
| 107 | Ag | 115 | 198.078 | 2196549 | 0.80 | 200 | 99.0 | 90 | 110 | |
| 111 | Cd | 115 | 195.089 | 311857 | 0.78 | 200 | 97.5 | 90 | 110 | |
| 118 | Sn | 115 | 194.926 | 641184 | 0.80 | 200 | 97.5 | 90 | 110 | |
| 121 | Sb | 115 | 198.600 | 1007405 | 1.03 | 200 | 99.3 | 90 | 110 | |
| 137 | Ba | 115 | 197.372 | 315985 | 0.91 | 200 | 98.7 | 90 | 110 | |
| 205 | Tl | 209 | 196.484 | 4428415 | 0.55 | 200 | 98.2 | 90 | 110 | |
| 208 | Pb | 209 | 195.125 | 5945664 | 0.41 | 200 | 97.6 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 847374 | 0.44 | 989663 | 85.62 | 70 | 120 | |
| 72 | Ge | 652051 | 1.49 | 739879 | 88.13 | 70 | 120 | |
| 115 | In | 5948718 | 0.47 | 6565136 | 90.61 | 70 | 120 | |
| 209 | Bi | 14047653 | 0.98 | 15222533 | 92.28 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 17:42 | Sample Name | LCVL7-160516 |
| Data Batch | 160516.b | Comment | LCVLICPMS_TW |
| Data File Name | 184LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.735 | 472 | 4.98 | 10 | 107.3 | 70 | 130 | |
| 9 | Be | 45 | 1.168 | 67 | 14.65 | 1 | 116.8 | 70 | 130 | |
| 11 | B | 45 | 25.393 | 584 | 9.75 | 20 | 127.0 | 70 | 130 | |
| 23 | Na | 45 | 132.710 | 135333 | 0.65 | 100 | 132.7 | 70 | 130 | Fail |
| 24 | Mg | 45 | 100.664 | 33859 | 0.52 | 100 | 100.7 | 70 | 130 | |
| 27 | Al | 45 | 101.267 | 12097 | 3.16 | 100 | 101.3 | 70 | 130 | |
| 39 | K | 45 | 100.626 | 78326 | 1.12 | 100 | 100.6 | 70 | 130 | |
| 44 | Ca | 45 | 102.547 | 2145 | 2.76 | 100 | 102.5 | 70 | 130 | |
| 47 | Ti | 45 | 5.249 | 669 | 7.63 | 5 | 105.0 | 70 | 130 | |
| 51 | V | 45 | 0.920 | 6193 | 3.31 | 1 | 92.0 | 70 | 130 | |
| 52 | Cr | 45 | 5.136 | 28600 | 0.48 | 5 | 102.7 | 70 | 130 | |
| 55 | Mn | 45 | 4.819 | 14294 | 2.98 | 5 | 96.4 | 70 | 130 | |
| 56 | Fe | 45 | 101.912 | 470909 | 1.83 | 100 | 101.9 | 70 | 130 | |
| 59 | Co | 72 | 5.213 | 44755 | 0.50 | 5 | 104.3 | 70 | 130 | |
| 60 | Ni | 72 | 5.215 | 12690 | 1.30 | 5 | 104.3 | 70 | 130 | |
| 63 | Cu | 72 | 5.038 | 36090 | 1.00 | 5 | 100.8 | 70 | 130 | |
| 66 | Zn | 72 | 5.321 | 5913 | 1.25 | 5 | 106.4 | 70 | 130 | |
| 75 | As | 72 | 5.070 | 4680 | 1.77 | 5 | 101.4 | 70 | 130 | |
| 78 | Se | 72 | 4.843 | 311 | 5.91 | 5 | 96.9 | 70 | 130 | |
| 88 | Sr | 115 | 4.752 | 19127 | 1.78 | 5 | 95.0 | 70 | 130 | |
| 95 | Mo | 115 | 4.718 | 17387 | 1.36 | 5 | 94.4 | 70 | 130 | |
| 107 | Ag | 115 | 1.928 | 22382 | 1.43 | 2 | 96.4 | 70 | 130 | |
| 111 | Cd | 115 | 0.935 | 1569 | 4.12 | 1 | 93.5 | 70 | 130 | |
| 118 | Sn | 115 | 4.792 | 17536 | 1.00 | 5 | 95.8 | 70 | 130 | |
| 121 | Sb | 115 | 1.933 | 10418 | 2.17 | 2 | 96.7 | 70 | 130 | |
| 137 | Ba | 115 | 4.859 | 8143 | 2.71 | 5 | 97.2 | 70 | 130 | |
| 205 | Tl | 209 | 1.004 | 23695 | 0.69 | 1 | 100.4 | 70 | 130 | |
| 208 | Pb | 209 | 0.919 | 33561 | 1.82 | 1 | 91.9 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 872405 | 0.53 | 989663 | 88.15 | 70 | 120 | |
| 72 | Ge | 664615 | 0.55 | 739879 | 89.83 | 70 | 120 | |
| 115 | In | 6203310 | 1.23 | 6565136 | 94.49 | 70 | 120 | |
| 209 | Bi | 14532820 | 1.06 | 15222533 | 95.47 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 17:44 | Sample Name | CCB7-160516 |
| Data Batch | 160516.b | Comment | CCB ICPMS_TW |
| Data File Name | 185_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.284 | 29 | 25.7 | 2 | 5 | |
| 9 | Be | 45 | 0.017 | 3 | 142.0 | 0.4 | 0.3 | |
| 11 | B | 45 | 5.548 | 229 | 12.4 | 10 | 10 | |
| 23 | Na | 45 | 31.448 | 67435 | 0.8 | 50 | 100 | |
| 24 | Mg | 45 | -0.640 | 461 | 17.2 | 50 | 100 | |
| 27 | Al | 45 | 1.859 | 389 | 15.9 | 50 | 10 | |
| 39 | K | 45 | 2.600 | 45489 | 1.5 | 50 | 100 | |
| 44 | Ca | 45 | 2.613 | 250 | 9.3 | 50 | 100 | |
| 47 | Ti | 45 | 0.029 | 6 | 69.3 | 4 | 3 | |
| 51 | V | 45 | -0.105 | 1728 | 5.6 | 4 | 3 | |
| 52 | Cr | 45 | -0.004 | 1793 | 4.2 | 2 | 2 | |
| 55 | Mn | 45 | -0.145 | 387 | 17.7 | 2 | 3 | |
| 56 | Fe | 45 | 1.218 | 20605 | 18.0 | 50 | 50 | |
| 59 | Co | 72 | 0.007 | 178 | 24.9 | 2 | 3 | |
| 60 | Ni | 72 | -0.009 | 361 | 11.7 | 2 | 3 | |
| 63 | Cu | 72 | -0.181 | 2093 | 7.1 | 2 | 2 | |
| 66 | Zn | 72 | -0.011 | 276 | 18.1 | 4 | 2 | |
| 75 | As | 72 | -0.005 | 139 | 5.7 | 2 | 2 | |
| 78 | Se | 72 | 0.230 | 80 | 9.2 | 1 | 2 | |
| 88 | Sr | 115 | 0.009 | 172 | 25.8 | 4 | 3 | |
| 95 | Mo | 115 | 0.015 | 99 | 13.6 | 2 | 2 | |
| 107 | Ag | 115 | 0.011 | 217 | 7.1 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.008 | 22 | 60.6 | 0.4 | 0.3 | |
| 118 | Sn | 115 | -0.101 | 777 | 6.0 | 4 | 3 | |
| 121 | Sb | 115 | 0.022 | 308 | 26.9 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.044 | 104 | 29.7 | 2 | 3 | |
| 205 | Tl | 209 | 0.029 | 932 | 15.5 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.062 | 2598 | 8.1 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 867642 | 0.63 | 989663 | 87.67 | 70 | 120 | |
| 72 | Ge | 664975 | 0.97 | 739879 | 89.88 | 70 | 120 | |
| 115 | In | 6146026 | 0.40 | 6565136 | 93.62 | 70 | 120 | |
| 209 | Bi | 14268893 | 2.38 | 15222533 | 93.74 | 70 | 120 | |

# Method Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/16 5:46 PM | Sample Name | MB-75104 |
| Data Batch | 160516.b | Comment | MBLKICPMS_TSDOD1 |
| Data File Name | 186_PB.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.159 | 24 | 11.02 | | |
| 9 | Be | 45 | 0.016 | 3 | 141.97 | | |
| 11 | B | 45 | 6.222 | 248 | 13.20 | | |
| 23 | Na | 45 | 39.858 | 75037 | 0.96 | | |
| 24 | Mg | 45 | 2.766 | 1622 | 5.80 | | |
| 27 | Al | 45 | 7.875 | 1123 | 10.44 | | |
| 39 | K | 45 | 8.803 | 48852 | 0.86 | | |
| 44 | Ca | 45 | 39.260 | 967 | 3.41 | | |
| 47 | Ti | 45 | 0.267 | 37 | 15.75 | | |
| 51 | V | 45 | -0.152 | 1563 | 6.34 | | |
| 52 | Cr | 45 | -0.004 | 1842 | 6.31 | | |
| 55 | Mn | 45 | -0.148 | 390 | 8.15 | | |
| 56 | Fe | 45 | 3.701 | 32534 | 3.67 | | |
| 59 | Co | 72 | 0.002 | 132 | 5.82 | | |
| 60 | Ni | 72 | 0.033 | 468 | 9.46 | | |
| 63 | Cu | 72 | -0.081 | 2794 | 7.24 | | |
| 66 | Zn | 72 | 2.585 | 3074 | 4.46 | | |
| 75 | As | 72 | -0.035 | 114 | 16.90 | | |
| 78 | Se | 72 | 0.031 | 71 | 15.23 | | |
| 88 | Sr | 115 | 0.116 | 623 | 12.05 | | |
| 95 | Mo | 115 | 0.026 | 143 | 26.82 | | |
| 107 | Ag | 115 | 0.007 | 179 | 16.91 | | |
| 111 | Cd | 115 | 0.002 | 13 | 0.00 | | |
| 118 | Sn | 115 | 3.494 | 13551 | 4.51 | | |
| 121 | Sb | 115 | 0.009 | 252 | 28.23 | | |
| 137 | Ba | 115 | 0.056 | 130 | 26.77 | | |
| 205 | Tl | 209 | 0.014 | 640 | 9.04 | | |
| 208 | Pb | 209 | -0.040 | 3500 | 1.03 | | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 891697 | 0.83 | 989663 | 90.10 | 70 | 120 | |
| 72 | Ge | 676387 | 0.23 | 739879 | 91.42 | 70 | 120 | |
| 115 | In | 6417437 | 1.76 | 6565136 | 97.75 | 70 | 120 | |
| 209 | Bi | 15159244 | 0.36 | 15222533 | 99.58 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 17:48 | Sample Name | LCS-75104 |
| Data Batch | 160516.b | Comment | LCS ICPMS_TSDOD1 |
| Data File Name | 187_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 217.307 | 9304 | 2.17 | 200 | 108.7 | 80 | 120 | |
| 9 | Be | 45 | 211.209 | 11948 | 0.37 | 200 | 105.6 | 80 | 120 | |
| 11 | B | 45 | 212.171 | 3947 | 1.85 | 200 | 106.1 | 80 | 120 | |
| 23 | Na | 45 | 5186.769 | 3533063 | 1.13 | 1000 | 518.7 | 80 | 120 | Fail |
| 24 | Mg | 45 | 5074.940 | 1686759 | 0.46 | 1000 | 507.5 | 80 | 120 | Fail |
| 27 | Al | 45 | 982.133 | 116730 | 0.66 | 1000 | 98.2 | 80 | 120 | |
| 39 | K | 45 | 5102.024 | 1754985 | 1.20 | 1000 | 510.2 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4796.504 | 91807 | 0.70 | 1000 | 479.7 | 80 | 120 | Fail |
| 47 | Ti | 45 | 202.170 | 25884 | 2.64 | 200 | 101.1 | 80 | 120 | |
| 51 | V | 45 | 206.829 | 908606 | 0.67 | 200 | 103.4 | 80 | 120 | |
| 52 | Cr | 45 | 209.381 | 1101893 | 1.32 | 200 | 104.7 | 80 | 120 | |
| 55 | Mn | 45 | 202.060 | 571185 | 0.05 | 200 | 101.0 | 80 | 120 | |
| 56 | Fe | 45 | 994.334 | 4495360 | 0.17 | 1000 | 99.4 | 80 | 120 | |
| 59 | Co | 72 | 207.600 | 1802640 | 0.78 | 200 | 103.8 | 80 | 120 | |
| 60 | Ni | 72 | 208.276 | 498798 | 0.29 | 200 | 104.1 | 80 | 120 | |
| 63 | Cu | 72 | 206.224 | 1365382 | 0.45 | 200 | 103.1 | 80 | 120 | |
| 66 | Zn | 72 | 204.721 | 219813 | 0.56 | 200 | 102.4 | 80 | 120 | |
| 75 | As | 72 | 204.335 | 185560 | 0.09 | 200 | 102.2 | 80 | 120 | |
| 78 | Se | 72 | 199.405 | 10202 | 2.02 | 200 | 99.7 | 80 | 120 | |
| 88 | Sr | 115 | 193.308 | 765214 | 0.58 | 200 | 96.7 | 80 | 120 | |
| 95 | Mo | 115 | 196.878 | 716794 | 0.47 | 200 | 98.4 | 80 | 120 | |
| 107 | Ag | 115 | 197.715 | 2264311 | 0.24 | 200 | 98.9 | 80 | 120 | |
| 111 | Cd | 115 | 196.096 | 323738 | 0.59 | 200 | 98.0 | 80 | 120 | |
| 118 | Sn | 115 | 201.661 | 685012 | 0.46 | 200 | 100.8 | 80 | 120 | |
| 121 | Sb | 115 | 196.868 | 1031342 | 0.30 | 200 | 98.4 | 80 | 120 | |
| 137 | Ba | 115 | 197.246 | 326103 | 0.77 | 200 | 98.6 | 80 | 120 | |
| 205 | Tl | 209 | 200.742 | 4673451 | 0.37 | 200 | 100.4 | 80 | 120 | |
| 208 | Pb | 209 | 199.049 | 6265029 | 0.46 | 200 | 99.5 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 879268 | 0.83 | 989663 | 88.85 | 70 | 120 | |
| 72 | Ge | 673931 | 0.26 | 739879 | 91.09 | 70 | 120 | |
| 115 | In | 6144786 | 1.91 | 6565136 | 93.60 | 70 | 120 | |
| 209 | Bi | 14509519 | 0.36 | 15222533 | 95.32 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 17:50 | Sample Name | LCSD-75104 |
| Data Batch | 160516.b | Comment | LCSDICPMS_TSDOD1 |
| Data File Name | 188_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 216.426 | 9354 | 1.13 | 200 | 108.2 | 80 | 120 | |
| 9 | Be | 45 | 212.684 | 12142 | 0.97 | 200 | 106.3 | 80 | 120 | |
| 11 | B | 45 | 212.325 | 3988 | 4.41 | 200 | 106.2 | 80 | 120 | |
| 23 | Na | 45 | 5194.382 | 3571044 | 0.53 | 1000 | 519.4 | 80 | 120 | Fail |
| 24 | Mg | 45 | 5110.510 | 1714436 | 0.64 | 1000 | 511.1 | 80 | 120 | Fail |
| 27 | Al | 45 | 979.320 | 117482 | 0.26 | 1000 | 97.9 | 80 | 120 | |
| 39 | K | 45 | 5080.396 | 1763607 | 0.78 | 1000 | 508.0 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4739.837 | 91581 | 1.88 | 1000 | 474.0 | 80 | 120 | Fail |
| 47 | Ti | 45 | 199.433 | 25770 | 1.59 | 200 | 99.7 | 80 | 120 | |
| 51 | V | 45 | 205.748 | 912093 | 1.03 | 200 | 102.9 | 80 | 120 | |
| 52 | Cr | 45 | 206.480 | 1096723 | 0.66 | 200 | 103.2 | 80 | 120 | |
| 55 | Mn | 45 | 199.979 | 570579 | 0.47 | 200 | 100.0 | 80 | 120 | |
| 56 | Fe | 45 | 999.344 | 4560486 | 1.26 | 1000 | 99.9 | 80 | 120 | |
| 59 | Co | 72 | 210.802 | 1817306 | 0.87 | 200 | 105.4 | 80 | 120 | |
| 60 | Ni | 72 | 208.925 | 496761 | 0.22 | 200 | 104.5 | 80 | 120 | |
| 63 | Cu | 72 | 207.598 | 1364596 | 0.16 | 200 | 103.8 | 80 | 120 | |
| 66 | Zn | 72 | 206.258 | 219874 | 0.99 | 200 | 103.1 | 80 | 120 | |
| 75 | As | 72 | 205.548 | 185321 | 0.79 | 200 | 102.8 | 80 | 120 | |
| 78 | Se | 72 | 196.657 | 9990 | 0.84 | 200 | 98.3 | 80 | 120 | |
| 88 | Sr | 115 | 191.400 | 760364 | 0.45 | 200 | 95.7 | 80 | 120 | |
| 95 | Mo | 115 | 194.808 | 711841 | 0.48 | 200 | 97.4 | 80 | 120 | |
| 107 | Ag | 115 | 196.119 | 2254545 | 0.90 | 200 | 98.1 | 80 | 120 | |
| 111 | Cd | 115 | 197.057 | 326540 | 0.57 | 200 | 98.5 | 80 | 120 | |
| 118 | Sn | 115 | 202.138 | 689326 | 1.71 | 200 | 101.1 | 80 | 120 | |
| 121 | Sb | 115 | 197.646 | 1039393 | 1.00 | 200 | 98.8 | 80 | 120 | |
| 137 | Ba | 115 | 197.200 | 327227 | 0.21 | 200 | 98.6 | 80 | 120 | |
| 205 | Tl | 209 | 200.607 | 4691591 | 1.48 | 200 | 100.3 | 80 | 120 | |
| 208 | Pb | 209 | 199.945 | 6321709 | 0.55 | 200 | 100.0 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 887672 | 2.27 | 989663 | 89.69 | 70 | 120 | |
| 72 | Ge | 669090 | 0.15 | 739879 | 90.43 | 70 | 120 | |
| 115 | In | 6169843 | 3.20 | 6565136 | 93.98 | 70 | 120 | |
| 209 | Bi | 14575012 | 0.59 | 15222533 | 95.75 | 70 | 120 | |

# Dilution Sample (Dil) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 17:56 | Sample Name | 1605071-53A SD |
| Data Batch | 160516.b | Comment | SD ICPMS_TSDOD1 |
| Data File Name | 191_SD.d | Dilution | 25 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Value | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 20.183 | 865 | 3.69 | 98.9 | 102.1 | 110 | 90 | Good |
| 9 | Be | 45 | 0.758 | 44 | 28.48 | 3.8 | 99.9 | 110 | 90 | Good |
| 11 | B | 45 | 38.615 | 812 | 9.25 | 177.0 | 109.1 | 110 | 90 | Good |
| 23 | Na | 45 | 2179.930 | 1487065 | 0.77 | 10853.8 | 100.4 | 110 | 90 | Good |
| 24 | Mg | 45 | 3538.431 | 1156768 | 1.42 | 17593.3 | 100.6 | 110 | 90 | Good |
| 27 | Al | 45 | 11876.356 | 1386222 | 0.65 | 59013.6 | 100.6 | 110 | 90 | Good |
| 39 | K | 45 | 4083.408 | 1389954 | 0.43 | 20156.4 | 101.3 | 110 | 90 | Good |
| 44 | Ca | 45 | 25548.076 | 479976 | 0.66 | 125427.9 | 101.8 | 110 | 90 | Good |
| 47 | Ti | 45 | 73.435 | 9246 | 0.43 | 359.6 | 102.1 | 110 | 90 | Good |
| 51 | V | 45 | 17.472 | 77464 | 0.54 | 88.1 | 99.1 | 110 | 90 | Good |
| 52 | Cr | 45 | 14.728 | 77896 | 0.88 | 73.0 | 100.9 | 110 | 90 | Good |
| 55 | Mn | 45 | 79.829 | 222393 | 1.36 | 389.4 | 102.5 | 110 | 90 | Good |
| 56 | Fe | 45 | 19080.842 | 84548612 | 0.25 | 90986.7 | 104.9 | 110 | 90 | Good |
| 59 | Co | 72 | 6.078 | 51050 | 1.18 | 29.2 | 103.9 | 110 | 90 | Good |
| 60 | Ni | 72 | 7.488 | 17670 | 0.81 | 36.5 | 102.6 | 110 | 90 | Good |
| 63 | Cu | 72 | 1.143 | 10487 | 2.59 | 5.5 | 103.1 | 110 | 90 | Good |
| 66 | Zn | 72 | 40.643 | 42350 | 1.90 | 195.8 | 103.8 | 110 | 90 | Good |
| 75 | As | 72 | 3.585 | 3281 | 2.26 | 17.7 | 101.3 | 110 | 90 | Good |
| 78 | Se | 72 | 1.180 | 125 | 13.73 | 5.4 | 109.4 | 110 | 90 | Good |
| 88 | Sr | 115 | 96.724 | 378414 | 0.70 | 499.3 | 96.9 | 110 | 90 | Good |
| 95 | Mo | 115 | 0.266 | 1002 | 7.94 | 1.4 | 95.4 | 110 | 90 | Good |
| 107 | Ag | 115 | 0.023 | 348 | 23.01 | 0.1 | 186.0 | 110 | 90 | |
| 111 | Cd | 115 | 0.034 | 64 | 31.18 | 0.2 | 112.0 | 110 | 90 | |
| 118 | Sn | 115 | 0.798 | 3779 | 3.89 | 5.1 | 78.9 | 110 | 90 | |
| 121 | Sb | 115 | 0.050 | 451 | 21.24 | 0.2 | 131.7 | 110 | 90 | |
| 137 | Ba | 115 | 26.183 | 42802 | 1.88 | 135.0 | 97.0 | 110 | 90 | Good |
| 205 | Tl | 209 | 0.117 | 2970 | 10.41 | 0.4 | 137.7 | 110 | 90 | |
| 208 | Pb | 209 | 3.448 | 111947 | 1.57 | 17.5 | 98.3 | 110 | 90 | Good |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 864639 | 1.16 | 989663 | 87.37 | 70 | 120 | |
| 72 | Ge | 650517 | 0.67 | 739879 | 87.92 | 70 | 120 | |
| 115 | In | 6070614 | 0.34 | 6565136 | 92.47 | 70 | 120 | |
| 209 | Bi | 14367769 | 1.01 | 15222533 | 94.38 | 70 | 120 | |

# Post Digestion Spike Sample (PDS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 18:17 | Sample Name | 1605071-53A PDS |
| Data Batch | 160516.b | Comment | PDS ICPMS_TSDOD1 |
| Data File Name | 201_PDS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 299.530 | 12602 | 1.66 | 98.9 | 200 | 100.3 | 75 | 125 | |
| 9 | Be | 45 | 205.480 | 11427 | 1.26 | 3.8 | 200 | 100.8 | 75 | 125 | |
| 11 | B | 45 | 381.572 | 6875 | 0.38 | 177.0 | 200 | 102.3 | 75 | 125 | |
| 23 | Na | 45 | 15731.814 | 10440065 | 1.58 | 10853.8 | 5000 | 97.6 | 75 | 125 | |
| 24 | Mg | 45 | 22867.217 | 7469823 | 2.53 | 17593.3 | 5000 | 105.5 | 75 | 125 | |
| 27 | Al | 45 | 64658.101 | 7543925 | 1.12 | 59013.6 | 5000 | 112.9 | 75 | 125 | |
| 39 | K | 45 | 25711.946 | 8514482 | 0.22 | 20156.4 | 5000 | 111.1 | 75 | 125 | |
| 44 | Ca | 45 | ######## | 2446259 | 0.46 | 125427.9 | 5000 | 97.1 | 75 | 125 | |
| 47 | Ti | 45 | 557.449 | 70151 | 2.14 | 359.6 | 200 | 98.9 | 75 | 125 | |
| 51 | V | 45 | 288.642 | 1245711 | 0.55 | 88.1 | 200 | 100.3 | 75 | 125 | |
| 52 | Cr | 45 | 274.616 | 1420132 | 0.75 | 73.0 | 200 | 100.8 | 75 | 125 | |
| 55 | Mn | 45 | 575.449 | 1597709 | 0.40 | 389.4 | 200 | 93.0 | 75 | 125 | |
| 56 | Fe | 45 | 97102.927 | 430087547 | 1.29 | 90986.7 | 5000 | 122.3 | 75 | 125 | |
| 59 | Co | 72 | 228.797 | 1895552 | 0.56 | 29.2 | 200 | 99.8 | 75 | 125 | |
| 60 | Ni | 72 | 231.028 | 527844 | 0.52 | 36.5 | 200 | 97.3 | 75 | 125 | |
| 63 | Cu | 72 | 195.540 | 1235329 | 0.74 | 5.5 | 200 | 95.0 | 75 | 125 | |
| 66 | Zn | 72 | 388.674 | 397934 | 0.44 | 195.8 | 200 | 96.4 | 75 | 125 | |
| 75 | As | 72 | 217.689 | 188613 | 0.76 | 17.7 | 200 | 100.0 | 75 | 125 | |
| 78 | Se | 72 | 201.489 | 9835 | 1.03 | 5.4 | 200 | 98.0 | 75 | 125 | |
| 88 | Sr | 115 | 687.559 | 2602796 | 0.41 | 499.3 | 200 | 94.1 | 75 | 125 | |
| 95 | Mo | 115 | 192.436 | 669975 | 1.11 | 1.4 | 200 | 95.5 | 75 | 125 | |
| 107 | Ag | 115 | 176.982 | 1938519 | 0.78 | 0.1 | 200 | 88.5 | 75 | 125 | |
| 111 | Cd | 115 | 187.555 | 296143 | 0.83 | 0.2 | 200 | 93.7 | 75 | 125 | |
| 118 | Sn | 115 | 204.809 | 665385 | 0.52 | 5.1 | 200 | 99.9 | 75 | 125 | |
| 121 | Sb | 115 | 191.198 | 958126 | 0.20 | 0.2 | 200 | 95.5 | 75 | 125 | |
| 137 | Ba | 115 | 330.052 | 522018 | 0.49 | 135.0 | 200 | 97.5 | 75 | 125 | |
| 205 | Tl | 209 | 194.627 | 4378810 | 0.79 | 0.4 | 200 | 97.1 | 75 | 125 | |
| 208 | Pb | 209 | 209.523 | 6372901 | 0.88 | 17.5 | 200 | 96.0 | 75 | 125 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 864374 | 0.64 | 989663 | 87.34 | 70 | 120 | |
| 72 | Ge | 643068 | 1.44 | 739879 | 86.92 | 70 | 120 | |
| 115 | In | 5880658 | 3.30 | 6565136 | 89.57 | 70 | 120 | |
| 209 | Bi | 14021642 | 0.43 | 15222533 | 92.11 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 18:19 | Sample Name | 1605071-53A MS |
| Data Batch | 160516.b | Comment | MS ICPMS_TSDOD1 |
| Data File Name | 202_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 308.595 | 12613 | 0.92 | 98.9 | 200 | 104.9 | 80 | 120 | |
| 9 | Be | 45 | 209.250 | 11306 | 0.87 | 3.8 | 200 | 102.7 | 80 | 120 | |
| 11 | B | 45 | 374.255 | 6554 | 1.62 | 177.0 | 200 | 98.6 | 80 | 120 | |
| 23 | Na | 45 | 15939.921 | 10276454 | 1.36 | 10853.8 | 1000 | 508.6 | 80 | 120 | Fail |
| 24 | Mg | 45 | 23014.948 | 7304144 | 1.86 | 17593.3 | 1000 | 542.2 | 80 | 120 | Fail |
| 27 | Al | 45 | 66648.950 | 7555516 | 2.01 | 59013.6 | 1000 | 763.5 | 80 | 120 | Fail |
| 39 | K | 45 | 25651.305 | 8252989 | 0.71 | 20156.4 | 1000 | 549.5 | 80 | 120 | Fail |
| 44 | Ca | 45 | ######## | 2320114 | 1.02 | 125427.9 | 1000 | 175.7 | 80 | 120 | Fail |
| 47 | Ti | 45 | 563.962 | 68956 | 0.49 | 359.6 | 200 | 102.2 | 80 | 120 | |
| 51 | V | 45 | 293.770 | 1231755 | 1.25 | 88.1 | 200 | 102.8 | 80 | 120 | |
| 52 | Cr | 45 | 274.475 | 1379018 | 1.11 | 73.0 | 200 | 100.7 | 80 | 120 | |
| 55 | Mn | 45 | 594.926 | 1604792 | 1.10 | 389.4 | 200 | 102.8 | 80 | 120 | |
| 56 | Fe | 45 | 95000.102 | 408813904 | 1.30 | 90986.7 | 1000 | 401.3 | 80 | 120 | Fail |
| 59 | Co | 72 | 229.114 | 1855863 | 1.71 | 29.2 | 200 | 99.9 | 80 | 120 | |
| 60 | Ni | 72 | 235.680 | 526494 | 1.03 | 36.5 | 200 | 99.6 | 80 | 120 | |
| 63 | Cu | 72 | 201.361 | 1243805 | 0.55 | 5.5 | 200 | 97.9 | 80 | 120 | |
| 66 | Zn | 72 | 399.014 | 399440 | 1.56 | 195.8 | 200 | 101.6 | 80 | 120 | |
| 75 | As | 72 | 219.944 | 186316 | 0.25 | 17.7 | 200 | 101.1 | 80 | 120 | |
| 78 | Se | 72 | 200.431 | 9566 | 0.26 | 5.4 | 200 | 97.5 | 80 | 120 | |
| 88 | Sr | 115 | 706.068 | 2577754 | 0.26 | 499.3 | 200 | 103.4 | 80 | 120 | |
| 95 | Mo | 115 | 187.664 | 630247 | 0.52 | 1.4 | 200 | 93.1 | 80 | 120 | |
| 107 | Ag | 115 | 192.357 | 2032087 | 0.56 | 0.1 | 200 | 96.1 | 80 | 120 | |
| 111 | Cd | 115 | 195.392 | 297553 | 0.85 | 0.2 | 200 | 97.6 | 80 | 120 | |
| 118 | Sn | 115 | 202.004 | 632934 | 0.66 | 5.1 | 200 | 98.5 | 80 | 120 | |
| 121 | Sb | 115 | 64.760 | 313042 | 0.79 | 0.2 | 200 | 32.3 | 80 | 120 | Fail |
| 137 | Ba | 115 | 429.321 | 654808 | 1.16 | 135.0 | 200 | 147.2 | 80 | 120 | Fail |
| 205 | Tl | 209 | 195.267 | 4334928 | 1.25 | 0.4 | 200 | 97.4 | 80 | 120 | |
| 208 | Pb | 209 | 211.624 | 6351126 | 0.89 | 17.5 | 200 | 97.0 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 839765 | 0.62 | 989663 | 84.85 | 70 | 120 | |
| 72 | Ge | 628707 | 0.64 | 739879 | 84.97 | 70 | 120 | |
| 115 | In | 5667651 | 1.50 | 6565136 | 86.33 | 70 | 120 | |
| 209 | Bi | 13837731 | 1.29 | 15222533 | 90.90 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 18:21 | Sample Name | 1605071-53A MSD |
| Data Batch | 160516.b | Comment | MSD ICPMS_TSDOD1 |
| Data File Name | 203_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 312.784 | 12601 | 0.80 | 98.9 | 200 | 107.0 | 80 | 120 | |
| 9 | Be | 45 | 205.879 | 10964 | 1.59 | 3.8 | 200 | 101.0 | 80 | 120 | |
| 11 | B | 45 | 389.221 | 6713 | 2.10 | 177.0 | 200 | 106.1 | 80 | 120 | |
| 23 | Na | 45 | 16296.448 | 10354763 | 1.38 | 10853.8 | 1000 | 544.3 | 80 | 120 | Fail |
| 24 | Mg | 45 | 23416.729 | 7324631 | 0.73 | 17593.3 | 1000 | 582.3 | 80 | 120 | Fail |
| 27 | Al | 45 | 66515.586 | 7431867 | 2.24 | 59013.6 | 1000 | 750.2 | 80 | 120 | Fail |
| 39 | K | 45 | 26303.800 | 8340229 | 1.42 | 20156.4 | 1000 | 614.7 | 80 | 120 | Fail |
| 44 | Ca | 45 | ######## | 2382698 | 0.24 | 125427.9 | 1000 | 709.3 | 80 | 120 | Fail |
| 47 | Ti | 45 | 550.353 | 66328 | 0.42 | 359.6 | 200 | 95.4 | 80 | 120 | |
| 51 | V | 45 | 291.860 | 1206166 | 0.78 | 88.1 | 200 | 101.9 | 80 | 120 | |
| 52 | Cr | 45 | 276.385 | 1368636 | 0.25 | 73.0 | 200 | 101.7 | 80 | 120 | |
| 55 | Mn | 45 | 603.095 | 1603413 | 0.39 | 389.4 | 200 | 106.9 | 80 | 120 | |
| 56 | Fe | 45 | 98689.312 | 418598792 | 1.03 | 90986.7 | 1000 | 770.3 | 80 | 120 | Fail |
| 59 | Co | 72 | 229.105 | 1825824 | 0.60 | 29.2 | 200 | 99.9 | 80 | 120 | |
| 60 | Ni | 72 | 236.759 | 520351 | 0.58 | 36.5 | 200 | 100.1 | 80 | 120 | |
| 63 | Cu | 72 | 201.871 | 1226801 | 0.87 | 5.5 | 200 | 98.2 | 80 | 120 | |
| 66 | Zn | 72 | 401.478 | 395393 | 0.72 | 195.8 | 200 | 102.8 | 80 | 120 | |
| 75 | As | 72 | 219.113 | 182613 | 0.12 | 17.7 | 200 | 100.7 | 80 | 120 | |
| 78 | Se | 72 | 200.156 | 9399 | 2.64 | 5.4 | 200 | 97.4 | 80 | 120 | |
| 88 | Sr | 115 | 692.136 | 2500189 | 1.14 | 499.3 | 200 | 96.4 | 80 | 120 | |
| 95 | Mo | 115 | 187.886 | 624354 | 0.02 | 1.4 | 200 | 93.2 | 80 | 120 | |
| 107 | Ag | 115 | 191.984 | 2006779 | 0.73 | 0.1 | 200 | 96.0 | 80 | 120 | |
| 111 | Cd | 115 | 191.752 | 288897 | 1.07 | 0.2 | 200 | 95.8 | 80 | 120 | |
| 118 | Sn | 115 | 201.590 | 625024 | 0.19 | 5.1 | 200 | 98.3 | 80 | 120 | |
| 121 | Sb | 115 | 65.168 | 311734 | 0.39 | 0.2 | 200 | 32.5 | 80 | 120 | Fail |
| 137 | Ba | 115 | 351.108 | 529883 | 0.52 | 135.0 | 200 | 108.0 | 80 | 120 | |
| 205 | Tl | 209 | 198.799 | 4289995 | 1.11 | 0.4 | 200 | 99.2 | 80 | 120 | |
| 208 | Pb | 209 | 213.166 | 6218209 | 0.73 | 17.5 | 200 | 97.8 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 827709 | 0.36 | 989663 | 83.64 | 70 | 120 | |
| 72 | Ge | 618540 | 0.50 | 739879 | 83.60 | 70 | 120 | |
| 115 | In | 5609453 | 2.38 | 6565136 | 85.44 | 70 | 120 | |
| 209 | Bi | 13452531 | 2.44 | 15222533 | 88.37 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 18:22 | Sample Name | CCV8-160516 |
| Data Batch | 160516.b | Comment | CCV ICPMS_TW |
| Data File Name | 204_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 217.071 | 8691 | 1.98 | 200 | 108.5 | 90 | 110 | |
| 9 | Be | 45 | 209.591 | 11086 | 0.59 | 200 | 104.8 | 90 | 110 | |
| 11 | B | 45 | 217.666 | 3784 | 4.20 | 200 | 108.8 | 90 | 110 | |
| 23 | Na | 45 | 5138.682 | 3273142 | 0.83 | 5000 | 102.8 | 90 | 110 | |
| 24 | Mg | 45 | 5094.892 | 1583302 | 0.76 | 5000 | 101.9 | 90 | 110 | |
| 27 | Al | 45 | 4949.710 | 549432 | 1.01 | 5000 | 99.0 | 90 | 110 | |
| 39 | K | 45 | 5067.389 | 1629970 | 0.95 | 5000 | 101.3 | 90 | 110 | |
| 44 | Ca | 45 | 4809.238 | 86073 | 1.65 | 5000 | 96.2 | 90 | 110 | |
| 47 | Ti | 45 | 202.801 | 24274 | 2.43 | 200 | 101.4 | 90 | 110 | |
| 51 | V | 45 | 203.029 | 833961 | 0.84 | 200 | 101.5 | 90 | 110 | |
| 52 | Cr | 45 | 203.781 | 1002690 | 0.81 | 200 | 101.9 | 90 | 110 | |
| 55 | Mn | 45 | 200.190 | 529115 | 1.02 | 200 | 100.1 | 90 | 110 | |
| 56 | Fe | 45 | 5203.833 | 21934996 | 2.16 | 5000 | 104.1 | 90 | 110 | |
| 59 | Co | 72 | 205.681 | 1676341 | 0.68 | 200 | 102.8 | 90 | 110 | |
| 60 | Ni | 72 | 204.373 | 459404 | 0.46 | 200 | 102.2 | 90 | 110 | |
| 63 | Cu | 72 | 205.669 | 1278115 | 0.49 | 200 | 102.8 | 90 | 110 | |
| 66 | Zn | 72 | 203.898 | 205488 | 0.61 | 200 | 101.9 | 90 | 110 | |
| 75 | As | 72 | 204.425 | 174242 | 0.24 | 200 | 102.2 | 90 | 110 | |
| 78 | Se | 72 | 199.208 | 9566 | 2.02 | 200 | 99.6 | 90 | 110 | |
| 88 | Sr | 115 | 191.552 | 720339 | 1.21 | 200 | 95.8 | 90 | 110 | |
| 95 | Mo | 115 | 192.399 | 665494 | 1.01 | 200 | 96.2 | 90 | 110 | |
| 107 | Ag | 115 | 198.179 | 2156401 | 0.68 | 200 | 99.1 | 90 | 110 | |
| 111 | Cd | 115 | 194.119 | 304492 | 0.48 | 200 | 97.1 | 90 | 110 | |
| 118 | Sn | 115 | 195.223 | 630237 | 0.46 | 200 | 97.6 | 90 | 110 | |
| 121 | Sb | 115 | 199.385 | 992480 | 0.39 | 200 | 99.7 | 90 | 110 | |
| 137 | Ba | 115 | 197.076 | 309611 | 0.96 | 200 | 98.5 | 90 | 110 | |
| 205 | Tl | 209 | 194.374 | 4391033 | 0.40 | 200 | 97.2 | 90 | 110 | |
| 208 | Pb | 209 | 193.592 | 5912909 | 0.27 | 200 | 96.8 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 822124 | 0.71 | 989663 | 83.07 | 70 | 120 | |
| 72 | Ge | 632554 | 0.47 | 739879 | 85.49 | 70 | 120 | |
| 115 | In | 5841340 | 3.11 | 6565136 | 88.98 | 70 | 120 | |
| 209 | Bi | 14080226 | 0.99 | 15222533 | 92.50 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 18:27 | Sample Name | LCVL8-160516 |
| Data Batch | 160516.b | Comment | LCVLICPMS_TW |
| Data File Name | 206LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 11.521 | 491 | 5.81 | 10 | 115.2 | 70 | 130 | |
| 9 | Be | 45 | 1.258 | 70 | 14.03 | 1 | 125.8 | 70 | 130 | |
| 11 | B | 45 | 29.502 | 639 | 4.85 | 20 | 147.5 | 70 | 130 | Fail |
| 23 | Na | 45 | 124.345 | 126077 | 2.38 | 100 | 124.3 | 70 | 130 | |
| 24 | Mg | 45 | 113.461 | 37009 | 7.99 | 100 | 113.5 | 70 | 130 | |
| 27 | Al | 45 | 140.685 | 16278 | 18.19 | 100 | 140.7 | 70 | 130 | Fail |
| 39 | K | 45 | 104.872 | 77480 | 2.08 | 100 | 104.9 | 70 | 130 | |
| 44 | Ca | 45 | 162.410 | 3190 | 21.96 | 100 | 162.4 | 70 | 130 | Fail |
| 47 | Ti | 45 | 5.521 | 683 | 2.97 | 5 | 110.4 | 70 | 130 | |
| 51 | V | 45 | 0.993 | 6328 | 8.96 | 1 | 99.3 | 70 | 130 | |
| 52 | Cr | 45 | 5.331 | 28773 | 0.10 | 5 | 106.6 | 70 | 130 | |
| 55 | Mn | 45 | 5.285 | 15158 | 2.92 | 5 | 105.7 | 70 | 130 | |
| 56 | Fe | 45 | 156.792 | 696607 | 20.79 | 100 | 156.8 | 70 | 130 | Fail |
| 59 | Co | 72 | 5.257 | 44412 | 2.08 | 5 | 105.1 | 70 | 130 | |
| 60 | Ni | 72 | 5.329 | 12752 | 0.48 | 5 | 106.6 | 70 | 130 | |
| 63 | Cu | 72 | 4.989 | 35204 | 1.26 | 5 | 99.8 | 70 | 130 | |
| 66 | Zn | 72 | 5.375 | 5877 | 4.72 | 5 | 107.5 | 70 | 130 | |
| 75 | As | 72 | 5.060 | 4598 | 3.88 | 5 | 101.2 | 70 | 130 | |
| 78 | Se | 72 | 5.407 | 334 | 6.57 | 5 | 108.1 | 70 | 130 | |
| 88 | Sr | 115 | 5.213 | 20409 | 4.20 | 5 | 104.3 | 70 | 130 | |
| 95 | Mo | 115 | 4.799 | 17210 | 0.05 | 5 | 96.0 | 70 | 130 | |
| 107 | Ag | 115 | 2.006 | 22664 | 0.95 | 2 | 100.3 | 70 | 130 | |
| 111 | Cd | 115 | 1.126 | 1836 | 5.35 | 1 | 112.6 | 70 | 130 | |
| 118 | Sn | 115 | 4.917 | 17485 | 1.48 | 5 | 98.3 | 70 | 130 | |
| 121 | Sb | 115 | 2.115 | 11077 | 4.55 | 2 | 105.8 | 70 | 130 | |
| 137 | Ba | 115 | 5.039 | 8217 | 3.61 | 5 | 100.8 | 70 | 130 | |
| 205 | Tl | 209 | 1.139 | 26973 | 4.27 | 1 | 113.9 | 70 | 130 | |
| 208 | Pb | 209 | 1.012 | 36688 | 6.02 | 1 | 101.2 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 847606 | 0.79 | 989663 | 85.65 | 70 | 120 | |
| 72 | Ge | 654071 | 0.41 | 739879 | 88.40 | 70 | 120 | |
| 115 | In | 6036873 | 1.64 | 6565136 | 91.95 | 70 | 120 | |
| 209 | Bi | 14617183 | 1.77 | 15222533 | 96.02 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 18:29 | Sample Name | CCB8-160516 |
| Data Batch | 160516.b | Comment | CCB ICPMS_TW |
| Data File Name | 207_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.494 | 37 | 29.2 | 2 | 5 | |
| 9 | Be | 45 | 0.146 | 10 | 47.8 | 0.4 | 0.3 | |
| 11 | B | 45 | 9.616 | 294 | 8.3 | 10 | 10 | |
| 23 | Na | 45 | 25.846 | 62342 | 1.4 | 50 | 100 | |
| 24 | Mg | 45 | 5.066 | 2275 | 65.7 | 50 | 100 | |
| 27 | Al | 45 | 21.968 | 2680 | 57.0 | 50 | 10 | FailAq |
| 39 | K | 45 | 8.951 | 46562 | 0.7 | 50 | 100 | |
| 44 | Ca | 45 | 33.489 | 812 | 59.2 | 50 | 100 | |
| 47 | Ti | 45 | 0.192 | 26 | 49.4 | 4 | 3 | |
| 51 | V | 45 | -0.075 | 1816 | 21.0 | 4 | 3 | |
| 52 | Cr | 45 | 0.093 | 2249 | 15.8 | 2 | 2 | |
| 55 | Mn | 45 | 0.028 | 851 | 35.9 | 2 | 3 | |
| 56 | Fe | 45 | 29.671 | 143637 | 58.9 | 50 | 50 | |
| 59 | Co | 72 | 0.069 | 698 | 43.1 | 2 | 3 | |
| 60 | Ni | 72 | 0.174 | 786 | 18.9 | 2 | 3 | |
| 63 | Cu | 72 | -0.141 | 2330 | 10.6 | 2 | 2 | |
| 66 | Zn | 72 | 0.316 | 614 | 8.2 | 4 | 2 | |
| 75 | As | 72 | 0.022 | 162 | 11.2 | 2 | 2 | |
| 78 | Se | 72 | 0.142 | 75 | 5.7 | 1 | 2 | |
| 88 | Sr | 115 | 0.224 | 1007 | 61.7 | 4 | 3 | |
| 95 | Mo | 115 | 0.077 | 319 | 65.6 | 2 | 2 | |
| 107 | Ag | 115 | 0.045 | 598 | 54.9 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.060 | 107 | 43.0 | 0.4 | 0.3 | |
| 118 | Sn | 115 | -0.038 | 972 | 19.2 | 4 | 3 | |
| 121 | Sb | 115 | 0.145 | 936 | 37.3 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.117 | 220 | 63.7 | 2 | 3 | |
| 205 | Tl | 209 | 0.109 | 2824 | 27.2 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.006 | 4431 | 22.9 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 849034 | 1.40 | 989663 | 85.79 | 70 | 120 | |
| 72 | Ge | 658317 | 0.65 | 739879 | 88.98 | 70 | 120 | |
| 115 | In | 6023431 | 0.85 | 6565136 | 91.75 | 70 | 120 | |
| 209 | Bi | 14490985 | 1.44 | 15222533 | 95.19 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 18:51 | Sample Name | CCV9-160516 |
| Data Batch | 160516.b | Comment | CCV ICPMS_TW |
| Data File Name | 218_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 213.687 | 8601 | 1.68 | 200 | 106.8 | 90 | 110 | |
| 9 | Be | 45 | 210.421 | 11188 | 1.47 | 200 | 105.2 | 90 | 110 | |
| 11 | B | 45 | 221.927 | 3875 | 1.45 | 200 | 111.0 | 90 | 110 | Fail |
| 23 | Na | 45 | 5078.194 | 3252299 | 0.32 | 5000 | 101.6 | 90 | 110 | |
| 24 | Mg | 45 | 5012.323 | 1565994 | 0.39 | 5000 | 100.2 | 90 | 110 | |
| 27 | Al | 45 | 4899.318 | 546714 | 1.00 | 5000 | 98.0 | 90 | 110 | |
| 39 | K | 45 | 5071.714 | 1639996 | 0.43 | 5000 | 101.4 | 90 | 110 | |
| 44 | Ca | 45 | 4834.518 | 86981 | 0.63 | 5000 | 96.7 | 90 | 110 | |
| 47 | Ti | 45 | 199.759 | 24039 | 1.15 | 200 | 99.9 | 90 | 110 | |
| 51 | V | 45 | 203.382 | 839924 | 0.81 | 200 | 101.7 | 90 | 110 | |
| 52 | Cr | 45 | 203.141 | 1004906 | 0.43 | 200 | 101.6 | 90 | 110 | |
| 55 | Mn | 45 | 197.856 | 525743 | 0.71 | 200 | 98.9 | 90 | 110 | |
| 56 | Fe | 45 | 5087.905 | 21562741 | 0.26 | 5000 | 101.8 | 90 | 110 | |
| 59 | Co | 72 | 206.484 | 1677647 | 0.83 | 200 | 103.2 | 90 | 110 | |
| 60 | Ni | 72 | 204.471 | 458192 | 0.91 | 200 | 102.2 | 90 | 110 | |
| 63 | Cu | 72 | 205.512 | 1273165 | 0.51 | 200 | 102.8 | 90 | 110 | |
| 66 | Zn | 72 | 203.486 | 204438 | 0.21 | 200 | 101.7 | 90 | 110 | |
| 75 | As | 72 | 204.877 | 174084 | 0.19 | 200 | 102.4 | 90 | 110 | |
| 78 | Se | 72 | 200.033 | 9576 | 0.84 | 200 | 100.0 | 90 | 110 | |
| 88 | Sr | 115 | 189.674 | 720787 | 1.13 | 200 | 94.8 | 90 | 110 | |
| 95 | Mo | 115 | 190.352 | 665218 | 0.42 | 200 | 95.2 | 90 | 110 | |
| 107 | Ag | 115 | 195.760 | 2151943 | 0.31 | 200 | 97.9 | 90 | 110 | |
| 111 | Cd | 115 | 191.441 | 303397 | 0.64 | 200 | 95.7 | 90 | 110 | |
| 118 | Sn | 115 | 192.350 | 627291 | 0.66 | 200 | 96.2 | 90 | 110 | |
| 121 | Sb | 115 | 195.566 | 983471 | 0.43 | 200 | 97.8 | 90 | 110 | |
| 137 | Ba | 115 | 195.752 | 310670 | 0.16 | 200 | 97.9 | 90 | 110 | |
| 205 | Tl | 209 | 195.609 | 4391889 | 0.58 | 200 | 97.8 | 90 | 110 | |
| 208 | Pb | 209 | 193.568 | 5876364 | 0.63 | 200 | 96.8 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 826513 | 0.88 | 989663 | 83.51 | 70 | 120 | |
| 72 | Ge | 630588 | 0.45 | 739879 | 85.23 | 70 | 120 | |
| 115 | In | 5898037 | 1.62 | 6565136 | 89.84 | 70 | 120 | |
| 209 | Bi | 13995254 | 1.38 | 15222533 | 91.94 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 18:55 | Sample Name | LCVL9-160516 |
| Data Batch | 160516.b | Comment | LCVLICPMS_TW |
| Data File Name | 220LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.985 | 465 | 2.27 | 10 | 109.9 | 70 | 130 | |
| 9 | Be | 45 | 1.146 | 64 | 7.75 | 1 | 114.6 | 70 | 130 | |
| 11 | B | 45 | 25.219 | 560 | 6.44 | 20 | 126.1 | 70 | 130 | |
| 23 | Na | 45 | 114.350 | 118595 | 1.84 | 100 | 114.4 | 70 | 130 | |
| 24 | Mg | 45 | 100.628 | 32613 | 2.30 | 100 | 100.6 | 70 | 130 | |
| 27 | Al | 45 | 97.887 | 11273 | 1.62 | 100 | 97.9 | 70 | 130 | |
| 39 | K | 45 | 100.969 | 75584 | 1.65 | 100 | 101.0 | 70 | 130 | |
| 44 | Ca | 45 | 102.701 | 2070 | 5.20 | 100 | 102.7 | 70 | 130 | |
| 47 | Ti | 45 | 4.724 | 580 | 7.34 | 5 | 94.5 | 70 | 130 | |
| 51 | V | 45 | 0.864 | 5730 | 1.43 | 1 | 86.4 | 70 | 130 | |
| 52 | Cr | 45 | 5.144 | 27595 | 0.32 | 5 | 102.9 | 70 | 130 | |
| 55 | Mn | 45 | 4.733 | 13541 | 1.92 | 5 | 94.7 | 70 | 130 | |
| 56 | Fe | 45 | 98.886 | 440677 | 0.92 | 100 | 98.9 | 70 | 130 | |
| 59 | Co | 72 | 5.131 | 42820 | 1.16 | 5 | 102.6 | 70 | 130 | |
| 60 | Ni | 72 | 5.150 | 12187 | 1.96 | 5 | 103.0 | 70 | 130 | |
| 63 | Cu | 72 | 4.877 | 34066 | 2.03 | 5 | 97.5 | 70 | 130 | |
| 66 | Zn | 72 | 4.988 | 5407 | 0.16 | 5 | 99.8 | 70 | 130 | |
| 75 | As | 72 | 5.006 | 4495 | 2.84 | 5 | 100.1 | 70 | 130 | |
| 78 | Se | 72 | 5.181 | 319 | 14.40 | 5 | 103.6 | 70 | 130 | |
| 88 | Sr | 115 | 4.796 | 18654 | 1.59 | 5 | 95.9 | 70 | 130 | |
| 95 | Mo | 115 | 4.789 | 17056 | 1.01 | 5 | 95.8 | 70 | 130 | |
| 107 | Ag | 115 | 1.910 | 21434 | 1.26 | 2 | 95.5 | 70 | 130 | |
| 111 | Cd | 115 | 0.912 | 1478 | 10.96 | 1 | 91.2 | 70 | 130 | |
| 118 | Sn | 115 | 4.624 | 16394 | 2.04 | 5 | 92.5 | 70 | 130 | |
| 121 | Sb | 115 | 1.984 | 10328 | 3.20 | 2 | 99.2 | 70 | 130 | |
| 137 | Ba | 115 | 4.890 | 7918 | 1.52 | 5 | 97.8 | 70 | 130 | |
| 205 | Tl | 209 | 1.010 | 23545 | 1.60 | 1 | 101.0 | 70 | 130 | |
| 208 | Pb | 209 | 0.921 | 33200 | 0.96 | 1 | 92.1 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 840578 | 0.23 | 989663 | 84.94 | 70 | 120 | |
| 72 | Ge | 646097 | 0.65 | 739879 | 87.32 | 70 | 120 | |
| 115 | In | 5994768 | 0.82 | 6565136 | 91.31 | 70 | 120 | |
| 209 | Bi | 14351976 | 0.52 | 15222533 | 94.28 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/16/2016 19:11 | Sample Name | CCB9-160516 |
| Data Batch | 160516.b | Comment | CCB ICPMS_TW |
| Data File Name | 228_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.216 | 24 | 8.6 | 2 | 5 | |
| 9 | Be | 45 | 0.013 | 2 | 173.2 | 0.4 | 0.3 | |
| 11 | B | 45 | 2.796 | 170 | 2.0 | 10 | 10 | |
| 23 | Na | 45 | 14.825 | 53228 | 0.6 | 50 | 100 | |
| 24 | Mg | 45 | 1.497 | 1097 | 48.4 | 50 | 100 | |
| 27 | Al | 45 | 11.145 | 1393 | 46.9 | 50 | 10 | FailAq |
| 39 | K | 45 | 8.291 | 44695 | 0.7 | 50 | 100 | |
| 44 | Ca | 45 | 15.708 | 468 | 40.4 | 50 | 100 | |
| 47 | Ti | 45 | 0.087 | 12 | 31.5 | 4 | 3 | |
| 51 | V | 45 | -0.134 | 1511 | 1.3 | 4 | 3 | |
| 52 | Cr | 45 | 0.010 | 1762 | 7.4 | 2 | 2 | |
| 55 | Mn | 45 | -0.085 | 524 | 26.1 | 2 | 3 | |
| 56 | Fe | 45 | 11.572 | 62879 | 50.0 | 50 | 50 | |
| 59 | Co | 72 | 0.003 | 133 | 52.0 | 2 | 3 | |
| 60 | Ni | 72 | 0.072 | 526 | 8.3 | 2 | 3 | |
| 63 | Cu | 72 | -0.232 | 1680 | 2.7 | 2 | 2 | |
| 66 | Zn | 72 | 0.173 | 448 | 1.9 | 4 | 2 | |
| 75 | As | 72 | -0.044 | 99 | 14.0 | 2 | 2 | |
| 78 | Se | 72 | 0.207 | 75 | 0.8 | 1 | 2 | |
| 88 | Sr | 115 | 0.065 | 376 | 53.3 | 4 | 3 | |
| 95 | Mo | 115 | 0.013 | 87 | 16.8 | 2 | 2 | |
| 107 | Ag | 115 | 0.009 | 182 | 29.4 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.009 | 23 | 14.3 | 0.4 | 0.3 | |
| 118 | Sn | 115 | -0.187 | 462 | 8.1 | 4 | 3 | |
| 121 | Sb | 115 | 0.008 | 223 | 19.6 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.068 | 137 | 51.9 | 2 | 3 | |
| 205 | Tl | 209 | 0.010 | 499 | 7.0 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.078 | 2105 | 12.9 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 818678 | 0.55 | 989663 | 82.72 | 70 | 120 | |
| 72 | Ge | 633690 | 0.50 | 739879 | 85.65 | 70 | 120 | |
| 115 | In | 5856719 | 0.63 | 6565136 | 89.21 | 70 | 120 | |
| 209 | Bi | 14267833 | 1.92 | 15222533 | 93.73 | 70 | 120 | |

# ICP-MS4_160520C
# For

# DHL Work Order
# 1605098

# Lab Data Review Check List
## EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

| PROJECT AND BATCH NUMBERS ARE LISTED ON THE RUN LOG | Run ID: ICP-MS4_160520C<br>SOP: MET-ICPMS-01 | | | |
|---|---|---|---|---|
| **Review Item** | **Yes** | **No** | **N/A** | **2nd Level Review** |
| **Data Folder Contents**<br>1. Is the Prep Batch Report included?<br>***Check the Prep Start/End Dates, Sample Amounts, Bottle #s*** | X | | | |
| 2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date?<br>***All standard/QC sample preparations shall be documented in LIMS*** | X | | | x |
| 3. Is the Run Log and instrument sequence included?<br>***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time*** | X | | | |

## Daily Demonstration of Performance

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.**

| Review Item | Frequency | Limits | Pass | Fail (List Batch/Sample) **See Run Log** | | 2nd Level Review |
|---|---|---|---|---|---|---|
| Tune | Before ICAL | RSD ≤ 5% / Peak Width@10% <0.9amu | X | | | |
| P/A Factor | Before ICAL | Increasing trend | X | | | x |
| Initial Calibration Curve (ICAL) (Blank + 4 Standards) | Prior to samples and when ICV fails | R ≥ 0.995 (DoD)<br>R ≥ 0.998 (6020A) | X | | | |
| **Review Item** | **Frequency** | **Limits** | **Pass** | **Fail** | **N/A** | **Review** |
| ICSA (N/A for Method 200.8+U) | After calibration & every 12 hours | < RL (except Mn & Zn) | X | | | x |
| ICSAB (N/A for Method 200.8+U) | After calibration & every 12 hours | 80-120% (correct for ICSA result) | X | | | |
| **Note: LCVLs and ICSA/ICSAB are N/A for Method 200.8 or project-specific exceptions** | | | | | | |
| ICV (Second Source Verification) | After ICAL | 90-110% | X | | | |
| ICB | After calibration | < MDL | X | | | |
| CCV | Every 10 samples | 90-110% | X | | | |
| CCB | Every 10 samples | < MDL (ALL + DoD) | X | | | |
| Internal Standards | Every sample and QC sample | > 70% (6020A)<br>60-125% (200.8)<br>30-120% (DoD) | X | | | |
| LCVL (6020A test code) | After ICAL, every 10 samples and end of run | 70-130% | X | | | |
| LCVL (All metals test codes except 200.8/6020A) | After ICAL and end of run | 70-130% | | | X | x |
| Method Blank (MB) | Every Batch | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | X | | | |
| Filter/TCLP/SPLP Blank | Filter-Dissolved only TCLP / SPLP | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | | | X | |
| Lab Control Sample (LCS) | Every Batch | 80-120% | X | | | |
| Lab Control Sample Dup (LCSD) | Every Batch | 80-120% | X | | | |
| LCSD - RPD | Every LCS/LCSD | 15 (H2O) / 20 (Soil) | X | | | |
| Matrix Spike/ Matrix Spike Duplicate (MS/MSD) | Every Batch | 80-120% | | X | | |
| MSD - RPD | Every MS/MSD | 15 (H2O) / 20 (Soil) | X | | | |
| Dilution Test (SD) - RPD | Every Batch | 10 | X | | | |
| Post Digestion Spike (PDS) | Every Batch | 75-125 / 80-120 (6020A) | X | | | |

# Lab Data Review Check List
## EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

| Review Item | Criteria | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|---|
| **Sample Analysis**<br>1. Are all sample hold times met? | 6 months | X | | | x |
| 2. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed? | All results > high point of ICAL must be diluted | X | | | |
| **3. Are ALL reported analytes and reported results > MDL highlighted by the analyst?** | | X | **Confirm with analyst if LIMS result does not match Labcore** | | |

## VARIANCE REPORT

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.**

| NON-CONFORMANCES / VARIANCE | Criteria | Yes | No | N/A | 2nd Level |
|---|---|---|---|---|---|
| 1. Are all non-conformances and corrective actions included and noted? | All deviations from the method and SOP that affect data quality | X | | | x |
| 2. Does the variance require approval by the Technical Director/General Manager/QA Manager? | | X | | | |

TECHNICAL DIRECTOR / QA MANAGER APPROVAL
SIGNATURE AND DATE STAMP:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

| VARIANCE ITEM | REASON | CORRECTIVE ACTION |
|---|---|---|
| __ CCV out of control (± 10%) | __ Carryover from previous run | __ Reanalyze QC to confirm |
| __ CCB out of control (> MDL / >½ RL) | __ Cross contamination | __ Recalibrate |
| __ MB out of control (> RL / >½ RL) | __ Lab Artifact | __ Reprep/Reanalyze sample |
| __ LCS __ LCSD out of control (± 20%) | __ Prep Spike error (describe) | __ Reprep/Reanalyze Batch |
| __ MS __ MSD out of control (± 20%) | __ Matrix Effect | __ Reanalyze Batch/Sample/QC |
| __ RPD out of control for MS/MSD (15/25) | __ High Levels of Target Metals | __ Verify reagents are clean |
| __ Internal Standard(s) out of control (see Method) | __ Insufficient sample for QC | __ Reanalyze sample to confirm |
| __ No MS/MSD prepared - LCS/LCSD used instead | __ Digestion/Prep Error | __ Sample results ND w/ dilution |
| __ Missing QC (other than MS/MSD) | __ Analytical Error | __ Client notified and approved |
| __ QC sample(s) was mis-spiked | __ Client Request | __ Flag Data/ Case Narative |
| __ ICSA/ICSAB missing or out of control (± 20%) | | __ Accept data |
| __ LCVL out of control (± 30%) | | __ Cal Std high and sample ND |
| __ Other (describe below) | __ Other (describe below) | __ Other (describe below) |

**General Comments and Impact on Data**: See Run Log

Analyst: _____ Date of Completion: 05/23/2016

Second-Level Review: Janice Whitt Date Stamp: 5/23/2016

REVIEWED BY
By Janice Whitt at 2:57:44 PM, 5/23/2016

**DHL Analytical, Inc.**

**Run ID:** **ICP-MS4_160520C** **Run No.:** 85935

**Analytical Run Date:** 5/20/2016 **InstrumentID:** ICP-MS4

**Analyst:** Ryan Oliver

| SampID | DF | TestCode | SampType | Batch ID | Analysis Date/Time | Q | Comments |
|---|---|---|---|---|---|---|---|
| BLANK STD 1 | 1 | ICPMS_TWDOD | CAL | R85935 | 5/20/2016 10:52:00 AM | | |
| L2-160520 | 1 | ICPMS_TWDOD | CAL | R85935 | 5/20/2016 10:54:00 AM | | |
| L-160520 | 1 | ICPMS_TWDOD | CAL | R85935 | 5/20/2016 10:56:00 AM | | |
| 10X-160520 | 1 | ICPMS_TWDOD | CAL | R85935 | 5/20/2016 10:58:00 AM | | |
| 5X-160520 | 1 | ICPMS_TWDOD | CAL | R85935 | 5/20/2016 11:00:00 AM | | |
| 2X-160520 | 1 | ICPMS_TWDOD | CAL | R85935 | 5/20/2016 11:02:00 AM | | |
| H-160520 | 1 | ICPMS_TWDOD | CAL | R85935 | 5/20/2016 11:04:00 AM | | |
| H2-160520 | 1 | ICPMS_TWDOD | CAL | R85935 | 5/20/2016 11:06:00 AM | | |
| ICSA-160520 | 1 | ICPMS_TWDOD | ICSA | R85935 | 5/20/2016 11:14:00 AM | | |
| ICSAB-160520 | 1 | ICPMS_TWDOD | ICSB | R85935 | 5/20/2016 11:16:00 AM | | |
| ICV-160520 | 1 | ICPMS_TWDOD | ICV | R85935 | 5/20/2016 11:28:00 AM | | |
| LCVL-160520 | 1 | ICPMS_TWDOD | LCVL | R85935 | 5/20/2016 11:40:00 AM | | |
| ICB-160520 | 1 | ICPMS_TWDOD | ICB | R85935 | 5/20/2016 11:45:00 AM | | |
| CCV2-160520 | 1 | ICPMS_TWDOD | CCV | R85935 | 5/20/2016 1:06:00 PM | | |
| LCVL2-160520 | 1 | ICPMS_TWDOD | LCVL | R85935 | 5/20/2016 1:11:00 PM | | |
| CCB2-160520 | 1 | ICPMS_TWDOD | CCB | R85935 | 5/20/2016 1:20:00 PM | | |
| MB-75180 | 1 | ICPMS_TWDOD | MBLK | 75180 | 5/20/2016 1:22:00 PM | | |
| LCS-75180 | 1 | ICPMS_TWDOD | LCS | 75180 | 5/20/2016 1:24:00 PM | | |
| LCSD-75180 | 1 | ICPMS_TWDOD | LCSD | 75180 | 5/20/2016 1:26:00 PM | | |
| 1605097-27A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:30:00 PM | | |
| 1605097-27A SD | 5 | ICPMS_TWDOD | SD | 75180 | 5/20/2016 1:32:00 PM | | |
| 1605047-31A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:34:00 PM | | |
| 1605047-32A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:36:00 PM | | |
| 1605047-38A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:38:00 PM | | |
| 1605071-28A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:40:00 PM | | |
| 1605071-29A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:42:00 PM | | |
| 1605074-33A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:44:00 PM | | |
| 1605074-34A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:46:00 PM | | |
| 1605074-35A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:48:00 PM | | |
| 1605096-36A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:50:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160520- | 10 PPM Ag+Sb PDS | | 11/18/2016 |
| MET-PDS-160520- | 10 PPM CUSTOM PDS SOLUTI | | 11/18/2016 |
| MET-PDS-160520- | 250 PPM Naturals+Al+Fe PDS | | 11/18/2016 |

**DHL Analytical, Inc.**

**Run ID: ICP-MS4_160520C** **Run No.:** 85935

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1605097-27A PDS | 1 | ICPMS_TWDOD | PDS | 75180 | 5/20/2016 1:52:00 PM | | |
| 1605097-27A MS | 1 | ICPMS_TWDOD | MS | 75180 | 5/20/2016 1:54:00 PM | | S-flag Pb- Low |
| 1605097-27A MSD | 1 | ICPMS_TWDOD | MSD | 75180 | 5/20/2016 1:56:00 PM | | |
| CCV3-160520 | 1 | ICPMS_TWDOD | CCV | R85935 | 5/20/2016 1:58:00 PM | | |
| LCVL3-160520 | 1 | ICPMS_TWDOD | LCVL | R85935 | 5/20/2016 2:04:00 PM | | |
| CCB3-160520 | 1 | ICPMS_TWDOD | CCB | R85935 | 5/20/2016 2:06:00 PM | | |
| 1605096-37A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 2:08:00 PM | | |
| 1605096-44A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 2:10:00 PM | | |
| 1605097-30A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 2:12:00 PM | | |
| 1605098-42A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 2:14:00 PM | | |
| 1605121-46A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 2:16:00 PM | | |
| 1605121-47A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 2:18:00 PM | | |
| 1605135-46A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 2:20:00 PM | | |
| 1605144-16A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 2:22:00 PM | | |
| CCV4-160520 | 1 | ICPMS_TWDOD | CCV | R85935 | 5/20/2016 2:24:00 PM | | |
| LCVL4-160520 | 1 | ICPMS_TWDOD | LCVL | R85935 | 5/20/2016 2:41:00 PM | | |
| CCB4-160520 | 1 | ICPMS_TWDOD | CCB | R85935 | 5/20/2016 2:48:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160520- | 10 PPM Ag+Sb PDS | | 11/18/2016 |
| MET-PDS-160520- | 10 PPM CUSTOM PDS SOLUTI | | 11/18/2016 |
| MET-PDS-160520- | 250 PPM Naturals+Al+Fe PDS | | 11/18/2016 |

# Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\160520.b

## Acquisition Order

| # | Sequence Flow |
|---|---|
| 1 | Calibration Standards |
| 2 | Unknown Samples |
| 3 | Blank Samples |

**Calibration Standards:**

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 1 | CCB | | CAL ICPMS_TW | 1101 | |
| 2 | CCB | | CAL ICPMS_TW | 1101 | |
| 3 | CCB | | CAL ICPMS_TW | 1101 | |
| 4 | CCB | | CAL ICPMS_TW | 1102 | |
| 5 | CCB | | CAL ICPMS_TW | 1102 | |
| 6 | CCB | | CAL ICPMS_TW | 1102 | |
| 7 | CCB | | CAL ICPMS_TW | 1102 | |
| 8 | CCB | | CAL ICPMS_TW | 1103 | |
| 9 | CCB | | CAL ICPMS_TW | 1103 | |
| 10 | CCB | | CAL ICPMS_TW | 1103 | |
| 11 | CCB | | CAL ICPMS_TW | 1103 | |
| 12 | CalBlk | BLANK STD 1 | CAL ICPMS_TW | 2101 | |
| 13 | CalStd | L2-160520 | CAL ICPMS_TW | 2102 | |
| 14 | CalStd | L-160520 | CAL ICPMS_TW | 2103 | |
| 15 | CalStd | 10X-160520 | CAL ICPMS_TW | 2104 | |
| 16 | CalStd | 5X-160520 | CAL ICPMS_TW | 2105 | |
| 17 | CalStd | 2X-160520 | CAL ICPMS_TW | 2106 | |
| 18 | CalStd | H-160520 | CAL ICPMS_TW | 2107 | |
| 19 | CalStd | H2-160520 | CAL ICPMS_TW | 2108 | |
| 20 | ICB | BLANK | CCB ICPMS_TW | 1101 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | 1 | | |
| 13 | 2 | | |
| 14 | 3 | | |
| 15 | 4 | | |
| 16 | 5 | | |
| 17 | 6 | | |
| 18 | 7 | | |
| 19 | 8 | | |

# Sample List

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 20 | | | | | |
| 21 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 22 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 23 | ICSA | ICSA-160520 | ICSAICPMS_TW | 2109 | |
| 24 | ICSB | ICSAB-160520 | ICSBICPMS_TW | 2110 | |
| 25 | ICB | BLANK | CCB ICPMS_TW | 1101 | |
| 26 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 27 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 28 | ICV | ICV-160520 | ICV ICPMS_TW | 2111 | |
| 29 | ICB | ICB-160520 | ICB ICPMS_TW | 1101 | |
| 30 | ICB | ICB-160520 | ICB ICPMS_TW | 1103 | |
| 31 | LLICV | LCVL-160520 | LCVLICPMS_TW | 2112 | |
| 32 | ICB | ICB-160520 | ICB ICPMS_TW | 1102 | |
| 33 | ICB | ICB-160520 | ICB ICPMS_TW | 1103 | |
| 34 | PB_W | MB-75206 | MBLK200.8_EPA | 2201 | |
| 35 | LCS_W | LCS-75206 | LCS 200.8_EPA | 2202 | |
| 36 | LCS_W | LCSD-75206 | LCSD200.8_EPA | 2203 | |
| 37 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 38 | AllRef | 1605161-13A | SAMP200.8_EPA | 2204 | |
| 39 | SD | 1605161-13A SD | SD 200.8_EPA | 2205 | |
| 40 | SAMP_W | 1605161-01A | SAMP200.8_EPA | 2206 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 21 | | | |
| 22 | | | |
| 23 | | | |
| 24 | | | |
| 25 | | | |
| 26 | | | |
| 27 | | | |
| 28 | | | |
| 29 | | | |
| 30 | | | |
| 31 | | | |
| 32 | | | |
| 33 | | | |
| 34 | | 1 | |
| 35 | | 1 | |
| 36 | | 1 | |
| 37 | | | |
| 38 | | 1 | |
| 39 | | 5 | |
| 40 | | 1 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 41 | SAMP_W | 1605161-02A | SAMP200.8_EPA | 2207 | |
| 42 | SAMP_W | 1605161-03A | SAMP200.8_EPA | 2208 | |
| 43 | SAMP_W | 1605161-04A | SAMP200.8_EPA | 2209 | |
| 44 | SAMP_W | 1605161-05A | SAMP200.8_EPA | 2210 | |
| 45 | SAMP_W | 1605161-06A | SAMP200.8_EPA | 2211 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 46 | SAMP_W | 1605161-07A | SAMP200.8_EPA | 2212 |
| 47 | SAMP_W | 1605161-08A | SAMP200.8_EPA | 2301 |
| 48 | SAMP_W | 1605161-09A | SAMP200.8_EPA | 2302 |
| 49 | PDS | 1605161-13A PDS | PDS 200.8_EPA | 2303 |
| 50 | MS_W | 1605161-13A MS | MS 200.8_EPA | 2304 |
| 51 | MS_W | 1605161-13A MSD | MSD 200.8_EPA | 2305 |
| 52 | CCV | CCV1-160520 | CCV ICPMS_TW | 1207 |
| 53 | CCB | CCB1-160520 | CCB ICPMS_TW | 1102 |
| 54 | LLCCV | LCVL1-160520 | LCVLICPMS_TW | 2112 |
| 55 | CCB | CCB1-160520 | CCB ICPMS_TW | 1103 |
| 56 | SAMP_W | 1605161-10A | SAMP200.8_EPA | 2306 |
| 57 | SAMP_W | 1605161-11A | SAMP200.8_EPA | 2307 |
| 58 | SAMP_W | 1605161-12A | SAMP200.8_EPA | 2308 |
| 59 | SAMP_W | 1605161-13A | SAMP200.8_EPA | 2309 |
| 60 | SAMP_W | 1605161-14A | SAMP200.8_EPA | 2310 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 41 | | 1 | |
| 42 | | 1 | |
| 43 | | 1 | |
| 44 | | 1 | |
| 45 | | 1 | |
| 46 | | 1 | |
| 47 | | 1 | |
| 48 | | 1 | |
| 49 | | 1 | |
| 50 | | 1 | |
| 51 | | 1 | |
| 52 | | | |
| 53 | | | |
| 54 | | | |
| 55 | | | |
| 56 | | 1 | |
| 57 | | 1 | |
| 58 | | 1 | |
| 59 | | 1 | |
| 60 | | 1 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 61 | SAMP_W | 1605161-15A | SAMP200.8_EPA | 2311 | |
| 62 | SAMP_W | 1605161-16A | SAMP200.8_EPA | 2312 | |
| 63 | SAMP_W | 1605161-17A | SAMP200.8_EPA | 2401 | |
| 64 | SAMP_W | 1605161-18A | SAMP200.8_EPA | 2402 | |
| 65 | SAMP_W | 1605161-19A | SAMP200.8_EPA | 2403 | |
| 66 | CCV | CCV2-160520 | CCV ICPMS_TW | 1207 | |
| 67 | CCB | CCB2-160520 | CCB ICPMS_TW | 1102 | |
| 68 | LLCCV | LCVL2-160520 | LCVLICPMS_TW | 2112 | |
| 69 | CCB | CCB2-160520 | CCB ICPMS_TW | 1103 | |
| 70 | PB_W | MB-75180 | MBLKICPMS_TWDOD | 3101 | |
| 71 | LCS_W | LCS-75180 | LCS ICPMS_TWDOD | 3102 | |
| 72 | LCS_W | LCSD-75180 | LCSDICPMS_TWDOD | 3103 | |
| 73 | CCB | RINSE | CCB ICPMS_TW | 1101 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 74 | AllRef | 1605097-27A | SAMPICPMS_TWDOD | 3104 |
| 75 | SD | 1605097-27A SD | SD ICPMS_TWDOD | 3105 |
| 76 | SAMP_W | 1605047-31A | SAMPICPMS_TWDOD | 3106 |
| 77 | SAMP_W | 1605047-32A | SAMPICPMS_TWDOD | 3107 |
| 78 | SAMP_W | 1605047-38A | SAMPICPMS_TWDOD | 3108 |
| 79 | SAMP_W | 1605071-28A | SAMPICPMS_TWDOD | 3109 |
| 80 | SAMP_W | 1605071-29A | SAMPICPMS_TWDOD | 3110 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 61 | | 1 | |
| 62 | | 1 | |
| 63 | | 1 | |
| 64 | | 1 | |
| 65 | | 1 | |
| 66 | | | |
| 67 | | | |
| 68 | | | |
| 69 | | | |
| 70 | | 1 | |
| 71 | | 1 | |
| 72 | | 1 | |
| 73 | | | |
| 74 | | 1 | |
| 75 | | 5 | |
| 76 | | 1 | |
| 77 | | 1 | |
| 78 | | 1 | |
| 79 | | 1 | |
| 80 | | 1 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 81 | SAMP_W | 1605074-33A | SAMPICPMS_TWDOD | 3111 | |
| 82 | SAMP_W | 1605074-34A | SAMPICPMS_TWDOD | 3112 | |
| 83 | SAMP_W | 1605074-35A | SAMPICPMS_TWDOD | 3201 | |
| 84 | SAMP_W | 1605096-36A | SAMPICPMS_TWDOD | 3202 | |
| 85 | PDS | 1605097-27A PDS | PDS ICPMS_TWDOD | 3203 | |
| 86 | MS_W | 1605097-27A MS | MS ICPMS_TWDOD | 3204 | |
| 87 | MS_W | 1605097-27A MSD | MSD ICPMS_TWDOD | 3205 | |
| 88 | CCV | CCV3-160520 | CCV ICPMS_TW | 1207 | |
| 89 | CCB | CCB3-160520 | CCB ICPMS_TW | 1102 | |
| 90 | LLCCV | LCVL3-160520 | LCVLICPMS_TW | 2512 | |
| 91 | CCB | CCB3-160520 | CCB ICPMS_TW | 1103 | |
| 92 | SAMP_W | 1605096-37A | SAMPICPMS_TWDOD | 3206 | |
| 93 | SAMP_W | 1605096-44A | SAMPICPMS_TWDOD | 3207 | |
| 94 | SAMP_W | 1605097-30A | SAMPICPMS_TWDOD | 3208 | |
| 95 | SAMP_W | 1605098-42A | SAMPICPMS_TWDOD | 3209 | |
| 96 | SAMP_W | 1605121-46A | SAMPICPMS_TWDOD | 3210 | |
| 97 | SAMP_W | 1605121-47A | SAMPICPMS_TWDOD | 3211 | |
| 98 | SAMP_W | 1605135-46A | SAMPICPMS_TWDOD | 3212 | |
| 99 | SAMP_W | 1605144-16A | SAMPICPMS_TWDOD | 2501 | |
| 100 | CCV | CCV4-160520 | CCV ICPMS_TW | 1207 | |

# Sample List

| # | Level | Dilution | Skip |
|---|---|---|---|
| 81 | | 1 | |
| 82 | | 1 | |
| 83 | | 1 | |
| 84 | | 1 | |
| 85 | | 1 | |
| 86 | | 1 | |
| 87 | | 1 | |
| 88 | | | |
| 89 | | | |
| 90 | | | |
| 91 | | | |
| 92 | | 1 | |
| 93 | | 1 | |
| 94 | | 1 | |
| 95 | | 1 | |
| 96 | | 1 | |
| 97 | | 1 | |
| 98 | | 1 | |
| 99 | | 1 | |
| 100 | | | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 101 | CCB | CCB4-160520 | CCB ICPMS_TW | 1102 | |
| 102 | LLCCV | LCVL4-160520 | LCVLICPMS_TW | 2512 | |
| 103 | CCB | CCB4-160520 | CCB ICPMS_TW | 1103 | |
| 104 | PB_W | MB-75233 | MBLKICPMS_TW | 3301 | |
| 105 | LCS_W | LCS-75233 | LCS ICPMS_TW | 3302 | |
| 106 | LCS_W | LCSD-75233 | LCSDICPMS_TW | 3303 | |
| 107 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 108 | AllRef | 1605172-04C | SAMPICPMS_TW | 3304 | |
| 109 | SD | 1605172-04C SD | SD ICPMS_TW | 3305 | |
| 110 | SAMP_W | 1605169-01C | SAMPICPMS_TW | 3306 | |
| 111 | SAMP_W | 1605183-01C | SAMP6020A_W | 3307 | |
| 112 | SAMP_W | 1605173-01E | SAMPICPMS_TW | 3308 | |
| 113 | SAMP_W | 1605173-02E | SAMPICPMS_TW | 3309 | |
| 114 | SAMP_W | 1605173-03E | SAMPICPMS_TW | 3310 | |
| 115 | SAMP_W | 1605173-04E | SAMPICPMS_TW | 3311 | |
| 116 | SAMP_W | 1604114-25B | SAMPICPMS_TW | 3312 | |
| 117 | SAMP_W | 1604114-26B | SAMPICPMS_TW | 3401 | |
| 118 | SAMP_W | 1604114-27B | SAMPICPMS_TW | 3402 | |
| 119 | PDS | 1605172-04C PDS | PDS ICPMS_TW | 3403 | |
| 120 | MS_W | 1605172-04C MS | MS ICPMS_TW | 3404 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 101 | | | |
| 102 | | | |
| 103 | | | |
| 104 | | 1 | |
| 105 | | 1 | |
| 106 | | 1 | |
| 107 | | | |

# Sample List

| | | |
|---|---|---|
| 108 | | 1 |
| 109 | | 5 |
| 110 | | 1 |
| 111 | | 1 |
| 112 | | 1 |
| 113 | | 1 |
| 114 | | 1 |
| 115 | | 1 |
| 116 | | 1 |
| 117 | | 1 |
| 118 | | 1 |
| 119 | | 1 |
| 120 | | 1 |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 121 | MS_W | 1605172-04C MSD | MSD ICPMS_TW | 3405 | |
| 122 | CCV | CCV5-160520 | CCV ICPMS_TW | 1207 | |
| 123 | CCB | CCB5-160520 | CCB ICPMS_TW | 1102 | |
| 124 | CCB | CCB5-160520 | CCB ICPMS_TW | 1102 | |
| 125 | CCB | CCB5-160520 | CCB ICPMS_TW | 1102 | |
| 126 | CCB | CCB5-160520 | CCB ICPMS_TW | 1103 | |
| 127 | CCB | CCB5-160520 | CCB ICPMS_TW | 1103 | |
| 128 | CCB | CCB5-160520 | CCB ICPMS_TW | 1103 | |
| 129 | LLCCV | LCVL5-160520 | LCVLICPMS_TW | 2511 | |
| 130 | CCB | CCB5-160520 | CCB ICPMS_TW | 1103 | |
| 131 | SAMP_W | 1605172-01C | SAMPICPMS_TW | 3406 | |
| 132 | SAMP_W | 1605172-02C | SAMPICPMS_TW | 3407 | |
| 133 | SAMP_W | 1605172-03C | SAMPICPMS_TW | 3408 | |
| 134 | SAMP_W | 1605181-01A | SAMPICPMS_TW | 3409 | |
| 135 | CCV | CCV6-160520 | CCV ICPMS_TW | 1207 | |
| 136 | CCB | CCB6-160520 | CCB ICPMS_TW | 1102 | |
| 137 | CCB | CCB6-160520 | CCB ICPMS_TW | 1102 | |
| 138 | CCB | CCB6-160520 | CCB ICPMS_TW | 1103 | |
| 139 | CCB | CCB6-160520 | CCB ICPMS_TW | 1103 | |
| 140 | LLCCV | LCVL6-160520 | LCVLICPMS_TW | 2511 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 121 | | 1 | |
| 122 | | | |
| 123 | | | |
| 124 | | | |
| 125 | | | |
| 126 | | | |
| 127 | | | |
| 128 | | | |
| 129 | | | |
| 130 | | | |
| 131 | | 1 | |
| 132 | | 1 | |
| 133 | | 1 | |
| 134 | | 1 | |
| 135 | | | |

# Sample List

136
137
138
139
140

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 141 | CCB | CCB6-160520 | CCB ICPMS_TW | 1102 | |
| 142 | CCB | CCB6-160520 | CCB ICPMS_TW | 1102 | |
| 143 | CCB | CCB6-160520 | CCB ICPMS_TW | 1102 | |
| 144 | CCB | CCB6-160520 | CCB ICPMS_TW | 1103 | |
| 145 | CCB | CCB6-160520 | CCB ICPMS_TW | 1103 | |
| 146 | CCB | CCB6-160520 | CCB ICPMS_TW | 1103 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 141 | | | |
| 142 | | | |
| 143 | | | |
| 144 | | | |
| 145 | | | |
| 146 | | | |

**Unknown Samples:**

**Blank Samples:**

## Periodic Block

| # | Block Name | Period | Unit | Reset By |
|---|---|---|---|---|

## Sublist

**DHL Analytical, Inc.**

# PREP BATCH REPORT

Prep Start Date: **5/19/2016 8:30:00 AM**
Digestion:
Prep End Date:

Prep Batch **75180** Prep Code: **3005ADOD** Technician: **Cassie Van Dyke**

Prep Factor Units: **mL/mL**

**Equipment List**

Hot Block #4
Thermometer #71
Pipette #P-09-Spikes
Pipette #P-01 Samples

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605047-31A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605047-32A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605047-38A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605071-28A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605071-29A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605074-33A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605074-34A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605074-35A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605096-36A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605096-37A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605096-44A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605097-27A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | MS + MSD |
| 1605097-30A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605098-42A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605121-46A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605121-47A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605135-46A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605144-16A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| LCS-75180 | Aqueous | | 50 | 50 | 1.000 | of | |
| LCSD-75180 | Aqueous | | 50 | 50 | 1.000 | of | |
| MB-75180 | Aqueous | | 50 | 50 | 1.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 9641 | Hydrochloric Acid (trace metal grade) | 1 | ml | 09/22/2025 |
| 10056 | Digestion Vessels | 1 | ml | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 1 | ml | 01/10/2026 |

9:54 - 15:33

**REVIEWED BY**
By Janice Whitt at 2:45:04 PM, 5/23/2016

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160406-1 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.1 | 07/05/2016 |
| MET-SPIKE-160511-1 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 0.2 | 08/09/2016 |
| MET-SPIKE-160511-2 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 0.2 | 08/09/2016 |

5/19/16

# MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

| | | | | |
|---|---|---|---|---|
| **ANALYST:** | CVD | **BALANCE #:** | 26 | |
| **TEST DATE:** | 05/19/2016 | **Water is at Room Temperatue (70-73°F) / (21-23°C)** | | |
| **PIPETTER LAB ID:** | P-01, P-09 | **WATER TEMP (°C):** | **21-23°C** | |
| **TEST VOLUME:** | See Below | **WATER DENSITY:** | **0.998** | **(0.9980-0.9976)** |

| | |
|---|---|
| **REFERENCE:** | DoD QSM 5.0 |
| **# of REPLICATES:** | 3 |
| **LABWARE TYPE:** | MECHANICAL VOLUMETRIC PIPETTE |
| **FREQUENCY:** | DAILY BEFORE USE |
| **MEAN CRITERIA:** | ± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME) |
| **RSD CRITERIA:** | < 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS) |

| | |
|---|---|
| **1) RECORD ROOM AND WATER TEMPERATURE** | **% TEST VOL = Volume of H2O at °C/Test Volume * 100** |
| **2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.** | **%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100** |
| **3) WEIGH 3 REPLICATES AT THE TEST VOLUME.** | |
| **4) DETERMINE TOTAL WT.** | |
| **5) CALCULATE VOLUME OF H2O AT °C (in mL)** | **VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY** |

| | | | | | BIAS | PRECISION |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-01** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 5.00 | 4.9999 | 4.9899 | 99.80 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 4.9998 | 4.9898 | 99.80 | | |
| 3 | | 4.9952 | 4.9852 | 99.70 | | |
| **AVERAGE (MEAN)** | | **4.998** | **4.988** | **99.77** | | **0.054** |
| | | | | | | **PASS** |

| **PIPETTE ID: P-09** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
|---|---|---|---|---|---|---|
| 1 | 0.20 | 0.2007 | 0.2003 | 100.15 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 0.2025 | 0.2021 | 101.05 | | |
| 3 | | 0.2027 | 0.2023 | 101.15 | | |
| **AVERAGE (MEAN)** | | **0.202** | **0.202** | **100.78** | | **0.545** |
| | | | | | | **PASS** |

| **PIPETTE ID:** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
|---|---|---|---|---|---|---|
| 1 | | | | | | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | | | | | |
| 3 | | | | | | |
| **AVERAGE (MEAN)** | | | | | | |
| | | | | | | |

CVC 5/19/16
Analyst / Date

REVIEWED BY
By Janice Whitt at 2:45:08 PM, 5/23/2016
Review and Approved / Date

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/19/2016 8:30:00 AM**
Digestion: **Start: 5/19/2016 9:54:00 AM / Stop: 5/19/2016 3:33:00 PM**
Prep End Date: **5/19/2016 3:41:51 PM**

Prep Batch **75180** Prep Code: **3005ADOD** Technician: **Cassie Van Dyke**

Prep Factor Units: **mL/mL**

**Equipment List**

Hot Block #4
Thermometer #71
Pipette #P-09-Spikes
Pipette #P-01 Samples

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605047-31A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605047-32A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605047-38A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605071-28A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605071-29A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605074-33A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605074-34A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605074-35A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605096-36A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605096-37A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605096-44A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605097-27A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605097-27A MS | Equip Blank | | 50 | 50 | 1.000 | of | |
| 1605097-27A MSD | Equip Blank | | 50 | 50 | 1.000 | of | |
| 1605097-27A PDS | Equip Blank | | 50 | 50 | 1.000 | of | |
| 1605097-27A SD | Equip Blank | | 50 | 50 | 1.000 | of | |
| 1605097-30A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605098-42A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605121-46A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605121-47A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605135-46A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605144-16A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| LCS-75180 | Aqueous | | 50 | 50 | 1.000 | of | |
| LCSD-75180 | Aqueous | | 50 | 50 | 1.000 | of | |
| MB-75180 | Aqueous | | 50 | 50 | 1.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 9641 | Hydrochloric Acid (trace metal grade) | 1 | ml | 09/22/2025 |
| 10056 | Digestion Vessels | 1 | ml | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 1 | ml | 01/10/2026 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160406-1 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.1 | 07/05/2016 |
| MET-SPIKE-160511-1 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 0.2 | 08/09/2016 |
| MET-SPIKE-160511-2 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 0.2 | 08/09/2016 |

***REVIEWED BY***
*By Janice Whitt at 2:45:11 PM, 5/23/2016*

# MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

| | | | |
|---|---|---|---|
| **ANALYST:** | RO | **BALANCE #:** | 30 |
| **TEST DATE:** | 05/20/2016 | **Water is at Room Temperatue (70-73°F) / (21-23°C)** | |
| **PIPETTER LAB ID:** | See Below | **WATER TEMP (°C):** | 21-23°C |
| **TEST VOLUME:** | See Below | **WATER DENSITY:** | 0.998 (0.9980-0.9976) |

| | |
|---|---|
| **REFERENCE:** | DoD QSM 5.0 |
| **# of REPLICATES:** | 3 |
| **LABWARE TYPE:** | MECHANICAL VOLUMETRIC PIPETTE |
| **FREQUENCY:** | DAILY BEFORE USE |
| **MEAN CRITERIA:** | ± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME) |
| **RSD CRITERIA:** | < 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS) |

**1) RECORD ROOM AND WATER TEMPERATURE**
**2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.**
**3) WEIGH 3 REPLICATES AT THE TEST VOLUME.**
**4) DETERMINE TOTAL WT.**
**5) CALCULATE VOLUME OF H2O AT °C (in mL)**

**% TEST VOL = Volume of H2O at °C/Test Volume * 100**

**%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100**

**VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY**

| | | | | | BIAS | PRECISION |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-31** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 4.00 | 3.9957 | 3.9877 | 99.69 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 3.9968 | 3.9888 | 99.72 | | |
| 3 | | 3.9926 | 3.9846 | 99.62 | | |
| **AVERAGE (MEAN)** | | **3.995** | **3.987** | **99.68** | | **0.055** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-21** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 1.00 | 0.9998 | 0.9978 | 99.78 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 0.9976 | 0.9956 | 99.56 | | |
| 3 | | 0.9977 | 0.9957 | 99.57 | | |
| **AVERAGE (MEAN)** | | **0.998** | **0.996** | **99.64** | | **0.124** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-39** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 0.500 | 0.4996 | 0.4986 | 99.72 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 0.4999 | 0.4989 | 99.78 | | |
| 3 | | 0.4989 | 0.4979 | 99.58 | | |
| **AVERAGE (MEAN)** | | **0.499** | **0.498** | **99.69** | | **0.103** |
| | | | | | | **PASS** |

5/20/16

Analyst / Date

REVIEWED BY
By Janice Whitt at 2:45:14 PM, 5/23/2016

Review and Approved / Date

# Calibration Summary Report

**Date Acquired** 5/20/2016 10:52
**Data Batch** 160520.b

| Level | Calibration File Name |
|---|---|
| 1 | 012CALB.d |
| 2 | 013CALS.d |
| 3 | 014CALS.d |
| 4 | 015CALS.d |
| 5 | 016CALS.d |
| 6 | 017CALS.d |
| 7 | 018CALS.d |
| 8 | 019CALS.d |

**Calibration Table**

| Ele | Corr Coef | Curve Equation |
|---|---|---|
| As | 1.0000 | y = 0.0014 * x + 1.9173E-004 |
| Be | 1.0000 | y = 6.7611E-005 * x + 4.0753E-006 |
| B | 1.0000 | y = 2.3935E-005 * x + 6.6671E-005 |
| Na | 0.9999 | y = 8.2020E-004 * x + 0.0425 |
| Mg | 0.9999 | y = 4.1094E-004 * x + 0.0010 |
| Al | 1.0000 | y = 1.4756E-004 * x + 3.6385E-004 |
| K | 0.9999 | y = 3.9899E-004 * x + 0.0507 |
| Ca | 1.0000 | y = 2.2762E-005 * x + 2.4734E-004 |
| Ti | 1.0000 | y = 1.5550E-004 * x + 2.4548E-006 |
| V | 1.0000 | y = 0.0053 * x + 0.0030 |
| Cr | 1.0000 | y = 0.0064 * x + 0.0010 |
| Mn | 1.0000 | y = 0.0034 * x + 1.2334E-004 |
| Fe | 1.0000 | y = 0.0054 * x + 0.0075 |
| Co | 1.0000 | y = 0.0134 * x + 1.6697E-004 |
| Ni | 1.0000 | y = 0.0037 * x + 5.9595E-004 |
| Cu | 1.0000 | y = 0.0102 * x + 0.0033 |
| Zn | 1.0000 | y = 0.0017 * x + 3.7275E-004 |
| Se | 1.0000 | y = 7.9937E-005 * x + 9.8739E-005 |
| Sr | 1.0000 | y = 6.4021E-004 * x + 3.3178E-005 |
| Mo | 1.0000 | y = 6.0622E-004 * x + 4.8584E-006 |
| Ag | 0.9999 | y = 0.0019 * x + 7.8947E-006 |
| Cd | 1.0000 | y = 2.8420E-004 * x + 1.5075E-006 |
| Sn | 1.0000 | y = 5.9872E-004 * x + 6.4692E-005 |
| Sb | 1.0000 | y = 9.1882E-004 * x + 2.1127E-005 |
| Tl | 1.0000 | y = 0.0017 * x + 2.3075E-006 |
| Ba | 1.0000 | y = 2.9131E-004 * x + 3.1689E-006 |
| Pb | 1.0000 | y = 0.0023 * x + 2.2673E-005 |
| Li | 1.0000 | y = 5.2630E-005 * x + 1.4809E-005 |

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By Janice Whitt at 2:45:18 PM, 5/23/2016

# Calibration Summary Report

**Level 7 Cal**

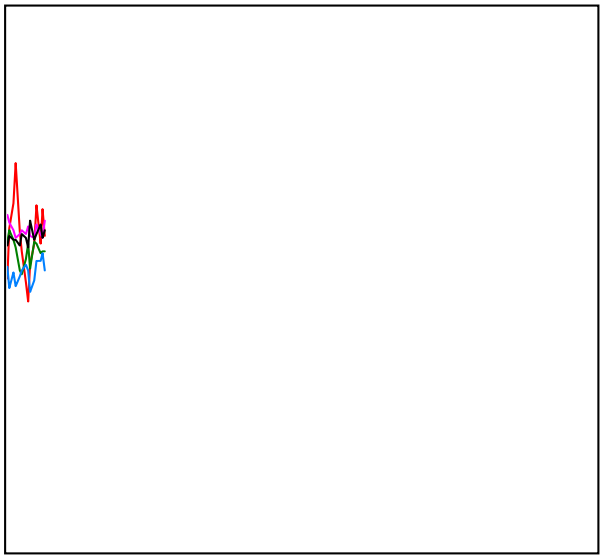
| Ele | Conc | Calc | %Rec |
|---|---|---|---|
| As | 500 | 494.27 | 99 |
| Be | 500 | 507.25 | 101 |
| B | 500 | 512.43 | 102 |
| Na | 10000 | 10274.86 | 103 |
| Mg | 10000 | 10243.18 | 102 |
| Al | 10000 | 9999.22 | 100 |
| K | 10000 | 10218.11 | 102 |
| Ca | 10000 | 9805.32 | 98 |
| Ti | 500 | 501.17 | 100 |
| V | 500 | 507.40 | 101 |
| Cr | 500 | 509.33 | 102 |
| Mn | 500 | 509.95 | 102 |
| Fe | 10000 | 9967.53 | 100 |
| Co | 500 | 512.00 | 102 |
| Ni | 500 | 505.16 | 101 |
| Cu | 500 | 508.82 | 102 |
| Zn | 500 | 506.99 | 101 |
| Se | 500 | 497.89 | 100 |
| Sr | 500 | 505.73 | 101 |
| Mo | 500 | 498.28 | 100 |
| Ag | 500 | 497.63 | 100 |
| Cd | 500 | 496.13 | 99 |
| Sn | 500 | 494.23 | 99 |
| Sb | 500 | 501.03 | 100 |
| Tl | 500 | 509.21 | 102 |
| Ba | 500 | 495.71 | 99 |
| Pb | 500 | 503.45 | 101 |

**Level 8 Cal**

| Ele | Conc | Calc | %Rec |
|---|---|---|---|
| As | 2000 | 2001.88 | 100 |
| Be | 2000 | 1997.64 | 100 |
| B | 2000 | 1996.74 | 100 |
| Na | 25000 | 24858.90 | 101 |
| Mg | 25000 | 24867.65 | 101 |
| K | 25000 | 24896.46 | 100 |
| Ca | 25000 | 25100.13 | 100 |
| Ti | 2000 | 1999.82 | 100 |
| V | 2000 | 1997.81 | 100 |
| Cr | 2000 | 1997.17 | 100 |
| Mn | 2000 | 1996.76 | 100 |
| Co | 2000 | 1995.80 | 100 |
| Ni | 2000 | 1997.77 | 100 |
| Cu | 2000 | 1996.80 | 100 |
| Zn | 2000 | 1997.23 | 100 |
| Se | 2000 | 2000.32 | 100 |
| Sr | 2000 | 1998.31 | 100 |
| Mo | 2000 | 2000.69 | 100 |
| Cd | 2000 | 2001.01 | 100 |
| Sn | 2000 | 2001.88 | 100 |
| Tl | 2000 | 1997.65 | 100 |
| Ba | 2000 | 2001.53 | 100 |
| Pb | 2000 | 1999.22 | 100 |
| Li | 2000 | 1995.26 | 100 |

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By Janice Whitt at 2:45:21 PM, 5/23/2016

# Current Signal



| Mass | Range | Count | Avg. Count | RSD [%] |
|---|---|---|---|---|
| 51 | 200 | 116 | 114.9 | 11.79 |
| 59 | 2000 | 1105 | 1102.9 | 4.38 |
| 89 | 2000 | 1032 | 1025.3 | 4.05 |
| 140 | 5000 | 3033 | 2949.5 | 2.29 |
| 205 | 5000 | 2959 | 2890.5 | 2.51 |
| 156/140 | 1 | 0.462 % | 0.345 % | 35.57 |
| 75 | 20 | 3 | 4.9 | 44.86 |
| 78 | 20 | 3 | 7.9 | 39.26 |
| 56 | 5000 | 2420 | 2326.3 | 2.61 |
| 31 | 100 | 56 | 49.2 | 9.44 |
| **Integration Time [sec]** | | 0.10 | | |

**## Plasma Parameters ##**

| | | | |
|---|---|---|---|
| RF Power | 1550 | Carrier Gas | 0.55 |
| RF Matching | 1.90 | Option Gas | 0.0 |
| Smpl Depth | 8.0 | Nebulizer Pump | 0.10 |
| S/C Temp | 2 | | |

**## Lenses Parameters ##**

| | | | |
|---|---|---|---|
| Extract 1 | 0.0 | Omega Lens | 6.6 |
| Extract 2 | -200.0 | Cell Entrance | -40 |
| Omega Bias | -80 | Cell Exit | -60 |
| Deflect | 2.4 | | |

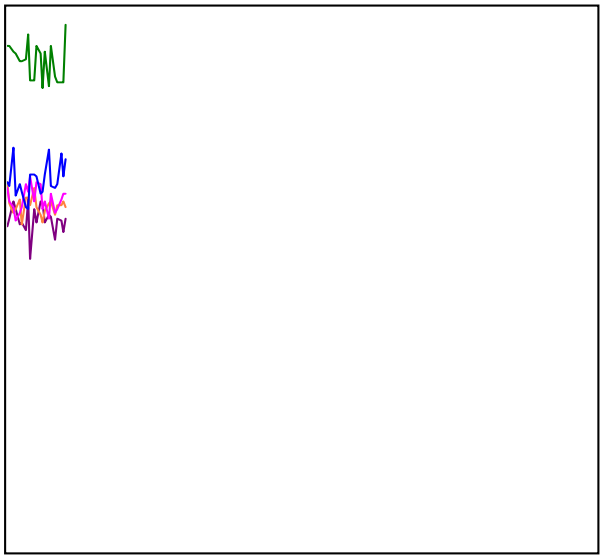
**## Cell Parameters ##**

| | | | |
|---|---|---|---|
| Use Gas | true | 3rd Gas Flow | 0 |
| He Flow | 4.7 | OctP Bias | -18.0 |
| H2 Flow | 0.0 | OctP RF | 200 |
| Energy Discrimination | 3.0 | | |

**Meters**

| | | | | | |
|---|---|---|---|---|---|
| IF/BK Press | 2.26E+2 | Pa | Carrier Gas(BP) | 2.53E+2 | kPa |
| Analyzer Press | 2.03E-4 | Pa | Reflected Power | 1 | W |
| Forward Power | 1550 | W | | | |

# Current Signal



| Mass | Range | Count | Avg. Count | RSD [%] |
|---|---|---|---|---|
| 7 | 2000 | 1222 | 1219.4 | 4.17 |
| 59 | 2000 | 1933 | 1800.7 | 3.77 |
| 89 | 5000 | 3170 | 3179.9 | 2.86 |
| 140 | 5000 | 3279 | 3231.5 | 3.58 |
| 205 | 5000 | 2137 | 2197.3 | 4.10 |
| 156/140 | 2 | 1.373 % | 1.107 % | 20.36 |
| 78 | 5000 | 2219 | 2298.0 | 2.84 |
| 63 | 500 | 361 | 341.0 | 4.61 |
| 75 | 10000 | 5042 | 4978.2 | 1.76 |
| **Integration Time [sec]** | | 0.10 | | |

**## Plasma Parameters ##**

| | | | |
|---|---|---|---|
| RF Power | 1550 | Carrier Gas | 0.55 |
| RF Matching | 1.90 | Option Gas | 0.0 |
| Smpl Depth | 8.0 | Nebulizer Pump | 0.10 |
| S/C Temp | 2 | | |

**## Lenses Parameters ##**

| | | | |
|---|---|---|---|
| Extract 1 | 0.0 | Omega Lens | 6.6 |
| Extract 2 | -200.0 | Cell Entrance | -40 |
| Omega Bias | -80 | Cell Exit | -60 |
| Deflect | 7.0 | | |

**## Cell Parameters ##**

| | | | |
|---|---|---|---|
| Use Gas | false | 3rd Gas Flow | 0 |
| He Flow | 4.2 | OctP Bias | -18.0 |
| H2 Flow | 0.0 | OctP RF | 200 |
| Energy Discrimination | 3.0 | | |

**Meters**

| | | | | | |
|---|---|---|---|---|---|
| IF/BK Press | 2.25E+2 | Pa | Carrier Gas(BP) | 2.51E+2 | kPa |
| Analyzer Press | 1.15E-4 | Pa | Reflected Power | 1 | W |
| Forward Power | 1549 | W | | | |

# US EPA Tune Check Sample Report

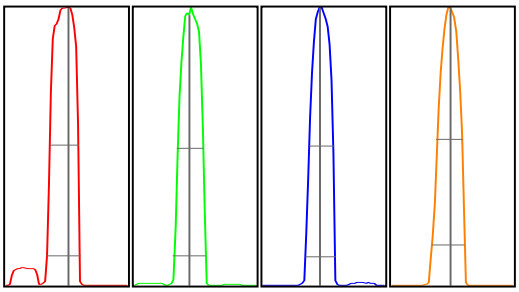
**Batch Folder** C:\Agilent\ICPMH\1\DATA\DHL TEMPLATE Li.b
**Report Comment**
**Instrument Name** ICPMS4 JP12361998

**[No gas]**

| Mass | Count (Mean) | RSD% (Actual) | RSD% (Required) | RSD% (Flag) |
|---|---|---|---|---|
| 7 | 766071 | 0.59 | 5.00 | |
| 59 | 1002535 | 0.88 | 5.00 | |
| 115 | 1534120 | 0.47 | 5.00 | |
| 205 | 1337735 | 0.65 | 5.00 | |

| Mass | Replicate 1 Count | Replicate 2 Count | Replicate 3 Count | Replicate 4 Count | Replicate 5 Count |
|---|---|---|---|---|---|
| 7 | 761000 | 762770 | 766402 | 767567 | 772618 |
| 59 | 994287 | 996607 | 1000508 | 1004518 | 1016753 |
| 115 | 1531586 | 1527087 | 1528422 | 1540459 | 1543047 |
| 205 | 1347346 | 1339137 | 1338492 | 1340161 | 1323539 |

**Integration Time [sec] =** 0.1



| Mass | Peak Height | Axis (Actual) | Axis (Required) | Axis (Flag) | Width-X% (Actual) | Width-X% (Required) | Width-X% (Flag) |
|---|---|---|---|---|---|---|---|
| 7 | 114427 | 7.05 | 6.9 - 7.1 | | 0.792 | 0.850 | |
| 59 | 169781 | 58.90 | 58.9 - 59.1 | | 0.757 | 0.850 | |
| 115 | 281192 | 114.95 | 114.9 - 115.1 | | 0.715 | 0.850 | |
| 205 | 235049 | 205.00 | 204.9 - 205.1 | | 0.792 | 0.850 | |

**X% =** 10 **Int Time [sec] =** 0.1 **Acq Time [sec] =** 135.05 **Y Axis =** Linear

**Tune Parameters**

**## Plasma Paramters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| RF Power | 1550 | W | Nebulizer Pump | 0.10 | rps |
| RF Matching | 1.90 | V | S/C Temp | 2 | ℃ |
| Smpl Depth | 8.0 | mm | Gas Switch | Dilution Gas | |
| Carrier Gas | 0.55 | L/min | Makeup/Dilution Gas | 0.50 | L/min |
| Option Gas | 0.0 | % | | | |

**## Lenses Parameters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| Extract 1 | 0.0 | V | Cell Entrance | -40 | V |
| Extract 2 | -200.0 | V | Cell Exit | -60 | V |
| Omega Bias | -80 | V | Deflect | 7.0 | V |
| Omega Lens | 6.6 | V | Plate Bias | -60 | V |

**## Cell Parameters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| Use Gas | false | | OctP Bias | -18.0 | V |
| He Flow | 0.0 | mL/min | OctP RF | 200 | V |
| H2 Flow | 0.0 | mL/min | Energy Discrimination | 3.0 | V |
| 3rd Gas Flow | 0 | % | | | |

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By Janice Whitt at 2:45:29 PM, 5/23/2016

# P/A Factor Tuning Report

## Current Sample

Sample Name: BLANK STD 1
Data File: 012CALB.d
Acquired: 05/20/2016 10:52:47

## Detector Parameters and P/A Factors

Discriminator: 4.5 mV
AnalogHV: 1756 V
PulseHV: 1224 V

Acquired: 05/20/2016 10:17:33

| Mass[u] | Element | P/A Factor |
|---|---|---|
| 6 | Li | 0.098134 |
| 9 | Be | 0.112424 |
| 23 | Na | 0.120362 |
| 24 | Mg | 0.125799 |
| 27 | Al | 0.129086 |
| 39 | K | 0.130962 |
| 45 | Sc | 0.132626 |
| 48 | | 0.132901 |
| 51 | V | 0.134336 |
| 52 | Cr | 0.138170 |
| 55 | Mn | 0.140003 |
| 59 | Co | 0.143275 |
| 60 | Ni | 0.144291 |
| 63 | Cu | 0.146894 |
| 66 | Zn | 0.146603 |
| 72 | | 0.145810 |
| 74 | Ge | 0.145819 |
| 75 | As | 0.144825 |
| 88 | Sr | 0.145917 |
| 89 | | 0.145627 |
| 95 | | 0.145741 |
| 97 | Mo | 0.145945 |
| 98 | Mo | 0.146160 |
| 99 | [Mo] | 0.149063 |
| 101 | | 0.148703 |
| 105 | | 0.151466 |
| 111 | Cd | 0.152171 |
| 114 | Cd | 0.152307 |
| 115 | In | 0.152070 |
| 118 | Sn | 0.152341 |
| 121 | | 0.151907 |
| 123 | Sb | 0.151213 |
| 135 | Ba | 0.153085 |
| 138 | | 0.153114 |
| 175 | | 0.157166 |
| 193 | | 0.158115 |
| 205 | Tl | 0.159390 |
| 206 | [Pb] | 0.158901 |
| 207 | [Pb] | 0.160233 |
| 208 | Pb | 0.160034 |
| 209 | Bi | 0.160265 |
| 232 | | 0.160153 |
| 238 | U | 0.160001 |
| 44 | Ca | Signal too low |
| 78 | Se | Signal too low |
| 107 | Ag | Signal too low |
| 172 | | Signal too low |

REVIEWED BY
By Janice Whitt at 2:45:32 PM, 5/23/2016

# Calibration Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 10:52 | Sample Name | BLANK STD 1 |
| Data Batch | 160520.b | Comment | CAL ICPMS_TW |
| Data File Name | 012CALB.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 13 | 11.46 |
| 9 | Be | 45 | 4 | 31.49 |
| 11 | B | 45 | 60 | 38.88 |
| 23 | Na | 45 | 38295 | 1.98 |
| 24 | Mg | 45 | 929 | 4.13 |
| 27 | Al | 45 | 328 | 9.67 |
| 39 | K | 45 | 45687 | 1.92 |
| 44 | Ca | 45 | 223 | 14.74 |
| 47 | Ti | 45 | 2 | 173.21 |
| 51 | V | 45 | 2712 | 3.25 |
| 52 | Cr | 45 | 932 | 8.94 |
| 55 | Mn | 45 | 111 | 4.58 |
| 56 | Fe | 45 | 6780 | 0.46 |
| 59 | Co | 72 | 116 | 10.13 |
| 60 | Ni | 72 | 412 | 4.45 |
| 63 | Cu | 72 | 2314 | 7.14 |
| 66 | Zn | 72 | 258 | 12.02 |
| 75 | As | 72 | 133 | 9.18 |
| 78 | Se | 72 | 68 | 18.46 |
| 88 | Sr | 115 | 220 | 6.60 |
| 95 | Mo | 115 | 32 | 39.17 |
| 107 | Ag | 115 | 52 | 47.91 |
| 111 | Cd | 115 | 10 | 0.00 |
| 118 | Sn | 115 | 429 | 7.22 |
| 121 | Sb | 115 | 140 | 14.48 |
| 137 | Ba | 115 | 21 | 59.77 |
| 205 | Tl | 209 | 38 | 10.19 |
| 208 | Pb | 209 | 371 | 5.49 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD |
|---|---|---|---|
| 45 | Sc | 900744 | 0.58 |
| 72 | Ge | 691836 | 0.52 |
| 115 | In | 6634288 | 1.31 |
| 209 | Bi | 16365010 | 0.86 |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 10:54 | Sample Name | L2-160520 |
| Data Batch | 160520.b | Comment | CAL ICPMS_TW |
| Data File Name | 013CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 51 | 19.61 |
| 9 | Be | 45 | 59 | 16.17 |
| 11 | B | 45 | 81 | 47.63 |
| 23 | Na | 45 | 54693 | 1.98 |
| 24 | Mg | 45 | 8631 | 1.06 |
| 27 | Al | 45 | 3024 | 4.27 |
| 39 | K | 45 | 52837 | 1.33 |
| 44 | Ca | 45 | 673 | 9.59 |
| 47 | Ti | 45 | 142 | 21.27 |
| 51 | V | 45 | 7566 | 1.37 |
| 52 | Cr | 45 | 6659 | 1.56 |
| 55 | Mn | 45 | 3339 | 3.35 |
| 56 | Fe | 45 | 103212 | 0.39 |
| 59 | Co | 72 | 9894 | 1.63 |
| 60 | Ni | 72 | 3053 | 2.78 |
| 63 | Cu | 72 | 9651 | 1.49 |
| 66 | Zn | 72 | 1510 | 9.51 |
| 75 | As | 72 | 1134 | 3.65 |
| 78 | Se | 72 | 138 | 13.66 |
| 88 | Sr | 115 | 4758 | 9.98 |
| 95 | Mo | 115 | 4017 | 1.96 |
| 107 | Ag | 115 | 13061 | 1.16 |
| 111 | Cd | 115 | 1892 | 1.58 |
| 118 | Sn | 115 | 4368 | 1.85 |
| 121 | Sb | 115 | 6040 | 1.52 |
| 137 | Ba | 115 | 1957 | 3.12 |
| 205 | Tl | 209 | 28454 | 0.85 |
| 208 | Pb | 209 | 38051 | 1.40 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 888675 | 0.90 | 900744 | 98.66 | 70 | 120 | |
| 72 | Ge | 693617 | 1.22 | 691836 | 100.26 | 70 | 120 | |
| 115 | In | 6537693 | 1.64 | 6634288 | 98.54 | 70 | 120 | |
| 209 | Bi | 16272142 | 1.22 | 16365010 | 99.43 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 10:56 | Sample Name | L-160520 |
| Data Batch | 160520.b | Comment | CAL ICPMS_TW |
| Data File Name | 014CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 475 | 4.33 |
| 9 | Be | 45 | 589 | 2.81 |
| 11 | B | 45 | 213 | 8.70 |
| 23 | Na | 45 | 187072 | 0.24 |
| 24 | Mg | 45 | 75079 | 1.15 |
| 27 | Al | 45 | 26142 | 0.55 |
| 39 | K | 45 | 117199 | 0.47 |
| 44 | Ca | 45 | 4092 | 2.49 |
| 47 | Ti | 45 | 1508 | 7.61 |
| 51 | V | 45 | 49367 | 1.70 |
| 52 | Cr | 45 | 57479 | 0.64 |
| 55 | Mn | 45 | 30593 | 1.12 |
| 56 | Fe | 45 | 958300 | 0.88 |
| 59 | Co | 72 | 94946 | 1.52 |
| 60 | Ni | 72 | 26516 | 2.15 |
| 63 | Cu | 72 | 74283 | 1.74 |
| 66 | Zn | 72 | 11910 | 2.27 |
| 75 | As | 72 | 9774 | 0.72 |
| 78 | Se | 72 | 636 | 2.65 |
| 88 | Sr | 115 | 41218 | 0.48 |
| 95 | Mo | 115 | 38411 | 0.41 |
| 107 | Ag | 115 | 126475 | 0.65 |
| 111 | Cd | 115 | 18563 | 1.42 |
| 118 | Sn | 115 | 38626 | 1.15 |
| 121 | Sb | 115 | 58717 | 1.10 |
| 137 | Ba | 115 | 18171 | 0.63 |
| 205 | Tl | 209 | 272304 | 0.87 |
| 208 | Pb | 209 | 366431 | 0.81 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 873243 | 0.62 | 900744 | 96.95 | 70 | 120 | |
| 72 | Ge | 678023 | 0.58 | 691836 | 98.00 | 70 | 120 | |
| 115 | In | 6551099 | 0.64 | 6634288 | 98.75 | 70 | 120 | |
| 209 | Bi | 15917913 | 1.04 | 16365010 | 97.27 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 10:58 | Sample Name | 10X-160520 |
| Data Batch | 160520.b | Comment | CAL ICPMS_TW |
| Data File Name | 015CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 2372 | 1.63 |
| 9 | Be | 45 | 2923 | 2.25 |
| 11 | B | 45 | 1067 | 9.08 |
| 23 | Na | 45 | 770119 | 0.18 |
| 24 | Mg | 45 | 367454 | 0.88 |
| 27 | Al | 45 | 128655 | 0.92 |
| 39 | K | 45 | 399073 | 0.48 |
| 44 | Ca | 45 | 19370 | 0.75 |
| 47 | Ti | 45 | 6789 | 2.58 |
| 51 | V | 45 | 235086 | 0.94 |
| 52 | Cr | 45 | 281473 | 0.22 |
| 55 | Mn | 45 | 151664 | 1.11 |
| 56 | Fe | 45 | 4726262 | 0.52 |
| 59 | Co | 72 | 472848 | 1.31 |
| 60 | Ni | 72 | 128482 | 0.55 |
| 63 | Cu | 72 | 359776 | 1.03 |
| 66 | Zn | 72 | 59442 | 1.18 |
| 75 | As | 72 | 47843 | 0.10 |
| 78 | Se | 72 | 2827 | 1.34 |
| 88 | Sr | 115 | 207253 | 0.76 |
| 95 | Mo | 115 | 189832 | 0.47 |
| 107 | Ag | 115 | 625220 | 0.51 |
| 111 | Cd | 115 | 90493 | 0.63 |
| 118 | Sn | 115 | 188562 | 0.79 |
| 121 | Sb | 115 | 291979 | 0.59 |
| 137 | Ba | 115 | 91676 | 0.52 |
| 205 | Tl | 209 | 1369668 | 0.21 |
| 208 | Pb | 209 | 1836011 | 0.28 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 870783 | 0.49 | 900744 | 96.67 | 70 | 120 | |
| 72 | Ge | 675804 | 0.16 | 691836 | 97.68 | 70 | 120 | |
| 115 | In | 6511848 | 1.01 | 6634288 | 98.15 | 70 | 120 | |
| 209 | Bi | 15817982 | 1.93 | 16365010 | 96.66 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:00 | Sample Name | 5X-160520 |
| Data Batch | 160520.b | Comment | CAL ICPMS_TW |
| Data File Name | 016CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 4719 | 0.99 |
| 9 | Be | 45 | 6031 | 2.61 |
| 11 | B | 45 | 2106 | 2.38 |
| 23 | Na | 45 | 1487744 | 0.34 |
| 24 | Mg | 45 | 730325 | 0.75 |
| 27 | Al | 45 | 254158 | 1.00 |
| 39 | K | 45 | 743764 | 0.35 |
| 44 | Ca | 45 | 38890 | 0.92 |
| 47 | Ti | 45 | 13122 | 1.48 |
| 51 | V | 45 | 464545 | 0.24 |
| 52 | Cr | 45 | 553845 | 0.36 |
| 55 | Mn | 45 | 296245 | 0.64 |
| 56 | Fe | 45 | 9475567 | 0.90 |
| 59 | Co | 72 | 929518 | 0.70 |
| 60 | Ni | 72 | 254645 | 0.94 |
| 63 | Cu | 72 | 705956 | 0.91 |
| 66 | Zn | 72 | 115636 | 0.55 |
| 75 | As | 72 | 94999 | 1.00 |
| 78 | Se | 72 | 5517 | 1.18 |
| 88 | Sr | 115 | 407209 | 0.73 |
| 95 | Mo | 115 | 382159 | 0.27 |
| 107 | Ag | 115 | 1246974 | 0.27 |
| 111 | Cd | 115 | 180002 | 0.67 |
| 118 | Sn | 115 | 373685 | 0.75 |
| 121 | Sb | 115 | 581845 | 0.44 |
| 137 | Ba | 115 | 181959 | 0.36 |
| 205 | Tl | 209 | 2721048 | 0.56 |
| 208 | Pb | 209 | 3638595 | 0.14 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 867111 | 0.94 | 900744 | 96.27 | 70 | 120 | |
| 72 | Ge | 670073 | 0.40 | 691836 | 96.85 | 70 | 120 | |
| 115 | In | 6345212 | 1.15 | 6634288 | 95.64 | 70 | 120 | |
| 209 | Bi | 15774838 | 1.13 | 16365010 | 96.39 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:02 | Sample Name | 2X-160520 |
| Data Batch | 160520.b | Comment | CAL ICPMS_TW |
| Data File Name | 017CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 11645 | 1.45 |
| 9 | Be | 45 | 14799 | 0.87 |
| 11 | B | 45 | 5271 | 3.09 |
| 23 | Na | 45 | 3674579 | 0.75 |
| 24 | Mg | 45 | 1829610 | 0.19 |
| 27 | Al | 45 | 638745 | 0.27 |
| 39 | K | 45 | 1790546 | 0.40 |
| 44 | Ca | 45 | 96796 | 0.45 |
| 47 | Ti | 45 | 33606 | 0.77 |
| 51 | V | 45 | 1166196 | 0.37 |
| 52 | Cr | 45 | 1399555 | 0.43 |
| 55 | Mn | 45 | 749211 | 1.10 |
| 56 | Fe | 45 | 23607094 | 0.99 |
| 59 | Co | 72 | 2343107 | 0.54 |
| 60 | Ni | 72 | 639981 | 0.74 |
| 63 | Cu | 72 | 1763980 | 0.57 |
| 66 | Zn | 72 | 293583 | 0.29 |
| 75 | As | 72 | 238361 | 0.79 |
| 78 | Se | 72 | 13619 | 1.02 |
| 88 | Sr | 115 | 1023414 | 0.41 |
| 95 | Mo | 115 | 955739 | 0.13 |
| 107 | Ag | 115 | 3129309 | 0.67 |
| 111 | Cd | 115 | 450580 | 1.28 |
| 118 | Sn | 115 | 940332 | 0.60 |
| 121 | Sb | 115 | 1446811 | 0.41 |
| 137 | Ba | 115 | 456887 | 0.89 |
| 205 | Tl | 209 | 6865122 | 2.34 |
| 208 | Pb | 209 | 9182346 | 0.28 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 863899 | 0.62 | 900744 | 95.91 | 70 | 120 | |
| 72 | Ge | 676172 | 1.16 | 691836 | 97.74 | 70 | 120 | |
| 115 | In | 6342174 | 1.08 | 6634288 | 95.60 | 70 | 120 | |
| 209 | Bi | 15798184 | 1.06 | 16365010 | 96.54 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:04 | Sample Name | H-160520 |
| Data Batch | 160520.b | Comment | CAL ICPMS_TW |
| Data File Name | 018CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 23477 | 0.78 |
| 9 | Be | 45 | 29678 | 0.77 |
| 11 | B | 45 | 10670 | 2.57 |
| 23 | Na | 45 | 7328693 | 1.45 |
| 24 | Mg | 45 | 3642987 | 0.46 |
| 27 | Al | 45 | 1276992 | 0.43 |
| 39 | K | 45 | 3571412 | 0.39 |
| 44 | Ca | 45 | 193325 | 1.27 |
| 47 | Ti | 45 | 67432 | 0.26 |
| 51 | V | 45 | 2342136 | 0.46 |
| 52 | Cr | 45 | 2811568 | 0.73 |
| 55 | Mn | 45 | 1497737 | 1.02 |
| 56 | Fe | 45 | 46607699 | 0.12 |
| 59 | Co | 72 | 4664541 | 0.37 |
| 60 | Ni | 72 | 1265436 | 0.57 |
| 63 | Cu | 72 | 3510221 | 0.93 |
| 66 | Zn | 72 | 580522 | 0.69 |
| 75 | As | 72 | 478495 | 0.53 |
| 78 | Se | 72 | 27052 | 0.42 |
| 88 | Sr | 115 | 2062251 | 0.76 |
| 95 | Mo | 115 | 1923834 | 1.60 |
| 107 | Ag | 115 | 6149064 | 1.18 |
| 111 | Cd | 115 | 897958 | 0.69 |
| 118 | Sn | 115 | 1885001 | 0.48 |
| 121 | Sb | 115 | 2931945 | 1.17 |
| 137 | Ba | 115 | 919713 | 0.73 |
| 205 | Tl | 209 | 13843577 | 0.15 |
| 208 | Pb | 209 | 18376231 | 1.17 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 865250 | 0.07 | 900744 | 96.06 | 70 | 120 | |
| 72 | Ge | 678053 | 0.72 | 691836 | 98.01 | 70 | 120 | |
| 115 | In | 6368809 | 0.55 | 6634288 | 96.00 | 70 | 120 | |
| 209 | Bi | 15682376 | 1.12 | 16365010 | 95.83 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:06 | Sample Name | H2-160520 |
| Data Batch | 160520.b | Comment | CAL ICPMS_TW |
| Data File Name | 019CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 91520 | 0.61 |
| 9 | Be | 45 | 117696 | 1.05 |
| 11 | B | 45 | 41703 | 2.00 |
| 23 | Na | 45 | 17804069 | 1.61 |
| 24 | Mg | 45 | 8905730 | 0.41 |
| 27 | Al | 45 | 1268 | 15.64 |
| 39 | K | 45 | 8700336 | 3.99 |
| 44 | Ca | 45 | 498064 | 0.89 |
| 47 | Ti | 45 | 270980 | 0.88 |
| 51 | V | 45 | 9279476 | 1.91 |
| 52 | Cr | 45 | 11100250 | 2.57 |
| 55 | Mn | 45 | 5906029 | 1.36 |
| 56 | Fe | 45 | 31079 | 21.18 |
| 59 | Co | 72 | 18091149 | 2.15 |
| 60 | Ni | 72 | 4978053 | 0.80 |
| 63 | Cu | 72 | 13698455 | 1.21 |
| 66 | Zn | 72 | 2274547 | 0.47 |
| 75 | As | 72 | 1927729 | 0.53 |
| 78 | Se | 72 | 107929 | 0.33 |
| 88 | Sr | 115 | 8069912 | 1.86 |
| 95 | Mo | 115 | 7651186 | 1.88 |
| 107 | Ag | 115 | 2167 | 27.48 |
| 111 | Cd | 115 | 3587268 | 0.74 |
| 118 | Sn | 115 | 7561068 | 0.94 |
| 121 | Sb | 115 | 4899 | 3.75 |
| 137 | Ba | 115 | 3678176 | 0.64 |
| 205 | Tl | 209 | 54027345 | 1.56 |
| 208 | Pb | 209 | 72597616 | 1.51 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 871411 | 0.35 | 900744 | 96.74 | 70 | 120 | |
| 72 | Ge | 674585 | 0.55 | 691836 | 97.51 | 70 | 120 | |
| 115 | In | 6308303 | 0.56 | 6634288 | 95.09 | 70 | 120 | |
| 209 | Bi | 15600790 | 0.51 | 16365010 | 95.33 | 70 | 120 | |

# Interference Check Solution A (ICS-A) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:14 | Sample Name | ICSA-160520 |
| Data Batch | 160520.b | Comment | ICSAICPMS_TW |
| Data File Name | 023ICSA.d | Dilution | 1 |

| Mass | Name | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|
| 9 | Be | 0.178 | 13 | 11.5 | 1.2 | 0.8 | |
| 11 | B | 12.857 | 310 | 15.8 | 30 | 30 | |
| 51 | V | -0.035 | 2337 | 3.4 | 10 | 10 | |
| 52 | Cr | 0.435 | 3153 | 9.6 | 8 | 5 | |
| 55 | Mn | 1.453 | 4183 | 2.6 | 8 | 10 | |
| 59 | Co | 0.572 | 5053 | 6.0 | 8 | 10 | |
| 60 | Ni | 0.460 | 1477 | 4.3 | 8 | 10 | |
| 63 | Cu | 0.966 | 8479 | 8.6 | 8 | 10 | |
| 66 | Zn | 1.514 | 1886 | 2.4 | 10 | 5 | |
| 75 | As | 0.723 | 788 | 5.3 | 4 | 5 | |
| 78 | Se | 0.403 | 84 | 12.1 | 2 | 5 | |
| 88 | Sr | 1.450 | 5706 | 4.5 | 10 | 10 | |
| 107 | Ag | 0.149 | 1757 | 1.5 | 0.8 | 2 | |
| 111 | Cd | 0.508 | 864 | 8.0 | 1.2 | 1 | |
| 118 | Sn | 1.337 | 5130 | 5.4 | 10 | 10 | |
| 121 | Sb | 0.431 | 2474 | 8.2 | 4 | 2.5 | |
| 137 | Ba | 0.360 | 641 | 0.8 | 8 | 10 | |
| 205 | Tl | 0.057 | 1457 | 3.8 | 4 | 1.5 | |
| 208 | Pb | 0.112 | 4071 | 5.3 | 1.2 | 1 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 827611 | 0.57 | 900744 | 91.88 | 70 | 120 | |
| 72 | Ge | 643920 | 0.43 | 691836 | 93.07 | 70 | 120 | |
| 115 | In | 5931990 | 0.71 | 6634288 | 89.41 | 70 | 120 | |
| 209 | Bi | 14414677 | 1.32 | 16365010 | 88.08 | 70 | 120 | |

# Interference Check Solution AB (ICS-AB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:16 | Sample Name | ICSAB-160520 |
| Data Batch | 160520.b | Comment | ICSBICPMS_TW |
| Data File Name | 024ICSB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 51 | V | 45 | 40.230 | 179228 | 0.38 | 40 | 100.6 | 80 | 120 | |
| 52 | Cr | 45 | 21.180 | 112220 | 0.68 | 20 | 105.9 | 80 | 120 | |
| 55 | Mn | 45 | 20.090 | 56319 | 0.85 | 20 | 100.5 | 80 | 120 | |
| 59 | Co | 72 | 40.765 | 350154 | 0.67 | 40 | 101.9 | 80 | 120 | |
| 60 | Ni | 72 | 37.991 | 90057 | 0.27 | 40 | 95.0 | 80 | 120 | |
| 63 | Cu | 72 | 21.028 | 138786 | 0.46 | 20 | 105.1 | 80 | 120 | |
| 66 | Zn | 72 | 20.320 | 22160 | 1.43 | 20 | 101.6 | 80 | 120 | |
| 75 | As | 72 | 19.962 | 18332 | 0.50 | 20 | 99.8 | 80 | 120 | |
| 78 | Se | 72 | 20.880 | 1130 | 1.09 | 20 | 104.4 | 80 | 120 | |
| 107 | Ag | 115 | 19.272 | 219521 | 0.59 | 20 | 96.4 | 80 | 120 | |
| 111 | Cd | 115 | 10.173 | 16977 | 1.44 | 10 | 101.7 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 824440 | 0.46 | 900744 | 91.53 | 70 | 120 | |
| 72 | Ge | 639098 | 0.68 | 691836 | 92.38 | 70 | 120 | |
| 115 | In | 5869841 | 0.52 | 6634288 | 88.48 | 70 | 120 | |
| 209 | Bi | 14474563 | 1.18 | 16365010 | 88.45 | 70 | 120 | |

# Initial Calibration Verification (ICV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:28 | Sample Name | ICV-160520 |
| Data Batch | 160520.b | Comment | ICV ICPMS_TW |
| Data File Name | 028_ICV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 100.332 | 4824 | 1.81 | 100 | 100.3 | 90 | 110 | |
| 9 | Be | 45 | 103.176 | 6359 | 1.46 | 100 | 103.2 | 90 | 110 | |
| 11 | B | 45 | 106.105 | 2375 | 2.15 | 100 | 106.1 | 90 | 110 | |
| 23 | Na | 45 | 2619.649 | 1996303 | 0.67 | 2500 | 104.8 | 90 | 110 | |
| 24 | Mg | 45 | 2613.352 | 979367 | 0.11 | 2500 | 104.5 | 90 | 110 | |
| 27 | Al | 45 | 2492.346 | 335405 | 0.21 | 2500 | 99.7 | 90 | 110 | |
| 39 | K | 45 | 2576.179 | 982676 | 0.45 | 2500 | 103.0 | 90 | 110 | |
| 44 | Ca | 45 | 2392.260 | 49836 | 0.98 | 2500 | 95.7 | 90 | 110 | |
| 47 | Ti | 45 | 102.414 | 14511 | 1.78 | 100 | 102.4 | 90 | 110 | |
| 51 | V | 45 | 103.304 | 504292 | 0.75 | 100 | 103.3 | 90 | 110 | |
| 52 | Cr | 45 | 105.424 | 613523 | 0.38 | 100 | 105.4 | 90 | 110 | |
| 55 | Mn | 45 | 102.300 | 316459 | 1.21 | 100 | 102.3 | 90 | 110 | |
| 56 | Fe | 45 | 2567.305 | 12645614 | 0.68 | 2500 | 102.7 | 90 | 110 | |
| 59 | Co | 72 | 106.357 | 1016420 | 0.67 | 100 | 106.4 | 90 | 110 | |
| 60 | Ni | 72 | 103.434 | 272118 | 0.62 | 100 | 103.4 | 90 | 110 | |
| 63 | Cu | 72 | 102.858 | 746210 | 0.57 | 100 | 102.9 | 90 | 110 | |
| 66 | Zn | 72 | 103.642 | 124695 | 1.04 | 100 | 103.6 | 90 | 110 | |
| 75 | As | 72 | 100.339 | 101992 | 0.91 | 100 | 100.3 | 90 | 110 | |
| 78 | Se | 72 | 104.060 | 5986 | 1.79 | 100 | 104.1 | 90 | 110 | |
| 88 | Sr | 115 | 103.091 | 442072 | 0.16 | 100 | 103.1 | 90 | 110 | |
| 95 | Mo | 115 | 98.299 | 398988 | 0.75 | 100 | 98.3 | 90 | 110 | |
| 107 | Ag | 115 | 98.962 | 1285452 | 0.32 | 100 | 99.0 | 90 | 110 | |
| 111 | Cd | 115 | 99.483 | 189297 | 1.17 | 100 | 99.5 | 90 | 110 | |
| 118 | Sn | 115 | 101.471 | 407166 | 1.20 | 100 | 101.5 | 90 | 110 | |
| 121 | Sb | 115 | 98.770 | 607715 | 0.72 | 100 | 98.8 | 90 | 110 | |
| 137 | Ba | 115 | 98.652 | 192414 | 0.96 | 100 | 98.7 | 90 | 110 | |
| 205 | Tl | 209 | 101.466 | 2836271 | 0.84 | 100 | 101.5 | 90 | 110 | |
| 208 | Pb | 209 | 101.685 | 3816480 | 0.50 | 100 | 101.7 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 911084 | 0.27 | 900744 | 101.15 | 70 | 120 | |
| 72 | Ge | 711191 | 0.51 | 691836 | 102.80 | 70 | 120 | |
| 115 | In | 6694931 | 0.54 | 6634288 | 100.91 | 70 | 120 | |
| 209 | Bi | 16123032 | 0.92 | 16365010 | 98.52 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:40 | Sample Name | LCVL-160520 |
| Data Batch | 160520.b | Comment | LCVLICPMS_TW |
| Data File Name | 031LICV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.211 | 493 | 3.28 | 10 | 102.1 | 70 | 130 | |
| 9 | Be | 45 | 0.883 | 57 | 3.51 | 1 | 88.3 | 70 | 130 | |
| 11 | B | 45 | 23.200 | 556 | 15.56 | 20 | 116.0 | 70 | 130 | |
| 23 | Na | 45 | 105.249 | 115108 | 0.58 | 100 | 105.2 | 70 | 130 | |
| 24 | Mg | 45 | 100.404 | 37782 | 2.89 | 100 | 100.4 | 70 | 130 | |
| 27 | Al | 45 | 96.019 | 12984 | 1.75 | 100 | 96.0 | 70 | 130 | |
| 39 | K | 45 | 105.822 | 83035 | 0.80 | 100 | 105.8 | 70 | 130 | |
| 44 | Ca | 45 | 97.034 | 2194 | 6.79 | 100 | 97.0 | 70 | 130 | |
| 47 | Ti | 45 | 4.981 | 694 | 16.24 | 5 | 99.6 | 70 | 130 | |
| 51 | V | 45 | 0.990 | 7405 | 1.67 | 1 | 99.0 | 70 | 130 | |
| 52 | Cr | 45 | 5.164 | 30348 | 0.92 | 5 | 103.3 | 70 | 130 | |
| 55 | Mn | 45 | 4.932 | 15067 | 0.98 | 5 | 98.6 | 70 | 130 | |
| 56 | Fe | 45 | 98.316 | 481338 | 0.67 | 100 | 98.3 | 70 | 130 | |
| 59 | Co | 72 | 5.160 | 48099 | 1.92 | 5 | 103.2 | 70 | 130 | |
| 60 | Ni | 72 | 5.266 | 13871 | 3.84 | 5 | 105.3 | 70 | 130 | |
| 63 | Cu | 72 | 5.055 | 37891 | 1.05 | 5 | 101.1 | 70 | 130 | |
| 66 | Zn | 72 | 5.003 | 6103 | 1.75 | 5 | 100.1 | 70 | 130 | |
| 75 | As | 72 | 5.096 | 5168 | 1.25 | 5 | 101.9 | 70 | 130 | |
| 78 | Se | 72 | 4.860 | 337 | 3.91 | 5 | 97.2 | 70 | 130 | |
| 88 | Sr | 115 | 5.140 | 21310 | 1.33 | 5 | 102.8 | 70 | 130 | |
| 95 | Mo | 115 | 4.953 | 19283 | 2.26 | 5 | 99.1 | 70 | 130 | |
| 107 | Ag | 115 | 1.964 | 24482 | 0.47 | 2 | 98.2 | 70 | 130 | |
| 111 | Cd | 115 | 1.030 | 1888 | 5.78 | 1 | 103.0 | 70 | 130 | |
| 118 | Sn | 115 | 5.127 | 20100 | 1.89 | 5 | 102.5 | 70 | 130 | |
| 121 | Sb | 115 | 1.951 | 11631 | 2.50 | 2 | 97.6 | 70 | 130 | |
| 137 | Ba | 115 | 5.004 | 9363 | 2.13 | 5 | 100.1 | 70 | 130 | |
| 205 | Tl | 209 | 0.992 | 27078 | 1.04 | 1 | 99.2 | 70 | 130 | |
| 208 | Pb | 209 | 0.967 | 35772 | 0.59 | 1 | 96.7 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 893427 | 0.34 | 900744 | 99.19 | 70 | 120 | |
| 72 | Ge | 692133 | 0.84 | 691836 | 100.04 | 70 | 120 | |
| 115 | In | 6412520 | 1.80 | 6634288 | 96.66 | 70 | 120 | |
| 209 | Bi | 15729452 | 0.95 | 16365010 | 96.12 | 70 | 120 | |

# Initial Calibration Blank (ICB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:45 | Sample Name | ICB-160520 |
| Data Batch | 160520.b | Comment | ICB ICPMS_TW |
| Data File Name | 033_ICB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.079 | 17 | 24.0 | 2 | 5 | |
| 9 | Be | 45 | 0.096 | 10 | 11.9 | 0.4 | 0.3 | |
| 11 | B | 45 | 2.797 | 122 | 14.0 | 10 | 10 | |
| 23 | Na | 45 | 1.389 | 39897 | 0.2 | 50 | 100 | |
| 24 | Mg | 45 | -0.816 | 636 | 7.3 | 50 | 100 | |
| 27 | Al | 45 | -0.630 | 248 | 10.8 | 50 | 10 | |
| 39 | K | 45 | 4.622 | 48039 | 0.4 | 50 | 100 | |
| 44 | Ca | 45 | 0.493 | 236 | 7.3 | 50 | 100 | |
| 47 | Ti | 45 | 0.032 | 7 | 132.3 | 4 | 3 | |
| 51 | V | 45 | 0.003 | 2768 | 7.0 | 4 | 3 | |
| 52 | Cr | 45 | -0.004 | 922 | 6.2 | 2 | 2 | |
| 55 | Mn | 45 | 0.012 | 149 | 15.9 | 2 | 3 | |
| 56 | Fe | 45 | 0.182 | 7778 | 2.3 | 50 | 50 | |
| 59 | Co | 72 | 0.001 | 131 | 10.3 | 2 | 3 | |
| 60 | Ni | 72 | -0.045 | 304 | 13.2 | 2 | 3 | |
| 63 | Cu | 72 | -0.086 | 1743 | 2.3 | 2 | 2 | |
| 66 | Zn | 72 | 0.005 | 270 | 10.7 | 4 | 2 | |
| 75 | As | 72 | 0.026 | 161 | 5.5 | 2 | 2 | |
| 78 | Se | 72 | 0.216 | 82 | 13.1 | 1 | 2 | |
| 88 | Sr | 115 | -0.005 | 196 | 17.2 | 4 | 3 | |
| 95 | Mo | 115 | 0.004 | 49 | 43.3 | 2 | 2 | |
| 107 | Ag | 115 | 0.002 | 71 | 15.1 | 0.4 | 1 | |
| 111 | Cd | 115 | -0.002 | 7 | 50.0 | 0.4 | 0.3 | |
| 118 | Sn | 115 | 0.236 | 1351 | 4.6 | 4 | 3 | |
| 121 | Sb | 115 | 0.008 | 189 | 2.7 | 2 | 0.8 | |
| 137 | Ba | 115 | -0.002 | 18 | 57.3 | 2 | 3 | |
| 205 | Tl | 209 | 0.000 | 32 | 39.2 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.001 | 313 | 21.3 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 914027 | 1.10 | 900744 | 101.47 | 70 | 120 | |
| 72 | Ge | 707118 | 0.50 | 691836 | 102.21 | 70 | 120 | |
| 115 | In | 6559701 | 1.67 | 6634288 | 98.88 | 70 | 120 | |
| 209 | Bi | 15784059 | 0.77 | 16365010 | 96.45 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:06 | Sample Name | CCV2-160520 |
| Data Batch | 160520.b | Comment | CCV ICPMS_TW |
| Data File Name | 066_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 206.782 | 9383 | 0.75 | 200 | 103.4 | 90 | 110 | |
| 9 | Be | 45 | 206.653 | 12034 | 2.11 | 200 | 103.3 | 90 | 110 | |
| 11 | B | 45 | 208.432 | 4353 | 3.34 | 200 | 104.2 | 90 | 110 | |
| 23 | Na | 45 | 5168.925 | 3686872 | 0.54 | 5000 | 103.4 | 90 | 110 | |
| 24 | Mg | 45 | 5109.315 | 1808629 | 0.07 | 5000 | 102.2 | 90 | 110 | |
| 27 | Al | 45 | 4965.141 | 631105 | 1.07 | 5000 | 99.3 | 90 | 110 | |
| 39 | K | 45 | 5070.813 | 1785627 | 0.49 | 5000 | 101.4 | 90 | 110 | |
| 44 | Ca | 45 | 4837.310 | 95013 | 0.31 | 5000 | 96.7 | 90 | 110 | |
| 47 | Ti | 45 | 201.140 | 26931 | 1.95 | 200 | 100.6 | 90 | 110 | |
| 51 | V | 45 | 203.158 | 934716 | 0.26 | 200 | 101.6 | 90 | 110 | |
| 52 | Cr | 45 | 203.913 | 1120596 | 0.27 | 200 | 102.0 | 90 | 110 | |
| 55 | Mn | 45 | 203.279 | 594158 | 0.25 | 200 | 101.6 | 90 | 110 | |
| 56 | Fe | 45 | 5042.514 | 23467994 | 2.63 | 5000 | 100.9 | 90 | 110 | |
| 59 | Co | 72 | 209.877 | 1876358 | 0.40 | 200 | 104.9 | 90 | 110 | |
| 60 | Ni | 72 | 207.066 | 509243 | 0.87 | 200 | 103.5 | 90 | 110 | |
| 63 | Cu | 72 | 208.708 | 1414211 | 0.15 | 200 | 104.4 | 90 | 110 | |
| 66 | Zn | 72 | 207.264 | 233038 | 0.84 | 200 | 103.6 | 90 | 110 | |
| 75 | As | 72 | 201.926 | 191894 | 0.46 | 200 | 101.0 | 90 | 110 | |
| 78 | Se | 72 | 202.755 | 10849 | 1.10 | 200 | 101.4 | 90 | 110 | |
| 88 | Sr | 115 | 204.295 | 814939 | 0.35 | 200 | 102.1 | 90 | 110 | |
| 95 | Mo | 115 | 202.212 | 763670 | 0.55 | 200 | 101.1 | 90 | 110 | |
| 107 | Ag | 115 | 205.239 | 2480385 | 1.13 | 200 | 102.6 | 90 | 110 | |
| 111 | Cd | 115 | 199.199 | 352656 | 0.69 | 200 | 99.6 | 90 | 110 | |
| 118 | Sn | 115 | 197.089 | 735458 | 0.76 | 200 | 98.5 | 90 | 110 | |
| 121 | Sb | 115 | 199.804 | 1143701 | 0.34 | 200 | 99.9 | 90 | 110 | |
| 137 | Ba | 115 | 198.088 | 359480 | 0.42 | 200 | 99.0 | 90 | 110 | |
| 205 | Tl | 209 | 200.163 | 5318716 | 0.54 | 200 | 100.1 | 90 | 110 | |
| 208 | Pb | 209 | 199.769 | 7127416 | 0.69 | 200 | 99.9 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 861013 | 0.67 | 900744 | 95.59 | 70 | 120 | |
| 72 | Ge | 665333 | 0.20 | 691836 | 96.17 | 70 | 120 | |
| 115 | In | 6231428 | 2.47 | 6634288 | 93.93 | 70 | 120 | |
| 209 | Bi | 15327196 | 0.94 | 16365010 | 93.66 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:11 | Sample Name | LCVL2-160520 |
| Data Batch | 160520.b | Comment | LCVLICPMS_TW |
| Data File Name | 068LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.180 | 474 | 2.40 | 10 | 101.8 | 70 | 130 | |
| 9 | Be | 45 | 0.959 | 59 | 8.65 | 1 | 95.9 | 70 | 130 | |
| 11 | B | 45 | 21.476 | 500 | 5.81 | 20 | 107.4 | 70 | 130 | |
| 23 | Na | 45 | 114.680 | 117582 | 1.00 | 100 | 114.7 | 70 | 130 | |
| 24 | Mg | 45 | 102.970 | 37317 | 0.48 | 100 | 103.0 | 70 | 130 | |
| 27 | Al | 45 | 98.909 | 12880 | 4.15 | 100 | 98.9 | 70 | 130 | |
| 39 | K | 45 | 108.787 | 81036 | 0.93 | 100 | 108.8 | 70 | 130 | |
| 44 | Ca | 45 | 94.480 | 2064 | 3.75 | 100 | 94.5 | 70 | 130 | |
| 47 | Ti | 45 | 5.005 | 672 | 10.88 | 5 | 100.1 | 70 | 130 | |
| 51 | V | 45 | 1.123 | 7743 | 1.49 | 1 | 112.3 | 70 | 130 | |
| 52 | Cr | 45 | 5.141 | 29121 | 0.49 | 5 | 102.8 | 70 | 130 | |
| 55 | Mn | 45 | 4.988 | 14682 | 1.06 | 5 | 99.8 | 70 | 130 | |
| 56 | Fe | 45 | 99.852 | 470995 | 0.94 | 100 | 99.9 | 70 | 130 | |
| 59 | Co | 72 | 5.265 | 47388 | 0.94 | 5 | 105.3 | 70 | 130 | |
| 60 | Ni | 72 | 5.263 | 13389 | 2.18 | 5 | 105.3 | 70 | 130 | |
| 63 | Cu | 72 | 4.987 | 36119 | 2.85 | 5 | 99.7 | 70 | 130 | |
| 66 | Zn | 72 | 5.046 | 5941 | 3.03 | 5 | 100.9 | 70 | 130 | |
| 75 | As | 72 | 5.075 | 4969 | 1.43 | 5 | 101.5 | 70 | 130 | |
| 78 | Se | 72 | 4.862 | 326 | 7.08 | 5 | 97.2 | 70 | 130 | |
| 88 | Sr | 115 | 5.081 | 20655 | 2.50 | 5 | 101.6 | 70 | 130 | |
| 95 | Mo | 115 | 4.888 | 18659 | 3.10 | 5 | 97.8 | 70 | 130 | |
| 107 | Ag | 115 | 1.957 | 23909 | 0.54 | 2 | 97.8 | 70 | 130 | |
| 111 | Cd | 115 | 0.957 | 1719 | 2.72 | 1 | 95.7 | 70 | 130 | |
| 118 | Sn | 115 | 5.006 | 19243 | 1.11 | 5 | 100.1 | 70 | 130 | |
| 121 | Sb | 115 | 1.956 | 11427 | 1.88 | 2 | 97.8 | 70 | 130 | |
| 137 | Ba | 115 | 4.966 | 9110 | 2.66 | 5 | 99.3 | 70 | 130 | |
| 205 | Tl | 209 | 0.981 | 26754 | 0.55 | 1 | 98.1 | 70 | 130 | |
| 208 | Pb | 209 | 0.963 | 35540 | 1.14 | 1 | 96.3 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 860941 | 0.31 | 900744 | 95.58 | 70 | 120 | |
| 72 | Ge | 668324 | 0.73 | 691836 | 96.60 | 70 | 120 | |
| 115 | In | 6285266 | 1.03 | 6634288 | 94.74 | 70 | 120 | |
| 209 | Bi | 15704344 | 0.74 | 16365010 | 95.96 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:20 | Sample Name | CCB2-160520 |
| Data Batch | 160520.b | Comment | CCB ICPMS_TW |
| Data File Name | 069_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | -0.014 | 13 | 25.4 | 2 | 5 | |
| 9 | Be | 45 | -0.006 | 3 | 34.6 | 0.4 | 0.3 | |
| 11 | B | 45 | 2.688 | 118 | 17.3 | 10 | 10 | |
| 23 | Na | 45 | 1.684 | 39484 | 2.0 | 50 | 100 | |
| 24 | Mg | 45 | -0.399 | 780 | 2.7 | 50 | 100 | |
| 27 | Al | 45 | -0.348 | 281 | 7.9 | 50 | 10 | |
| 39 | K | 45 | 7.540 | 48329 | 1.2 | 50 | 100 | |
| 44 | Ca | 45 | -1.660 | 189 | 6.3 | 50 | 100 | |
| 47 | Ti | 45 | 0.008 | 3 | 100.1 | 4 | 3 | |
| 51 | V | 45 | 0.049 | 2943 | 3.7 | 4 | 3 | |
| 52 | Cr | 45 | -0.015 | 847 | 3.8 | 2 | 2 | |
| 55 | Mn | 45 | -0.011 | 78 | 8.9 | 2 | 3 | |
| 56 | Fe | 45 | 0.069 | 7107 | 2.5 | 50 | 50 | |
| 59 | Co | 72 | -0.007 | 53 | 43.7 | 2 | 3 | |
| 60 | Ni | 72 | -0.065 | 244 | 13.7 | 2 | 3 | |
| 63 | Cu | 72 | -0.125 | 1426 | 1.3 | 2 | 2 | |
| 66 | Zn | 72 | -0.037 | 213 | 14.9 | 4 | 2 | |
| 75 | As | 72 | 0.009 | 141 | 11.2 | 2 | 2 | |
| 78 | Se | 72 | -0.189 | 58 | 22.2 | 1 | 2 | |
| 88 | Sr | 115 | 0.038 | 371 | 62.4 | 4 | 3 | |
| 95 | Mo | 115 | -0.003 | 19 | 56.7 | 2 | 2 | |
| 107 | Ag | 115 | 0.003 | 94 | 22.4 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.005 | 19 | 62.0 | 0.4 | 0.3 | |
| 118 | Sn | 115 | 0.076 | 714 | 4.9 | 4 | 3 | |
| 121 | Sb | 115 | 0.016 | 233 | 23.8 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.007 | 33 | 17.3 | 2 | 3 | |
| 205 | Tl | 209 | 0.000 | 34 | 39.1 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.001 | 310 | 17.2 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 899519 | 0.65 | 900744 | 99.86 | 70 | 120 | |
| 72 | Ge | 688533 | 0.82 | 691836 | 99.52 | 70 | 120 | |
| 115 | In | 6468049 | 0.42 | 6634288 | 97.49 | 70 | 120 | |
| 209 | Bi | 16017395 | 0.29 | 16365010 | 97.88 | 70 | 120 | |

# Method Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/16 1:22 PM | Sample Name | MB-75180 |
| Data Batch | 160520.b | Comment | MBLKICPMS_TWDOD |
| Data File Name | 070_LRB.d | Dilution | 1 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.065 | 16 | 43.00 | | |
| 9 | Be | 45 | -0.016 | 3 | 43.30 | | |
| 11 | B | 45 | 3.680 | 139 | 7.33 | | |
| 23 | Na | 45 | 1.602 | 39357 | 1.68 | | |
| 24 | Mg | 45 | 1.079 | 1323 | 9.33 | | |
| 27 | Al | 45 | 6.638 | 1207 | 6.50 | | |
| 39 | K | 45 | 6.087 | 47729 | 1.50 | | |
| 44 | Ca | 45 | 17.031 | 570 | 6.85 | | |
| 47 | Ti | 45 | 0.000 | 2 | 86.60 | | |
| 51 | V | 45 | 0.098 | 3175 | 2.84 | | |
| 52 | Cr | 45 | 0.003 | 946 | 10.81 | | |
| 55 | Mn | 45 | 0.007 | 131 | 27.42 | | |
| 56 | Fe | 45 | 0.701 | 10161 | 1.53 | | |
| 59 | Co | 72 | -0.006 | 58 | 35.25 | | |
| 60 | Ni | 72 | -0.056 | 270 | 9.64 | | |
| 63 | Cu | 72 | -0.120 | 1478 | 9.63 | | |
| 66 | Zn | 72 | 0.584 | 947 | 5.99 | | |
| 75 | As | 72 | -0.003 | 131 | 9.62 | | |
| 78 | Se | 72 | 0.231 | 82 | 12.61 | | |
| 88 | Sr | 115 | 0.102 | 651 | 7.42 | | |
| 95 | Mo | 115 | -0.004 | 14 | 74.18 | | |
| 107 | Ag | 115 | 0.004 | 98 | 20.55 | | |
| 111 | Cd | 115 | -0.005 | 0 | #DIV/0! | | |
| 118 | Sn | 115 | 0.027 | 536 | 6.23 | | |
| 121 | Sb | 115 | 0.014 | 222 | 8.66 | | |
| 137 | Ba | 115 | 0.032 | 82 | 24.77 | | |
| 205 | Tl | 209 | 0.000 | 47 | 25.75 | | |
| 208 | Pb | 209 | 0.004 | 533 | 7.68 | | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 898027 | 1.16 | 900744 | 99.70 | 70 | 120 | |
| 72 | Ge | 696733 | 0.54 | 691836 | 100.71 | 70 | 120 | |
| 115 | In | 6624535 | 1.15 | 6634288 | 99.85 | 70 | 120 | |
| 209 | Bi | 16420634 | 0.64 | 16365010 | 100.34 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:24 | Sample Name | LCS-75180 |
| Data Batch | 160520.b | Comment | LCS ICPMS_TWDOD |
| Data File Name | 071_LFB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 207.477 | 9515 | 1.62 | 200 | 103.7 | 80 | 120 | |
| 9 | Be | 45 | 202.266 | 11905 | 1.32 | 200 | 101.1 | 80 | 120 | |
| 11 | B | 45 | 195.161 | 4124 | 4.40 | 200 | 97.6 | 80 | 120 | |
| 23 | Na | 45 | 5153.894 | 3715782 | 0.89 | 5000 | 103.1 | 80 | 120 | |
| 24 | Mg | 45 | 5118.954 | 1831544 | 0.71 | 5000 | 102.4 | 80 | 120 | |
| 27 | Al | 45 | 4981.246 | 639961 | 1.20 | 5000 | 99.6 | 80 | 120 | |
| 39 | K | 45 | 5041.266 | 1794560 | 0.13 | 5000 | 100.8 | 80 | 120 | |
| 44 | Ca | 45 | 4740.164 | 94110 | 0.45 | 5000 | 94.8 | 80 | 120 | |
| 47 | Ti | 45 | 192.838 | 26098 | 0.93 | 200 | 96.4 | 80 | 120 | |
| 51 | V | 45 | 200.032 | 930245 | 0.81 | 200 | 100.0 | 80 | 120 | |
| 52 | Cr | 45 | 200.955 | 1116256 | 0.75 | 200 | 100.5 | 80 | 120 | |
| 55 | Mn | 45 | 199.655 | 589846 | 0.43 | 200 | 99.8 | 80 | 120 | |
| 56 | Fe | 45 | 5071.775 | 23856763 | 1.05 | 5000 | 101.4 | 80 | 120 | |
| 59 | Co | 72 | 207.626 | 1874260 | 0.84 | 200 | 103.8 | 80 | 120 | |
| 60 | Ni | 72 | 204.682 | 508272 | 0.59 | 200 | 102.3 | 80 | 120 | |
| 63 | Cu | 72 | 205.447 | 1405663 | 1.66 | 200 | 102.7 | 80 | 120 | |
| 66 | Zn | 72 | 202.971 | 230430 | 0.68 | 200 | 101.5 | 80 | 120 | |
| 75 | As | 72 | 196.603 | 188655 | 0.16 | 200 | 98.3 | 80 | 120 | |
| 78 | Se | 72 | 200.300 | 10823 | 0.38 | 200 | 100.1 | 80 | 120 | |
| 88 | Sr | 115 | 196.190 | 794822 | 0.55 | 200 | 98.1 | 80 | 120 | |
| 95 | Mo | 115 | 195.187 | 748613 | 0.26 | 200 | 97.6 | 80 | 120 | |
| 107 | Ag | 115 | 196.529 | 2412668 | 1.27 | 200 | 98.3 | 80 | 120 | |
| 111 | Cd | 115 | 196.284 | 352950 | 1.05 | 200 | 98.1 | 80 | 120 | |
| 118 | Sn | 115 | 193.543 | 733613 | 1.09 | 200 | 96.8 | 80 | 120 | |
| 121 | Sb | 115 | 198.951 | 1156640 | 0.59 | 200 | 99.5 | 80 | 120 | |
| 137 | Ba | 115 | 195.083 | 359597 | 1.11 | 200 | 97.5 | 80 | 120 | |
| 205 | Tl | 209 | 200.277 | 5442896 | 1.66 | 200 | 100.1 | 80 | 120 | |
| 208 | Pb | 209 | 196.766 | 7180277 | 0.50 | 200 | 98.4 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 870277 | 0.61 | 900744 | 96.62 | 70 | 120 | |
| 72 | Ge | 671795 | 0.07 | 691836 | 97.10 | 70 | 120 | |
| 115 | In | 6329080 | 2.64 | 6634288 | 95.40 | 70 | 120 | |
| 209 | Bi | 15677643 | 1.30 | 16365010 | 95.80 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:26 | Sample Name | LCSD-75180 |
| Data Batch | 160520.b | Comment | LCSDICPMS_TWDOD |
| Data File Name | 072_LFB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 211.628 | 9552 | 1.66 | 200 | 105.8 | 80 | 120 | |
| 9 | Be | 45 | 207.907 | 12043 | 0.86 | 200 | 104.0 | 80 | 120 | |
| 11 | B | 45 | 207.539 | 4312 | 1.43 | 200 | 103.8 | 80 | 120 | |
| 23 | Na | 45 | 5362.484 | 3803524 | 0.49 | 5000 | 107.2 | 80 | 120 | |
| 24 | Mg | 45 | 5350.645 | 1884119 | 0.41 | 5000 | 107.0 | 80 | 120 | |
| 27 | Al | 45 | 4623.801 | 584689 | 0.66 | 5000 | 92.5 | 80 | 120 | |
| 39 | K | 45 | 5298.886 | 1854221 | 0.78 | 5000 | 106.0 | 80 | 120 | |
| 44 | Ca | 45 | 4926.669 | 96259 | 0.97 | 5000 | 98.5 | 80 | 120 | |
| 47 | Ti | 45 | 200.210 | 26667 | 0.20 | 200 | 100.1 | 80 | 120 | |
| 51 | V | 45 | 205.077 | 938586 | 0.55 | 200 | 102.5 | 80 | 120 | |
| 52 | Cr | 45 | 204.586 | 1118439 | 0.90 | 200 | 102.3 | 80 | 120 | |
| 55 | Mn | 45 | 205.641 | 597919 | 0.06 | 200 | 102.8 | 80 | 120 | |
| 56 | Fe | 45 | 5087.447 | 23550804 | 1.09 | 5000 | 101.7 | 80 | 120 | |
| 59 | Co | 72 | 214.414 | 1904053 | 0.24 | 200 | 107.2 | 80 | 120 | |
| 60 | Ni | 72 | 209.839 | 512595 | 0.45 | 200 | 104.9 | 80 | 120 | |
| 63 | Cu | 72 | 210.981 | 1419956 | 0.46 | 200 | 105.5 | 80 | 120 | |
| 66 | Zn | 72 | 204.234 | 228100 | 0.64 | 200 | 102.1 | 80 | 120 | |
| 75 | As | 72 | 202.120 | 190788 | 0.15 | 200 | 101.1 | 80 | 120 | |
| 78 | Se | 72 | 201.529 | 10711 | 1.06 | 200 | 100.8 | 80 | 120 | |
| 88 | Sr | 115 | 196.352 | 801400 | 0.82 | 200 | 98.2 | 80 | 120 | |
| 95 | Mo | 115 | 195.900 | 756939 | 0.79 | 200 | 98.0 | 80 | 120 | |
| 107 | Ag | 115 | 195.076 | 2412277 | 0.22 | 200 | 97.5 | 80 | 120 | |
| 111 | Cd | 115 | 198.025 | 358702 | 0.47 | 200 | 99.0 | 80 | 120 | |
| 118 | Sn | 115 | 194.683 | 743307 | 0.78 | 200 | 97.3 | 80 | 120 | |
| 121 | Sb | 115 | 195.279 | 1143707 | 0.47 | 200 | 97.6 | 80 | 120 | |
| 137 | Ba | 115 | 194.998 | 362068 | 0.19 | 200 | 97.5 | 80 | 120 | |
| 205 | Tl | 209 | 201.393 | 5413984 | 0.64 | 200 | 100.7 | 80 | 120 | |
| 208 | Pb | 209 | 200.604 | 7241369 | 0.67 | 200 | 100.3 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 856491 | 0.13 | 900744 | 95.09 | 70 | 120 | |
| 72 | Ge | 660905 | 0.92 | 691836 | 95.53 | 70 | 120 | |
| 115 | In | 6373621 | 0.51 | 6634288 | 96.07 | 70 | 120 | |
| 209 | Bi | 15514322 | 2.64 | 16365010 | 94.80 | 70 | 120 | |

# Dilution Sample (Dil) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:32 | Sample Name | 1605097-27A SD |
| Data Batch | 160520.b | Comment | SD ICPMS_TWDOD |
| Data File Name | 075_SD.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Value | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.068 | 16 | 12.50 | 0.2 | 180.5 | 110 | 90 | |
| 9 | Be | 45 | -0.038 | 1 | 114.56 | 0.1 | -141.3 | 110 | 90 | |
| 11 | B | 45 | 17.535 | 423 | 8.52 | 77.9 | 112.5 | 110 | 90 | |
| 23 | Na | 45 | 35.699 | 62521 | 0.91 | 172.1 | 103.7 | 110 | 90 | Good |
| 24 | Mg | 45 | 3.836 | 2271 | 5.49 | 19.3 | 99.3 | 110 | 90 | Good |
| 27 | Al | 45 | 34.453 | 4743 | 3.67 | 166.6 | 103.4 | 110 | 90 | Good |
| 39 | K | 45 | 11.074 | 48015 | 1.21 | 33.2 | 166.9 | 110 | 90 | |
| 44 | Ca | 45 | 74.540 | 1693 | 4.14 | 360.4 | 103.4 | 110 | 90 | Good |
| 47 | Ti | 45 | 0.107 | 17 | 87.16 | 0.3 | 169.7 | 110 | 90 | |
| 51 | V | 45 | 0.073 | 2960 | 6.49 | 0.2 | 205.2 | 110 | 90 | |
| 52 | Cr | 45 | 0.197 | 1996 | 7.06 | 1.1 | 92.7 | 110 | 90 | Good |
| 55 | Mn | 45 | 0.148 | 544 | 14.36 | 0.8 | 93.8 | 110 | 90 | Good |
| 56 | Fe | 45 | 5.267 | 31343 | 1.57 | 26.2 | 100.7 | 110 | 90 | Good |
| 59 | Co | 72 | 0.009 | 193 | 14.73 | 0.0 | 121.3 | 110 | 90 | |
| 60 | Ni | 72 | 0.263 | 1052 | 2.56 | 1.7 | 76.4 | 110 | 90 | |
| 63 | Cu | 72 | -0.047 | 1923 | 10.96 | 0.3 | -91.9 | 110 | 90 | |
| 66 | Zn | 72 | 0.853 | 1217 | 12.34 | 4.1 | 103.4 | 110 | 90 | Good |
| 75 | As | 72 | 0.029 | 157 | 5.00 | 0.1 | 222.6 | 110 | 90 | |
| 78 | Se | 72 | 0.336 | 84 | 9.94 | 0.1 | 1399.8 | 110 | 90 | |
| 88 | Sr | 115 | 0.548 | 2455 | 2.52 | 2.7 | 102.1 | 110 | 90 | Good |
| 95 | Mo | 115 | 0.153 | 626 | 21.59 | 0.7 | 110.5 | 110 | 90 | |
| 107 | Ag | 115 | 0.009 | 164 | 25.34 | 0.0 | 250.0 | 110 | 90 | |
| 111 | Cd | 115 | 0.003 | 16 | 32.73 | 0.0 | 143.0 | 110 | 90 | |
| 118 | Sn | 115 | 0.074 | 696 | 6.98 | 0.2 | 169.5 | 110 | 90 | |
| 121 | Sb | 115 | 0.045 | 399 | 25.38 | 0.1 | 235.1 | 110 | 90 | |
| 137 | Ba | 115 | 0.117 | 239 | 11.62 | 0.7 | 90.2 | 110 | 90 | Good |
| 205 | Tl | 209 | 0.005 | 176 | 19.02 | 0.0 | 164.6 | 110 | 90 | |
| 208 | Pb | 209 | 0.027 | 1372 | 7.85 | 0.1 | 113.9 | 110 | 90 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 870854 | 0.91 | 900744 | 96.68 | 70 | 120 | |
| 72 | Ge | 671393 | 0.27 | 691836 | 97.05 | 70 | 120 | |
| 115 | In | 6391281 | 1.83 | 6634288 | 96.34 | 70 | 120 | |
| 209 | Bi | 15830888 | 0.33 | 16365010 | 96.74 | 70 | 120 | |

# Post Digestion Spike Sample (PDS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:52 | Sample Name | 1605097-27A PDS |
| Data Batch | 160520.b | Comment | PDS ICPMS_TWDOD |
| Data File Name | 085_PDS.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 208.981 | 9280 | 1.02 | 0.2 | 200 | 104.4 | 75 | 125 | |
| 9 | Be | 45 | 205.509 | 11711 | 0.53 | 0.1 | 200 | 102.7 | 75 | 125 | |
| 11 | B | 45 | 285.809 | 5820 | 2.43 | 77.9 | 200 | 104.0 | 75 | 125 | |
| 23 | Na | 45 | 5404.541 | 3770772 | 0.71 | 172.1 | 5000 | 104.6 | 75 | 125 | |
| 24 | Mg | 45 | 5227.887 | 1811012 | 0.25 | 19.3 | 5000 | 104.2 | 75 | 125 | |
| 27 | Al | 45 | 5186.356 | 645154 | 1.11 | 166.6 | 5000 | 100.4 | 75 | 125 | |
| 39 | K | 45 | 5131.767 | 1767946 | 0.81 | 33.2 | 5000 | 102.0 | 75 | 125 | |
| 44 | Ca | 45 | 5036.090 | 96794 | 0.63 | 360.4 | 5000 | 93.5 | 75 | 125 | |
| 47 | Ti | 45 | 204.672 | 26818 | 0.31 | 0.3 | 200 | 102.2 | 75 | 125 | |
| 51 | V | 45 | 205.614 | 925765 | 1.11 | 0.2 | 200 | 102.7 | 75 | 125 | |
| 52 | Cr | 45 | 209.415 | 1126215 | 0.10 | 1.1 | 200 | 104.2 | 75 | 125 | |
| 55 | Mn | 45 | 201.270 | 575717 | 0.99 | 0.8 | 200 | 100.2 | 75 | 125 | |
| 56 | Fe | 45 | 5141.790 | 23416040 | 2.86 | 26.2 | 5000 | 102.3 | 75 | 125 | |
| 59 | Co | 72 | 212.432 | 1865010 | 0.28 | 0.0 | 200 | 106.2 | 75 | 125 | |
| 60 | Ni | 72 | 206.554 | 498845 | 0.40 | 1.7 | 200 | 102.4 | 75 | 125 | |
| 63 | Cu | 72 | 205.509 | 1367501 | 0.81 | 0.3 | 200 | 102.6 | 75 | 125 | |
| 66 | Zn | 72 | 206.091 | 227552 | 0.83 | 4.1 | 200 | 101.0 | 75 | 125 | |
| 75 | As | 72 | 197.771 | 184566 | 0.70 | 0.1 | 200 | 98.9 | 75 | 125 | |
| 78 | Se | 72 | 202.393 | 10635 | 0.90 | 0.1 | 200 | 101.1 | 75 | 125 | |
| 88 | Sr | 115 | 206.704 | 815896 | 0.34 | 2.7 | 200 | 102.0 | 75 | 125 | |
| 95 | Mo | 115 | 198.384 | 741330 | 0.42 | 0.7 | 200 | 98.8 | 75 | 125 | |
| 107 | Ag | 115 | 184.548 | 2207022 | 0.22 | 0.0 | 200 | 92.3 | 75 | 125 | |
| 111 | Cd | 115 | 195.191 | 341931 | 0.27 | 0.0 | 200 | 97.6 | 75 | 125 | |
| 118 | Sn | 115 | 202.579 | 748007 | 0.46 | 0.2 | 200 | 101.2 | 75 | 125 | |
| 121 | Sb | 115 | 188.867 | 1069835 | 1.39 | 0.1 | 200 | 94.4 | 75 | 125 | |
| 137 | Ba | 115 | 199.288 | 357867 | 0.43 | 0.7 | 200 | 99.3 | 75 | 125 | |
| 205 | Tl | 209 | 199.302 | 5296717 | 0.74 | 0.0 | 200 | 99.6 | 75 | 125 | |
| 208 | Pb | 209 | 199.936 | 7134456 | 0.42 | 0.1 | 200 | 99.9 | 75 | 125 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 842584 | 0.33 | 900744 | 93.54 | 70 | 120 | |
| 72 | Ge | 653370 | 0.47 | 691836 | 94.44 | 70 | 120 | |
| 115 | In | 6164044 | 0.75 | 6634288 | 92.91 | 70 | 120 | |
| 209 | Bi | 15329899 | 0.74 | 16365010 | 93.67 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:54 | Sample Name | 1605097-27A MS |
| Data Batch | 160520.b | Comment | MS ICPMS_TWDOD |
| Data File Name | 086_MSW.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 170.064 | 7584 | 1.95 | 0.2 | 200 | 84.9 | 80 | 120 | |
| 9 | Be | 45 | 170.036 | 9730 | 0.33 | 0.1 | 200 | 85.0 | 80 | 120 | |
| 11 | B | 45 | 211.300 | 4335 | 2.63 | 77.9 | 200 | 66.7 | 80 | 120 | Fail |
| 23 | Na | 45 | 5276.203 | 3697081 | 0.68 | 172.1 | 5000 | 102.1 | 80 | 120 | |
| 24 | Mg | 45 | 5130.074 | 1784373 | 1.29 | 19.3 | 5000 | 102.2 | 80 | 120 | |
| 27 | Al | 45 | 4817.494 | 601724 | 1.24 | 166.6 | 5000 | 93.0 | 80 | 120 | |
| 39 | K | 45 | 5034.751 | 1742366 | 0.92 | 33.2 | 5000 | 100.0 | 80 | 120 | |
| 44 | Ca | 45 | 4749.301 | 91663 | 0.93 | 360.4 | 5000 | 87.8 | 80 | 120 | |
| 47 | Ti | 45 | 161.792 | 21287 | 1.94 | 0.3 | 200 | 80.7 | 80 | 120 | |
| 51 | V | 45 | 167.529 | 757849 | 1.08 | 0.2 | 200 | 83.7 | 80 | 120 | |
| 52 | Cr | 45 | 169.182 | 913736 | 0.52 | 1.1 | 200 | 84.1 | 80 | 120 | |
| 55 | Mn | 45 | 167.173 | 480133 | 1.01 | 0.8 | 200 | 83.2 | 80 | 120 | |
| 56 | Fe | 45 | 4989.600 | 22816465 | 1.30 | 26.2 | 5000 | 99.3 | 80 | 120 | |
| 59 | Co | 72 | 170.716 | 1510248 | 1.41 | 0.0 | 200 | 85.3 | 80 | 120 | |
| 60 | Ni | 72 | 170.393 | 414746 | 0.92 | 1.7 | 200 | 84.3 | 80 | 120 | |
| 63 | Cu | 72 | 170.672 | 1144804 | 0.98 | 0.3 | 200 | 85.2 | 80 | 120 | |
| 66 | Zn | 72 | 171.664 | 191038 | 0.75 | 4.1 | 200 | 83.8 | 80 | 120 | |
| 75 | As | 72 | 164.901 | 155123 | 1.29 | 0.1 | 200 | 82.4 | 80 | 120 | |
| 78 | Se | 72 | 162.927 | 8642 | 1.69 | 0.1 | 200 | 81.4 | 80 | 120 | |
| 88 | Sr | 115 | 166.659 | 660795 | 1.05 | 2.7 | 200 | 82.0 | 80 | 120 | |
| 95 | Mo | 115 | 163.856 | 615005 | 0.41 | 0.7 | 200 | 81.6 | 80 | 120 | |
| 107 | Ag | 115 | 198.800 | 2387903 | 0.89 | 0.0 | 200 | 99.4 | 80 | 120 | |
| 111 | Cd | 115 | 165.115 | 290524 | 0.61 | 0.0 | 200 | 82.6 | 80 | 120 | |
| 118 | Sn | 115 | 163.476 | 606381 | 0.54 | 0.2 | 200 | 81.6 | 80 | 120 | |
| 121 | Sb | 115 | 201.813 | 1148120 | 0.30 | 0.1 | 200 | 100.9 | 80 | 120 | |
| 137 | Ba | 115 | 165.330 | 298187 | 0.64 | 0.7 | 200 | 82.3 | 80 | 120 | |
| 205 | Tl | 209 | 163.516 | 4397378 | 0.75 | 0.0 | 200 | 81.8 | 80 | 120 | |
| 208 | Pb | 209 | 161.721 | 5839522 | 0.48 | 0.1 | 200 | 80.8 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 846025 | 0.40 | 900744 | 93.93 | 70 | 120 | |
| 72 | Ge | 658505 | 1.30 | 691836 | 95.18 | 70 | 120 | |
| 115 | In | 6191469 | 0.95 | 6634288 | 93.33 | 70 | 120 | |
| 209 | Bi | 15511736 | 0.59 | 16365010 | 94.79 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:56 | Sample Name | 1605097-27A MSD |
| Data Batch | 160520.b | Comment | MSD ICPMS_TWDOD |
| Data File Name | 087_MSW.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 205.597 | 9304 | 1.62 | 0.2 | 200 | 102.7 | 80 | 120 | |
| 9 | Be | 45 | 203.064 | 11793 | 1.41 | 0.1 | 200 | 101.5 | 80 | 120 | |
| 11 | B | 45 | 242.909 | 5050 | 4.50 | 77.9 | 200 | 82.5 | 80 | 120 | |
| 23 | Na | 45 | 5177.237 | 3682905 | 1.10 | 172.1 | 5000 | 100.1 | 80 | 120 | |
| 24 | Mg | 45 | 4993.908 | 1763105 | 0.25 | 19.3 | 5000 | 99.5 | 80 | 120 | |
| 27 | Al | 45 | 4936.520 | 625831 | 0.74 | 166.6 | 5000 | 95.4 | 80 | 120 | |
| 39 | K | 45 | 4965.228 | 1744703 | 1.20 | 33.2 | 5000 | 98.6 | 80 | 120 | |
| 44 | Ca | 45 | 4753.640 | 93125 | 1.29 | 360.4 | 5000 | 87.9 | 80 | 120 | |
| 47 | Ti | 45 | 195.210 | 26068 | 0.98 | 0.3 | 200 | 97.4 | 80 | 120 | |
| 51 | V | 45 | 200.675 | 920875 | 0.73 | 0.2 | 200 | 100.2 | 80 | 120 | |
| 52 | Cr | 45 | 203.955 | 1117867 | 0.41 | 1.1 | 200 | 101.4 | 80 | 120 | |
| 55 | Mn | 45 | 202.473 | 590229 | 0.83 | 0.8 | 200 | 100.8 | 80 | 120 | |
| 56 | Fe | 45 | 5112.057 | 23726119 | 2.33 | 26.2 | 5000 | 101.7 | 80 | 120 | |
| 59 | Co | 72 | 206.133 | 1846156 | 0.73 | 0.0 | 200 | 103.0 | 80 | 120 | |
| 60 | Ni | 72 | 206.533 | 508832 | 0.56 | 1.7 | 200 | 102.4 | 80 | 120 | |
| 63 | Cu | 72 | 206.199 | 1399718 | 0.23 | 0.3 | 200 | 103.0 | 80 | 120 | |
| 66 | Zn | 72 | 204.471 | 230307 | 1.38 | 4.1 | 200 | 100.2 | 80 | 120 | |
| 75 | As | 72 | 198.160 | 188652 | 0.84 | 0.1 | 200 | 99.0 | 80 | 120 | |
| 78 | Se | 72 | 201.130 | 10782 | 0.12 | 0.1 | 200 | 100.5 | 80 | 120 | |
| 88 | Sr | 115 | 201.026 | 801163 | 0.72 | 2.7 | 200 | 99.2 | 80 | 120 | |
| 95 | Mo | 115 | 199.764 | 753727 | 1.09 | 0.7 | 200 | 99.5 | 80 | 120 | |
| 107 | Ag | 115 | 197.459 | 2384307 | 0.18 | 0.0 | 200 | 98.7 | 80 | 120 | |
| 111 | Cd | 115 | 200.097 | 353929 | 0.48 | 0.0 | 200 | 100.0 | 80 | 120 | |
| 118 | Sn | 115 | 197.870 | 737731 | 0.96 | 0.2 | 200 | 98.8 | 80 | 120 | |
| 121 | Sb | 115 | 201.125 | 1150215 | 0.35 | 0.1 | 200 | 100.5 | 80 | 120 | |
| 137 | Ba | 115 | 199.346 | 361437 | 0.39 | 0.7 | 200 | 99.3 | 80 | 120 | |
| 205 | Tl | 209 | 195.932 | 5357915 | 0.27 | 0.0 | 200 | 98.0 | 80 | 120 | |
| 208 | Pb | 209 | 195.812 | 7189529 | 0.20 | 0.1 | 200 | 97.8 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 858705 | 0.07 | 900744 | 95.33 | 70 | 120 | |
| 72 | Ge | 666512 | 0.03 | 691836 | 96.34 | 70 | 120 | |
| 115 | In | 6223826 | 0.86 | 6634288 | 93.81 | 70 | 120 | |
| 209 | Bi | 15779807 | 2.46 | 16365010 | 96.42 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:58 | Sample Name | CCV3-160520 |
| Data Batch | 160520.b | Comment | CCV ICPMS_TW |
| Data File Name | 088_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 203.180 | 9274 | 0.83 | 200 | 101.6 | 90 | 110 | |
| 9 | Be | 45 | 203.486 | 11920 | 1.02 | 200 | 101.7 | 90 | 110 | |
| 11 | B | 45 | 210.276 | 4416 | 1.73 | 200 | 105.1 | 90 | 110 | |
| 23 | Na | 45 | 5132.134 | 3682741 | 0.63 | 5000 | 102.6 | 90 | 110 | |
| 24 | Mg | 45 | 5086.454 | 1811320 | 0.58 | 5000 | 101.7 | 90 | 110 | |
| 27 | Al | 45 | 4980.080 | 636833 | 0.78 | 5000 | 99.6 | 90 | 110 | |
| 39 | K | 45 | 5081.672 | 1800039 | 0.46 | 5000 | 101.6 | 90 | 110 | |
| 44 | Ca | 45 | 4836.944 | 95568 | 0.34 | 5000 | 96.7 | 90 | 110 | |
| 47 | Ti | 45 | 200.071 | 26952 | 1.98 | 200 | 100.0 | 90 | 110 | |
| 51 | V | 45 | 203.154 | 940224 | 0.55 | 200 | 101.6 | 90 | 110 | |
| 52 | Cr | 45 | 202.100 | 1117262 | 0.18 | 200 | 101.1 | 90 | 110 | |
| 55 | Mn | 45 | 202.982 | 596833 | 0.52 | 200 | 101.5 | 90 | 110 | |
| 56 | Fe | 45 | 5019.103 | 23493427 | 1.22 | 5000 | 100.4 | 90 | 110 | |
| 59 | Co | 72 | 208.419 | 1864213 | 1.18 | 200 | 104.2 | 90 | 110 | |
| 60 | Ni | 72 | 205.434 | 505495 | 0.52 | 200 | 102.7 | 90 | 110 | |
| 63 | Cu | 72 | 209.149 | 1417980 | 1.14 | 200 | 104.6 | 90 | 110 | |
| 66 | Zn | 72 | 205.831 | 231556 | 1.37 | 200 | 102.9 | 90 | 110 | |
| 75 | As | 72 | 201.676 | 191753 | 0.22 | 200 | 100.8 | 90 | 110 | |
| 78 | Se | 72 | 204.247 | 10934 | 1.41 | 200 | 102.1 | 90 | 110 | |
| 88 | Sr | 115 | 201.502 | 818714 | 0.86 | 200 | 100.8 | 90 | 110 | |
| 95 | Mo | 115 | 199.699 | 768114 | 0.40 | 200 | 99.8 | 90 | 110 | |
| 107 | Ag | 115 | 202.247 | 2489708 | 0.73 | 200 | 101.1 | 90 | 110 | |
| 111 | Cd | 115 | 199.234 | 359250 | 0.46 | 200 | 99.6 | 90 | 110 | |
| 118 | Sn | 115 | 196.022 | 745053 | 0.39 | 200 | 98.0 | 90 | 110 | |
| 121 | Sb | 115 | 199.544 | 1163397 | 0.25 | 200 | 99.8 | 90 | 110 | |
| 137 | Ba | 115 | 198.512 | 366908 | 1.08 | 200 | 99.3 | 90 | 110 | |
| 205 | Tl | 209 | 199.782 | 5446376 | 0.37 | 200 | 99.9 | 90 | 110 | |
| 208 | Pb | 209 | 197.855 | 7242369 | 0.64 | 200 | 98.9 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 866202 | 1.29 | 900744 | 96.17 | 70 | 120 | |
| 72 | Ge | 665686 | 0.56 | 691836 | 96.22 | 70 | 120 | |
| 115 | In | 6344920 | 0.75 | 6634288 | 95.64 | 70 | 120 | |
| 209 | Bi | 15726160 | 1.52 | 16365010 | 96.10 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 14:04 | Sample Name | LCVL3-160520 |
| Data Batch | 160520.b | Comment | LCVLICPMS_TW |
| Data File Name | 090LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 11.230 | 527 | 10.42 | 10 | 112.3 | 70 | 130 | |
| 9 | Be | 45 | 1.010 | 63 | 17.89 | 1 | 101.0 | 70 | 130 | |
| 11 | B | 45 | 24.634 | 571 | 4.38 | 20 | 123.2 | 70 | 130 | |
| 23 | Na | 45 | 98.195 | 107074 | 0.50 | 100 | 98.2 | 70 | 130 | |
| 24 | Mg | 45 | 101.451 | 37176 | 1.95 | 100 | 101.5 | 70 | 130 | |
| 27 | Al | 45 | 99.147 | 13048 | 0.90 | 100 | 99.1 | 70 | 130 | |
| 39 | K | 45 | 103.570 | 80094 | 1.64 | 100 | 103.6 | 70 | 130 | |
| 44 | Ca | 45 | 100.317 | 2202 | 2.99 | 100 | 100.3 | 70 | 130 | |
| 47 | Ti | 45 | 5.093 | 691 | 7.81 | 5 | 101.9 | 70 | 130 | |
| 51 | V | 45 | 1.066 | 7563 | 1.15 | 1 | 106.6 | 70 | 130 | |
| 52 | Cr | 45 | 5.146 | 29458 | 1.00 | 5 | 102.9 | 70 | 130 | |
| 55 | Mn | 45 | 5.131 | 15261 | 1.50 | 5 | 102.6 | 70 | 130 | |
| 56 | Fe | 45 | 100.203 | 477688 | 0.08 | 100 | 100.2 | 70 | 130 | |
| 59 | Co | 72 | 5.197 | 47885 | 1.12 | 5 | 103.9 | 70 | 130 | |
| 60 | Ni | 72 | 5.154 | 13429 | 0.94 | 5 | 103.1 | 70 | 130 | |
| 63 | Cu | 72 | 5.013 | 37155 | 1.61 | 5 | 100.3 | 70 | 130 | |
| 66 | Zn | 72 | 5.311 | 6389 | 4.69 | 5 | 106.2 | 70 | 130 | |
| 75 | As | 72 | 4.952 | 4966 | 1.28 | 5 | 99.0 | 70 | 130 | |
| 78 | Se | 72 | 5.555 | 371 | 4.76 | 5 | 111.1 | 70 | 130 | |
| 88 | Sr | 115 | 5.152 | 21317 | 0.76 | 5 | 103.0 | 70 | 130 | |
| 95 | Mo | 115 | 4.876 | 18942 | 2.94 | 5 | 97.5 | 70 | 130 | |
| 107 | Ag | 115 | 1.956 | 24332 | 2.20 | 2 | 97.8 | 70 | 130 | |
| 111 | Cd | 115 | 0.961 | 1757 | 3.66 | 1 | 96.1 | 70 | 130 | |
| 118 | Sn | 115 | 5.019 | 19639 | 1.08 | 5 | 100.4 | 70 | 130 | |
| 121 | Sb | 115 | 2.013 | 11969 | 1.61 | 2 | 100.7 | 70 | 130 | |
| 137 | Ba | 115 | 4.958 | 9262 | 1.20 | 5 | 99.2 | 70 | 130 | |
| 205 | Tl | 209 | 0.992 | 27281 | 1.62 | 1 | 99.2 | 70 | 130 | |
| 208 | Pb | 209 | 0.977 | 36361 | 0.51 | 1 | 97.7 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 870167 | 0.41 | 900744 | 96.61 | 70 | 120 | |
| 72 | Ge | 684121 | 0.81 | 691836 | 98.88 | 70 | 120 | |
| 115 | In | 6398204 | 0.37 | 6634288 | 96.44 | 70 | 120 | |
| 209 | Bi | 15843229 | 2.06 | 16365010 | 96.81 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 14:06 | Sample Name | CCB3-160520 |
| Data Batch | 160520.b | Comment | CCB ICPMS_TW |
| Data File Name | 091_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | -0.018 | 12 | 28.9 | 2 | 5 | |
| 9 | Be | 45 | 0.007 | 4 | 75.0 | 0.4 | 0.3 | |
| 11 | B | 45 | 5.180 | 166 | 19.3 | 10 | 10 | |
| 23 | Na | 45 | -4.493 | 33660 | 2.0 | 50 | 100 | |
| 24 | Mg | 45 | -1.062 | 516 | 7.2 | 50 | 100 | |
| 27 | Al | 45 | -0.474 | 254 | 16.5 | 50 | 10 | |
| 39 | K | 45 | 5.967 | 46044 | 0.9 | 50 | 100 | |
| 44 | Ca | 45 | 0.316 | 221 | 16.5 | 50 | 100 | |
| 47 | Ti | 45 | 0.034 | 7 | 86.6 | 4 | 3 | |
| 51 | V | 45 | 0.086 | 3011 | 4.6 | 4 | 3 | |
| 52 | Cr | 45 | 0.000 | 899 | 4.6 | 2 | 2 | |
| 55 | Mn | 45 | -0.001 | 103 | 29.6 | 2 | 3 | |
| 56 | Fe | 45 | 0.192 | 7426 | 0.8 | 50 | 50 | |
| 59 | Co | 72 | 0.009 | 199 | 23.8 | 2 | 3 | |
| 60 | Ni | 72 | -0.070 | 230 | 15.3 | 2 | 3 | |
| 63 | Cu | 72 | -0.120 | 1441 | 7.2 | 2 | 2 | |
| 66 | Zn | 72 | -0.026 | 223 | 3.9 | 4 | 2 | |
| 75 | As | 72 | 0.026 | 155 | 2.8 | 2 | 2 | |
| 78 | Se | 72 | 0.144 | 75 | 6.5 | 1 | 2 | |
| 88 | Sr | 115 | -0.007 | 181 | 12.5 | 4 | 3 | |
| 95 | Mo | 115 | 0.003 | 42 | 22.8 | 2 | 2 | |
| 107 | Ag | 115 | 0.009 | 161 | 2.4 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.000 | 10 | 33.3 | 0.4 | 0.3 | |
| 118 | Sn | 115 | 0.131 | 907 | 6.1 | 4 | 3 | |
| 121 | Sb | 115 | 0.092 | 671 | 12.4 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.013 | 44 | 11.5 | 2 | 3 | |
| 205 | Tl | 209 | 0.004 | 156 | 14.3 | 2 | 0.5 | |
| 208 | Pb | 209 | 0.003 | 463 | 8.5 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 867169 | 1.51 | 900744 | 96.27 | 70 | 120 | |
| 72 | Ge | 678651 | 0.28 | 691836 | 98.09 | 70 | 120 | |
| 115 | In | 6326752 | 0.94 | 6634288 | 95.36 | 70 | 120 | |
| 209 | Bi | 15694418 | 1.64 | 16365010 | 95.90 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/16 2:14 PM | Sample Name | 1605098-42A |
| Data Batch | 160520.b | Comment | SAMPICPMS_TWDOD |
| Data File Name | 095_WS.d | Dilution | 1 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.128 | 19 | 42.97 | 2000 | |
| 9 | Be | 45 | -0.009 | 3 | 66.67 | 2000 | |
| 11 | B | 45 | 37.415 | 836 | 13.72 | 2000 | >RL |
| 23 | Na | 45 | 160.466 | 151122 | 0.26 | 25000 | >RL |
| 24 | Mg | 45 | 7.630 | 3615 | 8.62 | 25000 | |
| 27 | Al | 45 | 22.900 | 3248 | 3.32 | 10000 | J |
| 39 | K | 45 | 16.562 | 49758 | 1.64 | 25000 | |
| 44 | Ca | 45 | 42.477 | 1054 | 2.77 | 25000 | |
| 47 | Ti | 45 | 0.174 | 26 | 60.23 | 2000 | |
| 51 | V | 45 | 0.109 | 3117 | 1.79 | 2000 | |
| 52 | Cr | 45 | 0.753 | 5068 | 3.20 | 2000 | |
| 55 | Mn | 45 | 0.288 | 957 | 3.14 | 2000 | |
| 56 | Fe | 45 | 13.182 | 68357 | 1.05 | 10000 | |
| 59 | Co | 72 | 0.014 | 243 | 39.16 | 2000 | |
| 60 | Ni | 72 | 0.999 | 2914 | 5.30 | 2000 | |
| 63 | Cu | 72 | 0.143 | 3263 | 8.07 | 2000 | |
| 66 | Zn | 72 | 1.813 | 2334 | 9.71 | 2000 | |
| 75 | As | 72 | 0.052 | 181 | 15.93 | 2000 | |
| 78 | Se | 72 | 0.271 | 82 | 18.21 | 2000 | |
| 88 | Sr | 115 | 0.402 | 1862 | 1.27 | 2000 | |
| 95 | Mo | 115 | 0.025 | 128 | 22.19 | 2000 | |
| 107 | Ag | 115 | 0.006 | 126 | 15.56 | 500 | |
| 111 | Cd | 115 | 0.000 | 10 | 66.70 | 2000 | |
| 118 | Sn | 115 | 0.107 | 827 | 7.17 | 2000 | |
| 121 | Sb | 115 | 0.057 | 470 | 13.95 | 500 | |
| 137 | Ba | 115 | 0.513 | 979 | 11.62 | 2000 | |
| 205 | Tl | 209 | 0.002 | 81 | 13.21 | 2000 | |
| 208 | Pb | 209 | 0.033 | 1584 | 0.64 | 2000 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 867933 | 1.03 | 900744 | 96.36 | 70 | 120 | |
| 72 | Ge | 679658 | 1.21 | 691836 | 98.24 | 70 | 120 | |
| 115 | In | 6414744 | 0.83 | 6634288 | 96.69 | 70 | 120 | |
| 209 | Bi | 15855954 | 1.20 | 16365010 | 96.89 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 14:24 | Sample Name | CCV4-160520 |
| Data Batch | 160520.b | Comment | CCV ICPMS_TW |
| Data File Name | 100_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 209.123 | 9388 | 0.80 | 200 | 104.6 | 90 | 110 | |
| 9 | Be | 45 | 208.207 | 11994 | 0.48 | 200 | 104.1 | 90 | 110 | |
| 11 | B | 45 | 203.797 | 4212 | 3.86 | 200 | 101.9 | 90 | 110 | |
| 23 | Na | 45 | 5148.990 | 3633551 | 0.68 | 5000 | 103.0 | 90 | 110 | |
| 24 | Mg | 45 | 5123.233 | 1794203 | 0.40 | 5000 | 102.5 | 90 | 110 | |
| 27 | Al | 45 | 4980.045 | 626267 | 0.50 | 5000 | 99.6 | 90 | 110 | |
| 39 | K | 45 | 5038.185 | 1755471 | 0.35 | 5000 | 100.8 | 90 | 110 | |
| 44 | Ca | 45 | 4785.666 | 92998 | 0.86 | 5000 | 95.7 | 90 | 110 | |
| 47 | Ti | 45 | 199.374 | 26410 | 2.03 | 200 | 99.7 | 90 | 110 | |
| 51 | V | 45 | 202.096 | 919918 | 0.37 | 200 | 101.0 | 90 | 110 | |
| 52 | Cr | 45 | 202.131 | 1098976 | 0.19 | 200 | 101.1 | 90 | 110 | |
| 55 | Mn | 45 | 202.769 | 586339 | 1.07 | 200 | 101.4 | 90 | 110 | |
| 56 | Fe | 45 | 5041.066 | 23208886 | 2.16 | 5000 | 100.8 | 90 | 110 | |
| 59 | Co | 72 | 207.997 | 1837266 | 0.54 | 200 | 104.0 | 90 | 110 | |
| 60 | Ni | 72 | 206.739 | 502343 | 0.77 | 200 | 103.4 | 90 | 110 | |
| 63 | Cu | 72 | 206.988 | 1385843 | 0.86 | 200 | 103.5 | 90 | 110 | |
| 66 | Zn | 72 | 203.079 | 225616 | 1.76 | 200 | 101.5 | 90 | 110 | |
| 75 | As | 72 | 199.013 | 186865 | 0.89 | 200 | 99.5 | 90 | 110 | |
| 78 | Se | 72 | 200.798 | 10616 | 0.97 | 200 | 100.4 | 90 | 110 | |
| 88 | Sr | 115 | 201.110 | 805597 | 1.18 | 200 | 100.6 | 90 | 110 | |
| 95 | Mo | 115 | 199.684 | 757215 | 0.24 | 200 | 99.8 | 90 | 110 | |
| 107 | Ag | 115 | 203.488 | 2469488 | 0.16 | 200 | 101.7 | 90 | 110 | |
| 111 | Cd | 115 | 199.985 | 355504 | 0.18 | 200 | 100.0 | 90 | 110 | |
| 118 | Sn | 115 | 197.462 | 739911 | 0.69 | 200 | 98.7 | 90 | 110 | |
| 121 | Sb | 115 | 198.318 | 1139914 | 0.61 | 200 | 99.2 | 90 | 110 | |
| 137 | Ba | 115 | 198.384 | 361502 | 0.28 | 200 | 99.2 | 90 | 110 | |
| 205 | Tl | 209 | 198.777 | 5414678 | 1.21 | 200 | 99.4 | 90 | 110 | |
| 208 | Pb | 209 | 196.887 | 7201152 | 0.36 | 200 | 98.4 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 851803 | 0.12 | 900744 | 94.57 | 70 | 120 | |
| 72 | Ge | 657385 | 0.52 | 691836 | 95.02 | 70 | 120 | |
| 115 | In | 6255271 | 0.87 | 6634288 | 94.29 | 70 | 120 | |
| 209 | Bi | 15713189 | 1.11 | 16365010 | 96.02 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 14:41 | Sample Name | LCVL4-160520 |
| Data Batch | 160520.b | Comment | LCVLICPMS_TW |
| Data File Name | 102LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.685 | 502 | 3.49 | 10 | 106.9 | 70 | 130 | |
| 9 | Be | 45 | 1.096 | 68 | 6.41 | 1 | 109.6 | 70 | 130 | |
| 11 | B | 45 | 23.853 | 554 | 7.94 | 20 | 119.3 | 70 | 130 | |
| 23 | Na | 45 | 93.918 | 103987 | 0.70 | 100 | 93.9 | 70 | 130 | |
| 24 | Mg | 45 | 99.544 | 36480 | 0.51 | 100 | 99.5 | 70 | 130 | |
| 27 | Al | 45 | 99.184 | 13048 | 0.80 | 100 | 99.2 | 70 | 130 | |
| 39 | K | 45 | 105.038 | 80572 | 0.51 | 100 | 105.0 | 70 | 130 | |
| 44 | Ca | 45 | 92.119 | 2039 | 1.77 | 100 | 92.1 | 70 | 130 | |
| 47 | Ti | 45 | 5.333 | 723 | 9.71 | 5 | 106.7 | 70 | 130 | |
| 51 | V | 45 | 1.049 | 7481 | 3.19 | 1 | 104.9 | 70 | 130 | |
| 52 | Cr | 45 | 5.152 | 29482 | 1.43 | 5 | 103.0 | 70 | 130 | |
| 55 | Mn | 45 | 4.912 | 14610 | 1.67 | 5 | 98.2 | 70 | 130 | |
| 56 | Fe | 45 | 99.465 | 474042 | 0.99 | 100 | 99.5 | 70 | 130 | |
| 59 | Co | 72 | 5.203 | 47305 | 0.83 | 5 | 104.1 | 70 | 130 | |
| 60 | Ni | 72 | 5.133 | 13200 | 2.09 | 5 | 102.7 | 70 | 130 | |
| 63 | Cu | 72 | 5.024 | 36741 | 1.23 | 5 | 100.5 | 70 | 130 | |
| 66 | Zn | 72 | 5.226 | 6207 | 1.40 | 5 | 104.5 | 70 | 130 | |
| 75 | As | 72 | 5.050 | 4995 | 1.79 | 5 | 101.0 | 70 | 130 | |
| 78 | Se | 72 | 5.706 | 375 | 1.39 | 5 | 114.1 | 70 | 130 | |
| 88 | Sr | 115 | 4.972 | 21117 | 3.12 | 5 | 99.4 | 70 | 130 | |
| 95 | Mo | 115 | 4.710 | 18774 | 0.76 | 5 | 94.2 | 70 | 130 | |
| 107 | Ag | 115 | 1.888 | 24096 | 1.18 | 2 | 94.4 | 70 | 130 | |
| 111 | Cd | 115 | 0.955 | 1792 | 2.86 | 1 | 95.5 | 70 | 130 | |
| 118 | Sn | 115 | 4.754 | 19110 | 1.41 | 5 | 95.1 | 70 | 130 | |
| 121 | Sb | 115 | 1.846 | 11275 | 1.66 | 2 | 92.3 | 70 | 130 | |
| 137 | Ba | 115 | 4.953 | 9493 | 1.16 | 5 | 99.1 | 70 | 130 | |
| 205 | Tl | 209 | 0.994 | 26913 | 0.64 | 1 | 99.4 | 70 | 130 | |
| 208 | Pb | 209 | 0.974 | 35718 | 1.32 | 1 | 97.4 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 869866 | 0.59 | 900744 | 96.57 | 70 | 120 | |
| 72 | Ge | 675027 | 0.39 | 691836 | 97.57 | 70 | 120 | |
| 115 | In | 6564471 | 0.91 | 6634288 | 98.95 | 70 | 120 | |
| 209 | Bi | 15594017 | 0.83 | 16365010 | 95.29 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 14:48 | Sample Name | CCB4-160520 |
| Data Batch | 160520.b | Comment | CCB ICPMS_TW |
| Data File Name | 103_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | -0.025 | 11 | 58.7 | 2 | 5 | |
| 9 | Be | 45 | -0.019 | 2 | 24.7 | 0.4 | 0.3 | |
| 11 | B | 45 | 0.364 | 63 | 39.7 | 10 | 10 | |
| 23 | Na | 45 | -7.059 | 30783 | 0.7 | 50 | 100 | |
| 24 | Mg | 45 | -1.361 | 396 | 1.0 | 50 | 100 | |
| 27 | Al | 45 | -0.498 | 243 | 17.8 | 50 | 10 | |
| 39 | K | 45 | 4.451 | 44003 | 0.3 | 50 | 100 | |
| 44 | Ca | 45 | 1.218 | 230 | 6.8 | 50 | 100 | |
| 47 | Ti | 45 | 0.044 | 8 | 65.5 | 4 | 3 | |
| 51 | V | 45 | 0.114 | 3035 | 8.6 | 4 | 3 | |
| 52 | Cr | 45 | -0.015 | 788 | 5.7 | 2 | 2 | |
| 55 | Mn | 45 | -0.019 | 49 | 10.4 | 2 | 3 | |
| 56 | Fe | 45 | 0.164 | 7056 | 6.1 | 50 | 50 | |
| 59 | Co | 72 | -0.003 | 86 | 9.8 | 2 | 3 | |
| 60 | Ni | 72 | -0.033 | 309 | 9.1 | 2 | 3 | |
| 63 | Cu | 72 | -0.124 | 1360 | 4.9 | 2 | 2 | |
| 66 | Zn | 72 | -0.033 | 207 | 14.0 | 4 | 2 | |
| 75 | As | 72 | -0.001 | 124 | 10.6 | 2 | 2 | |
| 78 | Se | 72 | 0.097 | 70 | 21.7 | 1 | 2 | |
| 88 | Sr | 115 | 0.011 | 251 | 13.3 | 4 | 3 | |
| 95 | Mo | 115 | -0.004 | 14 | 35.3 | 2 | 2 | |
| 107 | Ag | 115 | 0.002 | 71 | 57.9 | 0.4 | 1 | |
| 111 | Cd | 115 | -0.004 | 2 | 86.6 | 0.4 | 0.3 | |
| 118 | Sn | 115 | 0.031 | 519 | 5.5 | 4 | 3 | |
| 121 | Sb | 115 | 0.006 | 166 | 31.5 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.015 | 47 | 18.9 | 2 | 3 | |
| 205 | Tl | 209 | 0.000 | 26 | 61.6 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.002 | 280 | 20.0 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 838258 | 0.89 | 900744 | 93.06 | 70 | 120 | |
| 72 | Ge | 652989 | 0.94 | 691836 | 94.38 | 70 | 120 | |
| 115 | In | 6222740 | 1.27 | 6634288 | 93.80 | 70 | 120 | |
| 209 | Bi | 15341203 | 0.92 | 16365010 | 93.74 | 70 | 120 | |

# ICP-MS4_160523F
# For

# DHL Work Order
# 1605098

# Lab Data Review Check List
## EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

| PROJECT AND BATCH NUMBERS ARE LISTED ON THE RUN LOG | Run ID: ICP-MS4_160523F<br>SOP: MET-ICPMS-01 | | | |
|---|---|---|---|---|
| **Review Item** | **Yes** | **No** | **N/A** | **2nd Level Review** |
| **Data Folder Contents**<br>1. Is the Prep Batch Report included?<br>***Check the Prep Start/End Dates, Sample Amounts, Bottle #s*** | X | | | X |
| 2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date?<br>***All standard/QC sample preparations shall be documented in LIMS*** | X | | | |
| 3. Is the Run Log and instrument sequence included?<br>***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time*** | X | | | |

## Daily Demonstration of Performance

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.**

| Review Item | Frequency | Limits | Pass | Fail (List Batch/Sample) **See Run Log** | | 2nd Level Review |
|---|---|---|---|---|---|---|
| Tune | Before ICAL | RSD ≤ 5% / Peak Width@10% <0.9amu | X | | | X |
| P/A Factor | Before ICAL | Increasing trend | X | | | |
| Initial Calibration Curve (ICAL) (Blank + 4 Standards) | Prior to samples and when ICV fails | R ≥ 0.995 (DoD)<br>R ≥ 0.998 (6020A) | X | | | |
| **Review Item** | **Frequency** | **Limits** | **Pass** | **Fail** | **N/A** | **Review** |
| ICSA (N/A for Method 200.8+U) | After calibration & every 12 hours | < RL (except Mn & Zn) | X | | | X |
| ICSAB (N/A for Method 200.8+U) | After calibration & every 12 hours | 80-120% (correct for ICSA result) | X | | | |
| **Note: LCVLs and ICSA/ICSAB are N/A for Method 200.8 or project-specific exceptions** | | | | | | |
| ICV (Second Source Verification) | After ICAL | 90-110% | X | | | X |
| ICB | After calibration | < MDL | X | | | |
| CCV | Every 10 samples | 90-110% | X | | | |
| CCB | Every 10 samples | < MDL (ALL + DoD) | X | | | |
| Internal Standards | Every sample and QC sample | > 70% (6020A)<br>60-125% (200.8)<br>30-120% (DoD) | X | | | |
| LCVL (6020A test code) | After ICAL, every 10 samples and end of run | 70-130% | | | X | |
| LCVL (All metals test codes except 200.8/6020A) | After ICAL and end of run | 70-130% | X | | | |
| Method Blank (MB) | Every Batch | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | X | | | |
| Filter/TCLP/SPLP Blank | Filter-Dissolved only TCLP / SPLP | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | X | | | |
| Lab Control Sample (LCS) | Every Batch | 80-120% | X | | | |
| Lab Control Sample Dup (LCSD) | Every Batch | 80-120% | X | | | |
| LCSD - RPD | Every LCS/LCSD | 15 (H2O) / 20 (Soil) | X | | | |
| Matrix Spike/ Matrix Spike Duplicate (MS/MSD) | Every Batch | 80-120% | | X | | |
| MSD - RPD | Every MS/MSD | 15 (H2O) / 20 (Soil) | | X | | |
| Dilution Test (SD) - RPD | Every Batch | 10 | X | | | |
| Post Digestion Spike (PDS) | Every Batch | 75-125 / 80-120 (6020A) | X | | | |

# Lab Data Review Check List
## EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

| Review Item | Criteria | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|---|
| **Sample Analysis**<br>1. Are all sample hold times met? | 6 months | X | | | X |
| 2. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed? | All results > high point of ICAL must be diluted | X | | | |
| **3. Are ALL reported analytes and reported results > MDL highlighted by the analyst?** | | X | **Confirm with analyst if LIMS result does not match Labcore** | | |

## VARIANCE REPORT

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.**

| NON-CONFORMANCES / VARIANCE | Criteria | Yes | No | N/A | 2nd Level |
|---|---|---|---|---|---|
| 1. Are all non-conformances and corrective actions included and noted? | All deviations from the method and SOP that affect data quality | X | | | X |
| 2. Does the variance require approval by the Technical Director/General Manager/QA Manager? | | X | | | |

TECHNICAL DIRECTOR / QA MANAGER APPROVAL
SIGNATURE AND DATE STAMP:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

| VARIANCE ITEM | REASON | CORRECTIVE ACTION |
|---|---|---|
| __ CCV out of control (± 10%) | __ Carryover from previous run | __ Reanalyze QC to confirm |
| __ CCB out of control (> MDL / >½ RL) | __ Cross contamination | __ Recalibrate |
| __ MB out of control (> RL / >½ RL) | __ Lab Artifact | __ Reprep/Reanalyze sample |
| __ LCS __ LCSD out of control (± 20%) | __ Prep Spike error (describe) | __ Reprep/Reanalyze Batch |
| __ MS __ MSD out of control (± 20%) | __ Matrix Effect | __ Reanalyze Batch/Sample/QC |
| __ RPD out of control for MS/MSD (15/25) | __ High Levels of Target Metals | __ Verify reagents are clean |
| __ Internal Standard(s) out of control (see Method) | __ Insufficient sample for QC | __ Reanalyze sample to confirm |
| __ No MS/MSD prepared - LCS/LCSD used instead | __ Digestion/Prep Error | __ Sample results ND w/ dilution |
| __ Missing QC (other than MS/MSD) | __ Analytical Error | __ Client notified and approved |
| __ QC sample(s) was mis-spiked | __ Client Request | __ Flag Data/ Case Narative |
| __ ICSA/ICSAB missing or out of control (± 20%) | | __ Accept data |
| __ LCVL out of control (± 30%) | | __ Cal Std high and sample ND |
| __ Other (describe below) | __ Other (describe below) | __ Other (describe below) |

**General Comments and Impact on Data**: See Run Log

Analyst: _____ Date of Completion: 05/24/2016

Second-Level Review: _____ Date Stamp: 05/24/2016

***REVIEWED/APPROVED***
*By Sherri Herschmann at 11:37:09 AM, 5/24/2016*

**DHL Analytical, Inc.**

**Run ID:** ICP-MS4_160523F **Run No.:** 85956

**Analytical Run Date:** 5/23/2016 **InstrumentID:** ICP-MS4

**Analyst:** Ryan Oliver

| SampID | DF | TestCode | SampType | Batch ID | Analysis Date/Time | Q | Comments |
|---|---|---|---|---|---|---|---|
| BLANK STD 1 | 1 | ICPMS_TWDOD | CAL | R85956 | 5/23/2016 10:41:00 AM | | |
| L2-160523 | 1 | ICPMS_TWDOD | CAL | R85956 | 5/23/2016 10:43:00 AM | | |
| L-160523 | 1 | ICPMS_TWDOD | CAL | R85956 | 5/23/2016 10:45:00 AM | | |
| 10X-160523 | 1 | ICPMS_TWDOD | CAL | R85956 | 5/23/2016 10:47:00 AM | | |
| 5X-160523 | 1 | ICPMS_TWDOD | CAL | R85956 | 5/23/2016 10:49:00 AM | | |
| 2X-160523 | 1 | ICPMS_TWDOD | CAL | R85956 | 5/23/2016 10:51:00 AM | | |
| H-160523 | 1 | ICPMS_TWDOD | CAL | R85956 | 5/23/2016 10:53:00 AM | | |
| H2-160523 | 1 | ICPMS_TWDOD | CAL | R85956 | 5/23/2016 10:55:00 AM | | |
| ICSA-160523 | 1 | ICPMS_TWDOD | ICSA | R85956 | 5/23/2016 11:03:00 AM | | |
| ICSAB-160523 | 1 | ICPMS_TWDOD | ICSB | R85956 | 5/23/2016 11:05:00 AM | | |
| ICV-160523 | 1 | ICPMS_TWDOD | ICV | R85956 | 5/23/2016 11:13:00 AM | | |
| LCVL-160523 | 1 | ICPMS_TWDOD | LCVL | R85956 | 5/23/2016 11:22:00 AM | | |
| ICB-160523 | 1 | ICPMS_TWDOD | ICB | R85956 | 5/23/2016 11:30:00 AM | | |
| CCV4-160523 | 1 | ICPMS_TWDOD | CCV | R85956 | 5/23/2016 3:32:00 PM | | |
| LCVL4-160523 | 1 | ICPMS_TWDOD | LCVL | R85956 | 5/23/2016 3:42:00 PM | | |
| CCB4-160523 | 1 | ICPMS_TWDOD | CCB | R85956 | 5/23/2016 3:45:00 PM | | |
| MB-75166 | 5 | ICPMS_TSDOD1 | MBLK | 75166 | 5/23/2016 3:47:00 PM | | |
| LCS-75166 | 5 | ICPMS_TSDOD1 | LCS | 75166 | 5/23/2016 3:49:00 PM | | |
| LCSD-75166 | 5 | ICPMS_TSDOD1 | LCSD | 75166 | 5/23/2016 3:51:00 PM | | |
| 1605096-14A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 3:55:00 PM | | |
| 1605096-14A SD | 25 | ICPMS_TSDOD1 | SD | 75166 | 5/23/2016 3:57:00 PM | | |
| 1605074-40A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 3:59:00 PM | | |
| 1605074-41A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:01:00 PM | | |
| 1605096-01A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:03:00 PM | | |
| 1605096-02A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:05:00 PM | | |
| 1605096-03A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:07:00 PM | | |
| 1605096-04A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:09:00 PM | | |
| 1605096-05A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:11:00 PM | | |
| 1605096-06A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:13:00 PM | | |
| 1605096-07A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:15:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160520- | 10 PPM Ag+Sb PDS | | 11/18/2016 |
| MET-PDS-160520- | 10 PPM CUSTOM PDS SOLUTI | | 11/18/2016 |
| MET-PDS-160520- | 250 PPM Naturals+Al+Fe PDS | | 11/18/2016 |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 11:37:25 AM, 5/24/2016*

**Run ID: ICP-MS4_160523F** **Run No.:** 85956

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1605096-14A PDS | 5 | ICPMS_TSDOD1 | PDS | 75166 | 5/23/2016 4:17:00 PM | | |
| 1605096-14A MS | 5 | ICPMS_TSDOD1 | MS | 75166 | 5/23/2016 4:19:00 PM | | |
| 1605096-14A MSD | 5 | ICPMS_TSDOD1 | MSD | 75166 | 5/23/2016 4:21:00 PM | | |
| CCV5-160523 | 1 | ICPMS_TWDOD | CCV | R85956 | 5/23/2016 4:23:00 PM | | |
| LCVL5-160523 | 1 | ICPMS_TWDOD | LCVL | R85956 | 5/23/2016 4:27:00 PM | | |
| CCB5-160523 | 1 | ICPMS_TWDOD | CCB | R85956 | 5/23/2016 4:29:00 PM | | |
| 1605096-08A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:31:00 PM | | |
| 1605096-09A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:33:00 PM | | |
| 1605096-10A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:35:00 PM | | |
| 1605096-11A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:37:00 PM | | |
| 1605096-12A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:39:00 PM | | |
| 1605096-13A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:41:00 PM | | |
| 1605096-15A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:43:00 PM | | |
| 1605096-16A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:45:00 PM | | |
| 1605096-17A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:47:00 PM | | |
| 1605096-18A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:49:00 PM | | |
| CCV6-160523 | 1 | ICPMS_TWDOD | CCV | R85956 | 5/23/2016 4:51:00 PM | | |
| LCVL6-160523 | 1 | ICPMS_TWDOD | LCVL | R85956 | 5/23/2016 4:55:00 PM | | |
| CCB6-160523 | 1 | ICPMS_TWDOD | CCB | R85956 | 5/23/2016 4:57:00 PM | | |
| MB-75237 | 5 | ICPMS_TSDOD1 | MBLK | 75237 | 5/23/2016 5:00:00 PM | | |
| LCS-75237 | 5 | ICPMS_TSDOD1 | LCS | 75237 | 5/23/2016 5:02:00 PM | | |
| LCSD-75237 | 5 | ICPMS_TSDOD1 | LCSD | 75237 | 5/23/2016 5:04:00 PM | | |
| 1605121-01A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:08:00 PM | | |
| 1605121-01A SD | 25 | ICPMS_TSDOD1 | SD | 75237 | 5/23/2016 5:10:00 PM | | |
| 1605098-30A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:12:00 PM | | |
| 1605098-35A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:14:00 PM | | |
| 1605098-38A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:16:00 PM | | |
| 1605121-02A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:18:00 PM | | |
| 1605121-03A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:20:00 PM | | |
| 1605121-04A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:22:00 PM | | |
| 1605121-05A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:24:00 PM | | |
| 1605121-06A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:26:00 PM | | |
| 1605121-07A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:28:00 PM | | |
| 1605121-01A PDS | 5 | ICPMS_TSDOD1 | PDS | 75237 | 5/23/2016 5:30:00 PM | | |
| 1605121-01A MS | 5 | ICPMS_TSDOD1 | MS | 75237 | 5/23/2016 5:32:00 PM | | S-flag Pb- Low |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160520- | 10 PPM Ag+Sb PDS | | 11/18/2016 |
| MET-PDS-160520- | 10 PPM CUSTOM PDS SOLUTI | | 11/18/2016 |
| MET-PDS-160520- | 250 PPM Naturals+Al+Fe PDS | | 11/18/2016 |

**Run ID: ICP-MS4_160523F** **Run No.:** 85956

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1605121-01A MSD | 5 | ICPMS_TSDOD1 | MSD | 75237 | 5/23/2016 5:34:00 PM | | S-flag Pb- High; R-flag Pb; Rerunning to verify per JD; Data accepted |
| CCV7-160523 | 1 | ICPMS_TWDOD | CCV | R85956 | 5/23/2016 5:36:00 PM | | |
| LCVL7-160523 | 1 | ICPMS_TWDOD | LCVL | R85956 | 5/23/2016 5:40:00 PM | | |
| CCB7-160523 | 1 | ICPMS_TWDOD | CCB | R85956 | 5/23/2016 5:42:00 PM | | |
| 1605121-08A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:44:00 PM | | |
| 1605121-09A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:46:00 PM | | |
| 1605121-10A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:48:00 PM | | |
| 1605121-11A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:50:00 PM | | |
| 1605121-12A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:52:00 PM | | |
| 1605121-13A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:54:00 PM | | |
| 1605121-14A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:56:00 PM | | |
| 1605121-15A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:58:00 PM | | |
| 1605121-16A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 6:00:00 PM | | |
| 1605121-17A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 6:02:00 PM | | |
| CCV8-160523 | 1 | ICPMS_TWDOD | CCV | R85956 | 5/23/2016 6:04:00 PM | | |
| LCVL8-160523 | 1 | ICPMS_TWDOD | LCVL | R85956 | 5/23/2016 6:08:00 PM | | |
| CCB8-160523 | 1 | ICPMS_TWDOD | CCB | R85956 | 5/23/2016 6:10:00 PM | | |
| MB-75236 | 5 | ICPMS_TSDOD1 | MBLK | 75236 | 5/23/2016 6:12:00 PM | | |
| LCS-75236 | 5 | ICPMS_TSDOD1 | LCS | 75236 | 5/23/2016 6:14:00 PM | | |
| LCSD-75236 | 5 | ICPMS_TSDOD1 | LCSD | 75236 | 5/23/2016 6:16:00 PM | | |
| 1605098-17A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:20:00 PM | | |
| 1605098-17A SD | 25 | ICPMS_TSDOD1 | SD | 75236 | 5/23/2016 6:22:00 PM | | |
| 1605071-32A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:24:00 PM | | |
| 1605071-38A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:26:00 PM | | |
| 1605098-12A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:28:00 PM | | |
| 1605098-13A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:30:00 PM | | |
| 1605098-14A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:32:00 PM | | |
| 1605098-15A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:34:00 PM | | |
| 1605098-16A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:36:00 PM | | |
| 1605098-18A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:38:00 PM | | |
| 1605098-19A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:40:00 PM | | |
| 1605098-17A PDS | 5 | ICPMS_TSDOD1 | PDS | 75236 | 5/23/2016 6:42:00 PM | | |
| 1605098-17A MS | 5 | ICPMS_TSDOD1 | MS | 75236 | 5/23/2016 6:44:00 PM | | |
| 1605098-17A MSD | 5 | ICPMS_TSDOD1 | MSD | 75236 | 5/23/2016 6:46:00 PM | | |
| CCV9-160523 | 1 | ICPMS_TWDOD | CCV | R85956 | 5/23/2016 6:48:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160520- | 10 PPM Ag+Sb PDS | | 11/18/2016 |
| MET-PDS-160520- | 10 PPM CUSTOM PDS SOLUTI | | 11/18/2016 |
| MET-PDS-160520- | 250 PPM Naturals+Al+Fe PDS | | 11/18/2016 |

**DHL Analytical, Inc.**

**Run ID: ICP-MS4_160523F** **Run No.:** 85956

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| LCVL9-160523 | 1 | ICPMS_TWDOD | LCVL | R85956 | 5/23/2016 6:52:00 PM | | |
| CCB9-160523 | 1 | ICPMS_TWDOD | CCB | R85956 | 5/23/2016 6:54:00 PM | | |
| 1605098-20A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:56:00 PM | | |
| 1605098-21A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:58:00 PM | | |
| 1605098-22A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 7:00:00 PM | | |
| 1605098-23A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 7:02:00 PM | | |
| 1605098-24A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 7:04:00 PM | | |
| 1605098-25A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 7:06:00 PM | | |
| 1605098-26A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 7:08:00 PM | | |
| 1605098-27A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 7:10:00 PM | | |
| 1605098-28A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 7:12:00 PM | | |
| 1605098-29A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 7:14:00 PM | | |
| CCV10-160523 | 1 | ICPMS_TWDOD | CCV | R85956 | 5/23/2016 7:16:00 PM | | |
| LCVL10-160523 | 1 | ICPMS_TWDOD | LCVL | R85956 | 5/23/2016 7:20:00 PM | | |
| CCB10-160523 | 1 | ICPMS_TWDOD | CCB | R85956 | 5/23/2016 7:22:00 PM | | |

**REVIEWED/APPROVED**

*By Sherri Herschmann at 11:46:09 AM, 5/24/2016*

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160520- | 10 PPM Ag+Sb PDS | | 11/18/2016 |
| MET-PDS-160520- | 10 PPM CUSTOM PDS SOLUTI | | 11/18/2016 |
| MET-PDS-160520- | 250 PPM Naturals+Al+Fe PDS | | 11/18/2016 |

# Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\160523.b

## Acquisition Order

| # | Sequence Flow |
|---|---|
| 1 | Calibration Standards |
| 2 | Unknown Samples |
| 3 | Blank Samples |

**Calibration Standards:**

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 1 | CCB | | CAL ICPMS_TW | 1101 | |
| 2 | CCB | | CAL ICPMS_TW | 1101 | |
| 3 | CCB | | CAL ICPMS_TW | 1101 | |
| 4 | CCB | | CAL ICPMS_TW | 1102 | |
| 5 | CCB | | CAL ICPMS_TW | 1102 | |
| 6 | CCB | | CAL ICPMS_TW | 1102 | |
| 7 | CCB | | CAL ICPMS_TW | 1102 | |
| 8 | CCB | | CAL ICPMS_TW | 1103 | |
| 9 | CCB | | CAL ICPMS_TW | 1103 | |
| 10 | CCB | | CAL ICPMS_TW | 1103 | |
| 11 | CCB | | CAL ICPMS_TW | 1103 | |
| 12 | CalBlk | BLANK STD 1 | CAL ICPMS_TW | 2101 | |
| 13 | CalStd | L2-160523 | CAL ICPMS_TW | 2102 | |
| 14 | CalStd | L-160523 | CAL ICPMS_TW | 2103 | |
| 15 | CalStd | 10X-160523 | CAL ICPMS_TW | 2104 | |
| 16 | CalStd | 5X-160523 | CAL ICPMS_TW | 2105 | |
| 17 | CalStd | 2X-160523 | CAL ICPMS_TW | 2106 | |
| 18 | CalStd | H-160523 | CAL ICPMS_TW | 2107 | |
| 19 | CalStd | H2-160523 | CAL ICPMS_TW | 2108 | |
| 20 | ICB | BLANK | CCB ICPMS_TW | 1101 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | 1 | | |
| 13 | 2 | | |
| 14 | 3 | | |
| 15 | 4 | | |
| 16 | 5 | | |
| 17 | 6 | | |
| 18 | 7 | | |
| 19 | 8 | | |

# Sample List

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 20 | | | | | |
| 21 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 22 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 23 | ICSA | ICSA-160523 | ICSAICPMS_TW | 2109 | |
| 24 | ICSB | ICSAB-160523 | ICSBICPMS_TW | 2110 | |
| 25 | ICB | BLANK | CCB ICPMS_TW | 1101 | |
| 26 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 27 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 28 | ICV | ICV-160523 | ICV ICPMS_TW | 2111 | |
| 29 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 30 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 31 | LLICV | LCVL-160523 | LCVLICPMS_TW | 2112 | |
| 32 | ICB | ICB-160523 | ICB ICPMS_TW | 1102 | |
| 33 | ICB | ICB-160523 | ICB ICPMS_TW | 1103 | |
| 34 | PB_W | MB-75178 | MBLKICPMS_TW | 2201 | |
| 35 | LCS_W | LCS-75178 | LCS ICPMS_TW | 2202 | |
| 36 | LCS_W | LCSD-75178 | LCSDICPMS_TW | 2203 | |
| 37 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 38 | AllRef | 1605153-03A | SAMPICPMS_TW | 2204 | |
| 39 | SD | 1605153-03A SD | SD ICPMS_TW | 2205 | |
| 40 | SAMP_W | 1605152-01C | SAMPICPMS_TW | 2206 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 21 | | | |
| 22 | | | |
| 23 | | | |
| 24 | | | |
| 25 | | | |
| 26 | | | |
| 27 | | | |
| 28 | | | |
| 29 | | | |
| 30 | | | |
| 31 | | | |
| 32 | | | |
| 33 | | | |
| 34 | | 1 | |
| 35 | | 1 | |
| 36 | | 1 | |
| 37 | | | |
| 38 | | 100 | |
| 39 | | 500 | |
| 40 | | 10 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 41 | SAMP_W | 1605162-01A | SAMP200.8 | 2210 | |
| 42 | SAMP_W | 1605149-04A | SAMPICPMS_TW | 2211 | |
| 43 | SAMP_W | 1605149-08A | SAMPICPMS_TW | 2212 | |
| 44 | PDS | 1605153-03A PDS | PDS ICPMS_TW | 2207 | |
| 45 | MS_W | 1605153-03A MS | MS ICPMS_TW | 2208 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 46 | MS_W | 1605153-03A MSD | MSD ICPMS_TW | 2209 |
| 47 | CCB | RINSE | CCB ICPMS_TW | 1101 |
| 48 | CCB | RINSE | CCB ICPMS_TW | 1102 |
| 49 | CCB | RINSE | CCB ICPMS_TW | 1103 |
| 50 | SAMP_W | 1605149-04A | SAMPICPMS_TW | 2211 |
| 51 | CCV | CCV1-160523 | CCV ICPMS_TW | 1207 |
| 52 | CCB | CCB1-160523 | CCB ICPMS_TW | 1102 |
| 53 | LLCCV | LCVL1-160523 | LCVLICPMS_TW | 2112 |
| 54 | CCB | CCB1-160523 | CCB ICPMS_TW | 1103 |
| 55 | SAMP_W | 1605149-04A | SAMPICPMS_TW | 2504 |
| 56 | PB | MB-75261 | MBLK6020A_S | 2301 |
| 57 | LCS_S | LCS-75261 | LCS 6020A_S | 2302 |
| 58 | LCS_S | LCSD-75261 | LCSD6020A_S | 2303 |
| 59 | CCB | RINSE | CCB ICPMS_TW | 1101 |
| 60 | AllRef | 1605185-01A | SAMP6020A_S | 2304 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 41 | | 10 | |
| 42 | | 1 | |
| 43 | | 1 | |
| 44 | | 100 | |
| 45 | | 100 | |
| 46 | | 100 | |
| 47 | | | |
| 48 | | | |
| 49 | | | |
| 50 | | 1 | |
| 51 | | | |
| 52 | | | |
| 53 | | | |
| 54 | | | |
| 55 | | 1 | |
| 56 | | 5 | Skip |
| 57 | | 5 | Skip |
| 58 | | 5 | Skip |
| 59 | | | Skip |
| 60 | | 5 | Skip |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 61 | SD | 1605185-01A SD | SD 6020A_S | 2305 | |
| 62 | Sample | 1605191-01D | SAMP6020A_S | 2306 | |
| 63 | Sample | 1605191-02D | SAMP6020A_S | 2307 | |
| 64 | Sample | 1605191-03D | SAMP6020A_S | 2308 | |
| 65 | Sample | 1605191-04D | SAMP6020A_S | 2309 | |
| 66 | Sample | 1605191-05D | SAMP6020A_S | 2310 | |
| 67 | Sample | 1605191-06D | SAMP6020A_S | 2311 | |
| 68 | Sample | 1605185-02A | SAMP6020A_S | 2312 | |
| 69 | Sample | 1605185-03A | SAMP6020A_S | 2401 | |
| 70 | Sample | 1605185-04A | SAMP6020A_S | 2402 | |
| 71 | PDS | 1605185-01A PDS | PDS 6020A_S | 2403 | |
| 72 | MS_S | 1605185-01A MS | MS 6020A_S | 2404 | |
| 73 | MS_S | 1605185-01A MSD | MSD 6020A_S | 2405 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 74 | CCV | CCV2-160523 | CCV ICPMS_TW | 1207 |
| 75 | CCB | CCB2-160523 | CCB ICPMS_TW | 1102 |
| 76 | LLCCV | LCVL2-160523 | LCVLICPMS_TW | 2112 |
| 77 | CCB | CCB2-160523 | CCB ICPMS_TW | 1103 |
| 78 | Sample | 1605187-01A | SAMPICPMS_TS | 2406 |
| 79 | Sample | 1605187-02A | SAMPICPMS_TS | 2407 |
| 80 | Sample | 1605187-03A | SAMPICPMS_TS | 2408 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 61 | | 25 | Skip |
| 62 | | 5 | Skip |
| 63 | | 5 | Skip |
| 64 | | 5 | Skip |
| 65 | | 5 | Skip |
| 66 | | 5 | Skip |
| 67 | | 5 | Skip |
| 68 | | 5 | Skip |
| 69 | | 5 | Skip |
| 70 | | 5 | Skip |
| 71 | | 5 | Skip |
| 72 | | 5 | Skip |
| 73 | | 5 | Skip |
| 74 | | | Skip |
| 75 | | | Skip |
| 76 | | | Skip |
| 77 | | | Skip |
| 78 | | 5 | Skip |
| 79 | | 5 | Skip |
| 80 | | 5 | Skip |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 81 | Sample | 1605187-04A | SAMPICPMS_TS | 2409 | |
| 82 | Sample | 1605187-05A | SAMPICPMS_TS | 2410 | |
| 83 | Sample | 1605187-06A | SAMPICPMS_TS | 2411 | |
| 84 | Sample | 1605187-07A | SAMPICPMS_TS | 2412 | |
| 85 | Sample | 1605187-08A | SAMPICPMS_TS | 2501 | |
| 86 | Sample | 1605187-09A | SAMPICPMS_TS | 2502 | |
| 87 | Sample | 1605187-10A | SAMPICPMS_TS | 2503 | |
| 88 | CCV | CCV3-160523 | CCV ICPMS_TW | 1207 | |
| 89 | CCB | CCB3-160523 | CCB ICPMS_TW | 1102 | |
| 90 | LLCCV | LCVL3-160523 | LCVLICPMS_TW | 2512 | |
| 91 | CCB | CCB3-160523 | CCB ICPMS_TW | 1103 | |
| 92 | PB | MB-75256 | MBLKICPMS_TS | 3101 | |
| 93 | LCS_S | LCS-75256 | LCS ICPMS_TS | 3102 | |
| 94 | LCS_S | LCSD-75256 | LCSDICPMS_TS | 3103 | |
| 95 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 96 | AllRef | 1605186-02A | SAMPICPMS_TS | 3104 | |
| 97 | SD | 1605186-02A SD | SD ICPMS_TS | 3105 | |
| 98 | Sample | 1605186-01A | SAMPICPMS_TS | 3106 | |
| 99 | PDS | 1605186-02A PDS | PDS ICPMS_TS | 3107 | |
| 100 | MS_S | 1605186-02A MS | MS ICPMS_TS | 3108 | |

# Sample List

| # | Level | Dilution | Skip |
|---|---|---|---|
| 81 | | 5 | Skip |
| 82 | | 5 | Skip |
| 83 | | 5 | Skip |
| 84 | | 5 | Skip |
| 85 | | 5 | Skip |
| 86 | | 5 | Skip |
| 87 | | 5 | Skip |
| 88 | | | Skip |
| 89 | | | Skip |
| 90 | | | Skip |
| 91 | | | Skip |
| 92 | | 5 | Skip |
| 93 | | 5 | Skip |
| 94 | | 5 | Skip |
| 95 | | | Skip |
| 96 | | 5 | Skip |
| 97 | | 25 | Skip |
| 98 | | 5 | Skip |
| 99 | | 5 | Skip |
| 100 | | 5 | Skip |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 101 | MS_S | 1605186-02A MSD | MSD ICPMS_TS | 3109 | |
| 102 | CCV | CCV4-160523 | CCV ICPMS_TW | 1207 | |
| 103 | CCB | CCB4-160523 | CCB ICPMS_TW | 1102 | |
| 104 | LLCCV | LCVL4-160523 | LCVLICPMS_TW | 2512 | |
| 105 | CCB | CCB4-160523 | CCB ICPMS_TW | 1103 | |
| 106 | PB | MB-62609 | MBLKICPMS_TSDOD | 3401 | |
| 107 | Sample | PAINT CHIPS AW-13 | SAMPICPMS_TSDOD | 3402 | |
| 108 | LCS_S | LCS-62609 | LCS ICPMS_TSDOD | 3403 | |
| 109 | LCS_S | LCSD-62609 | LCSDICPMS_TSDOD | 3404 | |
| 110 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 111 | AllRef | 1403264-10A | SAMPICPMS_TSDOD | 3405 | |
| 112 | SD | 1403264-10A SD | SD ICPMS_TSDOD | 3406 | |
| 113 | Sample | 1403263-08A | SAMPICPMS_TSDOD | 3407 | |
| 114 | Sample | 1403263-09A | SAMPICPMS_TSDOD | 3408 | |
| 115 | Sample | 1403264-01A | SAMPICPMS_TSDOD | 3409 | |
| 116 | Sample | 1403264-02A | SAMPICPMS_TSDOD | 3410 | |
| 117 | Sample | 1403264-03A | SAMPICPMS_TSDOD | 3411 | |
| 118 | Sample | 1403264-04A | SAMPICPMS_TSDOD | 3412 | |
| 119 | Sample | 1403264-05A | SAMPICPMS_TSDOD | 3501 | |
| 120 | Sample | 1403264-06A | SAMPICPMS_TSDOD | 3502 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 101 | | 5 | Skip |
| 102 | | | Skip |
| 103 | | | Skip |
| 104 | | | Skip |
| 105 | | | Skip |
| 106 | | 5 | Skip |
| 107 | | 50 | Skip |

# Sample List

| | | |
|---|---|---|
| 108 | 5 | Skip |
| 109 | 5 | Skip |
| 110 | | Skip |
| 111 | 5 | Skip |
| 112 | 25 | Skip |
| 113 | 5 | Skip |
| 114 | 5 | Skip |
| 115 | 5 | Skip |
| 116 | 5 | Skip |
| 117 | 5 | Skip |
| 118 | 5 | Skip |
| 119 | 5 | Skip |
| 120 | 5 | Skip |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 121 | Sample | 1403264-07A | SAMPICPMS_TSDOD | 3503 | |
| 122 | PDS | 1403264-10A PDS | PDS ICPMS_TSDOD | 3504 | |
| 123 | MS_S | 1403264-10A MS | MS ICPMS_TSDOD | 3505 | |
| 124 | MS_S | 1403264-10A MSD | MSD ICPMS_TSDOD | 3506 | |
| 125 | CCV | CCV5-140402 | CCV ICPMS_TW | 1207 | |
| 126 | CCB | CCB5-140402 | CCB ICPMS_TW | 1102 | |
| 127 | LLCCV | LCVL5-140402 | LCVLICPMS_TW | 2511 | |
| 128 | CCB | CCB5-140402 | CCB ICPMS_TW | 1103 | |
| 129 | Sample | 1403264-08A | SAMPICPMS_TSDOD | 3507 | |
| 130 | Sample | 1403264-09A | SAMPICPMS_TSDOD | 3508 | |
| 131 | Sample | 1403264-11A | SAMPICPMS_TSDOD | 3509 | |
| 132 | Sample | 1403264-12A | SAMPICPMS_TSDOD | 3510 | |
| 133 | Sample | 1403264-13A | SAMPICPMS_TSDOD | 3511 | |
| 134 | Sample | 1403264-14A | SAMPICPMS_TSDOD | 3512 | |
| 135 | Sample | 1403264-15A | SAMPICPMS_TSDOD | 3310 | |
| 136 | Sample | 1403264-16A | SAMPICPMS_TSDOD | 3311 | |
| 137 | Sample | 1403264-17A | SAMPICPMS_TSDOD | 3312 | |
| 138 | Sample | 1403264-12A | SAMPICPMS_TSDOD | 3510 | |
| 139 | CCV | CCV6-140402 | CCV ICPMS_TW | 1207 | |
| 140 | CCB | CCB6-140402 | CCB ICPMS_TW | 1102 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 121 | | 5 | Skip |
| 122 | | 5 | Skip |
| 123 | | 5 | Skip |
| 124 | | 5 | Skip |
| 125 | | | Skip |
| 126 | | | Skip |
| 127 | | | Skip |
| 128 | | | Skip |
| 129 | | 5 | Skip |
| 130 | | 5 | Skip |
| 131 | | 5 | Skip |
| 132 | | 5 | Skip |
| 133 | | 5 | Skip |
| 134 | | 5 | Skip |
| 135 | | 5 | Skip |

# Sample List

| | | | |
|---|---|---|---|
| 136 | 5 | Skip | |
| 137 | 5 | Skip | |
| 138 | 5 | Skip | |
| 139 | | Skip | |
| 140 | | Skip | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 141 | LLCCV | LCVL6-140402 | LCVLICPMS_TW | 2511 | |
| 142 | CCB | CCB6-140402 | CCB ICPMS_TW | 1103 | |
| 143 | CCB | CCB6-140402 | CCB ICPMS_TW | 1102 | |
| 144 | CCB | CCB6-140402 | CCB ICPMS_TW | 1102 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 141 | | | Skip |
| 142 | | | Skip |
| 143 | | | Skip |
| 144 | | | Skip |

**Unknown Samples:**

**Blank Samples:**

## Periodic Block

| # | Block Name | Period | Unit | Reset By |
|---|---|---|---|---|

## Sublist

# Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\160523.b

## Acquisition Order

| # | Sequence Flow |
|---|---|
| 1 | Calibration Standards |
| 2 | Unknown Samples |
| 3 | Blank Samples |

**Calibration Standards:**

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 1 | CCB | | CAL ICPMS_TW | 1101 | |
| 2 | CCB | | CAL ICPMS_TW | 1101 | |
| 3 | CCB | | CAL ICPMS_TW | 1101 | |
| 4 | CCB | | CAL ICPMS_TW | 1102 | |
| 5 | CCB | | CAL ICPMS_TW | 1102 | |
| 6 | CCB | | CAL ICPMS_TW | 1102 | |
| 7 | CCB | | CAL ICPMS_TW | 1102 | |
| 8 | CCB | | CAL ICPMS_TW | 1103 | |
| 9 | CCB | | CAL ICPMS_TW | 1103 | |
| 10 | CCB | | CAL ICPMS_TW | 1103 | |
| 11 | CCB | | CAL ICPMS_TW | 1103 | |
| 12 | CalBlk | BLANK STD 1 | CAL ICPMS_TW | 2101 | |
| 13 | CalStd | L2-160523 | CAL ICPMS_TW | 2102 | |
| 14 | CalStd | L-160523 | CAL ICPMS_TW | 2103 | |
| 15 | CalStd | 10X-160523 | CAL ICPMS_TW | 2104 | |
| 16 | CalStd | 5X-160523 | CAL ICPMS_TW | 2105 | |
| 17 | CalStd | 2X-160523 | CAL ICPMS_TW | 2106 | |
| 18 | CalStd | H-160523 | CAL ICPMS_TW | 2107 | |
| 19 | CalStd | H2-160523 | CAL ICPMS_TW | 2108 | |
| 20 | ICB | BLANK | CCB ICPMS_TW | 1101 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 1 | | | Skip |
| 2 | | | Skip |
| 3 | | | Skip |
| 4 | | | Skip |
| 5 | | | Skip |
| 6 | | | Skip |
| 7 | | | Skip |
| 8 | | | Skip |
| 9 | | | Skip |
| 10 | | | Skip |
| 11 | | | Skip |
| 12 | 1 | | Skip |
| 13 | 2 | | Skip |
| 14 | 3 | | Skip |
| 15 | 4 | | Skip |
| 16 | 5 | | Skip |
| 17 | 6 | | Skip |
| 18 | 7 | | Skip |
| 19 | 8 | | Skip |

# Sample List

| | | | | | |
|---|---|---|---|---|---|
| 20 | | | Skip | | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 21 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 22 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 23 | ICSA | ICSA-160523 | ICSAICPMS_TW | 2109 | |
| 24 | ICSB | ICSAB-160523 | ICSBICPMS_TW | 2110 | |
| 25 | ICB | BLANK | CCB ICPMS_TW | 1101 | |
| 26 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 27 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 28 | ICV | ICV-160523 | ICV ICPMS_TW | 2111 | |
| 29 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 30 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 31 | LLICV | LCVL-160523 | LCVLICPMS_TW | 2112 | |
| 32 | ICB | ICB-160523 | ICB ICPMS_TW | 1102 | |
| 33 | ICB | ICB-160523 | ICB ICPMS_TW | 1103 | |
| 34 | PB_W | MB-75178 | MBLKICPMS_TW | 2201 | |
| 35 | LCS_W | LCS-75178 | LCS ICPMS_TW | 2202 | |
| 36 | LCS_W | LCSD-75178 | LCSDICPMS_TW | 2203 | |
| 37 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 38 | AllRef | 1605153-03A | SAMPICPMS_TW | 2204 | |
| 39 | SD | 1605153-03A SD | SD ICPMS_TW | 2205 | |
| 40 | SAMP_W | 1605152-01C | SAMPICPMS_TW | 2206 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 21 | | | Skip |
| 22 | | | Skip |
| 23 | | | Skip |
| 24 | | | Skip |
| 25 | | | Skip |
| 26 | | | Skip |
| 27 | | | Skip |
| 28 | | | Skip |
| 29 | | | Skip |
| 30 | | | Skip |
| 31 | | | Skip |
| 32 | | | Skip |
| 33 | | | Skip |
| 34 | | 1 | Skip |
| 35 | | 1 | Skip |
| 36 | | 1 | Skip |
| 37 | | | Skip |
| 38 | | 100 | Skip |
| 39 | | 500 | Skip |
| 40 | | 10 | Skip |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 41 | SAMP_W | 1605162-01A | SAMP200.8 | 2210 | |
| 42 | SAMP_W | 1605149-04A | SAMPICPMS_TW | 2211 | |
| 43 | SAMP_W | 1605149-08A | SAMPICPMS_TW | 2212 | |
| 44 | PDS | 1605153-03A PDS | PDS ICPMS_TW | 2207 | |
| 45 | MS_W | 1605153-03A MS | MS ICPMS_TW | 2208 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 46 | MS_W | 1605153-03A MSD | MSD ICPMS_TW | 2209 |
| 47 | CCB | RINSE | CCB ICPMS_TW | 1101 |
| 48 | CCB | RINSE | CCB ICPMS_TW | 1102 |
| 49 | CCB | RINSE | CCB ICPMS_TW | 1103 |
| 50 | SAMP_W | 1605149-04A | SAMPICPMS_TW | 2211 |
| 51 | CCV | CCV1-160523 | CCV ICPMS_TW | 1207 |
| 52 | CCB | CCB1-160523 | CCB ICPMS_TW | 1102 |
| 53 | LLCCV | LCVL1-160523 | LCVLICPMS_TW | 2112 |
| 54 | CCB | CCB1-160523 | CCB ICPMS_TW | 1103 |
| 55 | SAMP_W | 1605149-04A | SAMPICPMS_TW | 2504 |
| 56 | PB | MB-75261 | MBLK6020A_S | 2301 |
| 57 | LCS_S | LCS-75261 | LCS 6020A_S | 2302 |
| 58 | LCS_S | LCSD-75261 | LCSD6020A_S | 2303 |
| 59 | CCB | RINSE | CCB ICPMS_TW | 1101 |
| 60 | AllRef | 1605185-01A | SAMP6020A_S | 2304 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 41 | | 10 | Skip |
| 42 | | 1 | Skip |
| 43 | | 1 | Skip |
| 44 | | 100 | Skip |
| 45 | | 100 | Skip |
| 46 | | 100 | Skip |
| 47 | | | Skip |
| 48 | | | Skip |
| 49 | | | Skip |
| 50 | | 1 | Skip |
| 51 | | | Skip |
| 52 | | | Skip |
| 53 | | | Skip |
| 54 | | | Skip |
| 55 | | 1 | Skip |
| 56 | | 5 | |
| 57 | | 5 | |
| 58 | | 5 | |
| 59 | | | |
| 60 | | 5 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 61 | SD | 1605185-01A SD | SD 6020A_S | 2305 | |
| 62 | Sample | 1605191-01D | SAMP6020A_S | 2306 | |
| 63 | Sample | 1605191-02D | SAMP6020A_S | 2307 | |
| 64 | Sample | 1605191-03D | SAMP6020A_S | 2308 | |
| 65 | Sample | 1605191-04D | SAMP6020A_S | 2309 | |
| 66 | Sample | 1605191-05D | SAMP6020A_S | 2310 | |
| 67 | Sample | 1605191-06D | SAMP6020A_S | 2311 | |
| 68 | Sample | 1605185-02A | SAMP6020A_S | 2312 | |
| 69 | Sample | 1605185-03A | SAMP6020A_S | 2401 | |
| 70 | Sample | 1605185-04A | SAMP6020A_S | 2402 | |
| 71 | PDS | 1605185-01A PDS | PDS 6020A_S | 2403 | |
| 72 | MS_S | 1605185-01A MS | MS 6020A_S | 2404 | |
| 73 | MS_S | 1605185-01A MSD | MSD 6020A_S | 2405 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 74 | CCV | CCV2-160523 | CCV ICPMS_TW | 1207 |
| 75 | CCB | CCB2-160523 | CCB ICPMS_TW | 1102 |
| 76 | CCB | CCB2-160523 | CCB ICPMS_TW | 1103 |
| 77 | LLCCV | LCVL2-160523 | LCVLICPMS_TW | 2112 |
| 78 | CCB | CCB2-160523 | CCB ICPMS_TW | 1103 |
| 79 | Sample | 1605187-01A | SAMPICPMS_TS | 2406 |
| 80 | Sample | 1605187-02A | SAMPICPMS_TS | 2407 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 61 | | 25 | |
| 62 | | 5 | |
| 63 | | 5 | |
| 64 | | 5 | |
| 65 | | 5 | |
| 66 | | 5 | |
| 67 | | 5 | |
| 68 | | 5 | |
| 69 | | 5 | |
| 70 | | 5 | |
| 71 | | 5 | |
| 72 | | 5 | |
| 73 | | 5 | |
| 74 | | | |
| 75 | | | |
| 76 | | | |
| 77 | | | |
| 78 | | | |
| 79 | | 5 | |
| 80 | | 5 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 81 | Sample | 1605187-03A | SAMPICPMS_TS | 2408 | |
| 82 | Sample | 1605187-04A | SAMPICPMS_TS | 2409 | |
| 83 | Sample | 1605187-05A | SAMPICPMS_TS | 2410 | |
| 84 | Sample | 1605187-06A | SAMPICPMS_TS | 2411 | |
| 85 | Sample | 1605187-07A | SAMPICPMS_TS | 2412 | |
| 86 | Sample | 1605187-08A | SAMPICPMS_TS | 2501 | |
| 87 | Sample | 1605187-09A | SAMPICPMS_TS | 2502 | |
| 88 | Sample | 1605187-10A | SAMPICPMS_TS | 2503 | |
| 89 | CCV | CCV3-160523 | CCV ICPMS_TW | 1207 | |
| 90 | CCB | CCB3-160523 | CCB ICPMS_TW | 1102 | |
| 91 | CCB | CCB3-160523 | CCB ICPMS_TW | 1102 | |
| 92 | CCB | CCB3-160523 | CCB ICPMS_TW | 1103 | |
| 93 | CCB | CCB3-160523 | CCB ICPMS_TW | 1103 | |
| 94 | CCB | CCB3-160523 | CCB ICPMS_TW | 1103 | |
| 95 | LLCCV | LCVL3-160523 | LCVLICPMS_TW | 2512 | |
| 96 | CCB | CCB3-160523 | CCB ICPMS_TW | 1103 | |
| 97 | PB | MB-75256 | MBLKICPMS_TS | 3101 | |
| 98 | LCS_S | LCS-75256 | LCS ICPMS_TS | 3102 | |
| 99 | LCS_S | LCSD-75256 | LCSDICPMS_TS | 3103 | |
| 100 | CCB | RINSE | CCB ICPMS_TW | 1101 | |

# Sample List

| # | Level | Dilution | Skip |
|---|---|---|---|
| 81 | | 5 | |
| 82 | | 5 | |
| 83 | | 5 | |
| 84 | | 5 | |
| 85 | | 5 | |
| 86 | | 5 | |
| 87 | | 5 | |
| 88 | | 5 | |
| 89 | | | |
| 90 | | | |
| 91 | | | |
| 92 | | | |
| 93 | | | |
| 94 | | | |
| 95 | | | |
| 96 | | | |
| 97 | | 5 | |
| 98 | | 5 | |
| 99 | | 5 | |
| 100 | | | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 101 | PB | MB-75256 | MBLKICPMS_TS | 3101 | |
| 102 | LCS_S | LCS-75256 | LCS ICPMS_TS | 3102 | |
| 103 | LCS_S | LCSD-75256 | LCSDICPMS_TS | 3103 | |
| 104 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 105 | AllRef | 1605186-02A | SAMPICPMS_TS | 3104 | |
| 106 | SD | 1605186-02A SD | SD ICPMS_TS | 3105 | |
| 107 | Sample | 1605186-01A | SAMPICPMS_TS | 3106 | |
| 108 | PDS | 1605186-02A PDS | PDS ICPMS_TS | 3107 | |
| 109 | MS_S | 1605186-02A MS | MS ICPMS_TS | 3108 | |
| 110 | MS_S | 1605186-02A MSD | MSD ICPMS_TS | 3109 | |
| 111 | CCB | CCB4-160523 | CCB ICPMS_TW | 1102 | |
| 112 | AllRef | 1605186-02A | SAMPICPMS_TS | 3501 | |
| 113 | SD | 1605186-02A SD | SD ICPMS_TS | 3502 | |
| 114 | Sample | 1605186-01A | SAMPICPMS_TS | 3503 | |
| 115 | PDS | 1605186-02A PDS | PDS ICPMS_TS | 3504 | |
| 116 | MS_S | 1605186-02A MS | MS ICPMS_TS | 3505 | |
| 117 | MS_S | 1605186-02A MSD | MSD ICPMS_TS | 3506 | |
| 118 | SAMP_W | 1605152-01C | SAMPICPMS_TW | 3507 | |
| 119 | SAMP_W | 1605152-01C | SAMPICPMS_TW | 3508 | |
| 120 | CCB | CCB4-160523 | CCB ICPMS_TW | 1102 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 101 | | 5 | |
| 102 | | 5 | |
| 103 | | 5 | |
| 104 | | | |
| 105 | | 5000 | |
| 106 | | 25000 | |
| 107 | | 5000 | |

# Sample List

| | | |
|---|---|---|
| 108 | | 5000 |
| 109 | | 5000 |
| 110 | | 5000 |
| 111 | | |
| 112 | | 50 |
| 113 | | 250 |
| 114 | | 50 |
| 115 | | 50 |
| 116 | | 50 |
| 117 | | 50 |
| 118 | | 10 |
| 119 | | 1 |
| 120 | | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 121 | CCB | CCB4-160523 | CCB ICPMS_TW | 1103 | |
| 122 | PB_W | MB-75255 | MBLKTCLP_MET | 4101 | |
| 123 | PB_W | MB-75242-TCLP | MBLKTCLP_MET | 4102 | |
| 124 | LCS_W | LCS-75255 | LCS TCLP_MET | 4103 | |
| 125 | LCS_W | LCSD-75255 | LCSDTCLP_MET | 4104 | |
| 126 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 127 | AllRef | 1605186-01A | SAMPTCLP_MET | 4105 | |
| 128 | SD | 1605186-01A SD | SD TCLP_MET | 4106 | |
| 129 | SAMP_W | 1605186-02A | SAMPTCLP_MET | 4107 | |
| 130 | PDS | 1605186-01A PDS | PDS TCLP_MET | 4108 | |
| 131 | MS_W | 1605186-01A MS | MS TCLP_MET | 4109 | |
| 132 | MS_W | 1605186-01A MSD | MSD TCLP_MET | 4110 | |
| 133 | CCB | CCB4-160523 | CCB ICPMS_TW | 1102 | |
| 134 | CCB | CCB4-160523 | CCB ICPMS_TW | 1103 | |
| 135 | CCB | CCB4-160523 | CCB ICPMS_TW | 1103 | |
| 136 | CCV | CCV4-160523 | CCV ICPMS_TW | 1207 | |
| 137 | CCB | CCB4-160523 | CCB ICPMS_TW | 1102 | |
| 138 | CCB | CCB4-160523 | CCB ICPMS_TW | 1103 | |
| 139 | LLCCV | LCVL4-160523 | LCVLICPMS_TW | 2512 | |
| 140 | CCB | CCB4-160523 | CCB ICPMS_TW | 1103 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 121 | | | |
| 122 | | 1 | |
| 123 | | 1 | |
| 124 | | 1 | |
| 125 | | 1 | |
| 126 | | | |
| 127 | | 5 | |
| 128 | | 25 | |
| 129 | | 5 | |
| 130 | | 5 | |
| 131 | | 5 | |
| 132 | | 5 | |
| 133 | | | |
| 134 | | | |
| 135 | | | |

# Sample List

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 141 | PB | MB-75166 | MBLKICPMS_TSDOD1 | 3201 | |
| 142 | LCS_S | LCS-75166 | LCS ICPMS_TSDOD1 | 3202 | |
| 143 | LCS_S | LCSD-75166 | LCSDICPMS_TSDOD1 | 3203 | |
| 144 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 145 | AllRef | 1605096-14A | SAMPICPMS_TSDOD1 | 3204 | |
| 146 | SD | 1605096-14A SD | SD ICPMS_TSDOD1 | 3205 | |
| 147 | Sample | 1605074-40A | SAMPICPMS_TSDOD1 | 3206 | |
| 148 | Sample | 1605074-41A | SAMPICPMS_TSDOD1 | 3207 | |
| 149 | Sample | 1605096-01A | SAMPICPMS_TSDOD1 | 3208 | |
| 150 | Sample | 1605096-02A | SAMPICPMS_TSDOD1 | 3209 | |
| 151 | Sample | 1605096-03A | SAMPICPMS_TSDOD1 | 3210 | |
| 152 | Sample | 1605096-04A | SAMPICPMS_TSDOD1 | 3211 | |
| 153 | Sample | 1605096-05A | SAMPICPMS_TSDOD1 | 3212 | |
| 154 | Sample | 1605096-06A | SAMPICPMS_TSDOD1 | 3301 | |
| 155 | Sample | 1605096-07A | SAMPICPMS_TSDOD1 | 3302 | |
| 156 | PDS | 1605096-14A PDS | PDS ICPMS_TSDOD1 | 3303 | |
| 157 | MS_S | 1605096-14A MS | MS ICPMS_TSDOD1 | 3304 | |
| 158 | MS_S | 1605096-14A MSD | MSD ICPMS_TSDOD1 | 3305 | |
| 159 | CCV | CCV5-160523 | CCV ICPMS_TW | 1207 | |
| 160 | CCB | CCB5-160523 | CCB ICPMS_TW | 1102 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 141 | | 5 | |
| 142 | | 5 | |
| 143 | | 5 | |
| 144 | | | |
| 145 | | 5 | |
| 146 | | 25 | |
| 147 | | 5 | |
| 148 | | 5 | |
| 149 | | 5 | |
| 150 | | 5 | |
| 151 | | 5 | |
| 152 | | 5 | |
| 153 | | 5 | |
| 154 | | 5 | |
| 155 | | 5 | |
| 156 | | 5 | |
| 157 | | 5 | |
| 158 | | 5 | |
| 159 | | | |
| 160 | | | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 161 | LLCCV | LCVL5-160523 | LCVLICPMS_TW | 2511 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 162 | CCB | CCB5-160523 | CCB ICPMS_TW | 1103 |
| 163 | Sample | 1605096-08A | SAMPICPMS_TSDOD1 | 3306 |
| 164 | Sample | 1605096-09A | SAMPICPMS_TSDOD1 | 3307 |
| 165 | Sample | 1605096-10A | SAMPICPMS_TSDOD1 | 3308 |
| 166 | Sample | 1605096-11A | SAMPICPMS_TSDOD1 | 3309 |
| 167 | Sample | 1605096-12A | SAMPICPMS_TSDOD1 | 3310 |
| 168 | Sample | 1605096-13A | SAMPICPMS_TSDOD1 | 3311 |
| 169 | Sample | 1605096-15A | SAMPICPMS_TSDOD1 | 3312 |
| 170 | Sample | 1605096-16A | SAMPICPMS_TSDOD1 | 3401 |
| 171 | Sample | 1605096-17A | SAMPICPMS_TSDOD1 | 3402 |
| 172 | Sample | 1605096-18A | SAMPICPMS_TSDOD1 | 3403 |
| 173 | CCV | CCV6-160523 | CCV ICPMS_TW | 1207 |
| 174 | CCB | CCB6-160523 | CCB ICPMS_TW | 1102 |
| 175 | LLCCV | LCVL6-160523 | LCVLICPMS_TW | 2511 |
| 176 | CCB | CCB6-160523 | CCB ICPMS_TW | 1103 |
| 177 | PB | MB-75237 | MBLKICPMS_TSDOD1 | 4101 |
| 178 | LCS_S | LCS-75237 | LCS ICPMS_TSDOD1 | 4102 |
| 179 | LCS_S | LCSD-75237 | LCSDICPMS_TSDOD1 | 4103 |
| 180 | CCB | RINSE | CCB ICPMS_TW | 1101 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 161 | | | |
| 162 | | | |
| 163 | | 5 | |
| 164 | | 5 | |
| 165 | | 5 | |
| 166 | | 5 | |
| 167 | | 5 | |
| 168 | | 5 | |
| 169 | | 5 | |
| 170 | | 5 | |
| 171 | | 5 | |
| 172 | | 5 | |
| 173 | | | |
| 174 | | | |
| 175 | | | |
| 176 | | | |
| 177 | | 5 | |
| 178 | | 5 | |
| 179 | | 5 | |
| 180 | | | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 181 | AllRef | 1605121-01A | SAMPICPMS_TSDOD1 | 4104 | |
| 182 | SD | 1605121-01A SD | SD ICPMS_TSDOD1 | 4105 | |
| 183 | Sample | 1605098-30A | SAMPICPMS_TSDOD1 | 4106 | |
| 184 | Sample | 1605098-35A | SAMPICPMS_TSDOD1 | 4107 | |
| 185 | Sample | 1605098-38A | SAMPICPMS_TSDOD1 | 4108 | |
| 186 | Sample | 1605121-02A | SAMPICPMS_TSDOD1 | 4109 | |
| 187 | Sample | 1605121-03A | SAMPICPMS_TSDOD1 | 4110 | |
| 188 | Sample | 1605121-04A | SAMPICPMS_TSDOD1 | 4111 | |
| 189 | Sample | 1605121-05A | SAMPICPMS_TSDOD1 | 4112 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 190 | Sample | 1605121-06A | SAMPICPMS_TSDOD1 | 4201 |
| 191 | Sample | 1605121-07A | SAMPICPMS_TSDOD1 | 4202 |
| 192 | PDS | 1605121-01A PDS | PDS ICPMS_TSDOD1 | 4203 |
| 193 | MS_S | 1605121-01A MS | MS ICPMS_TSDOD1 | 4204 |
| 194 | MS_S | 1605121-01A MSD | MSD ICPMS_TSDOD1 | 4205 |
| 195 | CCV | CCV7-160523 | CCV ICPMS_TW | 1207 |
| 196 | CCB | CCB7-160523 | CCB ICPMS_TW | 1102 |
| 197 | LLCCV | LCVL7-160523 | LCVLICPMS_TW | 2511 |
| 198 | CCB | CCB7-160523 | CCB ICPMS_TW | 1103 |
| 199 | Sample | 1605121-08A | SAMPICPMS_TSDOD1 | 4206 |
| 200 | Sample | 1605121-09A | SAMPICPMS_TSDOD1 | 4207 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 181 | | 5 | |
| 182 | | 25 | |
| 183 | | 5 | |
| 184 | | 5 | |
| 185 | | 5 | |
| 186 | | 5 | |
| 187 | | 5 | |
| 188 | | 5 | |
| 189 | | 5 | |
| 190 | | 5 | |
| 191 | | 5 | |
| 192 | | 5 | |
| 193 | | 5 | |
| 194 | | 5 | |
| 195 | | | |
| 196 | | | |
| 197 | | | |
| 198 | | | |
| 199 | | 5 | |
| 200 | | 5 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 201 | Sample | 1605121-10A | SAMPICPMS_TSDOD1 | 4208 | |
| 202 | Sample | 1605121-11A | SAMPICPMS_TSDOD1 | 4209 | |
| 203 | Sample | 1605121-12A | SAMPICPMS_TSDOD1 | 4210 | |
| 204 | Sample | 1605121-13A | SAMPICPMS_TSDOD1 | 4211 | |
| 205 | Sample | 1605121-14A | SAMPICPMS_TSDOD1 | 4212 | |
| 206 | Sample | 1605121-15A | SAMPICPMS_TSDOD1 | 4301 | |
| 207 | Sample | 1605121-16A | SAMPICPMS_TSDOD1 | 4302 | |
| 208 | Sample | 1605121-17A | SAMPICPMS_TSDOD1 | 4303 | |
| 209 | CCV | CCV8-160523 | CCV ICPMS_TW | 1207 | |
| 210 | CCB | CCB8-160523 | CCB ICPMS_TW | 1102 | |
| 211 | LLCCV | LCVL8-160523 | LCVLICPMS_TW | 2510 | |
| 212 | CCB | CCB8-160523 | CCB ICPMS_TW | 1103 | |
| 213 | PB | MB-75236 | MBLKICPMS_TSDOD1 | 4310 | |
| 214 | LCS_S | LCS-75236 | LCS ICPMS_TSDOD1 | 4311 | |
| 215 | LCS_S | LCSD-75236 | LCSDICPMS_TSDOD1 | 4312 | |
| 216 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 217 | AllRef | 1605098-17A | SAMPICPMS_TSDOD1 | 4401 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 218 | SD | 1605098-17A SD | SD ICPMS_TSDOD1 | 4402 |
| 219 | Sample | 1605071-32A | SAMPICPMS_TSDOD1 | 4403 |
| 220 | Sample | 1605071-38A | SAMPICPMS_TSDOD1 | 4404 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 201 | | 5 | |
| 202 | | 5 | |
| 203 | | 5 | |
| 204 | | 5 | |
| 205 | | 5 | |
| 206 | | 5 | |
| 207 | | 5 | |
| 208 | | 5 | |
| 209 | | | |
| 210 | | | |
| 211 | | | |
| 212 | | | |
| 213 | | 5 | |
| 214 | | 5 | |
| 215 | | 5 | |
| 216 | | | |
| 217 | | 5 | |
| 218 | | 25 | |
| 219 | | 5 | |
| 220 | | 5 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 221 | Sample | 1605098-12A | SAMPICPMS_TSDOD1 | 4405 | |
| 222 | Sample | 1605098-13A | SAMPICPMS_TSDOD1 | 4406 | |
| 223 | Sample | 1605098-14A | SAMPICPMS_TSDOD1 | 4407 | |
| 224 | Sample | 1605098-15A | SAMPICPMS_TSDOD1 | 4408 | |
| 225 | Sample | 1605098-16A | SAMPICPMS_TSDOD1 | 4409 | |
| 226 | Sample | 1605098-18A | SAMPICPMS_TSDOD1 | 4410 | |
| 227 | Sample | 1605098-19A | SAMPICPMS_TSDOD1 | 4411 | |
| 228 | PDS | 1605098-17A PDS | PDS ICPMS_TSDOD1 | 4412 | |
| 229 | MS_S | 1605098-17A MS | MS ICPMS_TSDOD1 | 4501 | |
| 230 | MS_S | 1605098-17A MSD | MSD ICPMS_TSDOD1 | 4502 | |
| 231 | CCV | CCV9-160523 | CCV ICPMS_TW | 1207 | |
| 232 | CCB | CCB9-160523 | CCB ICPMS_TW | 1102 | |
| 233 | LLCCV | LCVL9-160523 | LCVLICPMS_TW | 2510 | |
| 234 | CCB | CCB9-160523 | CCB ICPMS_TW | 1103 | |
| 235 | Sample | 1605098-20A | SAMPICPMS_TSDOD1 | 4503 | |
| 236 | Sample | 1605098-21A | SAMPICPMS_TSDOD1 | 4504 | |
| 237 | Sample | 1605098-22A | SAMPICPMS_TSDOD1 | 4505 | |
| 238 | Sample | 1605098-23A | SAMPICPMS_TSDOD1 | 4506 | |
| 239 | Sample | 1605098-24A | SAMPICPMS_TSDOD1 | 4507 | |
| 240 | Sample | 1605098-25A | SAMPICPMS_TSDOD1 | 4508 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 221 | | 5 | |
| 222 | | 5 | |
| 223 | | 5 | |

# Sample List

| | | |
|---|---|---|
| 224 | | 5 |
| 225 | | 5 |
| 226 | | 5 |
| 227 | | 5 |
| 228 | | 5 |
| 229 | | 5 |
| 230 | | 5 |
| 231 | | |
| 232 | | |
| 233 | | |
| 234 | | |
| 235 | | 5 |
| 236 | | 5 |
| 237 | | 5 |
| 238 | | 5 |
| 239 | | 5 |
| 240 | | 5 |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 241 | Sample | 1605098-26A | SAMPICPMS_TSDOD1 | 4509 | |
| 242 | Sample | 1605098-27A | SAMPICPMS_TSDOD1 | 4510 | |
| 243 | Sample | 1605098-28A | SAMPICPMS_TSDOD1 | 4511 | |
| 244 | Sample | 1605098-29A | SAMPICPMS_TSDOD1 | 4512 | |
| 245 | CCV | CCV10-160523 | CCV ICPMS_TW | 1207 | |
| 246 | CCB | CCB10-160523 | CCB ICPMS_TW | 1102 | |
| 247 | LLCCV | LCVL10-160523 | LCVLICPMS_TW | 2509 | |
| 248 | CCB | CCB10-160523 | CCB ICPMS_TW | 1102 | |
| 249 | AllRef | 1605186-01A | SAMPTCLP_MET | 3404 | |
| 250 | SD | 1605186-01A SD | SD TCLP_MET | 3405 | |
| 251 | SAMP_W | 1605186-02A | SAMPTCLP_MET | 3406 | |
| 252 | PDS | 1605186-01A PDS | PDS TCLP_MET | 3407 | |
| 253 | MS_W | 1605186-01A MS | MS TCLP_MET | 3408 | |
| 254 | MS_W | 1605186-01A MSD | MSD TCLP_MET | 3409 | |
| 255 | CCV | CCV11-160523 | CCV ICPMS_TW | 1207 | |
| 256 | CCB | CCB11-160523 | CCB ICPMS_TW | 1102 | |
| 257 | LLCCV | LCVL11-160523 | LCVLICPMS_TW | 2509 | |
| 258 | CCB | CCB11-160523 | CCB ICPMS_TW | 1102 | |
| 259 | CCB | CCB11-160523 | CCB ICPMS_TW | 1102 | |
| 260 | CCB | CCB11-160523 | CCB ICPMS_TW | 1102 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 241 | | 5 | |
| 242 | | 5 | |
| 243 | | 5 | |
| 244 | | 5 | |
| 245 | | | |
| 246 | | | |
| 247 | | | |
| 248 | | | |
| 249 | | 1 | |
| 250 | | 5 | |
| 251 | | 1 | |

# Sample List

| | |
|---|---|
| 252 | 1 |
| 253 | 1 |
| 254 | 1 |
| 255 | |
| 256 | |
| 257 | |
| 258 | |
| 259 | |
| 260 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 261 | CCB | CCB11-160523 | CCB ICPMS_TW | 1103 | |
| 262 | CCB | CCB11-160523 | CCB ICPMS_TW | 1103 | |
| 263 | CCB | CCB11-160523 | CCB ICPMS_TW | 1103 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 261 | | | |
| 262 | | | |
| 263 | | | |

**Unknown Samples:**

**Blank Samples:**

## Periodic Block

| # | Block Name | Period | Unit | Reset By |
|---|---|---|---|---|

## Sublist

**DHL Analytical, Inc.**

# PREP BATCH REPORT



Prep Start Date: **5/19/2016 10:08:03 AM**
Digestion:
Prep End Date:

Prep Batch **75236** Prep Code: **3050_IDOD** Technician: **Will Boston**

Prep Factor Units: mL/g

| Equipment List |
|---|
| Hot Block #3 |
| Thermometer #71 |
| Balance #20 |
| Pipette #P-01 |
| Pipette#-P-09 |

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605071-32A | Soil | | 1.11 | 50 | 50.000 | 1 of 1 | |
| 1605071-38A | Soil | | 1.15 | 50 | 50.000 | 1 of 1 | |
| 1605098-12A | Soil | | 1.14 | 50 | 50.000 | 1 of 1 | |
| 1605098-13A | Soil | | 1.02 | 50 | 50.000 | 1 of 1 | |
| 1605098-14A | Soil | | 1.11 | 50 | 50.000 | 1 of 1 | |
| 1605098-15A | Soil | | 1.04 | 50 | 50.000 | 1 of 1 | |
| 1605098-16A | Soil | | 1.16 | 50 | 50.000 | 1 of 1 | |
| 1605098-17A | Soil | | 1.08 | 50 | 50.000 | 1 of 1 | |
| 1605098-17AMS | Soil | | 1.12 | 50 | 50.000 | of | |
| 1605098-17AMSD | Soil | | 1.16 | 50 | 50.000 | of | |
| 1605098-18A | Soil | | 1.07 | 50 | 50.000 | 1 of 1 | |
| 1605098-19A | Soil | | 1.12 | 50 | 50.000 | 1 of 1 | |
| 1605098-20A | Soil | | 1.10 | 50 | 50.000 | 1 of 1 | |
| 1605098-21A | Soil | | 1.15 | 50 | 50.000 | 1 of 1 | |
| 1605098-22A | Soil | | 1.17 | 50 | 50.000 | 1 of 1 | |
| 1605098-23A | Soil | | 1.19 | 50 | 50.000 | 1 of 1 | |
| 1605098-24A | Soil | | 1.05 | 50 | 50.000 | 1 of 1 | |
| 1605098-25A | Soil | | 1.01 | 50 | 50.000 | 1 of 1 | |
| 1605098-26A | Soil | | 1.16 | 50 | 50.000 | 1 of 1 | |
| 1605098-27A | Soil | | 1.15 | 50 | 50.000 | 1 of 1 | |
| 1605098-28A | Soil | | 1.17 | 50 | 50.000 | 1 of 1 | |
| 1605098-29A | Soil | | 1.14 | 50 | 50.000 | 1 of 1 | |
| LCS-75236 | Soil | | 1 | 50 | 50.000 | of | |
| LCSD-75236 | Soil | | 1 | 50 | 50.000 | of | |
| MB-75236 | Soil | | 1 | 50 | 50.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 10056 | Digestion Vessels | 1 | vessel | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 10 | ml | 01/10/2026 |
| 10137 | Hydrochloric Acid (trace metal grade) | 5 | ml | 01/10/2026 |
| 10318 | Hydrogen Peroxide, 30% | 3 | ml | 10/29/2016 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160406-1 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.5 | 07/05/2016 |
| MET-SPIKE-160511-1 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 1 | 08/09/2016 |
| MET-SPIKE-160511-2 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 1 | 08/09/2016 |

12:28 - 12:43
12:44 - 14:44
15:15 - 17:15
17:33 - 17:48

05-20-16

REVIEWED/APPROVED
By Sherri Herschmann at 11:58:19 AM, 5/24/2016

**DHL Analytical, Inc.**

# PREP BATCH REPORT



Prep Start Date: **5/12/2016 5:00:00 PM**
Digestion: **Start: 5/12/2015 5:15:00 PM / Stop: 5/16/2016 8:30:00 AM**
Prep End Date: **5/16/2016 3:30:00 PM**

Prep Batch **75144** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: mL/

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605098-11A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-12A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-13A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-14A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-15A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-16A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-17A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling - hard clay enough for MS/MSD | | | | | | |
| 1605098-18A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-19A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-20A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-21A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-22A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling- hard copy | | | | | | |
| 1605098-23A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-24A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-25A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-26A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-27A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605098-28A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-29A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-30A | Soil | | 0 | 0 | #Num! | 1 of 1 | |

# MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

| | | | | |
|---|---|---|---|---|
| **ANALYST:** | CVD | **BALANCE #:** | 26 | |
| **TEST DATE:** | 05/19/2016 | **Water is at Room Temperatue (70-73°F) / (21-23°C)** | | |
| **PIPETTER LAB ID:** | P-01, P-09 | **WATER TEMP (°C):** | **21-23°C** | |
| **TEST VOLUME:** | See Below | **WATER DENSITY:** | **0.998** | **(0.9980-0.9976)** |

| | |
|---|---|
| **REFERENCE:** | DoD QSM 5.0 |
| **# of REPLICATES:** | 3 |
| **LABWARE TYPE:** | MECHANICAL VOLUMETRIC PIPETTE |
| **FREQUENCY:** | DAILY BEFORE USE |
| **MEAN CRITERIA:** | ± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME) |
| **RSD CRITERIA:** | < 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS) |

| | |
|---|---|
| **1) RECORD ROOM AND WATER TEMPERATURE** | **% TEST VOL = Volume of H2O at °C/Test Volume * 100** |
| **2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.** | **%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100** |
| **3) WEIGH 3 REPLICATES AT THE TEST VOLUME.** | |
| **4) DETERMINE TOTAL WT.** | |
| **5) CALCULATE VOLUME OF H2O AT °C (in mL)** | **VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY** |

| | | | | | BIAS | PRECISION |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-01** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 5.00 | 4.9999 | 4.9899 | 99.80 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 4.9998 | 4.9898 | 99.80 | | |
| 3 | | 4.9952 | 4.9852 | 99.70 | | |
| AVERAGE (MEAN) | | 4.998 | 4.988 | 99.77 | | 0.054 |
| | | | | | | PASS |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-09** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 0.20 | 0.2007 | 0.2003 | 100.15 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 0.2025 | 0.2021 | 101.05 | | |
| 3 | | 0.2027 | 0.2023 | 101.15 | | |
| AVERAGE (MEAN) | | 0.202 | 0.202 | 100.78 | | 0.545 |
| | | | | | | PASS |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID:** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | | | | | | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | | | | | |
| 3 | | | | | | |
| AVERAGE (MEAN) | | | | | | |
| | | | | | | |

5/19/16
Analyst / Date

05/24/2016
Review and Approved / Date

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/19/2016 10:08:03 AM**
Digestion: **Start: 5/19/2016 12:28:00 PM / Stop: 5/19/2016 5:48:00 PM**
Prep End Date: **5/20/2016 8:43:53 AM**

Prep Batch **75236** Prep Code: **3050_IDOD** Technician: **Will Boston**

Prep Factor Units: **mL/g**

**Equipment List**

Hot Block #3
Thermometer #71
Balance #20
Pipette #P-01
Pipette#-P-09

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605071-32A | Soil | | 1.11 | 50 | 45.045 | 1 of 1 | |
| 1605071-38A | Soil | | 1.15 | 50 | 43.478 | 1 of 1 | |
| 1605098-12A | Soil | | 1.14 | 50 | 43.860 | 1 of 1 | |
| 1605098-13A | Soil | | 1.02 | 50 | 49.020 | 1 of 1 | |
| 1605098-14A | Soil | | 1.11 | 50 | 45.045 | 1 of 1 | |
| 1605098-15A | Soil | | 1.04 | 50 | 48.077 | 1 of 1 | |
| 1605098-16A | Soil | | 1.16 | 50 | 43.103 | 1 of 1 | |
| 1605098-17A | Soil | | 1.08 | 50 | 46.296 | 1 of 1 | |
| 1605098-17A MS | Soil | | 1.12 | 50 | 44.643 | of | |
| 1605098-17A MSD | Soil | | 1.16 | 50 | 43.103 | of | |
| 1605098-17A PDS | Soil | | 1.08 | 50 | 46.296 | of | |
| 1605098-17A SD | Soil | | 1.08 | 50 | 46.296 | of | |
| 1605098-18A | Soil | | 1.07 | 50 | 46.729 | 1 of 1 | |
| 1605098-19A | Soil | | 1.12 | 50 | 44.643 | 1 of 1 | |
| 1605098-20A | Soil | | 1.1 | 50 | 45.455 | 1 of 1 | |
| 1605098-21A | Soil | | 1.15 | 50 | 43.478 | 1 of 1 | |
| 1605098-22A | Soil | | 1.17 | 50 | 42.735 | 1 of 1 | |
| 1605098-23A | Soil | | 1.19 | 50 | 42.017 | 1 of 1 | |
| 1605098-24A | Soil | | 1.05 | 50 | 47.619 | 1 of 1 | |
| 1605098-25A | Soil | | 1.01 | 50 | 49.505 | 1 of 1 | |
| 1605098-26A | Soil | | 1.16 | 50 | 43.103 | 1 of 1 | |
| 1605098-27A | Soil | | 1.15 | 50 | 43.478 | 1 of 1 | |
| 1605098-28A | Soil | | 1.17 | 50 | 42.735 | 1 of 1 | |
| 1605098-29A | Soil | | 1.14 | 50 | 43.860 | 1 of 1 | |
| LCS-75236 | Soil | | 1 | 50 | 50.000 | of | |
| LCSD-75236 | Soil | | 1 | 50 | 50.000 | of | |
| MB-75236 | Soil | | 1 | 50 | 50.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 10056 | Digestion Vessels | 1 | vessel | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 10 | ml | 01/10/2026 |
| 10137 | Hydrochloric Acid (trace metal grade) | 5 | ml | 01/10/2026 |
| 10318 | Hydrogen Peroxide, 30% | 3 | ml | 10/29/2016 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160406-1 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.5 | 07/05/2016 |
| MET-SPIKE-160511-1 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 1 | 08/09/2016 |
| MET-SPIKE-160511-2 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 1 | 08/09/2016 |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 12:00:59 PM, 5/24/2016*

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/19/2016 10:13:48 AM**
Digestion:
Prep End Date:

Prep Batch **75237** Prep Code: **3050_IDOD** Technician: **Will Boston**

Prep Factor Units: mL/g

| Equipment List |
|---|
| Hot Block #3 |
| Thermometer #71 |
| Balance #20 |
| Pipette #P-01 |
| Pipette#-P-09 |

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605098-30A | Soil | | 1.08 | 50 | 50.000 | 1 of 1 | |
| 1605098-35A | Soil | | 1.04 | 50 | 50.000 | 1 of 1 | |
| 1605098-38A | Soil | | 1.06 | 50 | 50.000 | 1 of 1 | |
| 1605121-01A | Soil | | 1.10 | 50 | 50.000 | 1 of 1 | |
| 1605121-01AMS | Soil | | 1.08 | 50 | 50.000 | of | |
| 1605121-01AMSD | Soil | | 1.01 | 50 | 50.000 | of | |
| 1605121-02A | Soil | | 1.20 | 50 | 50.000 | 1 of 1 | |
| 1605121-03A | Soil | | 1.07 | 50 | 50.000 | 1 of 1 | |
| 1605121-04A | Soil | | 1.12 | 50 | 50.000 | 1 of 1 | |
| 1605121-05A | Soil | | 1.06 | 50 | 50.000 | 1 of 1 | |
| 1605121-06A | Soil | | 1.08 | 50 | 50.000 | 1 of 1 | |
| 1605121-07A | Soil | | 1.09 | 50 | 50.000 | 1 of 1 | |
| 1605121-08A | Soil | | 1.12 | 50 | 50.000 | 1 of 1 | |
| 1605121-09A | Soil | | 1.11 | 50 | 50.000 | 1 of 1 | |
| 1605121-10A | Soil | | 1.15 | 50 | 50.000 | 1 of 1 | |
| 1605121-11A | Soil | | 1.16 | 50 | 50.000 | 1 of 1 | |
| 1605121-12A | Soil | | 1.06 | 50 | 50.000 | 1 of 1 | |
| 1605121-13A | Soil | | 1.06 | 50 | 50.000 | 1 of 1 | |
| 1605121-14A | Soil | | 1.18 | 50 | 50.000 | 1 of 1 | |
| 1605121-15A | Soil | | 1.19 | 50 | 50.000 | 1 of 1 | |
| 1605121-16A | Soil | | 1.15 | 50 | 50.000 | 1 of 1 | |
| 1605121-17A | Soil | | 1.10 | 50 | 50.000 | 1 of 1 | |
| LCS-75237 | Soil | | 1 | 50 | 50.000 | of | |
| LCSD-75237 | Soil | | 1 | 50 | 50.000 | of | |
| MB-75237 | Soil | | 1 | 50 | 50.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 10056 | Digestion Vessels | 1 | vessel | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 10 | ml | 01/10/2026 |
| 10137 | Hydrochloric Acid (trace metal grade) | 5 | ml | 01/10/2026 |
| 10318 | Hydrogen Peroxide, 30% | 3 | ml | 10/29/2016 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160406-1 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.5 | 07/05/2016 |
| MET-SPIKE-160511-1 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 1 | 08/09/2016 |
| MET-SPIKE-160511-2 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 1 | 08/09/2016 |

12:28-12:43
12:44-14:44
15:15-17:15
17:33-17:48

REVIEWED/APPROVED
By Sherri Herschmann at 12:03:11 PM, 5/24/2016

05-20-16

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/12/2016 5:00:00 PM**
Digestion: **Start: 5/12/2015 5:15:00 PM / Stop: 5/16/2016 8:30:00 AM**
Prep End Date: **5/16/2016 3:30:00 PM**

Prep Batch **75144** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605098-11A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-12A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-13A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-14A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-15A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-16A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-17A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling - hard clay enough for MS/MSD | | | | | | |
| 1605098-18A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-19A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-20A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-21A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-22A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling- hard copy | | | | | | |
| 1605098-23A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-24A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-25A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-26A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-27A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605098-28A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-29A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-30A | Soil | | 0 | 0 | #Num! | 1 of 1 | |

**DHL Analytical, Inc.**

# PREP BATCH REPORT



Prep Start Date: **5/13/2016 1:00:00 PM**
Digestion: **Start: 5/13/2016 2:00:00 PM / Stop: 5/17/2016 9:00:00 AM**
Prep End Date: **5/17/2016 12:00:00 PM**

Prep Batch **75155** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-01A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling - MS/MSD | | | | | | |
| 1605121-02A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-03A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-04A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-05A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-06A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-07A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-08A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-09A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-10A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-11A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-12A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-13A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-14A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-15A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-16A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-17A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-18A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-19A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |

**DHL Analytical, Inc.**

# PREP BATCH REPORT

Prep Start Date: **5/13/2016 1:00:00 PM**
Digestion: **Start: 5/13/2016 2:00:00 PM / Stop: 5/17/2016 9:00:00 AM**
Prep End Date: **5/17/2016 12:00:00 PM**

Prep Batch **75155** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-20A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |

# MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

| | | | | |
|---|---|---|---|---|
| **ANALYST:** | CVD | **BALANCE #:** | 26 | |
| **TEST DATE:** | 05/19/2016 | **Water is at Room Temperatue (70-73°F) / (21-23°C)** | | |
| **PIPETTER LAB ID:** | P-01, P-09 | **WATER TEMP (°C):** | **21-23°C** | |
| **TEST VOLUME:** | See Below | **WATER DENSITY:** | **0.998** | **(0.9980-0.9976)** |

| | |
|---|---|
| **REFERENCE:** | DoD QSM 5.0 |
| **# of REPLICATES:** | 3 |
| **LABWARE TYPE:** | MECHANICAL VOLUMETRIC PIPETTE |
| **FREQUENCY:** | DAILY BEFORE USE |
| **MEAN CRITERIA:** | ± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME) |
| **RSD CRITERIA:** | < 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS) |

| | |
|---|---|
| **1) RECORD ROOM AND WATER TEMPERATURE** | **% TEST VOL = Volume of H2O at °C/Test Volume * 100** |
| **2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.** | **%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100** |
| **3) WEIGH 3 REPLICATES AT THE TEST VOLUME.** | |
| **4) DETERMINE TOTAL WT.** | |
| **5) CALCULATE VOLUME OF H2O AT °C (in mL)** | **VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY** |

| | | | | | BIAS | PRECISION |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-01** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 5.00 | 4.9999 | 4.9899 | 99.80 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 4.9998 | 4.9898 | 99.80 | | |
| 3 | | 4.9952 | 4.9852 | 99.70 | | |
| **AVERAGE (MEAN)** | | **4.998** | **4.988** | 99.77 | | 0.054 |
| | | | | | | PASS |

| **PIPETTE ID: P-09** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
|---|---|---|---|---|---|---|
| 1 | 0.20 | 0.2007 | 0.2003 | 100.15 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 0.2025 | 0.2021 | 101.05 | | |
| 3 | | 0.2027 | 0.2023 | 101.15 | | |
| **AVERAGE (MEAN)** | | **0.202** | **0.202** | 100.78 | | 0.545 |
| | | | | | | PASS |

| **PIPETTE ID:** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
|---|---|---|---|---|---|---|
| 1 | | | | | | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | | | | | |
| 3 | | | | | | |
| **AVERAGE (MEAN)** | | | | | | |
| | | | | | | |

5/19/16
Analyst / Date

05/24/2016
Review and Approved / Date

# MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

| | | | | |
|---|---|---|---|---|
| **ANALYST:** | RO | **BALANCE #:** | 30 | |
| **TEST DATE:** | 05/23/2016 | **Water is at Room Temperatue (70-73°F) / (21-23°C)** | | |
| **PIPETTER LAB ID:** | See Below | **WATER TEMP (°C):** | **21-23°C** | |
| **TEST VOLUME:** | See Below | **WATER DENSITY:** | **0.998** | **(0.9980-0.9976)** |

| | |
|---|---|
| **REFERENCE:** | DoD QSM 5.0 |
| **# of REPLICATES:** | 3 |
| **LABWARE TYPE:** | MECHANICAL VOLUMETRIC PIPETTE |
| **FREQUENCY:** | DAILY BEFORE USE |
| **MEAN CRITERIA:** | ± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME) |
| **RSD CRITERIA:** | < 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS) |

| | |
|---|---|
| **1) RECORD ROOM AND WATER TEMPERATURE** | **% TEST VOL = Volume of H2O at °C/Test Volume * 100** |
| **2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.** | **%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100** |
| **3) WEIGH 3 REPLICATES AT THE TEST VOLUME.** | |
| **4) DETERMINE TOTAL WT.** | |
| **5) CALCULATE VOLUME OF H2O AT °C (in mL)** | **VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY** |

| | | | | | BIAS | PRECISION |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-31** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| **1** | **4.00** | 4.0171 | 4.0091 | **100.23** | **PASS** | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| **2** | | 3.9879 | 3.9799 | **99.50** | | |
| **3** | | 3.9865 | 3.9785 | **99.46** | | |
| **AVERAGE (MEAN)** | | **3.997** | **3.989** | **99.73** | | **0.432** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-21** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| **1** | **1.00** | 0.9989 | 0.9969 | **99.69** | **PASS** | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| **2** | | 0.9957 | 0.9937 | **99.37** | | |
| **3** | | 0.9956 | 0.9936 | **99.36** | | |
| **AVERAGE (MEAN)** | | **0.997** | **0.995** | **99.47** | | **0.188** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-39** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| **1** | **0.500** | 0.5002 | 0.4992 | **99.84** | **PASS** | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| **2** | | 0.5022 | 0.5012 | **100.24** | | |
| **3** | | 0.4996 | 0.4986 | **99.72** | | |
| **AVERAGE (MEAN)** | | **0.501** | **0.500** | **99.93** | | **0.272** |
| | | | | | | **PASS** |

5/23/2016
Analyst / Date

**05/24/2016**
Review and Approved / Date

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/19/2016 10:13:48 AM**
Digestion: **Start: 5/19/2016 12:28:00 PM / Stop: 5/19/2016 5:48:00 PM**
Prep End Date: **5/20/2016 8:43:16 AM**

Prep Batch **75237** Prep Code: **3050_IDOD** Technician: **Will Boston**

Prep Factor Units: **mL/g**

**Equipment List**

- Hot Block #3
- Thermometer #71
- Balance #20
- Pipette #P-01
- Pipette#-P-09

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605098-30A | Soil | | 1.08 | 50 | 46.296 | 1 of 1 | |
| 1605098-35A | Soil | | 1.04 | 50 | 48.077 | 1 of 1 | |
| 1605098-38A | Soil | | 1.06 | 50 | 47.170 | 1 of 1 | |
| 1605121-01A | Soil | | 1.1 | 50 | 45.455 | 1 of 1 | |
| 1605121-01A MS | Soil | | 1.08 | 50 | 46.296 | of | |
| 1605121-01A MSD | Soil | | 1.01 | 50 | 49.505 | of | |
| 1605121-01A PDS | Soil | | 1.1 | 50 | 45.455 | of | |
| 1605121-01A SD | Soil | | 1.1 | 50 | 45.455 | of | |
| 1605121-02A | Soil | | 1.2 | 50 | 41.667 | 1 of 1 | |
| 1605121-03A | Soil | | 1.07 | 50 | 46.729 | 1 of 1 | |
| 1605121-04A | Soil | | 1.12 | 50 | 44.643 | 1 of 1 | |
| 1605121-05A | Soil | | 1.06 | 50 | 47.170 | 1 of 1 | |
| 1605121-06A | Soil | | 1.08 | 50 | 46.296 | 1 of 1 | |
| 1605121-07A | Soil | | 1.08 | 50 | 46.296 | 1 of 1 | |
| 1605121-08A | Soil | | 1.12 | 50 | 44.643 | 1 of 1 | |
| 1605121-09A | Soil | | 1.11 | 50 | 45.045 | 1 of 1 | |
| 1605121-10A | Soil | | 1.15 | 50 | 43.478 | 1 of 1 | |
| 1605121-11A | Soil | | 1.16 | 50 | 43.103 | 1 of 1 | |
| 1605121-12A | Soil | | 1.06 | 50 | 47.170 | 1 of 1 | |
| 1605121-13A | Soil | | 1.06 | 50 | 47.170 | 1 of 1 | |
| 1605121-14A | Soil | | 1.18 | 50 | 42.373 | 1 of 1 | |
| 1605121-15A | Soil | | 1.18 | 50 | 42.373 | 1 of 1 | |
| 1605121-16A | Soil | | 1.15 | 50 | 43.478 | 1 of 1 | |
| 1605121-17A | Soil | | 1.1 | 50 | 45.455 | 1 of 1 | |
| LCS-75237 | Soil | | 1 | 50 | 50.000 | of | |
| LCSD-75237 | Soil | | 1 | 50 | 50.000 | of | |
| MB-75237 | Soil | | 1 | 50 | 50.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 10056 | Digestion Vessels | 1 | vessel | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 10 | ml | 01/10/2026 |
| 10137 | Hydrochloric Acid (trace metal grade) | 5 | ml | 01/10/2026 |
| 10318 | Hydrogen Peroxide, 30% | 3 | ml | 10/29/2016 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160406-1 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.5 | 07/05/2016 |
| MET-SPIKE-160511-1 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 1 | 08/09/2016 |
| MET-SPIKE-160511-2 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 1 | 08/09/2016 |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 12:06:33 PM, 5/24/2016*

# Calibration Summary Report

**Date Acquired** 5/23/2016 10:41
**Data Batch** 160523.b

| Level | Calibration File Name |
|---|---|
| 1 | 012CALB.d |
| 2 | 013CALS.d |
| 3 | 014CALS.d |
| 4 | 015CALS.d |
| 5 | 016CALS.d |
| 6 | 017CALS.d |
| 7 | 018CALS.d |
| 8 | 019CALS.d |

**Calibration Table**

| Ele | Corr Coef | Curve Equation |
|---|---|---|
| As | 1.0000 | y = 0.0014 * x + 2.8167E-004 |
| Be | 1.0000 | y = 5.9114E-005 * x + 2.9353E-006 |
| B | 1.0000 | y = 2.1736E-005 * x + 1.9548E-004 |
| Na | 0.9999 | y = 8.0916E-004 * x + 0.0378 |
| Mg | 1.0000 | y = 4.0716E-004 * x + 0.0022 |
| Al | 1.0000 | y = 1.5051E-004 * x + 0.0025 |
| K | 0.9999 | y = 4.1449E-004 * x + 0.0614 |
| Ca | 1.0000 | y = 2.2383E-005 * x + 0.0011 |
| Ti | 1.0000 | y = 1.5574E-004 * x + 2.4626E-006 |
| V | 1.0000 | y = 0.0050 * x + 0.0047 |
| Cr | 1.0000 | y = 0.0060 * x + 0.0013 |
| Mn | 1.0000 | y = 0.0034 * x + 2.3576E-004 |
| Fe | 1.0000 | y = 0.0051 * x + 0.0128 |
| Co | 1.0000 | y = 0.0130 * x + 1.6569E-004 |
| Ni | 1.0000 | y = 0.0034 * x + 0.0012 |
| Cu | 1.0000 | y = 0.0094 * x + 0.0023 |
| Zn | 1.0000 | y = 0.0016 * x + 5.3931E-004 |
| Se | 1.0000 | y = 8.2217E-005 * x + 1.3839E-004 |
| Sr | 0.9999 | y = 6.9275E-004 * x + 1.7507E-004 |
| Mo | 1.0000 | y = 5.7772E-004 * x + 5.8427E-006 |
| Ag | 0.9999 | y = 0.0018 * x + 5.0866E-006 |
| Cd | 1.0000 | y = 2.7114E-004 * x + 5.3819E-007 |
| Sn | 1.0000 | y = 5.7939E-004 * x + 8.1217E-005 |
| Sb | 1.0000 | y = 9.0284E-004 * x + 2.1461E-005 |
| Tl | 1.0000 | y = 0.0017 * x + 3.0027E-006 |
| Ba | 1.0000 | y = 2.8780E-004 * x + 1.4284E-005 |
| Pb | 1.0000 | y = 0.0023 * x + 4.2707E-005 |
| Li | 1.0000 | y = 4.4727E-005 * x + 1.5412E-005 |

REVIEWED BY
By Janice Whitt at 1:09:12 PM, 5/23/2016

# Calibration Summary Report

**Level 7 Cal**

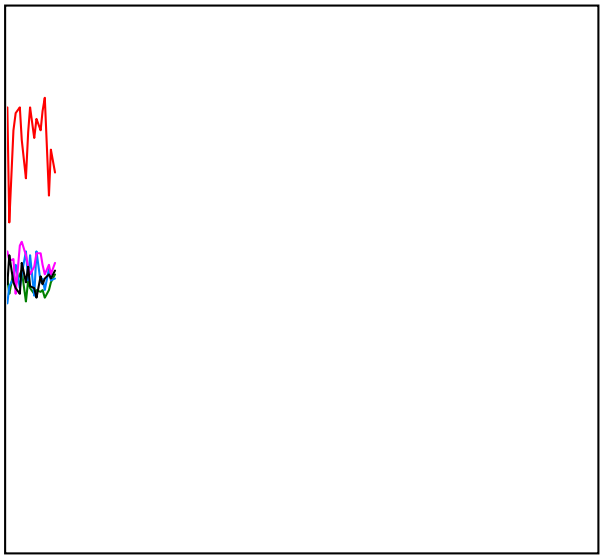
| Ele | Conc | Calc | %Rec |
|---|---|---|---|
| As | 500 | 501.58 | 100 |
| Be | 500 | 509.04 | 102 |
| B | 500 | 503.43 | 101 |
| Na | 10000 | 10289.89 | 103 |
| Mg | 10000 | 10177.23 | 102 |
| Al | 10000 | 9993.09 | 100 |
| K | 10000 | 10214.27 | 102 |
| Ca | 10000 | 9855.94 | 99 |
| Ti | 500 | 493.20 | 99 |
| V | 500 | 509.55 | 102 |
| Cr | 500 | 505.18 | 101 |
| Mn | 500 | 501.60 | 100 |
| Fe | 10000 | 9960.71 | 100 |
| Co | 500 | 504.63 | 101 |
| Ni | 500 | 509.37 | 102 |
| Cu | 500 | 516.68 | 103 |
| Zn | 500 | 510.66 | 102 |
| Se | 500 | 504.06 | 101 |
| Sr | 500 | 480.45 | 96 |
| Mo | 500 | 489.49 | 98 |
| Ag | 500 | 497.86 | 100 |
| Cd | 500 | 490.04 | 98 |
| Sn | 500 | 493.35 | 99 |
| Sb | 500 | 498.86 | 100 |
| Tl | 500 | 499.66 | 100 |
| Ba | 500 | 492.56 | 99 |
| Pb | 500 | 491.91 | 98 |

**Level 8 Cal**

| Ele | Conc | Calc | %Rec |
|---|---|---|---|
| As | 2000 | 1999.84 | 100 |
| Be | 2000 | 1997.32 | 100 |
| B | 2000 | 1999.79 | 100 |
| Na | 25000 | 24864.22 | 101 |
| Mg | 25000 | 24911.90 | 100 |
| K | 25000 | 24898.11 | 100 |
| Ca | 25000 | 25076.46 | 100 |
| Ti | 2000 | 2002.16 | 100 |
| V | 2000 | 1997.60 | 100 |
| Cr | 2000 | 1998.52 | 100 |
| Mn | 2000 | 1999.70 | 100 |
| Co | 2000 | 1998.85 | 100 |
| Ni | 2000 | 1997.15 | 100 |
| Cu | 2000 | 1994.95 | 100 |
| Zn | 2000 | 1996.85 | 100 |
| Se | 2000 | 1998.41 | 100 |
| Sr | 2000 | 2005.86 | 100 |
| Mo | 2000 | 2002.88 | 100 |
| Cd | 2000 | 2002.48 | 100 |
| Sn | 2000 | 2001.85 | 100 |
| Tl | 2000 | 2000.08 | 100 |
| Ba | 2000 | 2002.16 | 100 |
| Pb | 2000 | 2002.50 | 100 |
| Li | 2000 | 1996.24 | 100 |

REVIEWED BY
By Janice Whitt at 1:09:17 PM, 5/23/2016

# Current Signal



| Mass | Range | Count | Avg. Count | RSD [%] |
|---|---|---|---|---|
| 51 | 200 | 139 | 151.8 | 8.48 |
| 59 | 2000 | 1016 | 977.5 | 3.51 |
| 89 | 2000 | 1005 | 1008.6 | 5.33 |
| 140 | 5000 | 2643 | 2653.6 | 4.28 |
| 205 | 5000 | 2588 | 2500.5 | 3.98 |
| 156/140 | 1 | 0.416 % | 0.361 % | 49.12 |
| 75 | 20 | 8 | 6.0 | 47.51 |
| 78 | 20 | 9 | 8.9 | 46.87 |
| 56 | 5000 | 3619 | 3697.9 | 2.82 |
| 31 | 500 | 218 | 204.4 | 11.07 |

**Integration Time [sec]** 0.10

**## Plasma Parameters ##**

| | | | |
|---|---|---|---|
| RF Power | 1550 | Carrier Gas | 0.53 |
| RF Matching | 1.90 | Option Gas | 0.0 |
| Smpl Depth | 8.0 | Nebulizer Pump | 0.10 |
| S/C Temp | 2 | | |

**## Lenses Parameters ##**

| | | | |
|---|---|---|---|
| Extract 1 | 0.0 | Omega Lens | 6.5 |
| Extract 2 | -200.0 | Cell Entrance | -40 |
| Omega Bias | -90 | Cell Exit | -60 |
| Deflect | 1.8 | | |

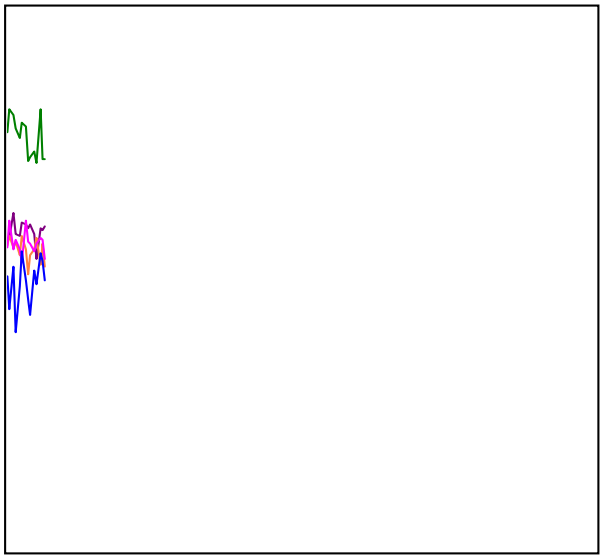
**## Cell Parameters ##**

| | | | |
|---|---|---|---|
| Use Gas | true | 3rd Gas Flow | 0 |
| He Flow | 4.7 | OctP Bias | -18.0 |
| H2 Flow | 0.0 | OctP RF | 200 |
| Energy Discrimination | 3.0 | | |

**Meters**

| | | | | | |
|---|---|---|---|---|---|
| IF/BK Press | 2.23E+2 | Pa | Carrier Gas(BP) | 2.57E+2 | kPa |
| Analyzer Press | 2.02E-4 | Pa | Reflected Power | 1 | W |
| Forward Power | 1550 | W | | | |

# Current Signal



| Mass | Range | Count | Avg. Count | RSD [%] |
|---|---|---|---|---|
| 7 | 2000 | 1195 | 1175.5 | 3.25 |
| 59 | 2000 | 1443 | 1519.8 | 4.94 |
| 89 | 5000 | 2607 | 2765.2 | 3.91 |
| 140 | 5000 | 2677 | 2830.2 | 3.92 |
| 205 | 5000 | 1806 | 1915.5 | 4.14 |
| 156/140 | 2 | 1.233 % | 1.130 % | 16.46 |
| 78 | 5000 | 2299 | 2307.8 | 2.34 |
| 63 | 500 | 249 | 246.4 | 8.79 |
| 75 | 10000 | 6159 | 6248.2 | 1.25 |
| **Integration Time [sec]** | | 0.10 | | |

**## Plasma Parameters ##**

| | | | |
|---|---|---|---|
| RF Power | 1550 | Carrier Gas | 0.53 |
| RF Matching | 1.90 | Option Gas | 0.0 |
| Smpl Depth | 8.0 | Nebulizer Pump | 0.10 |
| S/C Temp | 2 | | |

**## Lenses Parameters ##**

| | | | |
|---|---|---|---|
| Extract 1 | 0.0 | Omega Lens | 6.5 |
| Extract 2 | -200.0 | Cell Entrance | -40 |
| Omega Bias | -90 | Cell Exit | -60 |
| Deflect | 7.0 | | |

**## Cell Parameters ##**

| | | | |
|---|---|---|---|
| Use Gas | false | 3rd Gas Flow | 0 |
| He Flow | 4.2 | OctP Bias | -18.0 |
| H2 Flow | 0.0 | OctP RF | 200 |
| Energy Discrimination | 3.0 | | |

**Meters**

| | | | | | |
|---|---|---|---|---|---|
| IF/BK Press | 2.22E+2 | Pa | Carrier Gas(BP) | 2.56E+2 | kPa |
| Analyzer Press | 1.15E-4 | Pa | Reflected Power | 1 | W |
| Forward Power | 1550 | W | | | |

# US EPA Tune Check Sample Report

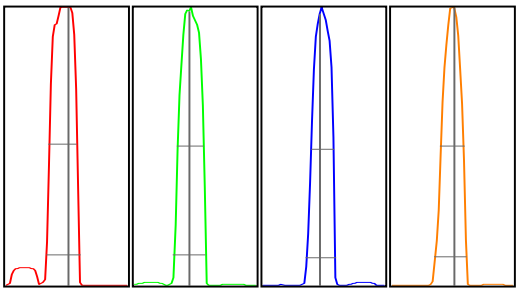
**Batch Folder** C:\Agilent\ICPMH\1\DATA\DHL TEMPLATE Li.b
**Report Comment**
**Instrument Name** ICPMS4 JP12361998

**[No gas]**

| Mass | Count (Mean) | RSD% (Actual) | RSD% (Required) | RSD% (Flag) |
|---|---|---|---|---|
| 7 | 679972 | 0.31 | 5.00 | |
| 59 | 866598 | 0.70 | 5.00 | |
| 115 | 1209526 | 0.83 | 5.00 | |
| 205 | 1027821 | 1.04 | 5.00 | |

| Mass | Replicate 1 Count | Replicate 2 Count | Replicate 3 Count | Replicate 4 Count | Replicate 5 Count |
|---|---|---|---|---|---|
| 7 | 678094 | 677691 | 680079 | 681628 | 682370 |
| 59 | 868590 | 856230 | 870874 | 866547 | 870748 |
| 115 | 1195979 | 1206736 | 1215765 | 1222350 | 1206798 |
| 205 | 1040280 | 1013800 | 1027603 | 1021630 | 1035791 |

**Integration Time [sec] =** 0.1



| Mass | Peak Height | Axis (Actual) | Axis (Required) | Axis (Flag) | Width-X% (Actual) | Width-X% (Required) | Width-X% (Flag) |
|---|---|---|---|---|---|---|---|
| 7 | 103908 | 7.05 | 6.9 - 7.1 | | 0.803 | 0.850 | |
| 59 | 144998 | 58.90 | 58.9 - 59.1 | | 0.763 | 0.850 | |
| 115 | 234368 | 114.95 | 114.9 - 115.1 | | 0.680 | 0.850 | |
| 205 | 201934 | 205.05 | 204.9 - 205.1 | | 0.762 | 0.850 | |

**X% =** 10 **Int Time [sec] =** 0.1 **Acq Time [sec] =** 135.05 **Y Axis =** Linear

**Tune Parameters**

**## Plasma Paramters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| RF Power | 1550 | W | Nebulizer Pump | 0.10 | rps |
| RF Matching | 1.90 | V | S/C Temp | 2 | ℃ |
| Smpl Depth | 8.0 | mm | Gas Switch | Dilution Gas | |
| Carrier Gas | 0.53 | L/min | Makeup/Dilution Gas | 0.52 | L/min |
| Option Gas | 0.0 | % | | | |

**## Lenses Parameters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| Extract 1 | 0.0 | V | Cell Entrance | -40 | V |
| Extract 2 | -200.0 | V | Cell Exit | -60 | V |
| Omega Bias | -90 | V | Deflect | 7.0 | V |
| Omega Lens | 6.5 | V | Plate Bias | -60 | V |

**## Cell Parameters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| Use Gas | false | | OctP Bias | -18.0 | V |
| He Flow | 0.0 | mL/min | OctP RF | 200 | V |
| H2 Flow | 0.0 | mL/min | Energy Discrimination | 3.0 | V |
| 3rd Gas Flow | 0 | % | | | |

REVIEWED BY
By Janice Whitt at 1:09:24 PM, 5/23/2016

# P/A Factor Tuning Report

## Current Sample

Sample Name: CCB1-160523
Data File: 052_CCB.d
Acquired: 05/23/2016 12:15:32

## Detector Parameters and P/A Factors

Discriminator: 4.5 mV
AnalogHV: 1761 V
PulseHV: 1217 V

Acquired: 05/23/2016 10:07:12

| Mass[u] | Element | P/A Factor |
|---|---|---|
| 6 | Li | 0.097837 |
| 9 | Be | 0.111012 |
| 23 | Na | 0.119192 |
| 24 | Mg | 0.123724 |
| 27 | Al | 0.128077 |
| 39 | K | 0.129771 |
| 45 | Sc | 0.130862 |
| 48 | | 0.132135 |
| 51 | V | 0.130933 |
| 52 | Cr | 0.136231 |
| 55 | Mn | 0.137648 |
| 59 | Co | 0.141543 |
| 60 | Ni | 0.142563 |
| 63 | Cu | 0.144932 |
| 66 | Zn | 0.144574 |
| 72 | | 0.143658 |
| 74 | Ge | 0.143964 |
| 75 | As | 0.142622 |
| 88 | Sr | 0.143956 |
| 89 | | 0.143507 |
| 95 | | 0.143591 |
| 97 | Mo | 0.143375 |
| 98 | Mo | 0.143813 |
| 99 | [Mo] | 0.145738 |
| 101 | | 0.146466 |
| 105 | | 0.148942 |
| 111 | Cd | 0.150174 |
| 114 | Cd | 0.149276 |
| 115 | In | 0.149915 |
| 118 | Sn | 0.149082 |
| 121 | | 0.149568 |
| 123 | Sb | 0.149873 |
| 135 | Ba | 0.152643 |
| 138 | | 0.150322 |
| 175 | | 0.154881 |
| 193 | | 0.155592 |
| 205 | Tl | 0.157007 |
| 206 | [Pb] | 0.157788 |
| 207 | [Pb] | 0.157904 |
| 208 | Pb | 0.157038 |
| 209 | Bi | 0.156907 |
| 232 | | 0.157055 |
| 238 | U | 0.157339 |
| 44 | Ca | Signal too low |
| 78 | Se | Signal too low |
| 107 | Ag | Signal too low |
| 172 | | Signal too low |

REVIEWED BY
By Janice Whitt at 1:09:27 PM, 5/23/2016

# Calibration Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 10:41 | Sample Name | BLANK STD 1 |
| Data Batch | 160523.b | Comment | CAL ICPMS_TW |
| Data File Name | 012CALB.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 14 | 55.79 |
| 9 | Be | 45 | 3 | 57.28 |
| 11 | B | 45 | 177 | 6.54 |
| 23 | Na | 45 | 34139 | 1.60 |
| 24 | Mg | 45 | 1980 | 4.08 |
| 27 | Al | 45 | 2288 | 3.85 |
| 39 | K | 45 | 55476 | 1.42 |
| 44 | Ca | 45 | 961 | 7.56 |
| 47 | Ti | 45 | 2 | 86.60 |
| 51 | V | 45 | 4266 | 2.62 |
| 52 | Cr | 45 | 1141 | 7.79 |
| 55 | Mn | 45 | 213 | 11.80 |
| 56 | Fe | 45 | 11561 | 2.68 |
| 59 | Co | 72 | 112 | 20.22 |
| 60 | Ni | 72 | 821 | 7.77 |
| 63 | Cu | 72 | 1579 | 1.41 |
| 66 | Zn | 72 | 366 | 16.95 |
| 75 | As | 72 | 191 | 9.42 |
| 78 | Se | 72 | 94 | 12.11 |
| 88 | Sr | 115 | 1100 | 1.05 |
| 95 | Mo | 115 | 37 | 45.45 |
| 107 | Ag | 115 | 32 | 56.98 |
| 111 | Cd | 115 | 3 | 100.05 |
| 118 | Sn | 115 | 510 | 3.92 |
| 121 | Sb | 115 | 134 | 16.51 |
| 137 | Ba | 115 | 90 | 18.52 |
| 205 | Tl | 209 | 42 | 27.72 |
| 208 | Pb | 209 | 600 | 8.94 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD |
|---|---|---|---|
| 45 | Sc | 904202 | 1.28 |
| 72 | Ge | 677615 | 0.38 |
| 115 | In | 6287303 | 2.85 |
| 209 | Bi | 14081817 | 3.17 |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 10:43 | Sample Name | L2-160523 |
| Data Batch | 160523.b | Comment | CAL ICPMS_TW |
| Data File Name | 013CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 54 | 30.93 |
| 9 | Be | 45 | 59 | 24.19 |
| 11 | B | 45 | 218 | 11.69 |
| 23 | Na | 45 | 49106 | 0.27 |
| 24 | Mg | 45 | 9386 | 3.13 |
| 27 | Al | 45 | 4806 | 2.74 |
| 39 | K | 45 | 62560 | 0.51 |
| 44 | Ca | 45 | 1323 | 4.63 |
| 47 | Ti | 45 | 147 | 13.82 |
| 51 | V | 45 | 8479 | 3.30 |
| 52 | Cr | 45 | 6574 | 2.86 |
| 55 | Mn | 45 | 3288 | 2.00 |
| 56 | Fe | 45 | 102248 | 1.34 |
| 59 | Co | 72 | 8973 | 2.16 |
| 60 | Ni | 72 | 3143 | 6.28 |
| 63 | Cu | 72 | 8237 | 2.17 |
| 66 | Zn | 72 | 1521 | 7.87 |
| 75 | As | 72 | 1135 | 3.69 |
| 78 | Se | 72 | 145 | 17.13 |
| 88 | Sr | 115 | 5162 | 3.36 |
| 95 | Mo | 115 | 3446 | 4.72 |
| 107 | Ag | 115 | 11258 | 2.34 |
| 111 | Cd | 115 | 1519 | 7.20 |
| 118 | Sn | 115 | 3828 | 0.96 |
| 121 | Sb | 115 | 5552 | 2.01 |
| 137 | Ba | 115 | 1890 | 3.23 |
| 205 | Tl | 209 | 22877 | 0.82 |
| 208 | Pb | 209 | 31445 | 1.13 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 900571 | 0.45 | 904202 | 99.60 | 70 | 120 | |
| 72 | Ge | 670627 | 1.48 | 677615 | 98.97 | 70 | 120 | |
| 115 | In | 6190956 | 0.22 | 6287303 | 98.47 | 70 | 120 | |
| 209 | Bi | 13796768 | 1.16 | 14081817 | 97.98 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 10:45 | Sample Name | L-160523 |
| Data Batch | 160523.b | Comment | CAL ICPMS_TW |
| Data File Name | 014CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 422 | 6.67 |
| 9 | Be | 45 | 513 | 4.28 |
| 11 | B | 45 | 314 | 7.81 |
| 23 | Na | 45 | 179567 | 0.71 |
| 24 | Mg | 45 | 75498 | 0.67 |
| 27 | Al | 45 | 28659 | 1.69 |
| 39 | K | 45 | 129305 | 0.51 |
| 44 | Ca | 45 | 4762 | 0.26 |
| 47 | Ti | 45 | 1509 | 5.75 |
| 51 | V | 45 | 48612 | 0.96 |
| 52 | Cr | 45 | 54862 | 0.14 |
| 55 | Mn | 45 | 30512 | 2.78 |
| 56 | Fe | 45 | 906138 | 0.11 |
| 59 | Co | 72 | 86261 | 0.31 |
| 60 | Ni | 72 | 24301 | 0.57 |
| 63 | Cu | 72 | 65859 | 0.98 |
| 66 | Zn | 72 | 11289 | 1.37 |
| 75 | As | 72 | 9325 | 1.65 |
| 78 | Se | 72 | 634 | 3.42 |
| 88 | Sr | 115 | 41872 | 0.51 |
| 95 | Mo | 115 | 34142 | 1.36 |
| 107 | Ag | 115 | 110269 | 0.50 |
| 111 | Cd | 115 | 16671 | 1.71 |
| 118 | Sn | 115 | 35109 | 1.10 |
| 121 | Sb | 115 | 54278 | 1.52 |
| 137 | Ba | 115 | 17059 | 2.93 |
| 205 | Tl | 209 | 230034 | 0.72 |
| 208 | Pb | 209 | 309141 | 0.69 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 904779 | 0.88 | 904202 | 100.06 | 70 | 120 | |
| 72 | Ge | 670882 | 0.39 | 677615 | 99.01 | 70 | 120 | |
| 115 | In | 6230915 | 0.35 | 6287303 | 99.10 | 70 | 120 | |
| 209 | Bi | 13793986 | 0.79 | 14081817 | 97.96 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 10:47 | Sample Name | 10X-160523 |
| Data Batch | 160523.b | Comment | CAL ICPMS_TW |
| Data File Name | 015CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 1995 | 3.01 |
| 9 | Be | 45 | 2601 | 0.94 |
| 11 | B | 45 | 1111 | 3.78 |
| 23 | Na | 45 | 767294 | 0.52 |
| 24 | Mg | 45 | 369675 | 1.08 |
| 27 | Al | 45 | 137134 | 0.22 |
| 39 | K | 45 | 428254 | 0.61 |
| 44 | Ca | 45 | 20275 | 2.18 |
| 47 | Ti | 45 | 6760 | 3.23 |
| 51 | V | 45 | 227873 | 1.94 |
| 52 | Cr | 45 | 268227 | 0.39 |
| 55 | Mn | 45 | 151812 | 0.06 |
| 56 | Fe | 45 | 4554936 | 0.43 |
| 59 | Co | 72 | 437181 | 0.92 |
| 60 | Ni | 72 | 119086 | 0.70 |
| 63 | Cu | 72 | 322274 | 0.51 |
| 66 | Zn | 72 | 55804 | 0.51 |
| 75 | As | 72 | 46279 | 0.92 |
| 78 | Se | 72 | 2853 | 2.51 |
| 88 | Sr | 115 | 205994 | 0.17 |
| 95 | Mo | 115 | 174091 | 0.88 |
| 107 | Ag | 115 | 553943 | 0.92 |
| 111 | Cd | 115 | 82554 | 0.32 |
| 118 | Sn | 115 | 174025 | 0.99 |
| 121 | Sb | 115 | 274641 | 0.79 |
| 137 | Ba | 115 | 85763 | 0.27 |
| 205 | Tl | 209 | 1162224 | 0.27 |
| 208 | Pb | 209 | 1552470 | 0.96 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 888520 | 1.86 | 904202 | 98.27 | 70 | 120 | |
| 72 | Ge | 663382 | 1.33 | 677615 | 97.90 | 70 | 120 | |
| 115 | In | 6119290 | 1.44 | 6287303 | 97.33 | 70 | 120 | |
| 209 | Bi | 13721704 | 3.04 | 14081817 | 97.44 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 10:49 | Sample Name | 5X-160523 |
| Data Batch | 160523.b | Comment | CAL ICPMS_TW |
| Data File Name | 016CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 4022 | 2.28 |
| 9 | Be | 45 | 5208 | 1.03 |
| 11 | B | 45 | 2090 | 6.59 |
| 23 | Na | 45 | 1482695 | 0.22 |
| 24 | Mg | 45 | 731448 | 0.66 |
| 27 | Al | 45 | 268102 | 0.93 |
| 39 | K | 45 | 800264 | 0.09 |
| 44 | Ca | 45 | 39793 | 0.32 |
| 47 | Ti | 45 | 13629 | 2.19 |
| 51 | V | 45 | 450460 | 0.19 |
| 52 | Cr | 45 | 529709 | 0.67 |
| 55 | Mn | 45 | 301095 | 0.26 |
| 56 | Fe | 45 | 9087517 | 1.57 |
| 59 | Co | 72 | 867230 | 0.62 |
| 60 | Ni | 72 | 232640 | 0.43 |
| 63 | Cu | 72 | 637526 | 0.42 |
| 66 | Zn | 72 | 111543 | 1.58 |
| 75 | As | 72 | 91397 | 0.61 |
| 78 | Se | 72 | 5646 | 0.25 |
| 88 | Sr | 115 | 405534 | 0.98 |
| 95 | Mo | 115 | 344042 | 1.66 |
| 107 | Ag | 115 | 1104806 | 0.81 |
| 111 | Cd | 115 | 163760 | 1.13 |
| 118 | Sn | 115 | 348511 | 0.44 |
| 121 | Sb | 115 | 546794 | 0.64 |
| 137 | Ba | 115 | 171815 | 0.48 |
| 205 | Tl | 209 | 2336598 | 0.56 |
| 208 | Pb | 209 | 3097207 | 0.33 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 879951 | 0.58 | 904202 | 97.32 | 70 | 120 | |
| 72 | Ge | 661139 | 0.69 | 677615 | 97.57 | 70 | 120 | |
| 115 | In | 6149856 | 1.42 | 6287303 | 97.81 | 70 | 120 | |
| 209 | Bi | 13593824 | 2.28 | 14081817 | 96.53 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 10:51 | Sample Name | 2X-160523 |
| Data Batch | 160523.b | Comment | CAL ICPMS_TW |
| Data File Name | 017CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 10158 | 2.48 |
| 9 | Be | 45 | 13366 | 1.11 |
| 11 | B | 45 | 4926 | 3.90 |
| 23 | Na | 45 | 3700424 | 0.50 |
| 24 | Mg | 45 | 1842485 | 0.20 |
| 27 | Al | 45 | 674718 | 1.07 |
| 39 | K | 45 | 1925190 | 0.56 |
| 44 | Ca | 45 | 99227 | 1.57 |
| 47 | Ti | 45 | 34276 | 0.98 |
| 51 | V | 45 | 1126479 | 0.23 |
| 52 | Cr | 45 | 1337611 | 0.46 |
| 55 | Mn | 45 | 751245 | 0.54 |
| 56 | Fe | 45 | 22912045 | 0.43 |
| 59 | Co | 72 | 2147838 | 0.23 |
| 60 | Ni | 72 | 579579 | 1.00 |
| 63 | Cu | 72 | 1589846 | 0.57 |
| 66 | Zn | 72 | 273371 | 0.47 |
| 75 | As | 72 | 229135 | 0.29 |
| 78 | Se | 72 | 13921 | 2.74 |
| 88 | Sr | 115 | 1027359 | 0.51 |
| 95 | Mo | 115 | 872922 | 0.12 |
| 107 | Ag | 115 | 2766127 | 0.67 |
| 111 | Cd | 115 | 411961 | 0.87 |
| 118 | Sn | 115 | 876724 | 0.39 |
| 121 | Sb | 115 | 1383479 | 0.63 |
| 137 | Ba | 115 | 434262 | 0.39 |
| 205 | Tl | 209 | 5947641 | 0.36 |
| 208 | Pb | 209 | 7903967 | 0.16 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 891953 | 0.79 | 904202 | 98.65 | 70 | 120 | |
| 72 | Ge | 663268 | 0.23 | 677615 | 97.88 | 70 | 120 | |
| 115 | In | 6058043 | 1.31 | 6287303 | 96.35 | 70 | 120 | |
| 209 | Bi | 13829886 | 0.53 | 14081817 | 98.21 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 10:53 | Sample Name | H-160523 |
| Data Batch | 160523.b | Comment | CAL ICPMS_TW |
| Data File Name | 018CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 20339 | 0.70 |
| 9 | Be | 45 | 26681 | 0.80 |
| 11 | B | 45 | 9875 | 3.47 |
| 23 | Na | 45 | 7415179 | 1.62 |
| 24 | Mg | 45 | 3675807 | 0.05 |
| 27 | Al | 45 | 1335716 | 1.13 |
| 39 | K | 45 | 3808036 | 0.76 |
| 44 | Ca | 45 | 196537 | 0.82 |
| 47 | Ti | 45 | 68103 | 0.69 |
| 51 | V | 45 | 2279167 | 0.43 |
| 52 | Cr | 45 | 2673841 | 0.59 |
| 55 | Mn | 45 | 1505829 | 0.41 |
| 56 | Fe | 45 | 44791023 | 1.36 |
| 59 | Co | 72 | 4333632 | 0.07 |
| 60 | Ni | 72 | 1162385 | 0.75 |
| 63 | Cu | 72 | 3202470 | 0.85 |
| 66 | Zn | 72 | 551113 | 0.61 |
| 75 | As | 72 | 461164 | 0.32 |
| 78 | Se | 72 | 27499 | 1.50 |
| 88 | Sr | 115 | 2071588 | 0.38 |
| 95 | Mo | 115 | 1759082 | 0.34 |
| 107 | Ag | 115 | 5562354 | 1.28 |
| 111 | Cd | 115 | 826540 | 0.24 |
| 118 | Sn | 115 | 1778907 | 1.25 |
| 121 | Sb | 115 | 2802214 | 1.01 |
| 137 | Ba | 115 | 881929 | 0.21 |
| 205 | Tl | 209 | 11933830 | 1.10 |
| 208 | Pb | 209 | 15814357 | 0.88 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 886620 | 0.63 | 904202 | 98.06 | 70 | 120 | |
| 72 | Ge | 661371 | 0.53 | 677615 | 97.60 | 70 | 120 | |
| 115 | In | 6222293 | 2.02 | 6287303 | 98.97 | 70 | 120 | |
| 209 | Bi | 13894584 | 1.34 | 14081817 | 98.67 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 10:55 | Sample Name | H2-160523 |
| Data Batch | 160523.b | Comment | CAL ICPMS_TW |
| Data File Name | 019CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 79991 | 0.83 |
| 9 | Be | 45 | 105763 | 0.57 |
| 11 | B | 45 | 39112 | 1.45 |
| 23 | Na | 45 | 18057534 | 3.58 |
| 24 | Mg | 45 | 9088289 | 1.47 |
| 27 | Al | 45 | 1269 | 16.03 |
| 39 | K | 45 | 9298592 | 1.18 |
| 44 | Ca | 45 | 503718 | 0.10 |
| 47 | Ti | 45 | 279312 | 0.68 |
| 51 | V | 45 | 9015007 | 1.15 |
| 52 | Cr | 45 | 10684407 | 2.93 |
| 55 | Mn | 45 | 6064120 | 1.50 |
| 56 | Fe | 45 | 35308 | 20.24 |
| 59 | Co | 72 | 17361777 | 1.84 |
| 60 | Ni | 72 | 4607152 | 1.02 |
| 63 | Cu | 72 | 12501757 | 0.38 |
| 66 | Zn | 72 | 2178676 | 0.19 |
| 75 | As | 72 | 1859138 | 0.52 |
| 78 | Se | 72 | 110000 | 0.32 |
| 88 | Sr | 115 | 8401070 | 0.86 |
| 95 | Mo | 115 | 6994842 | 0.76 |
| 107 | Ag | 115 | 2126 | 23.63 |
| 111 | Cd | 115 | 3282273 | 1.18 |
| 118 | Sn | 115 | 7011933 | 0.68 |
| 121 | Sb | 115 | 4685 | 3.78 |
| 137 | Ba | 115 | 3483257 | 0.41 |
| 205 | Tl | 209 | 47207017 | 0.33 |
| 208 | Pb | 209 | 63612418 | 1.06 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 895774 | 0.77 | 904202 | 99.07 | 70 | 120 | |
| 72 | Ge | 668943 | 0.70 | 677615 | 98.72 | 70 | 120 | |
| 115 | In | 6045106 | 0.72 | 6287303 | 96.15 | 70 | 120 | |
| 209 | Bi | 13730344 | 1.07 | 14081817 | 97.50 | 70 | 120 | |

# Interference Check Solution A (ICS-A) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 11:03 | Sample Name | ICSA-160523 |
| Data Batch | 160523.b | Comment | ICSAICPMS_TW |
| Data File Name | 023ICSA.d | Dilution | 1 |

| Mass | Name | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|
| 9 | Be | 0.149 | 10 | 10.0 | 1.2 | 0.8 | |
| 11 | B | 11.290 | 376 | 17.9 | 30 | 30 | |
| 51 | V | -0.180 | 3253 | 2.5 | 10 | 10 | |
| 52 | Cr | 0.410 | 3167 | 4.0 | 8 | 5 | |
| 55 | Mn | 1.407 | 4265 | 3.6 | 8 | 10 | |
| 59 | Co | 0.554 | 4687 | 1.5 | 8 | 10 | |
| 60 | Ni | 0.586 | 2057 | 3.0 | 8 | 10 | |
| 63 | Cu | 0.967 | 7251 | 2.3 | 8 | 10 | |
| 66 | Zn | 1.505 | 1906 | 6.7 | 10 | 5 | |
| 75 | As | 0.715 | 812 | 3.7 | 4 | 5 | |
| 78 | Se | 0.189 | 98 | 21.9 | 2 | 5 | |
| 88 | Sr | 1.411 | 6641 | 3.1 | 10 | 10 | |
| 107 | Ag | 0.156 | 1640 | 6.2 | 0.8 | 2 | |
| 111 | Cd | 0.568 | 891 | 4.2 | 1.2 | 1 | |
| 118 | Sn | 1.490 | 5444 | 3.5 | 10 | 10 | |
| 121 | Sb | 0.409 | 2254 | 3.4 | 4 | 2.5 | |
| 137 | Ba | 0.358 | 677 | 12.8 | 8 | 10 | |
| 205 | Tl | 0.053 | 1181 | 6.8 | 4 | 1.5 | |
| 208 | Pb | 0.115 | 3836 | 3.0 | 1.2 | 1 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 853276 | 1.55 | 904202 | 94.37 | 70 | 120 | |
| 72 | Ge | 636672 | 0.65 | 677615 | 93.96 | 70 | 120 | |
| 115 | In | 5764026 | 0.57 | 6287303 | 91.68 | 70 | 120 | |
| 209 | Bi | 12438504 | 1.71 | 14081817 | 88.33 | 70 | 120 | |

# Interference Check Solution AB (ICS-AB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 11:05 | Sample Name | ICSAB-160523 |
| Data Batch | 160523.b | Comment | ICSBICPMS_TW |
| Data File Name | 024ICSB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 51 | V | 45 | 40.430 | 177045 | 0.63 | 40 | 101.1 | 80 | 120 | |
| 52 | Cr | 45 | 21.277 | 108980 | 0.68 | 20 | 106.4 | 80 | 120 | |
| 55 | Mn | 45 | 19.721 | 56943 | 0.66 | 20 | 98.6 | 80 | 120 | |
| 59 | Co | 72 | 39.986 | 330797 | 0.91 | 40 | 100.0 | 80 | 120 | |
| 60 | Ni | 72 | 38.440 | 85195 | 0.48 | 40 | 96.1 | 80 | 120 | |
| 63 | Cu | 72 | 21.070 | 127190 | 0.48 | 20 | 105.3 | 80 | 120 | |
| 66 | Zn | 72 | 20.526 | 21663 | 1.72 | 20 | 102.6 | 80 | 120 | |
| 75 | As | 72 | 20.358 | 18198 | 0.82 | 20 | 101.8 | 80 | 120 | |
| 78 | Se | 72 | 19.723 | 1121 | 6.78 | 20 | 98.6 | 80 | 120 | |
| 107 | Ag | 115 | 19.288 | 197546 | 1.17 | 20 | 96.4 | 80 | 120 | |
| 111 | Cd | 115 | 10.185 | 15746 | 3.02 | 10 | 101.9 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 849875 | 0.06 | 904202 | 93.99 | 70 | 120 | |
| 72 | Ge | 636925 | 0.26 | 677615 | 94.00 | 70 | 120 | |
| 115 | In | 5701078 | 0.43 | 6287303 | 90.68 | 70 | 120 | |
| 209 | Bi | 12549877 | 1.59 | 14081817 | 89.12 | 70 | 120 | |

# Initial Calibration Verification (ICV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 11:13 | Sample Name | ICV-160523 |
| Data Batch | 160523.b | Comment | ICV ICPMS_TW |
| Data File Name | 028_ICV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 100.423 | 4248 | 0.95 | 100 | 100.4 | 90 | 110 | |
| 9 | Be | 45 | 101.646 | 5667 | 0.58 | 100 | 101.6 | 90 | 110 | |
| 11 | B | 45 | 104.978 | 2336 | 4.70 | 100 | 105.0 | 90 | 110 | |
| 23 | Na | 45 | 2586.060 | 2008198 | 0.89 | 2500 | 103.4 | 90 | 110 | |
| 24 | Mg | 45 | 2562.125 | 985387 | 0.56 | 2500 | 102.5 | 90 | 110 | |
| 27 | Al | 45 | 2504.172 | 357686 | 0.60 | 2500 | 100.2 | 90 | 110 | |
| 39 | K | 45 | 2581.178 | 1066381 | 0.58 | 2500 | 103.2 | 90 | 110 | |
| 44 | Ca | 45 | 2372.478 | 51065 | 1.75 | 2500 | 94.9 | 90 | 110 | |
| 47 | Ti | 45 | 101.067 | 14843 | 3.44 | 100 | 101.1 | 90 | 110 | |
| 51 | V | 45 | 101.914 | 488235 | 1.04 | 100 | 101.9 | 90 | 110 | |
| 52 | Cr | 45 | 105.134 | 592568 | 0.63 | 100 | 105.1 | 90 | 110 | |
| 55 | Mn | 45 | 99.716 | 318433 | 0.67 | 100 | 99.7 | 90 | 110 | |
| 56 | Fe | 45 | 2559.322 | 12244428 | 2.69 | 2500 | 102.4 | 90 | 110 | |
| 59 | Co | 72 | 102.839 | 935257 | 0.89 | 100 | 102.8 | 90 | 110 | |
| 60 | Ni | 72 | 103.357 | 250435 | 1.06 | 100 | 103.4 | 90 | 110 | |
| 63 | Cu | 72 | 103.718 | 682030 | 0.10 | 100 | 103.7 | 90 | 110 | |
| 66 | Zn | 72 | 102.929 | 117929 | 0.21 | 100 | 102.9 | 90 | 110 | |
| 75 | As | 72 | 101.739 | 99208 | 0.58 | 100 | 101.7 | 90 | 110 | |
| 78 | Se | 72 | 102.180 | 5980 | 1.29 | 100 | 102.2 | 90 | 110 | |
| 88 | Sr | 115 | 97.362 | 445614 | 0.82 | 100 | 97.4 | 90 | 110 | |
| 95 | Mo | 115 | 96.288 | 366620 | 0.97 | 100 | 96.3 | 90 | 110 | |
| 107 | Ag | 115 | 97.154 | 1150101 | 0.40 | 100 | 97.2 | 90 | 110 | |
| 111 | Cd | 115 | 97.549 | 174298 | 0.87 | 100 | 97.5 | 90 | 110 | |
| 118 | Sn | 115 | 100.644 | 384806 | 0.52 | 100 | 100.6 | 90 | 110 | |
| 121 | Sb | 115 | 97.820 | 582167 | 0.42 | 100 | 97.8 | 90 | 110 | |
| 137 | Ba | 115 | 96.935 | 183943 | 0.07 | 100 | 96.9 | 90 | 110 | |
| 205 | Tl | 209 | 99.429 | 2451582 | 0.42 | 100 | 99.4 | 90 | 110 | |
| 208 | Pb | 209 | 99.012 | 3286154 | 0.32 | 100 | 99.0 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 942688 | 0.94 | 904202 | 104.26 | 70 | 120 | |
| 72 | Ge | 700315 | 0.23 | 677615 | 103.35 | 70 | 120 | |
| 115 | In | 6591165 | 1.48 | 6287303 | 104.83 | 70 | 120 | |
| 209 | Bi | 14342513 | 0.82 | 14081817 | 101.85 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 11:22 | Sample Name | LCVL-160523 |
| Data Batch | 160523.b | Comment | LCVLICPMS_TW |
| Data File Name | 031LICV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.463 | 454 | 2.11 | 10 | 104.6 | 70 | 130 | |
| 9 | Be | 45 | 0.970 | 57 | 13.71 | 1 | 97.0 | 70 | 130 | |
| 11 | B | 45 | 22.559 | 644 | 2.99 | 20 | 112.8 | 70 | 130 | |
| 23 | Na | 45 | 102.326 | 113290 | 0.57 | 100 | 102.3 | 70 | 130 | |
| 24 | Mg | 45 | 98.504 | 39753 | 1.29 | 100 | 98.5 | 70 | 130 | |
| 27 | Al | 45 | 95.406 | 15875 | 0.76 | 100 | 95.4 | 70 | 130 | |
| 39 | K | 45 | 102.661 | 97657 | 1.50 | 100 | 102.7 | 70 | 130 | |
| 44 | Ca | 45 | 93.089 | 2957 | 5.50 | 100 | 93.1 | 70 | 130 | |
| 47 | Ti | 45 | 4.739 | 696 | 11.51 | 5 | 94.8 | 70 | 130 | |
| 51 | V | 45 | 0.861 | 8507 | 0.92 | 1 | 86.1 | 70 | 130 | |
| 52 | Cr | 45 | 5.065 | 29593 | 0.96 | 5 | 101.3 | 70 | 130 | |
| 55 | Mn | 45 | 4.839 | 15619 | 0.36 | 5 | 96.8 | 70 | 130 | |
| 56 | Fe | 45 | 98.224 | 480128 | 0.60 | 100 | 98.2 | 70 | 130 | |
| 59 | Co | 72 | 5.047 | 45754 | 0.45 | 5 | 100.9 | 70 | 130 | |
| 60 | Ni | 72 | 5.053 | 12977 | 1.53 | 5 | 101.1 | 70 | 130 | |
| 63 | Cu | 72 | 5.097 | 34877 | 1.64 | 5 | 101.9 | 70 | 130 | |
| 66 | Zn | 72 | 5.187 | 6266 | 2.89 | 5 | 103.7 | 70 | 130 | |
| 75 | As | 72 | 4.940 | 4977 | 0.92 | 5 | 98.8 | 70 | 130 | |
| 78 | Se | 72 | 4.978 | 381 | 7.35 | 5 | 99.6 | 70 | 130 | |
| 88 | Sr | 115 | 4.774 | 22733 | 1.35 | 5 | 95.5 | 70 | 130 | |
| 95 | Mo | 115 | 4.671 | 17652 | 0.52 | 5 | 93.4 | 70 | 130 | |
| 107 | Ag | 115 | 1.890 | 22183 | 1.34 | 2 | 94.5 | 70 | 130 | |
| 111 | Cd | 115 | 0.877 | 1557 | 3.32 | 1 | 87.7 | 70 | 130 | |
| 118 | Sn | 115 | 5.050 | 19637 | 2.67 | 5 | 101.0 | 70 | 130 | |
| 121 | Sb | 115 | 1.932 | 11526 | 1.31 | 2 | 96.6 | 70 | 130 | |
| 137 | Ba | 115 | 4.760 | 9034 | 1.40 | 5 | 95.2 | 70 | 130 | |
| 205 | Tl | 209 | 0.998 | 24095 | 0.66 | 1 | 99.8 | 70 | 130 | |
| 208 | Pb | 209 | 0.970 | 32076 | 1.46 | 1 | 97.0 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 939860 | 1.08 | 904202 | 103.94 | 70 | 120 | |
| 72 | Ge | 696437 | 0.55 | 677615 | 102.78 | 70 | 120 | |
| 115 | In | 6530312 | 2.75 | 6287303 | 103.87 | 70 | 120 | |
| 209 | Bi | 14025539 | 1.89 | 14081817 | 99.60 | 70 | 120 | |

# Initial Calibration Blank (ICB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 11:30 | Sample Name | ICB-160523 |
| Data Batch | 160523.b | Comment | ICB ICPMS_TW |
| Data File Name | 033_ICB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.142 | 20 | 20.5 | 2 | 5 | |
| 9 | Be | 45 | 0.095 | 8 | 43.3 | 0.4 | 0.3 | |
| 11 | B | 45 | 0.156 | 186 | 12.0 | 10 | 10 | |
| 23 | Na | 45 | 0.367 | 35489 | 1.7 | 50 | 100 | |
| 24 | Mg | 45 | -1.823 | 1350 | 1.5 | 50 | 100 | |
| 27 | Al | 45 | -0.267 | 2324 | 8.1 | 50 | 10 | |
| 39 | K | 45 | 3.549 | 58593 | 0.4 | 50 | 100 | |
| 44 | Ca | 45 | -3.802 | 913 | 6.2 | 50 | 100 | |
| 47 | Ti | 45 | 0.023 | 6 | 91.6 | 4 | 3 | |
| 51 | V | 45 | -0.106 | 3902 | 3.8 | 4 | 3 | |
| 52 | Cr | 45 | -0.025 | 1038 | 4.5 | 2 | 2 | |
| 55 | Mn | 45 | -0.011 | 184 | 26.8 | 2 | 3 | |
| 56 | Fe | 45 | 0.172 | 12736 | 2.1 | 50 | 50 | |
| 59 | Co | 72 | -0.001 | 102 | 8.2 | 2 | 3 | |
| 60 | Ni | 72 | -0.036 | 758 | 17.0 | 2 | 3 | |
| 63 | Cu | 72 | -0.039 | 1369 | 4.9 | 2 | 2 | |
| 66 | Zn | 72 | 0.053 | 437 | 8.8 | 4 | 2 | |
| 75 | As | 72 | -0.011 | 186 | 9.0 | 2 | 2 | |
| 78 | Se | 72 | 0.056 | 100 | 17.9 | 1 | 2 | |
| 88 | Sr | 115 | 0.014 | 1203 | 1.7 | 4 | 3 | |
| 95 | Mo | 115 | 0.000 | 39 | 32.4 | 2 | 2 | |
| 107 | Ag | 115 | 0.001 | 40 | 30.0 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.002 | 7 | 50.0 | 0.4 | 0.3 | |
| 118 | Sn | 115 | 0.241 | 1442 | 6.2 | 4 | 3 | |
| 121 | Sb | 115 | 0.018 | 247 | 80.5 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.002 | 98 | 29.0 | 2 | 3 | |
| 205 | Tl | 209 | 0.000 | 46 | 34.6 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.003 | 510 | 8.0 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 932628 | 0.61 | 904202 | 103.14 | 70 | 120 | |
| 72 | Ge | 697475 | 0.81 | 677615 | 102.93 | 70 | 120 | |
| 115 | In | 6523390 | 0.30 | 6287303 | 103.75 | 70 | 120 | |
| 209 | Bi | 14176412 | 0.50 | 14081817 | 100.67 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 15:32 | Sample Name | CCV4-160523 |
| Data Batch | 160523.b | Comment | CCV ICPMS_TW |
| Data File Name | 136_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 206.211 | 8130 | 1.55 | 200 | 103.1 | 90 | 110 | |
| 9 | Be | 45 | 200.287 | 10422 | 0.37 | 200 | 100.1 | 90 | 110 | |
| 11 | B | 45 | 196.074 | 3923 | 2.72 | 200 | 98.0 | 90 | 110 | |
| 23 | Na | 45 | 5013.929 | 3603866 | 0.91 | 5000 | 100.3 | 90 | 110 | |
| 24 | Mg | 45 | 5002.788 | 1794591 | 0.40 | 5000 | 100.1 | 90 | 110 | |
| 27 | Al | 45 | 4901.565 | 651487 | 0.59 | 5000 | 98.0 | 90 | 110 | |
| 39 | K | 45 | 5065.739 | 1901852 | 0.79 | 5000 | 101.3 | 90 | 110 | |
| 44 | Ca | 45 | 4848.345 | 96442 | 0.79 | 5000 | 97.0 | 90 | 110 | |
| 47 | Ti | 45 | 196.475 | 26931 | 0.76 | 200 | 98.2 | 90 | 110 | |
| 51 | V | 45 | 198.856 | 885443 | 0.36 | 200 | 99.4 | 90 | 110 | |
| 52 | Cr | 45 | 200.779 | 1055489 | 0.93 | 200 | 100.4 | 90 | 110 | |
| 55 | Mn | 45 | 197.918 | 589894 | 0.90 | 200 | 99.0 | 90 | 110 | |
| 56 | Fe | 45 | 5117.742 | 22851373 | 1.10 | 5000 | 102.4 | 90 | 110 | |
| 59 | Co | 72 | 196.663 | 1703424 | 0.80 | 200 | 98.3 | 90 | 110 | |
| 60 | Ni | 72 | 200.192 | 461256 | 0.48 | 200 | 100.1 | 90 | 110 | |
| 63 | Cu | 72 | 203.120 | 1270703 | 0.47 | 200 | 101.6 | 90 | 110 | |
| 66 | Zn | 72 | 199.232 | 217081 | 0.84 | 200 | 99.6 | 90 | 110 | |
| 75 | As | 72 | 195.657 | 181548 | 0.49 | 200 | 97.8 | 90 | 110 | |
| 78 | Se | 72 | 197.084 | 10901 | 0.81 | 200 | 98.5 | 90 | 110 | |
| 88 | Sr | 115 | 187.973 | 805573 | 0.82 | 200 | 94.0 | 90 | 110 | |
| 95 | Mo | 115 | 192.436 | 686850 | 0.99 | 200 | 96.2 | 90 | 110 | |
| 107 | Ag | 115 | 195.128 | 2165531 | 1.08 | 200 | 97.6 | 90 | 110 | |
| 111 | Cd | 115 | 191.368 | 320585 | 0.37 | 200 | 95.7 | 90 | 110 | |
| 118 | Sn | 115 | 192.898 | 691035 | 0.67 | 200 | 96.4 | 90 | 110 | |
| 121 | Sb | 115 | 195.344 | 1089773 | 0.15 | 200 | 97.7 | 90 | 110 | |
| 137 | Ba | 115 | 191.701 | 340951 | 0.52 | 200 | 95.9 | 90 | 110 | |
| 205 | Tl | 209 | 191.912 | 4608887 | 0.89 | 200 | 96.0 | 90 | 110 | |
| 208 | Pb | 209 | 189.118 | 6113017 | 0.40 | 200 | 94.6 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 880099 | 0.87 | 904202 | 97.33 | 70 | 120 | |
| 72 | Ge | 667027 | 0.33 | 677615 | 98.44 | 70 | 120 | |
| 115 | In | 6178968 | 1.30 | 6287303 | 98.28 | 70 | 120 | |
| 209 | Bi | 13969084 | 0.67 | 14081817 | 99.20 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 15:42 | Sample Name | LCVL4-160523 |
| Data Batch | 160523.b | Comment | LCVLICPMS_TW |
| Data File Name | 139LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.081 | 407 | 5.32 | 10 | 100.8 | 70 | 130 | |
| 9 | Be | 45 | 1.017 | 55 | 6.56 | 1 | 101.7 | 70 | 130 | |
| 11 | B | 45 | 18.482 | 521 | 11.27 | 20 | 92.4 | 70 | 130 | |
| 23 | Na | 45 | 96.215 | 100875 | 0.71 | 100 | 96.2 | 70 | 130 | |
| 24 | Mg | 45 | 98.412 | 36876 | 0.76 | 100 | 98.4 | 70 | 130 | |
| 27 | Al | 45 | 95.429 | 14741 | 0.66 | 100 | 95.4 | 70 | 130 | |
| 39 | K | 45 | 101.075 | 90095 | 0.45 | 100 | 101.1 | 70 | 130 | |
| 44 | Ca | 45 | 89.228 | 2670 | 3.27 | 100 | 89.2 | 70 | 130 | |
| 47 | Ti | 45 | 5.274 | 719 | 10.34 | 5 | 105.5 | 70 | 130 | |
| 51 | V | 45 | 0.821 | 7723 | 2.12 | 1 | 82.1 | 70 | 130 | |
| 52 | Cr | 45 | 5.156 | 27952 | 1.38 | 5 | 103.1 | 70 | 130 | |
| 55 | Mn | 45 | 5.008 | 14997 | 4.30 | 5 | 100.2 | 70 | 130 | |
| 56 | Fe | 45 | 99.341 | 450729 | 0.52 | 100 | 99.3 | 70 | 130 | |
| 59 | Co | 72 | 5.047 | 42731 | 0.74 | 5 | 100.9 | 70 | 130 | |
| 60 | Ni | 72 | 4.920 | 11821 | 3.13 | 5 | 98.4 | 70 | 130 | |
| 63 | Cu | 72 | 5.290 | 33746 | 1.14 | 5 | 105.8 | 70 | 130 | |
| 66 | Zn | 72 | 5.041 | 5698 | 1.12 | 5 | 100.8 | 70 | 130 | |
| 75 | As | 72 | 4.963 | 4669 | 0.07 | 5 | 99.3 | 70 | 130 | |
| 78 | Se | 72 | 5.356 | 376 | 9.07 | 5 | 107.1 | 70 | 130 | |
| 88 | Sr | 115 | 4.783 | 21404 | 0.48 | 5 | 95.7 | 70 | 130 | |
| 95 | Mo | 115 | 4.742 | 16839 | 2.39 | 5 | 94.8 | 70 | 130 | |
| 107 | Ag | 115 | 1.942 | 21434 | 0.19 | 2 | 97.1 | 70 | 130 | |
| 111 | Cd | 115 | 0.967 | 1611 | 5.38 | 1 | 96.7 | 70 | 130 | |
| 118 | Sn | 115 | 4.807 | 17588 | 1.20 | 5 | 96.1 | 70 | 130 | |
| 121 | Sb | 115 | 1.894 | 10625 | 1.82 | 2 | 94.7 | 70 | 130 | |
| 137 | Ba | 115 | 4.815 | 8589 | 0.84 | 5 | 96.3 | 70 | 130 | |
| 205 | Tl | 209 | 0.956 | 22620 | 1.28 | 1 | 95.6 | 70 | 130 | |
| 208 | Pb | 209 | 0.958 | 31050 | 0.67 | 1 | 95.8 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 872631 | 0.93 | 904202 | 96.51 | 70 | 120 | |
| 72 | Ge | 650398 | 0.32 | 677615 | 95.98 | 70 | 120 | |
| 115 | In | 6135820 | 1.32 | 6287303 | 97.59 | 70 | 120 | |
| 209 | Bi | 13738911 | 1.98 | 14081817 | 97.56 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 15:45 | Sample Name | CCB4-160523 |
| Data Batch | 160523.b | Comment | CCB ICPMS_TW |
| Data File Name | 140_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.093 | 17 | 15.6 | 2 | 5 | |
| 9 | Be | 45 | 0.041 | 5 | 24.7 | 0.4 | 0.3 | |
| 11 | B | 45 | -0.574 | 159 | 21.2 | 10 | 10 | |
| 23 | Na | 45 | -3.383 | 30413 | 0.3 | 50 | 100 | |
| 24 | Mg | 45 | -3.103 | 804 | 3.9 | 50 | 100 | |
| 27 | Al | 45 | -0.333 | 2155 | 5.0 | 50 | 10 | |
| 39 | K | 45 | 0.059 | 53309 | 0.4 | 50 | 100 | |
| 44 | Ca | 45 | -4.778 | 831 | 3.2 | 50 | 100 | |
| 47 | Ti | 45 | 0.017 | 4 | 43.4 | 4 | 3 | |
| 51 | V | 45 | -0.249 | 3008 | 3.2 | 4 | 3 | |
| 52 | Cr | 45 | -0.041 | 884 | 6.8 | 2 | 2 | |
| 55 | Mn | 45 | -0.021 | 142 | 5.4 | 2 | 3 | |
| 56 | Fe | 45 | 0.149 | 11761 | 2.1 | 50 | 50 | |
| 59 | Co | 72 | 0.000 | 106 | 26.9 | 2 | 3 | |
| 60 | Ni | 72 | -0.232 | 269 | 21.1 | 2 | 3 | |
| 63 | Cu | 72 | 0.265 | 3137 | 18.4 | 2 | 2 | |
| 66 | Zn | 72 | -0.056 | 292 | 22.3 | 4 | 2 | |
| 75 | As | 72 | -0.023 | 163 | 10.1 | 2 | 2 | |
| 78 | Se | 72 | -0.030 | 89 | 10.5 | 1 | 2 | |
| 88 | Sr | 115 | 0.014 | 1123 | 3.7 | 4 | 3 | |
| 95 | Mo | 115 | -0.003 | 23 | 42.9 | 2 | 2 | |
| 107 | Ag | 115 | 0.020 | 254 | 21.3 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.001 | 6 | 91.6 | 0.4 | 0.3 | |
| 118 | Sn | 115 | -0.043 | 342 | 14.8 | 4 | 3 | |
| 121 | Sb | 115 | 0.034 | 313 | 38.1 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.007 | 99 | 19.8 | 2 | 3 | |
| 205 | Tl | 209 | 0.001 | 71 | 40.4 | 2 | 0.5 | |
| 208 | Pb | 209 | 0.001 | 597 | 13.4 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 868509 | 0.24 | 904202 | 96.05 | 70 | 120 | |
| 72 | Ge | 651469 | 0.14 | 677615 | 96.14 | 70 | 120 | |
| 115 | In | 6087959 | 1.77 | 6287303 | 96.83 | 70 | 120 | |
| 209 | Bi | 13477598 | 2.29 | 14081817 | 95.71 | 70 | 120 | |

# Method Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 3:47 PM | Sample Name | MB-75166 |
| Data Batch | 160523.b | Comment | MBLKICPMS_TSDOD1 |
| Data File Name | 141_PB.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.163 | 20 | 43.30 | | |
| 9 | Be | 45 | 0.002 | 3 | 114.56 | | |
| 11 | B | 45 | 10.893 | 380 | 15.52 | | J |
| 23 | Na | 45 | 6.950 | 38126 | 0.61 | | |
| 24 | Mg | 45 | 4.890 | 3674 | 3.45 | | |
| 27 | Al | 45 | 52.014 | 9106 | 1.88 | | FAIL |
| 39 | K | 45 | 7.740 | 56752 | 1.89 | | |
| 44 | Ca | 45 | 125.767 | 3411 | 9.49 | | FAIL |
| 47 | Ti | 45 | 0.276 | 40 | 16.68 | | |
| 51 | V | 45 | -0.336 | 2657 | 6.82 | | |
| 52 | Cr | 45 | 0.309 | 2730 | 1.76 | | |
| 55 | Mn | 45 | 0.123 | 572 | 8.16 | | |
| 56 | Fe | 45 | 6.677 | 40994 | 1.06 | | |
| 59 | Co | 72 | 0.004 | 143 | 12.09 | | |
| 60 | Ni | 72 | 0.335 | 1542 | 8.73 | | |
| 63 | Cu | 72 | 0.357 | 3697 | 1.58 | | |
| 66 | Zn | 72 | 4.293 | 4913 | 3.39 | | J |
| 75 | As | 72 | -0.032 | 155 | 2.19 | | |
| 78 | Se | 72 | 0.050 | 93 | 27.02 | | |
| 88 | Sr | 115 | 0.897 | 4933 | 2.73 | | |
| 95 | Mo | 115 | 0.010 | 71 | 21.14 | | |
| 107 | Ag | 115 | 0.019 | 248 | 6.77 | | |
| 111 | Cd | 115 | 0.001 | 4 | 86.60 | | |
| 118 | Sn | 115 | 3.945 | 14654 | 1.79 | | |
| 121 | Sb | 115 | 0.030 | 299 | 11.00 | | |
| 137 | Ba | 115 | 0.204 | 451 | 2.13 | | |
| 205 | Tl | 209 | 0.003 | 104 | 45.29 | | |
| 208 | Pb | 209 | 0.157 | 5751 | 0.81 | | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 878965 | 1.21 | 904202 | 97.21 | 70 | 120 | |
| 72 | Ge | 651509 | 0.79 | 677615 | 96.15 | 70 | 120 | |
| 115 | In | 6191927 | 1.98 | 6287303 | 98.48 | 70 | 120 | |
| 209 | Bi | 14143847 | 1.85 | 14081817 | 100.44 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 15:49 | Sample Name | LCS-75166 |
| Data Batch | 160523.b | Comment | LCS ICPMS_TSDOD1 |
| Data File Name | 142_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 207.948 | 8170 | 1.78 | 200 | 104.0 | 80 | 120 | |
| 9 | Be | 45 | 198.684 | 10304 | 1.79 | 200 | 99.3 | 80 | 120 | |
| 11 | B | 45 | 192.876 | 3848 | 0.55 | 200 | 96.4 | 80 | 120 | |
| 23 | Na | 45 | 5155.569 | 3691614 | 0.92 | 1000 | 515.6 | 80 | 120 | Fail |
| 24 | Mg | 45 | 5111.433 | 1827066 | 1.09 | 1000 | 511.1 | 80 | 120 | Fail |
| 27 | Al | 45 | 1002.572 | 134560 | 0.61 | 1000 | 100.3 | 80 | 120 | |
| 39 | K | 45 | 5183.099 | 1938014 | 0.56 | 1000 | 518.3 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4943.867 | 97982 | 0.77 | 1000 | 494.4 | 80 | 120 | Fail |
| 47 | Ti | 45 | 201.209 | 27486 | 0.97 | 200 | 100.6 | 80 | 120 | |
| 51 | V | 45 | 203.634 | 903493 | 0.35 | 200 | 101.8 | 80 | 120 | |
| 52 | Cr | 45 | 204.347 | 1070602 | 0.72 | 200 | 102.2 | 80 | 120 | |
| 55 | Mn | 45 | 200.666 | 596028 | 0.29 | 200 | 100.3 | 80 | 120 | |
| 56 | Fe | 45 | 1017.427 | 4536062 | 0.11 | 1000 | 101.7 | 80 | 120 | |
| 59 | Co | 72 | 200.799 | 1720585 | 0.37 | 200 | 100.4 | 80 | 120 | |
| 60 | Ni | 72 | 203.573 | 464011 | 0.93 | 200 | 101.8 | 80 | 120 | |
| 63 | Cu | 72 | 205.503 | 1271804 | 0.59 | 200 | 102.8 | 80 | 120 | |
| 66 | Zn | 72 | 203.344 | 219177 | 0.62 | 200 | 101.7 | 80 | 120 | |
| 75 | As | 72 | 199.647 | 183258 | 0.67 | 200 | 99.8 | 80 | 120 | |
| 78 | Se | 72 | 200.329 | 10960 | 1.59 | 200 | 100.2 | 80 | 120 | |
| 88 | Sr | 115 | 192.278 | 820227 | 0.71 | 200 | 96.1 | 80 | 120 | |
| 95 | Mo | 115 | 196.170 | 696988 | 1.00 | 200 | 98.1 | 80 | 120 | |
| 107 | Ag | 115 | 197.789 | 2184878 | 1.25 | 200 | 98.9 | 80 | 120 | |
| 111 | Cd | 115 | 193.418 | 322517 | 0.44 | 200 | 96.7 | 80 | 120 | |
| 118 | Sn | 115 | 201.701 | 719190 | 0.37 | 200 | 100.9 | 80 | 120 | |
| 121 | Sb | 115 | 196.893 | 1093344 | 0.51 | 200 | 98.4 | 80 | 120 | |
| 137 | Ba | 115 | 192.616 | 340991 | 0.96 | 200 | 96.3 | 80 | 120 | |
| 205 | Tl | 209 | 197.060 | 4607380 | 0.67 | 200 | 98.5 | 80 | 120 | |
| 208 | Pb | 209 | 196.878 | 6195669 | 0.49 | 200 | 98.4 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 877087 | 0.97 | 904202 | 97.00 | 70 | 120 | |
| 72 | Ge | 659875 | 0.44 | 677615 | 97.38 | 70 | 120 | |
| 115 | In | 6149834 | 0.40 | 6287303 | 97.81 | 70 | 120 | |
| 209 | Bi | 13601586 | 1.61 | 14081817 | 96.59 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 15:51 | Sample Name | LCSD-75166 |
| Data Batch | 160523.b | Comment | LCSDICPMS_TSDOD1 |
| Data File Name | 143_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 204.335 | 8193 | 3.06 | 200 | 102.2 | 80 | 120 | |
| 9 | Be | 45 | 201.593 | 10668 | 0.65 | 200 | 100.8 | 80 | 120 | |
| 11 | B | 45 | 200.198 | 4069 | 1.23 | 200 | 100.1 | 80 | 120 | |
| 23 | Na | 45 | 5193.381 | 3794606 | 0.65 | 1000 | 519.3 | 80 | 120 | Fail |
| 24 | Mg | 45 | 5133.228 | 1872503 | 0.74 | 1000 | 513.3 | 80 | 120 | Fail |
| 27 | Al | 45 | 1016.812 | 139232 | 0.29 | 1000 | 101.7 | 80 | 120 | |
| 39 | K | 45 | 5227.181 | 1993943 | 0.15 | 1000 | 522.7 | 80 | 120 | Fail |
| 44 | Ca | 45 | 5003.936 | 101191 | 1.10 | 1000 | 500.4 | 80 | 120 | Fail |
| 47 | Ti | 45 | 199.178 | 27765 | 2.51 | 200 | 99.6 | 80 | 120 | |
| 51 | V | 45 | 204.723 | 926895 | 0.70 | 200 | 102.4 | 80 | 120 | |
| 52 | Cr | 45 | 203.940 | 1090293 | 0.08 | 200 | 102.0 | 80 | 120 | |
| 55 | Mn | 45 | 201.479 | 610672 | 0.45 | 200 | 100.7 | 80 | 120 | |
| 56 | Fe | 45 | 1025.796 | 4666666 | 0.59 | 1000 | 102.6 | 80 | 120 | |
| 59 | Co | 72 | 204.728 | 1764922 | 0.88 | 200 | 102.4 | 80 | 120 | |
| 60 | Ni | 72 | 206.091 | 472589 | 0.66 | 200 | 103.0 | 80 | 120 | |
| 63 | Cu | 72 | 208.065 | 1295444 | 0.24 | 200 | 104.0 | 80 | 120 | |
| 66 | Zn | 72 | 206.512 | 223936 | 0.26 | 200 | 103.3 | 80 | 120 | |
| 75 | As | 72 | 203.805 | 188205 | 0.37 | 200 | 101.9 | 80 | 120 | |
| 78 | Se | 72 | 205.283 | 11296 | 0.93 | 200 | 102.6 | 80 | 120 | |
| 88 | Sr | 115 | 193.396 | 838582 | 0.88 | 200 | 96.7 | 80 | 120 | |
| 95 | Mo | 115 | 198.635 | 717296 | 0.58 | 200 | 99.3 | 80 | 120 | |
| 107 | Ag | 115 | 200.953 | 2256282 | 0.67 | 200 | 100.5 | 80 | 120 | |
| 111 | Cd | 115 | 197.139 | 334083 | 0.18 | 200 | 98.6 | 80 | 120 | |
| 118 | Sn | 115 | 203.710 | 738324 | 1.32 | 200 | 101.9 | 80 | 120 | |
| 121 | Sb | 115 | 199.567 | 1126349 | 0.51 | 200 | 99.8 | 80 | 120 | |
| 137 | Ba | 115 | 194.023 | 349162 | 1.37 | 200 | 97.0 | 80 | 120 | |
| 205 | Tl | 209 | 198.989 | 4742396 | 1.01 | 200 | 99.5 | 80 | 120 | |
| 208 | Pb | 209 | 196.007 | 6287483 | 0.16 | 200 | 98.0 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 894965 | 0.48 | 904202 | 98.98 | 70 | 120 | |
| 72 | Ge | 663891 | 0.76 | 677615 | 97.97 | 70 | 120 | |
| 115 | In | 6254886 | 3.51 | 6287303 | 99.48 | 70 | 120 | |
| 209 | Bi | 13864773 | 1.57 | 14081817 | 98.46 | 70 | 120 | |

# Dilution Sample (Dil) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 15:57 | Sample Name | 1605096-14A SD |
| Data Batch | 160523.b | Comment | SD ICPMS_TSDOD1 |
| Data File Name | 146_SD.d | Dilution | 25 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Value | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 11.528 | 497 | 7.25 | 52.7 | 109.3 | 110 | 90 | Good |
| 9 | Be | 45 | 0.577 | 35 | 11.66 | 2.2 | 130.5 | 110 | 90 | |
| 11 | B | 45 | 15.750 | 503 | 8.27 | 73.7 | 106.9 | 110 | 90 | Good |
| 23 | Na | 45 | 139.494 | 140955 | 1.18 | 704.0 | 99.1 | 110 | 90 | Good |
| 24 | Mg | 45 | 2654.984 | 1013647 | 1.57 | 12987.5 | 102.2 | 110 | 90 | Good |
| 27 | Al | 45 | 9896.037 | 1396139 | 0.73 | 48433.4 | 102.2 | 110 | 90 | Good |
| 39 | K | 45 | 3111.293 | 1264171 | 0.67 | 15746.6 | 98.8 | 110 | 90 | Good |
| 44 | Ca | 45 | 23643.837 | 496219 | 1.18 | 115495.2 | 102.4 | 110 | 90 | Good |
| 47 | Ti | 45 | 171.703 | 25024 | 2.55 | 834.8 | 102.8 | 110 | 90 | Good |
| 51 | V | 45 | 21.477 | 105621 | 0.86 | 108.8 | 98.7 | 110 | 90 | Good |
| 52 | Cr | 45 | 12.931 | 73387 | 1.23 | 62.4 | 103.7 | 110 | 90 | Good |
| 55 | Mn | 45 | 161.802 | 512817 | 1.09 | 789.6 | 102.5 | 110 | 90 | Good |
| 56 | Fe | 45 | 11960.609 | 56765791 | 1.52 | 58641.4 | 102.0 | 110 | 90 | Good |
| 59 | Co | 72 | 3.839 | 34227 | 1.98 | 18.4 | 104.5 | 110 | 90 | Good |
| 60 | Ni | 72 | 7.443 | 18396 | 1.62 | 35.6 | 104.5 | 110 | 90 | Good |
| 63 | Cu | 72 | 17.759 | 115451 | 0.98 | 82.5 | 107.6 | 110 | 90 | Good |
| 66 | Zn | 72 | 90.880 | 101806 | 0.96 | 434.2 | 104.7 | 110 | 90 | Good |
| 75 | As | 72 | 3.391 | 3418 | 1.59 | 16.7 | 101.5 | 110 | 90 | Good |
| 78 | Se | 72 | 1.081 | 156 | 5.99 | 4.2 | 127.6 | 110 | 90 | |
| 88 | Sr | 115 | 88.168 | 396213 | 1.23 | 436.1 | 101.1 | 110 | 90 | Good |
| 95 | Mo | 115 | 0.428 | 1637 | 0.20 | 2.2 | 98.5 | 110 | 90 | Good |
| 107 | Ag | 115 | 0.079 | 956 | 5.36 | 0.3 | 140.0 | 110 | 90 | |
| 111 | Cd | 115 | 0.242 | 428 | 10.92 | 1.2 | 103.2 | 110 | 90 | Good |
| 118 | Sn | 115 | 2.655 | 10474 | 2.37 | 8.4 | 158.6 | 110 | 90 | |
| 121 | Sb | 115 | 0.501 | 3066 | 1.38 | 2.2 | 112.3 | 110 | 90 | |
| 137 | Ba | 115 | 124.660 | 232139 | 1.22 | 617.0 | 101.0 | 110 | 90 | Good |
| 205 | Tl | 209 | 0.097 | 2505 | 4.58 | 0.5 | 100.2 | 110 | 90 | Good |
| 208 | Pb | 209 | 25.863 | 886272 | 0.47 | 132.5 | 97.6 | 110 | 90 | Good |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 935754 | 0.55 | 904202 | 103.49 | 70 | 120 | |
| 72 | Ge | 684430 | 0.15 | 677615 | 101.01 | 70 | 120 | |
| 115 | In | 6468753 | 1.66 | 6287303 | 102.89 | 70 | 120 | |
| 209 | Bi | 14800704 | 1.23 | 14081817 | 105.11 | 70 | 120 | |

# Post Digestion Spike Sample (PDS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 16:17 | Sample Name | 1605096-14A PDS |
| Data Batch | 160523.b | Comment | PDS ICPMS_TSDOD1 |
| Data File Name | 156_PDS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 245.404 | 10228 | 1.48 | 52.7 | 200 | 96.3 | 75 | 125 | |
| 9 | Be | 45 | 199.517 | 10977 | 1.06 | 2.2 | 200 | 98.7 | 75 | 125 | |
| 11 | B | 45 | 270.341 | 5650 | 3.22 | 73.7 | 200 | 98.3 | 75 | 125 | |
| 23 | Na | 45 | 5623.265 | 4269100 | 0.70 | 704.0 | 5000 | 98.4 | 75 | 125 | |
| 24 | Mg | 45 | 18216.224 | 6903524 | 1.37 | 12987.5 | 5000 | 104.6 | 75 | 125 | |
| 27 | Al | 45 | 54404.618 | 7621995 | 1.60 | 48433.4 | 5000 | 119.4 | 75 | 125 | |
| 39 | K | 45 | 21486.144 | 8344396 | 2.58 | 15746.6 | 5000 | 114.8 | 75 | 125 | |
| 44 | Ca | 45 | ######## | 2541806 | 0.68 | 115495.2 | 5000 | 129.9 | 75 | 125 | Fail |
| 47 | Ti | 45 | 1045.654 | 151532 | 0.78 | 834.8 | 200 | 105.4 | 75 | 125 | |
| 51 | V | 45 | 309.960 | 1456838 | 0.43 | 108.8 | 200 | 100.6 | 75 | 125 | |
| 52 | Cr | 45 | 262.672 | 1459758 | 0.81 | 62.4 | 200 | 100.2 | 75 | 125 | |
| 55 | Mn | 45 | 978.589 | 3083076 | 0.85 | 789.6 | 200 | 94.5 | 75 | 125 | |
| 56 | Fe | 45 | 63561.735 | 299932584 | 0.73 | 58641.4 | 5000 | 98.4 | 75 | 125 | |
| 59 | Co | 72 | 218.049 | 1899596 | 0.24 | 18.4 | 200 | 99.8 | 75 | 125 | |
| 60 | Ni | 72 | 234.483 | 543250 | 0.41 | 35.6 | 200 | 99.4 | 75 | 125 | |
| 63 | Cu | 72 | 282.575 | 1777389 | 0.08 | 82.5 | 200 | 100.0 | 75 | 125 | |
| 66 | Zn | 72 | 642.086 | 702855 | 0.91 | 434.2 | 200 | 103.9 | 75 | 125 | |
| 75 | As | 72 | 218.691 | 204068 | 0.53 | 16.7 | 200 | 101.0 | 75 | 125 | |
| 78 | Se | 72 | 205.521 | 11428 | 1.15 | 4.2 | 200 | 100.6 | 75 | 125 | |
| 88 | Sr | 115 | 637.197 | 2782051 | 0.38 | 436.1 | 200 | 100.5 | 75 | 125 | |
| 95 | Mo | 115 | 194.420 | 707660 | 0.65 | 2.2 | 200 | 96.1 | 75 | 125 | |
| 107 | Ag | 115 | 188.010 | 2127744 | 0.55 | 0.3 | 200 | 93.9 | 75 | 125 | |
| 111 | Cd | 115 | 189.397 | 323541 | 0.81 | 1.2 | 200 | 94.1 | 75 | 125 | |
| 118 | Sn | 115 | 209.409 | 764897 | 0.42 | 8.4 | 200 | 100.5 | 75 | 125 | |
| 121 | Sb | 115 | 190.568 | 1084058 | 1.01 | 2.2 | 200 | 94.2 | 75 | 125 | |
| 137 | Ba | 115 | 823.706 | 1493582 | 0.90 | 617.0 | 200 | 103.4 | 75 | 125 | |
| 205 | Tl | 209 | 195.125 | 4635970 | 0.82 | 0.5 | 200 | 97.3 | 75 | 125 | |
| 208 | Pb | 209 | 329.933 | 10550697 | 0.69 | 132.5 | 200 | 98.7 | 75 | 125 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 930513 | 0.23 | 904202 | 102.91 | 70 | 120 | |
| 72 | Ge | 670917 | 0.79 | 677615 | 99.01 | 70 | 120 | |
| 115 | In | 6300237 | 0.53 | 6287303 | 100.21 | 70 | 120 | |
| 209 | Bi | 13822083 | 1.80 | 14081817 | 98.16 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 16:19 | Sample Name | 1605096-14A MS |
| Data Batch | 160523.b | Comment | MS ICPMS_TSDOD1 |
| Data File Name | 157_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 244.612 | 10207 | 0.86 | 52.7 | 200 | 95.9 | 80 | 120 | |
| 9 | Be | 45 | 197.225 | 10864 | 1.35 | 2.2 | 200 | 97.5 | 80 | 120 | |
| 11 | B | 45 | 277.450 | 5800 | 3.19 | 73.7 | 200 | 101.9 | 80 | 120 | |
| 23 | Na | 45 | 5627.974 | 4277525 | 0.16 | 704.0 | 1000 | 492.4 | 80 | 120 | Fail |
| 24 | Mg | 45 | 17714.552 | 6721221 | 0.55 | 12987.5 | 1000 | 472.7 | 80 | 120 | Fail |
| 27 | Al | 45 | 52185.867 | 7319600 | 1.58 | 48433.4 | 1000 | 375.2 | 80 | 120 | Fail |
| 39 | K | 45 | 20690.666 | 8046586 | 1.10 | 15746.6 | 1000 | 494.4 | 80 | 120 | Fail |
| 44 | Ca | 45 | ######## | 2457009 | 0.39 | 115495.2 | 1000 | 229.2 | 80 | 120 | Fail |
| 47 | Ti | 45 | 1035.933 | 150296 | 0.85 | 834.8 | 200 | 100.6 | 80 | 120 | |
| 51 | V | 45 | 304.698 | 1433825 | 0.62 | 108.8 | 200 | 98.0 | 80 | 120 | |
| 52 | Cr | 45 | 255.262 | 1420215 | 0.67 | 62.4 | 200 | 96.4 | 80 | 120 | |
| 55 | Mn | 45 | 955.520 | 3013815 | 0.32 | 789.6 | 200 | 83.0 | 80 | 120 | |
| 56 | Fe | 45 | 57857.319 | 273328300 | 0.76 | 58641.4 | 1000 | -78.4 | 80 | 120 | Fail |
| 59 | Co | 72 | 217.759 | 1898829 | 0.36 | 18.4 | 200 | 99.7 | 80 | 120 | |
| 60 | Ni | 72 | 236.854 | 549273 | 0.69 | 35.6 | 200 | 100.6 | 80 | 120 | |
| 63 | Cu | 72 | 298.545 | 1879542 | 0.14 | 82.5 | 200 | 108.0 | 80 | 120 | |
| 66 | Zn | 72 | 624.296 | 684050 | 0.42 | 434.2 | 200 | 95.1 | 80 | 120 | |
| 75 | As | 72 | 215.625 | 201404 | 0.78 | 16.7 | 200 | 99.5 | 80 | 120 | |
| 78 | Se | 72 | 203.708 | 11339 | 1.92 | 4.2 | 200 | 99.7 | 80 | 120 | |
| 88 | Sr | 115 | 628.822 | 2738648 | 1.11 | 436.1 | 200 | 96.4 | 80 | 120 | |
| 95 | Mo | 115 | 185.280 | 672701 | 0.52 | 2.2 | 200 | 91.6 | 80 | 120 | |
| 107 | Ag | 115 | 194.941 | 2200533 | 0.80 | 0.3 | 200 | 97.3 | 80 | 120 | |
| 111 | Cd | 115 | 190.934 | 325338 | 0.84 | 1.2 | 200 | 94.9 | 80 | 120 | |
| 118 | Sn | 115 | 199.686 | 727562 | 0.32 | 8.4 | 200 | 95.7 | 80 | 120 | |
| 121 | Sb | 115 | 59.202 | 336028 | 0.36 | 2.2 | 200 | 28.5 | 80 | 120 | Fail |
| 137 | Ba | 115 | 827.551 | 1496760 | 0.31 | 617.0 | 200 | 105.3 | 80 | 120 | |
| 205 | Tl | 209 | 194.350 | 4658196 | 0.94 | 0.5 | 200 | 96.9 | 80 | 120 | |
| 208 | Pb | 209 | 315.725 | 10185025 | 0.58 | 132.5 | 200 | 91.6 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 931578 | 0.19 | 904202 | 103.03 | 70 | 120 | |
| 72 | Ge | 671538 | 0.51 | 677615 | 99.10 | 70 | 120 | |
| 115 | In | 6284207 | 0.40 | 6287303 | 99.95 | 70 | 120 | |
| 209 | Bi | 13942023 | 0.58 | 14081817 | 99.01 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 16:21 | Sample Name | 1605096-14A MSD |
| Data Batch | 160523.b | Comment | MSD ICPMS_TSDOD1 |
| Data File Name | 158_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 247.671 | 10039 | 2.56 | 52.7 | 200 | 97.5 | 80 | 120 | |
| 9 | Be | 45 | 197.835 | 10584 | 0.75 | 2.2 | 200 | 97.8 | 80 | 120 | |
| 11 | B | 45 | 269.082 | 5470 | 3.61 | 73.7 | 200 | 97.7 | 80 | 120 | |
| 23 | Na | 45 | 5697.707 | 4206117 | 1.20 | 704.0 | 1000 | 499.4 | 80 | 120 | Fail |
| 24 | Mg | 45 | 17828.561 | 6570853 | 1.39 | 12987.5 | 1000 | 484.1 | 80 | 120 | Fail |
| 27 | Al | 45 | 50819.117 | 6924180 | 1.86 | 48433.4 | 1000 | 238.6 | 80 | 120 | Fail |
| 39 | K | 45 | 20641.082 | 7798606 | 2.79 | 15746.6 | 1000 | 489.5 | 80 | 120 | Fail |
| 44 | Ca | 45 | ######## | 2361699 | 1.24 | 115495.2 | 1000 | 106.4 | 80 | 120 | |
| 47 | Ti | 45 | 1020.817 | 143851 | 0.32 | 834.8 | 200 | 93.0 | 80 | 120 | |
| 51 | V | 45 | 305.069 | 1394447 | 1.80 | 108.8 | 200 | 98.1 | 80 | 120 | |
| 52 | Cr | 45 | 256.723 | 1387337 | 0.67 | 62.4 | 200 | 97.2 | 80 | 120 | |
| 55 | Mn | 45 | 972.117 | 2978112 | 0.54 | 789.6 | 200 | 91.3 | 80 | 120 | |
| 56 | Fe | 45 | 57321.948 | 263008416 | 1.36 | 58641.4 | 1000 | -131.9 | 80 | 120 | Fail |
| 59 | Co | 72 | 217.109 | 1862926 | 0.73 | 18.4 | 200 | 99.4 | 80 | 120 | |
| 60 | Ni | 72 | 232.439 | 530427 | 0.97 | 35.6 | 200 | 98.4 | 80 | 120 | |
| 63 | Cu | 72 | 304.967 | 1889278 | 0.52 | 82.5 | 200 | 111.2 | 80 | 120 | |
| 66 | Zn | 72 | 619.451 | 667900 | 0.54 | 434.2 | 200 | 92.6 | 80 | 120 | |
| 75 | As | 72 | 214.784 | 197415 | 0.42 | 16.7 | 200 | 99.0 | 80 | 120 | |
| 78 | Se | 72 | 200.099 | 10963 | 0.85 | 4.2 | 200 | 97.9 | 80 | 120 | |
| 88 | Sr | 115 | 609.818 | 2617789 | 0.79 | 436.1 | 200 | 86.8 | 80 | 120 | |
| 95 | Mo | 115 | 185.250 | 663008 | 1.33 | 2.2 | 200 | 91.5 | 80 | 120 | |
| 107 | Ag | 115 | 192.448 | 2141521 | 0.75 | 0.3 | 200 | 96.1 | 80 | 120 | |
| 111 | Cd | 115 | 190.245 | 319542 | 0.46 | 1.2 | 200 | 94.5 | 80 | 120 | |
| 118 | Sn | 115 | 199.877 | 717829 | 0.96 | 8.4 | 200 | 95.8 | 80 | 120 | |
| 121 | Sb | 115 | 60.891 | 340674 | 0.60 | 2.2 | 200 | 29.3 | 80 | 120 | Fail |
| 137 | Ba | 115 | 790.186 | 1408730 | 0.92 | 617.0 | 200 | 86.6 | 80 | 120 | |
| 205 | Tl | 209 | 193.716 | 4542508 | 0.26 | 0.5 | 200 | 96.6 | 80 | 120 | |
| 208 | Pb | 209 | 317.450 | 10019560 | 0.71 | 132.5 | 200 | 92.5 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 904917 | 1.27 | 904202 | 100.08 | 70 | 120 | |
| 72 | Ge | 660807 | 0.35 | 677615 | 97.52 | 70 | 120 | |
| 115 | In | 6195299 | 1.47 | 6287303 | 98.54 | 70 | 120 | |
| 209 | Bi | 13642424 | 1.60 | 14081817 | 96.88 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 16:23 | Sample Name | CCV5-160523 |
| Data Batch | 160523.b | Comment | CCV ICPMS_TW |
| Data File Name | 159_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 201.797 | 8150 | 2.37 | 200 | 100.9 | 90 | 110 | |
| 9 | Be | 45 | 196.877 | 10493 | 1.23 | 200 | 98.4 | 90 | 110 | |
| 11 | B | 45 | 198.177 | 4059 | 5.38 | 200 | 99.1 | 90 | 110 | |
| 23 | Na | 45 | 4976.757 | 3663521 | 0.74 | 5000 | 99.5 | 90 | 110 | |
| 24 | Mg | 45 | 4937.444 | 1813963 | 0.47 | 5000 | 98.7 | 90 | 110 | |
| 27 | Al | 45 | 4819.253 | 656082 | 0.90 | 5000 | 96.4 | 90 | 110 | |
| 39 | K | 45 | 5027.576 | 1933611 | 0.61 | 5000 | 100.6 | 90 | 110 | |
| 44 | Ca | 45 | 4805.025 | 97895 | 0.37 | 5000 | 96.1 | 90 | 110 | |
| 47 | Ti | 45 | 196.909 | 27644 | 1.72 | 200 | 98.5 | 90 | 110 | |
| 51 | V | 45 | 198.178 | 903790 | 1.09 | 200 | 99.1 | 90 | 110 | |
| 52 | Cr | 45 | 197.990 | 1066066 | 0.68 | 200 | 99.0 | 90 | 110 | |
| 55 | Mn | 45 | 195.106 | 595560 | 0.64 | 200 | 97.6 | 90 | 110 | |
| 56 | Fe | 45 | 5049.359 | 23088207 | 1.53 | 5000 | 101.0 | 90 | 110 | |
| 59 | Co | 72 | 200.915 | 1732093 | 0.53 | 200 | 100.5 | 90 | 110 | |
| 60 | Ni | 72 | 203.541 | 466763 | 0.17 | 200 | 101.8 | 90 | 110 | |
| 63 | Cu | 72 | 207.256 | 1290479 | 0.16 | 200 | 103.6 | 90 | 110 | |
| 66 | Zn | 72 | 202.683 | 219802 | 0.29 | 200 | 101.3 | 90 | 110 | |
| 75 | As | 72 | 200.409 | 185082 | 0.40 | 200 | 100.2 | 90 | 110 | |
| 78 | Se | 72 | 201.384 | 11084 | 1.35 | 200 | 100.7 | 90 | 110 | |
| 88 | Sr | 115 | 187.014 | 817186 | 0.60 | 200 | 93.5 | 90 | 110 | |
| 95 | Mo | 115 | 191.483 | 696865 | 0.86 | 200 | 95.7 | 90 | 110 | |
| 107 | Ag | 115 | 194.689 | 2202905 | 1.01 | 200 | 97.3 | 90 | 110 | |
| 111 | Cd | 115 | 190.082 | 324655 | 0.55 | 200 | 95.0 | 90 | 110 | |
| 118 | Sn | 115 | 190.638 | 696264 | 1.24 | 200 | 95.3 | 90 | 110 | |
| 121 | Sb | 115 | 191.417 | 1088725 | 1.11 | 200 | 95.7 | 90 | 110 | |
| 137 | Ba | 115 | 188.682 | 342151 | 0.42 | 200 | 94.3 | 90 | 110 | |
| 205 | Tl | 209 | 193.509 | 4585568 | 0.55 | 200 | 96.8 | 90 | 110 | |
| 208 | Pb | 209 | 190.469 | 6075123 | 0.18 | 200 | 95.2 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 901346 | 0.71 | 904202 | 99.68 | 70 | 120 | |
| 72 | Ge | 663913 | 0.54 | 677615 | 97.98 | 70 | 120 | |
| 115 | In | 6299760 | 0.93 | 6287303 | 100.20 | 70 | 120 | |
| 209 | Bi | 13784027 | 0.52 | 14081817 | 97.89 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 16:27 | Sample Name | LCVL5-160523 |
| Data Batch | 160523.b | Comment | LCVLICPMS_TW |
| Data File Name | 161LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.724 | 440 | 9.97 | 10 | 107.2 | 70 | 130 | |
| 9 | Be | 45 | 1.100 | 60 | 6.90 | 1 | 110.0 | 70 | 130 | |
| 11 | B | 45 | 24.629 | 649 | 6.42 | 20 | 123.1 | 70 | 130 | |
| 23 | Na | 45 | 102.503 | 107134 | 1.32 | 100 | 102.5 | 70 | 130 | |
| 24 | Mg | 45 | 97.436 | 37159 | 0.90 | 100 | 97.4 | 70 | 130 | |
| 27 | Al | 45 | 101.392 | 15793 | 1.13 | 100 | 101.4 | 70 | 130 | |
| 39 | K | 45 | 109.100 | 94597 | 1.57 | 100 | 109.1 | 70 | 130 | |
| 44 | Ca | 45 | 92.280 | 2778 | 0.81 | 100 | 92.3 | 70 | 130 | |
| 47 | Ti | 45 | 5.547 | 769 | 1.75 | 5 | 110.9 | 70 | 130 | |
| 51 | V | 45 | 0.660 | 7137 | 5.42 | 1 | 66.0 | 70 | 130 | Fail |
| 52 | Cr | 45 | 5.126 | 28276 | 2.20 | 5 | 102.5 | 70 | 130 | |
| 55 | Mn | 45 | 4.994 | 15216 | 0.46 | 5 | 99.9 | 70 | 130 | |
| 56 | Fe | 45 | 101.150 | 466646 | 0.69 | 100 | 101.1 | 70 | 130 | |
| 59 | Co | 72 | 4.978 | 43366 | 1.63 | 5 | 99.6 | 70 | 130 | |
| 60 | Ni | 72 | 4.836 | 11971 | 1.40 | 5 | 96.7 | 70 | 130 | |
| 63 | Cu | 72 | 5.568 | 36469 | 2.25 | 5 | 111.4 | 70 | 130 | |
| 66 | Zn | 72 | 5.085 | 5910 | 3.83 | 5 | 101.7 | 70 | 130 | |
| 75 | As | 72 | 4.947 | 4790 | 1.29 | 5 | 98.9 | 70 | 130 | |
| 78 | Se | 72 | 5.269 | 383 | 8.23 | 5 | 105.4 | 70 | 130 | |
| 88 | Sr | 115 | 4.825 | 21939 | 1.76 | 5 | 96.5 | 70 | 130 | |
| 95 | Mo | 115 | 4.719 | 17039 | 2.04 | 5 | 94.4 | 70 | 130 | |
| 107 | Ag | 115 | 1.962 | 22013 | 0.89 | 2 | 98.1 | 70 | 130 | |
| 111 | Cd | 115 | 0.947 | 1605 | 2.58 | 1 | 94.7 | 70 | 130 | |
| 118 | Sn | 115 | 4.865 | 18086 | 2.42 | 5 | 97.3 | 70 | 130 | |
| 121 | Sb | 115 | 1.992 | 11353 | 3.07 | 2 | 99.6 | 70 | 130 | |
| 137 | Ba | 115 | 4.821 | 8743 | 3.51 | 5 | 96.4 | 70 | 130 | |
| 205 | Tl | 209 | 0.988 | 23107 | 1.02 | 1 | 98.8 | 70 | 130 | |
| 208 | Pb | 209 | 1.036 | 33130 | 0.67 | 1 | 103.6 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 887680 | 0.82 | 904202 | 98.17 | 70 | 120 | |
| 72 | Ge | 669269 | 0.79 | 677615 | 98.77 | 70 | 120 | |
| 115 | In | 6237111 | 0.26 | 6287303 | 99.20 | 70 | 120 | |
| 209 | Bi | 13580613 | 0.47 | 14081817 | 96.44 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 16:29 | Sample Name | CCB5-160523 |
| Data Batch | 160523.b | Comment | CCB ICPMS_TW |
| Data File Name | 162_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.296 | 25 | 16.4 | 2 | 5 | |
| 9 | Be | 45 | 0.071 | 6 | 24.1 | 0.4 | 0.3 | |
| 11 | B | 45 | 2.737 | 226 | 12.3 | 10 | 10 | |
| 23 | Na | 45 | -3.403 | 30948 | 1.8 | 50 | 100 | |
| 24 | Mg | 45 | -2.653 | 981 | 5.1 | 50 | 100 | |
| 27 | Al | 45 | -0.539 | 2165 | 9.0 | 50 | 10 | |
| 39 | K | 45 | 4.480 | 55885 | 0.7 | 50 | 100 | |
| 44 | Ca | 45 | -4.459 | 852 | 6.1 | 50 | 100 | |
| 47 | Ti | 45 | 0.074 | 12 | 110.2 | 4 | 3 | |
| 51 | V | 45 | -0.363 | 2555 | 2.8 | 4 | 3 | |
| 52 | Cr | 45 | -0.049 | 857 | 8.8 | 2 | 2 | |
| 55 | Mn | 45 | 0.013 | 248 | 21.0 | 2 | 3 | |
| 56 | Fe | 45 | 1.109 | 16272 | 2.2 | 50 | 50 | |
| 59 | Co | 72 | 0.002 | 128 | 18.5 | 2 | 3 | |
| 60 | Ni | 72 | -0.220 | 302 | 6.7 | 2 | 3 | |
| 63 | Cu | 72 | 0.415 | 4162 | 12.5 | 2 | 2 | |
| 66 | Zn | 72 | 0.024 | 388 | 22.3 | 4 | 2 | |
| 75 | As | 72 | -0.015 | 175 | 18.1 | 2 | 2 | |
| 78 | Se | 72 | 0.223 | 105 | 14.7 | 1 | 2 | |
| 88 | Sr | 115 | 0.006 | 1129 | 8.5 | 4 | 3 | |
| 95 | Mo | 115 | 0.004 | 51 | 21.0 | 2 | 2 | |
| 107 | Ag | 115 | 0.050 | 603 | 0.6 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.006 | 14 | 74.2 | 0.4 | 0.3 | |
| 118 | Sn | 115 | 0.009 | 544 | 12.3 | 4 | 3 | |
| 121 | Sb | 115 | 0.082 | 598 | 35.5 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.016 | 120 | 7.3 | 2 | 3 | |
| 205 | Tl | 209 | 0.005 | 151 | 26.5 | 2 | 0.5 | |
| 208 | Pb | 209 | 0.039 | 1793 | 9.4 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 884168 | 0.99 | 904202 | 97.78 | 70 | 120 | |
| 72 | Ge | 669545 | 0.78 | 677615 | 98.81 | 70 | 120 | |
| 115 | In | 6304397 | 2.33 | 6287303 | 100.27 | 70 | 120 | |
| 209 | Bi | 13603427 | 0.19 | 14081817 | 96.60 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 16:51 | Sample Name | CCV6-160523 |
| Data Batch | 160523.b | Comment | CCV ICPMS_TW |
| Data File Name | 173_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 199.618 | 7993 | 0.77 | 200 | 99.8 | 90 | 110 | |
| 9 | Be | 45 | 197.514 | 10436 | 1.39 | 200 | 98.8 | 90 | 110 | |
| 11 | B | 45 | 193.491 | 3933 | 2.55 | 200 | 96.7 | 90 | 110 | |
| 23 | Na | 45 | 4985.344 | 3638590 | 0.29 | 5000 | 99.7 | 90 | 110 | |
| 24 | Mg | 45 | 4958.895 | 1806231 | 0.81 | 5000 | 99.2 | 90 | 110 | |
| 27 | Al | 45 | 4848.782 | 654436 | 0.18 | 5000 | 97.0 | 90 | 110 | |
| 39 | K | 45 | 5104.316 | 1945464 | 0.88 | 5000 | 102.1 | 90 | 110 | |
| 44 | Ca | 45 | 4864.857 | 98262 | 2.29 | 5000 | 97.3 | 90 | 110 | |
| 47 | Ti | 45 | 194.137 | 27021 | 0.38 | 200 | 97.1 | 90 | 110 | |
| 51 | V | 45 | 197.730 | 894015 | 1.00 | 200 | 98.9 | 90 | 110 | |
| 52 | Cr | 45 | 198.413 | 1059176 | 1.06 | 200 | 99.2 | 90 | 110 | |
| 55 | Mn | 45 | 195.173 | 590712 | 1.07 | 200 | 97.6 | 90 | 110 | |
| 56 | Fe | 45 | 5073.823 | 23004020 | 0.79 | 5000 | 101.5 | 90 | 110 | |
| 59 | Co | 72 | 198.650 | 1726060 | 0.37 | 200 | 99.3 | 90 | 110 | |
| 60 | Ni | 72 | 200.741 | 463981 | 0.69 | 200 | 100.4 | 90 | 110 | |
| 63 | Cu | 72 | 202.712 | 1272163 | 0.62 | 200 | 101.4 | 90 | 110 | |
| 66 | Zn | 72 | 199.720 | 218310 | 1.11 | 200 | 99.9 | 90 | 110 | |
| 75 | As | 72 | 199.230 | 185449 | 0.76 | 200 | 99.6 | 90 | 110 | |
| 78 | Se | 72 | 196.458 | 10901 | 1.67 | 200 | 98.2 | 90 | 110 | |
| 88 | Sr | 115 | 184.255 | 808441 | 0.40 | 200 | 92.1 | 90 | 110 | |
| 95 | Mo | 115 | 187.875 | 686533 | 0.29 | 200 | 93.9 | 90 | 110 | |
| 107 | Ag | 115 | 189.563 | 2153672 | 0.11 | 200 | 94.8 | 90 | 110 | |
| 111 | Cd | 115 | 186.691 | 320170 | 0.58 | 200 | 93.3 | 90 | 110 | |
| 118 | Sn | 115 | 188.825 | 692457 | 0.30 | 200 | 94.4 | 90 | 110 | |
| 121 | Sb | 115 | 189.705 | 1083421 | 0.25 | 200 | 94.9 | 90 | 110 | |
| 137 | Ba | 115 | 186.481 | 339530 | 0.28 | 200 | 93.2 | 90 | 110 | |
| 205 | Tl | 209 | 191.435 | 4485355 | 0.03 | 200 | 95.7 | 90 | 110 | |
| 208 | Pb | 209 | 189.668 | 5981566 | 0.61 | 200 | 94.8 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 893658 | 0.59 | 904202 | 98.83 | 70 | 120 | |
| 72 | Ge | 669154 | 0.61 | 677615 | 98.75 | 70 | 120 | |
| 115 | In | 6325246 | 1.02 | 6287303 | 100.60 | 70 | 120 | |
| 209 | Bi | 13630363 | 1.35 | 14081817 | 96.79 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 16:55 | Sample Name | LCVL6-160523 |
| Data Batch | 160523.b | Comment | LCVLICPMS_TW |
| Data File Name | 175LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.353 | 443 | 2.69 | 10 | 103.5 | 70 | 130 | |
| 9 | Be | 45 | 1.125 | 64 | 3.24 | 1 | 112.5 | 70 | 130 | |
| 11 | B | 45 | 22.576 | 636 | 3.97 | 20 | 112.9 | 70 | 130 | |
| 23 | Na | 45 | 98.461 | 108796 | 1.06 | 100 | 98.5 | 70 | 130 | |
| 24 | Mg | 45 | 96.118 | 38295 | 1.83 | 100 | 96.1 | 70 | 130 | |
| 27 | Al | 45 | 101.637 | 16516 | 1.57 | 100 | 101.6 | 70 | 130 | |
| 39 | K | 45 | 112.886 | 100213 | 1.19 | 100 | 112.9 | 70 | 130 | |
| 44 | Ca | 45 | 95.738 | 2970 | 4.49 | 100 | 95.7 | 70 | 130 | |
| 47 | Ti | 45 | 4.885 | 708 | 15.22 | 5 | 97.7 | 70 | 130 | |
| 51 | V | 45 | 0.622 | 7275 | 0.42 | 1 | 62.2 | 70 | 130 | Fail |
| 52 | Cr | 45 | 5.015 | 28896 | 1.97 | 5 | 100.3 | 70 | 130 | |
| 55 | Mn | 45 | 4.916 | 15640 | 0.90 | 5 | 98.3 | 70 | 130 | |
| 56 | Fe | 45 | 100.410 | 483601 | 0.30 | 100 | 100.4 | 70 | 130 | |
| 59 | Co | 72 | 5.001 | 45120 | 0.51 | 5 | 100.0 | 70 | 130 | |
| 60 | Ni | 72 | 4.910 | 12574 | 1.48 | 5 | 98.2 | 70 | 130 | |
| 63 | Cu | 72 | 5.625 | 38133 | 1.70 | 5 | 112.5 | 70 | 130 | |
| 66 | Zn | 72 | 5.045 | 6075 | 5.41 | 5 | 100.9 | 70 | 130 | |
| 75 | As | 72 | 4.934 | 4947 | 2.73 | 5 | 98.7 | 70 | 130 | |
| 78 | Se | 72 | 5.423 | 405 | 1.05 | 5 | 108.5 | 70 | 130 | |
| 88 | Sr | 115 | 4.820 | 22620 | 0.65 | 5 | 96.4 | 70 | 130 | |
| 95 | Mo | 115 | 4.763 | 17748 | 1.11 | 5 | 95.3 | 70 | 130 | |
| 107 | Ag | 115 | 1.957 | 22651 | 0.55 | 2 | 97.8 | 70 | 130 | |
| 111 | Cd | 115 | 0.960 | 1678 | 5.45 | 1 | 96.0 | 70 | 130 | |
| 118 | Sn | 115 | 4.829 | 18535 | 1.95 | 5 | 96.6 | 70 | 130 | |
| 121 | Sb | 115 | 1.950 | 11471 | 2.14 | 2 | 97.5 | 70 | 130 | |
| 137 | Ba | 115 | 4.887 | 9143 | 1.50 | 5 | 97.7 | 70 | 130 | |
| 205 | Tl | 209 | 0.944 | 23160 | 4.14 | 1 | 94.4 | 70 | 130 | |
| 208 | Pb | 209 | 0.979 | 32848 | 1.58 | 1 | 97.9 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 926678 | 1.52 | 904202 | 102.49 | 70 | 120 | |
| 72 | Ge | 693134 | 1.02 | 677615 | 102.29 | 70 | 120 | |
| 115 | In | 6437034 | 1.57 | 6287303 | 102.38 | 70 | 120 | |
| 209 | Bi | 14239865 | 0.96 | 14081817 | 101.12 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 16:57 | Sample Name | CCB6-160523 |
| Data Batch | 160523.b | Comment | CCB ICPMS_TW |
| Data File Name | 176_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.114 | 19 | 11.9 | 2 | 5 | |
| 9 | Be | 45 | 0.040 | 5 | 40.0 | 0.4 | 0.3 | |
| 11 | B | 45 | 2.945 | 244 | 13.5 | 10 | 10 | |
| 23 | Na | 45 | -4.919 | 31823 | 1.2 | 50 | 100 | |
| 24 | Mg | 45 | -2.947 | 932 | 11.6 | 50 | 100 | |
| 27 | Al | 45 | -0.446 | 2321 | 5.3 | 50 | 10 | |
| 39 | K | 45 | 6.363 | 60295 | 1.3 | 50 | 100 | |
| 44 | Ca | 45 | -8.640 | 820 | 3.1 | 50 | 100 | |
| 47 | Ti | 45 | 0.052 | 10 | 100.0 | 4 | 3 | |
| 51 | V | 45 | -0.367 | 2705 | 0.6 | 4 | 3 | |
| 52 | Cr | 45 | -0.052 | 899 | 12.1 | 2 | 2 | |
| 55 | Mn | 45 | -0.003 | 213 | 14.1 | 2 | 3 | |
| 56 | Fe | 45 | 1.484 | 19135 | 1.3 | 50 | 50 | |
| 59 | Co | 72 | -0.001 | 107 | 25.6 | 2 | 3 | |
| 60 | Ni | 72 | -0.247 | 251 | 32.0 | 2 | 3 | |
| 63 | Cu | 72 | 0.460 | 4655 | 4.3 | 2 | 2 | |
| 66 | Zn | 72 | -0.021 | 354 | 9.7 | 4 | 2 | |
| 75 | As | 72 | -0.038 | 160 | 11.9 | 2 | 2 | |
| 78 | Se | 72 | -0.002 | 97 | 19.7 | 1 | 2 | |
| 88 | Sr | 115 | 0.028 | 1266 | 4.1 | 4 | 3 | |
| 95 | Mo | 115 | 0.005 | 57 | 21.2 | 2 | 2 | |
| 107 | Ag | 115 | 0.032 | 407 | 10.7 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.006 | 13 | 86.6 | 0.4 | 0.3 | |
| 118 | Sn | 115 | -0.010 | 490 | 11.8 | 4 | 3 | |
| 121 | Sb | 115 | 0.051 | 441 | 21.6 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.008 | 108 | 38.7 | 2 | 3 | |
| 205 | Tl | 209 | 0.004 | 136 | 24.8 | 2 | 0.5 | |
| 208 | Pb | 209 | 0.020 | 1290 | 8.2 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 942195 | 0.40 | 904202 | 104.20 | 70 | 120 | |
| 72 | Ge | 701694 | 0.97 | 677615 | 103.55 | 70 | 120 | |
| 115 | In | 6516517 | 0.53 | 6287303 | 103.65 | 70 | 120 | |
| 209 | Bi | 14506116 | 2.14 | 14081817 | 103.01 | 70 | 120 | |

# Method Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 5:00 PM | Sample Name | MB-75237 |
| Data Batch | 160523.b | Comment | MBLKICPMS_TSDOD1 |
| Data File Name | 177_PB.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.070 | 18 | 27.92 | | |
| 9 | Be | 45 | 0.021 | 4 | 25.00 | | |
| 11 | B | 45 | 2.060 | 229 | 13.84 | | |
| 23 | Na | 45 | 0.292 | 36162 | 0.92 | | |
| 24 | Mg | 45 | -0.644 | 1835 | 3.95 | | |
| 27 | Al | 45 | -5.658 | 1599 | 5.30 | | |
| 39 | K | 45 | 11.858 | 63080 | 0.22 | | |
| 44 | Ca | 45 | 1.972 | 1055 | 9.35 | | |
| 47 | Ti | 45 | 0.194 | 31 | 43.29 | | |
| 51 | V | 45 | -0.372 | 2708 | 2.10 | | |
| 52 | Cr | 45 | 0.148 | 2040 | 4.27 | | |
| 55 | Mn | 45 | 0.112 | 587 | 10.97 | | |
| 56 | Fe | 45 | 4.785 | 35266 | 0.82 | | |
| 59 | Co | 72 | -0.001 | 107 | 17.40 | | |
| 60 | Ni | 72 | -0.093 | 624 | 6.14 | | |
| 63 | Cu | 72 | 0.461 | 4662 | 4.09 | | |
| 66 | Zn | 72 | 2.353 | 3067 | 1.07 | | |
| 75 | As | 72 | -0.038 | 161 | 5.82 | | |
| 78 | Se | 72 | 0.274 | 113 | 13.16 | | |
| 88 | Sr | 115 | -0.091 | 762 | 7.34 | | |
| 95 | Mo | 115 | 0.015 | 98 | 41.24 | | |
| 107 | Ag | 115 | 0.029 | 390 | 8.15 | | |
| 111 | Cd | 115 | 0.005 | 13 | 25.01 | | |
| 118 | Sn | 115 | 3.668 | 14964 | 1.84 | | |
| 121 | Sb | 115 | 0.033 | 349 | 3.86 | | |
| 137 | Ba | 115 | 0.046 | 187 | 7.79 | | |
| 205 | Tl | 209 | 0.001 | 81 | 23.37 | | |
| 208 | Pb | 209 | 0.037 | 1908 | 3.04 | | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 951924 | 0.92 | 904202 | 105.28 | 70 | 120 | |
| 72 | Ge | 700783 | 0.55 | 677615 | 103.42 | 70 | 120 | |
| 115 | In | 6783979 | 1.00 | 6287303 | 107.90 | 70 | 120 | |
| 209 | Bi | 14743945 | 2.17 | 14081817 | 104.70 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 17:02 | Sample Name | LCS-75237 |
| Data Batch | 160523.b | Comment | LCS ICPMS_TSDOD1 |
| Data File Name | 178_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 197.684 | 8380 | 0.28 | 200 | 98.8 | 80 | 120 | |
| 9 | Be | 45 | 195.117 | 10915 | 1.23 | 200 | 97.6 | 80 | 120 | |
| 11 | B | 45 | 189.083 | 4074 | 2.13 | 200 | 94.5 | 80 | 120 | |
| 23 | Na | 45 | 4898.684 | 3786115 | 0.77 | 1000 | 489.9 | 80 | 120 | Fail |
| 24 | Mg | 45 | 4838.884 | 1866165 | 0.57 | 1000 | 483.9 | 80 | 120 | Fail |
| 27 | Al | 45 | 994.213 | 143975 | 1.02 | 1000 | 99.4 | 80 | 120 | |
| 39 | K | 45 | 4995.467 | 2017164 | 0.77 | 1000 | 499.5 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4728.056 | 101137 | 1.34 | 1000 | 472.8 | 80 | 120 | Fail |
| 47 | Ti | 45 | 193.443 | 28508 | 1.42 | 200 | 96.7 | 80 | 120 | |
| 51 | V | 45 | 197.900 | 947354 | 0.57 | 200 | 98.9 | 80 | 120 | |
| 52 | Cr | 45 | 198.575 | 1122300 | 1.18 | 200 | 99.3 | 80 | 120 | |
| 55 | Mn | 45 | 195.132 | 625267 | 0.12 | 200 | 97.6 | 80 | 120 | |
| 56 | Fe | 45 | 980.027 | 4713976 | 0.43 | 1000 | 98.0 | 80 | 120 | |
| 59 | Co | 72 | 199.184 | 1797980 | 0.41 | 200 | 99.6 | 80 | 120 | |
| 60 | Ni | 72 | 201.772 | 484496 | 0.55 | 200 | 100.9 | 80 | 120 | |
| 63 | Cu | 72 | 203.903 | 1329384 | 0.21 | 200 | 102.0 | 80 | 120 | |
| 66 | Zn | 72 | 200.566 | 227744 | 0.87 | 200 | 100.3 | 80 | 120 | |
| 75 | As | 72 | 200.551 | 193929 | 0.50 | 200 | 100.3 | 80 | 120 | |
| 78 | Se | 72 | 197.561 | 11387 | 0.80 | 200 | 98.8 | 80 | 120 | |
| 88 | Sr | 115 | 186.175 | 849592 | 0.14 | 200 | 93.1 | 80 | 120 | |
| 95 | Mo | 115 | 189.371 | 719742 | 0.33 | 200 | 94.7 | 80 | 120 | |
| 107 | Ag | 115 | 189.068 | 2234183 | 1.18 | 200 | 94.5 | 80 | 120 | |
| 111 | Cd | 115 | 188.859 | 336866 | 0.34 | 200 | 94.4 | 80 | 120 | |
| 118 | Sn | 115 | 194.139 | 740501 | 0.90 | 200 | 97.1 | 80 | 120 | |
| 121 | Sb | 115 | 187.458 | 1113518 | 0.62 | 200 | 93.7 | 80 | 120 | |
| 137 | Ba | 115 | 188.577 | 357118 | 0.68 | 200 | 94.3 | 80 | 120 | |
| 205 | Tl | 209 | 192.347 | 4693739 | 0.92 | 200 | 96.2 | 80 | 120 | |
| 208 | Pb | 209 | 190.658 | 6262261 | 0.98 | 200 | 95.3 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 946195 | 0.89 | 904202 | 104.64 | 70 | 120 | |
| 72 | Ge | 695166 | 0.52 | 677615 | 102.59 | 70 | 120 | |
| 115 | In | 6578455 | 0.11 | 6287303 | 104.63 | 70 | 120 | |
| 209 | Bi | 14195010 | 1.46 | 14081817 | 100.80 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 17:04 | Sample Name | LCSD-75237 |
| Data Batch | 160523.b | Comment | LCSDICPMS_TSDOD1 |
| Data File Name | 179_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 205.014 | 8412 | 1.22 | 200 | 102.5 | 80 | 120 | |
| 9 | Be | 45 | 202.502 | 10965 | 1.43 | 200 | 101.3 | 80 | 120 | |
| 11 | B | 45 | 198.287 | 4126 | 1.36 | 200 | 99.1 | 80 | 120 | |
| 23 | Na | 45 | 5058.340 | 3783184 | 1.14 | 1000 | 505.8 | 80 | 120 | Fail |
| 24 | Mg | 45 | 4983.481 | 1860322 | 0.69 | 1000 | 498.3 | 80 | 120 | Fail |
| 27 | Al | 45 | 981.514 | 137618 | 1.34 | 1000 | 98.2 | 80 | 120 | |
| 39 | K | 45 | 5116.770 | 1998598 | 1.02 | 1000 | 511.7 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4882.345 | 101055 | 0.84 | 1000 | 488.2 | 80 | 120 | Fail |
| 47 | Ti | 45 | 198.487 | 28310 | 2.31 | 200 | 99.2 | 80 | 120 | |
| 51 | V | 45 | 204.500 | 947497 | 1.34 | 200 | 102.3 | 80 | 120 | |
| 52 | Cr | 45 | 205.194 | 1122588 | 0.66 | 200 | 102.6 | 80 | 120 | |
| 55 | Mn | 45 | 200.904 | 623135 | 0.49 | 200 | 100.5 | 80 | 120 | |
| 56 | Fe | 45 | 1011.560 | 4709606 | 1.08 | 1000 | 101.2 | 80 | 120 | |
| 59 | Co | 72 | 203.289 | 1810452 | 1.32 | 200 | 101.6 | 80 | 120 | |
| 60 | Ni | 72 | 206.823 | 489940 | 1.05 | 200 | 103.4 | 80 | 120 | |
| 63 | Cu | 72 | 206.229 | 1326514 | 0.27 | 200 | 103.1 | 80 | 120 | |
| 66 | Zn | 72 | 203.247 | 227697 | 1.08 | 200 | 101.6 | 80 | 120 | |
| 75 | As | 72 | 202.174 | 192880 | 0.96 | 200 | 101.1 | 80 | 120 | |
| 78 | Se | 72 | 198.954 | 11314 | 2.14 | 200 | 99.5 | 80 | 120 | |
| 88 | Sr | 115 | 191.734 | 847928 | 0.12 | 200 | 95.9 | 80 | 120 | |
| 95 | Mo | 115 | 194.941 | 718074 | 0.81 | 200 | 97.5 | 80 | 120 | |
| 107 | Ag | 115 | 194.527 | 2227737 | 0.22 | 200 | 97.3 | 80 | 120 | |
| 111 | Cd | 115 | 193.868 | 335118 | 0.49 | 200 | 96.9 | 80 | 120 | |
| 118 | Sn | 115 | 198.437 | 733478 | 1.37 | 200 | 99.2 | 80 | 120 | |
| 121 | Sb | 115 | 190.688 | 1097713 | 0.55 | 200 | 95.3 | 80 | 120 | |
| 137 | Ba | 115 | 194.250 | 356496 | 0.51 | 200 | 97.1 | 80 | 120 | |
| 205 | Tl | 209 | 195.393 | 4734724 | 0.06 | 200 | 97.7 | 80 | 120 | |
| 208 | Pb | 209 | 193.075 | 6297376 | 0.62 | 200 | 96.5 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 915836 | 0.53 | 904202 | 101.29 | 70 | 120 | |
| 72 | Ge | 685841 | 0.26 | 677615 | 101.21 | 70 | 120 | |
| 115 | In | 6375805 | 0.96 | 6287303 | 101.41 | 70 | 120 | |
| 209 | Bi | 14095896 | 1.05 | 14081817 | 100.10 | 70 | 120 | |

# Dilution Sample (Dil) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 17:10 | Sample Name | 1605121-01A SD |
| Data Batch | 160523.b | Comment | SD ICPMS_TSDOD1 |
| Data File Name | 182_SD.d | Dilution | 25 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Value | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 14.407 | 593 | 1.70 | 64.9 | 111.0 | 110 | 90 | |
| 9 | Be | 45 | 0.583 | 34 | 29.30 | 2.9 | 100.4 | 110 | 90 | Good |
| 11 | B | 45 | 18.065 | 529 | 6.12 | 82.7 | 109.2 | 110 | 90 | Good |
| 23 | Na | 45 | 349.949 | 288598 | 0.54 | 1676.6 | 104.4 | 110 | 90 | Good |
| 24 | Mg | 45 | 3177.964 | 1165601 | 0.87 | 15300.2 | 103.9 | 110 | 90 | Good |
| 27 | Al | 45 | 14912.538 | 2020705 | 0.69 | 73421.4 | 101.6 | 110 | 90 | Good |
| 39 | K | 45 | 3592.306 | 1394193 | 0.37 | 17631.4 | 101.9 | 110 | 90 | Good |
| 44 | Ca | 45 | 13015.089 | 262931 | 0.26 | 62353.6 | 104.4 | 110 | 90 | Good |
| 47 | Ti | 45 | 45.969 | 6440 | 6.54 | 222.2 | 103.4 | 110 | 90 | Good |
| 51 | V | 45 | 22.554 | 106380 | 0.97 | 110.2 | 102.3 | 110 | 90 | Good |
| 52 | Cr | 45 | 15.761 | 85718 | 0.51 | 74.6 | 105.7 | 110 | 90 | Good |
| 55 | Mn | 45 | 128.072 | 390134 | 0.24 | 611.1 | 104.8 | 110 | 90 | Good |
| 56 | Fe | 45 | 15053.979 | 68657837 | 1.52 | 71064.7 | 105.9 | 110 | 90 | Good |
| 59 | Co | 72 | 5.027 | 43357 | 1.40 | 24.3 | 103.4 | 110 | 90 | Good |
| 60 | Ni | 72 | 8.470 | 20154 | 2.17 | 41.0 | 103.2 | 110 | 90 | Good |
| 63 | Cu | 72 | 6.325 | 40803 | 1.58 | 29.5 | 107.2 | 110 | 90 | Good |
| 66 | Zn | 72 | 56.072 | 60949 | 1.27 | 269.0 | 104.2 | 110 | 90 | Good |
| 75 | As | 72 | 5.713 | 5447 | 1.50 | 28.5 | 100.3 | 110 | 90 | Good |
| 78 | Se | 72 | 0.879 | 140 | 13.04 | 5.4 | 81.6 | 110 | 90 | |
| 88 | Sr | 115 | 72.980 | 322123 | 0.21 | 363.0 | 100.5 | 110 | 90 | Good |
| 95 | Mo | 115 | 0.340 | 1285 | 4.64 | 1.7 | 101.0 | 110 | 90 | Good |
| 107 | Ag | 115 | 0.067 | 793 | 1.11 | 0.2 | 151.6 | 110 | 90 | |
| 111 | Cd | 115 | 0.157 | 273 | 25.70 | 0.7 | 105.2 | 110 | 90 | Good |
| 118 | Sn | 115 | 1.324 | 5387 | 3.10 | 6.9 | 95.9 | 110 | 90 | Good |
| 121 | Sb | 115 | 1.182 | 6912 | 1.39 | 5.7 | 104.4 | 110 | 90 | Good |
| 137 | Ba | 115 | 89.683 | 163972 | 1.31 | 443.2 | 101.2 | 110 | 90 | Good |
| 205 | Tl | 209 | 0.148 | 3567 | 2.40 | 0.7 | 102.8 | 110 | 90 | Good |
| 208 | Pb | 209 | 112.661 | 3621068 | 0.40 | 574.4 | 98.1 | 110 | 90 | Good |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 899286 | 0.33 | 904202 | 99.46 | 70 | 120 | |
| 72 | Ge | 662611 | 0.64 | 677615 | 97.79 | 70 | 120 | |
| 115 | In | 6350181 | 1.13 | 6287303 | 101.00 | 70 | 120 | |
| 209 | Bi | 13892011 | 1.72 | 14081817 | 98.65 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 5:12 PM | Sample Name | 1605098-30A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 183SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 113.841 | 4544 | 1.22 | 2000 | >RL |
| 9 | Be | 45 | 3.259 | 174 | 6.90 | 2000 | >RL |
| 11 | B | 45 | 149.839 | 3071 | 0.87 | 2000 | >RL |
| 23 | Na | 45 | 6251.203 | 4533712 | 0.56 | 25000 | >RL |
| 24 | Mg | 45 | 12664.044 | 4589355 | 0.15 | 25000 | >RL |
| 27 | Al | 45 | 51722.007 | 6928269 | 2.04 | 10000 | OUTCAL |
| 39 | K | 45 | 15630.930 | 5818684 | 0.89 | 25000 | >RL |
| 44 | Ca | 45 | 125138.980 | 2492871 | 0.47 | 25000 | OUTCAL |
| 47 | Ti | 45 | 172.117 | 23850 | 1.56 | 2000 | >RL |
| 51 | V | 45 | 78.212 | 354601 | 0.38 | 2000 | >RL |
| 52 | Cr | 45 | 49.585 | 264368 | 0.98 | 2000 | >RL |
| 55 | Mn | 45 | 453.254 | 1365405 | 0.27 | 2000 | >RL |
| 56 | Fe | 45 | 79266.605 | 357617239 | 0.76 | 10000 | OUTCAL |
| 59 | Co | 72 | 41.856 | 354395 | 0.94 | 2000 | >RL |
| 60 | Ni | 72 | 42.173 | 95596 | 0.18 | 2000 | >RL |
| 63 | Cu | 72 | 6.015 | 38248 | 0.91 | 2000 | >RL |
| 66 | Zn | 72 | 205.908 | 219289 | 1.23 | 2000 | >RL |
| 75 | As | 72 | 16.427 | 15065 | 0.18 | 2000 | >RL |
| 78 | Se | 72 | 6.380 | 432 | 6.47 | 2000 | >RL |
| 88 | Sr | 115 | 474.183 | 2033154 | 0.60 | 2000 | >RL |
| 95 | Mo | 115 | 1.155 | 4166 | 4.18 | 2000 | |
| 107 | Ag | 115 | 0.042 | 496 | 9.92 | 500 | |
| 111 | Cd | 115 | 0.081 | 139 | 15.98 | 2000 | |
| 118 | Sn | 115 | 4.814 | 17762 | 1.53 | 2000 | >RL |
| 121 | Sb | 115 | 0.088 | 622 | 9.96 | 500 | |
| 137 | Ba | 115 | 40.952 | 72998 | 0.58 | 2000 | >RL |
| 205 | Tl | 209 | 0.311 | 7113 | 1.85 | 2000 | |
| 208 | Pb | 209 | 22.013 | 674621 | 0.69 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 889666 | 0.19 | 904202 | 98.39 | 70 | 120 | |
| 72 | Ge | 652032 | 1.52 | 677615 | 96.22 | 70 | 120 | |
| 115 | In | 6187671 | 1.92 | 6287303 | 98.42 | 70 | 120 | |
| 209 | Bi | 13234809 | 1.11 | 14081817 | 93.99 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 5:14 PM | Sample Name | 1605098-35A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 184SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 67.425 | 2727 | 1.09 | 2000 | >RL |
| 9 | Be | 45 | 2.910 | 157 | 5.77 | 2000 | >RL |
| 11 | B | 45 | 84.223 | 1822 | 4.83 | 2000 | >RL |
| 23 | Na | 45 | 797.066 | 614192 | 0.38 | 25000 | >RL |
| 24 | Mg | 45 | 12345.588 | 4524229 | 0.70 | 25000 | >RL |
| 27 | Al | 45 | 64014.705 | 8670429 | 0.66 | 10000 | OUTCAL |
| 39 | K | 45 | 13968.359 | 5263818 | 0.66 | 25000 | >RL |
| 44 | Ca | 45 | 81330.911 | 1638717 | 0.88 | 25000 | OUTCAL |
| 47 | Ti | 45 | 213.438 | 29908 | 1.42 | 2000 | >RL |
| 51 | V | 45 | 103.583 | 473558 | 1.57 | 2000 | >RL |
| 52 | Cr | 45 | 95.408 | 513345 | 0.59 | 2000 | >RL |
| 55 | Mn | 45 | 569.869 | 1735853 | 0.45 | 2000 | >RL |
| 56 | Fe | 45 | 66600.548 | 303846912 | 1.88 | 10000 | OUTCAL |
| 59 | Co | 72 | 26.107 | 223015 | 0.86 | 2000 | >RL |
| 60 | Ni | 72 | 58.713 | 133927 | 1.79 | 2000 | >RL |
| 63 | Cu | 72 | 17.170 | 107291 | 0.55 | 2000 | >RL |
| 66 | Zn | 72 | 198.855 | 213603 | 1.63 | 2000 | >RL |
| 75 | As | 72 | 19.995 | 18457 | 1.29 | 2000 | >RL |
| 78 | Se | 72 | 4.465 | 332 | 6.10 | 2000 | >RL |
| 88 | Sr | 115 | 328.209 | 1396864 | 0.47 | 2000 | >RL |
| 95 | Mo | 115 | 1.789 | 6381 | 2.93 | 2000 | |
| 107 | Ag | 115 | 0.105 | 1188 | 9.44 | 500 | |
| 111 | Cd | 115 | 0.469 | 783 | 11.33 | 2000 | >RL |
| 118 | Sn | 115 | 5.058 | 18487 | 1.00 | 2000 | >RL |
| 121 | Sb | 115 | 2.489 | 13929 | 1.52 | 500 | >RL |
| 137 | Ba | 115 | 486.425 | 859499 | 0.64 | 2000 | >RL |
| 205 | Tl | 209 | 0.475 | 11014 | 1.00 | 2000 | |
| 208 | Pb | 209 | 89.343 | 2778816 | 0.43 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 899670 | 0.94 | 904202 | 99.50 | 70 | 120 | |
| 72 | Ge | 657565 | 0.48 | 677615 | 97.04 | 70 | 120 | |
| 115 | In | 6139177 | 0.91 | 6287303 | 97.64 | 70 | 120 | |
| 209 | Bi | 13441823 | 1.73 | 14081817 | 95.46 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 5:16 PM | Sample Name | 1605098-38A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 185SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 67.651 | 2813 | 1.25 | 2000 | >RL |
| 9 | Be | 45 | 2.719 | 151 | 18.58 | 2000 | >RL |
| 11 | B | 45 | 82.503 | 1839 | 4.44 | 2000 | >RL |
| 23 | Na | 45 | 1279.215 | 992168 | 1.25 | 25000 | >RL |
| 24 | Mg | 45 | 11773.137 | 4434975 | 0.86 | 25000 | >RL |
| 27 | Al | 45 | 60248.344 | 8388533 | 0.90 | 10000 | OUTCAL |
| 39 | K | 45 | 13257.957 | 5139142 | 2.23 | 25000 | >RL |
| 44 | Ca | 45 | 112597.899 | 2331745 | 1.17 | 25000 | OUTCAL |
| 47 | Ti | 45 | 203.959 | 29377 | 1.11 | 2000 | >RL |
| 51 | V | 45 | 93.783 | 441120 | 0.58 | 2000 | >RL |
| 52 | Cr | 45 | 59.137 | 327530 | 1.16 | 2000 | >RL |
| 55 | Mn | 45 | 533.689 | 1671151 | 0.68 | 2000 | >RL |
| 56 | Fe | 45 | 59576.288 | 279398993 | 0.86 | 10000 | OUTCAL |
| 59 | Co | 72 | 24.664 | 212383 | 0.87 | 2000 | >RL |
| 60 | Ni | 72 | 38.997 | 89932 | 0.64 | 2000 | >RL |
| 63 | Cu | 72 | 17.253 | 108673 | 1.02 | 2000 | >RL |
| 66 | Zn | 72 | 179.117 | 193974 | 0.61 | 2000 | >RL |
| 75 | As | 72 | 18.290 | 17034 | 1.59 | 2000 | >RL |
| 78 | Se | 72 | 3.935 | 306 | 10.25 | 2000 | >RL |
| 88 | Sr | 115 | 312.952 | 1351741 | 0.38 | 2000 | >RL |
| 95 | Mo | 115 | 1.183 | 4295 | 0.52 | 2000 | |
| 107 | Ag | 115 | 0.116 | 1327 | 0.66 | 500 | |
| 111 | Cd | 115 | 0.364 | 619 | 7.62 | 2000 | |
| 118 | Sn | 115 | 4.792 | 17804 | 0.41 | 2000 | >RL |
| 121 | Sb | 115 | 1.567 | 8949 | 3.84 | 500 | |
| 137 | Ba | 115 | 582.157 | 1043934 | 0.16 | 2000 | >RL |
| 205 | Tl | 209 | 0.488 | 11467 | 4.18 | 2000 | |
| 208 | Pb | 209 | 59.543 | 1875140 | 0.50 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 924791 | 0.64 | 904202 | 102.28 | 70 | 120 | |
| 72 | Ge | 662841 | 0.27 | 677615 | 97.82 | 70 | 120 | |
| 115 | In | 6232030 | 2.02 | 6287303 | 99.12 | 70 | 120 | |
| 209 | Bi | 13606774 | 0.61 | 14081817 | 96.63 | 70 | 120 | |

# Post Digestion Spike Sample (PDS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 17:30 | Sample Name | 1605121-01A PDS |
| Data Batch | 160523.b | Comment | PDS ICPMS_TSDOD1 |
| Data File Name | 192_PDS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 250.371 | 10252 | 1.14 | 64.9 | 200 | 92.7 | 75 | 125 | |
| 9 | Be | 45 | 190.876 | 10319 | 1.31 | 2.9 | 200 | 94.0 | 75 | 125 | |
| 11 | B | 45 | 263.434 | 5414 | 5.34 | 82.7 | 200 | 90.4 | 75 | 125 | |
| 23 | Na | 45 | 6690.865 | 4984575 | 0.85 | 1676.6 | 5000 | 100.3 | 75 | 125 | |
| 24 | Mg | 45 | 20301.429 | 7559486 | 0.73 | 15300.2 | 5000 | 100.0 | 75 | 125 | |
| 27 | Al | 45 | 78467.483 | 10801189 | 2.81 | 73421.4 | 5000 | 100.9 | 75 | 125 | |
| 39 | K | 45 | 22897.094 | 8733587 | 2.07 | 17631.4 | 5000 | 105.3 | 75 | 125 | |
| 44 | Ca | 45 | 67589.368 | 1384181 | 0.83 | 62353.6 | 5000 | 104.7 | 75 | 125 | |
| 47 | Ti | 45 | 419.378 | 59717 | 0.27 | 222.2 | 200 | 98.6 | 75 | 125 | |
| 51 | V | 45 | 307.883 | 1421904 | 0.64 | 110.2 | 200 | 98.8 | 75 | 125 | |
| 52 | Cr | 45 | 272.853 | 1489870 | 0.96 | 74.6 | 200 | 99.1 | 75 | 125 | |
| 55 | Mn | 45 | 812.264 | 2514543 | 0.95 | 611.1 | 200 | 100.6 | 75 | 125 | |
| 56 | Fe | 45 | 77555.459 | 359588519 | 0.66 | 71064.7 | 5000 | 129.8 | 75 | 125 | Fail |
| 59 | Co | 72 | 223.719 | 1915694 | 0.30 | 24.3 | 200 | 99.7 | 75 | 125 | |
| 60 | Ni | 72 | 238.617 | 543382 | 0.45 | 41.0 | 200 | 98.8 | 75 | 125 | |
| 63 | Cu | 72 | 226.603 | 1401309 | 0.65 | 29.5 | 200 | 98.5 | 75 | 125 | |
| 66 | Zn | 72 | 464.259 | 499622 | 0.43 | 269.0 | 200 | 97.6 | 75 | 125 | |
| 75 | As | 72 | 229.520 | 210517 | 0.79 | 28.5 | 200 | 100.5 | 75 | 125 | |
| 78 | Se | 72 | 203.733 | 11139 | 2.79 | 5.4 | 200 | 99.2 | 75 | 125 | |
| 88 | Sr | 115 | 572.141 | 2422056 | 1.08 | 363.0 | 200 | 104.6 | 75 | 125 | |
| 95 | Mo | 115 | 193.122 | 681497 | 0.32 | 1.7 | 200 | 95.7 | 75 | 125 | |
| 107 | Ag | 115 | 187.544 | 2057554 | 0.81 | 0.2 | 200 | 93.7 | 75 | 125 | |
| 111 | Cd | 115 | 187.427 | 310402 | 0.26 | 0.7 | 200 | 93.3 | 75 | 125 | |
| 118 | Sn | 115 | 205.702 | 728493 | 0.85 | 6.9 | 200 | 99.4 | 75 | 125 | |
| 121 | Sb | 115 | 198.740 | 1096030 | 0.33 | 5.7 | 200 | 96.5 | 75 | 125 | |
| 137 | Ba | 115 | 647.894 | 1138984 | 0.69 | 443.2 | 200 | 102.3 | 75 | 125 | |
| 205 | Tl | 209 | 191.531 | 4425936 | 0.17 | 0.7 | 200 | 95.4 | 75 | 125 | |
| 208 | Pb | 209 | 775.727 | 24126992 | 0.44 | 574.4 | 200 | 100.7 | 75 | 125 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 914310 | 0.55 | 904202 | 101.12 | 70 | 120 | |
| 72 | Ge | 659473 | 1.00 | 677615 | 97.32 | 70 | 120 | |
| 115 | In | 6108533 | 1.35 | 6287303 | 97.16 | 70 | 120 | |
| 209 | Bi | 13443224 | 1.36 | 14081817 | 95.47 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 17:32 | Sample Name | 1605121-01A MS |
| Data Batch | 160523.b | Comment | MS ICPMS_TSDOD1 |
| Data File Name | 193_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 245.530 | 9988 | 1.31 | 64.9 | 200 | 90.3 | 80 | 120 | |
| 9 | Be | 45 | 185.181 | 9945 | 1.37 | 2.9 | 200 | 91.1 | 80 | 120 | |
| 11 | B | 45 | 257.388 | 5259 | 1.39 | 82.7 | 200 | 87.4 | 80 | 120 | |
| 23 | Na | 45 | 6482.759 | 4798482 | 0.43 | 1676.6 | 1000 | 480.6 | 80 | 120 | Fail |
| 24 | Mg | 45 | 19023.362 | 7036639 | 0.27 | 15300.2 | 1000 | 372.3 | 80 | 120 | Fail |
| 27 | Al | 45 | 79055.187 | 10807806 | 1.86 | 73421.4 | 1000 | 563.4 | 80 | 120 | Fail |
| 39 | K | 45 | 22680.578 | 8593487 | 0.93 | 17631.4 | 1000 | 504.9 | 80 | 120 | Fail |
| 44 | Ca | 45 | 62134.861 | 1264065 | 0.14 | 62353.6 | 1000 | -21.9 | 80 | 120 | Fail |
| 47 | Ti | 45 | 378.230 | 53499 | 1.80 | 222.2 | 200 | 78.0 | 80 | 120 | Fail |
| 51 | V | 45 | 301.620 | 1383750 | 0.79 | 110.2 | 200 | 95.7 | 80 | 120 | |
| 52 | Cr | 45 | 258.709 | 1403268 | 0.32 | 74.6 | 200 | 92.1 | 80 | 120 | |
| 55 | Mn | 45 | 774.372 | 2381227 | 0.11 | 611.1 | 200 | 81.7 | 80 | 120 | |
| 56 | Fe | 45 | 70964.356 | 326817898 | 1.08 | 71064.7 | 1000 | -10.0 | 80 | 120 | Fail |
| 59 | Co | 72 | 212.809 | 1797239 | 0.16 | 24.3 | 200 | 94.3 | 80 | 120 | |
| 60 | Ni | 72 | 231.594 | 520173 | 1.00 | 41.0 | 200 | 95.3 | 80 | 120 | |
| 63 | Cu | 72 | 221.182 | 1349016 | 0.16 | 29.5 | 200 | 95.8 | 80 | 120 | |
| 66 | Zn | 72 | 447.674 | 475165 | 0.23 | 269.0 | 200 | 89.3 | 80 | 120 | |
| 75 | As | 72 | 217.761 | 196994 | 0.73 | 28.5 | 200 | 94.6 | 80 | 120 | |
| 78 | Se | 72 | 196.151 | 10578 | 0.71 | 5.4 | 200 | 95.4 | 80 | 120 | |
| 88 | Sr | 115 | 466.713 | 1983091 | 0.19 | 363.0 | 200 | 51.9 | 80 | 120 | Fail |
| 95 | Mo | 115 | 168.270 | 595976 | 0.56 | 1.7 | 200 | 83.3 | 80 | 120 | |
| 107 | Ag | 115 | 179.220 | 1973573 | 0.36 | 0.2 | 200 | 89.5 | 80 | 120 | |
| 111 | Cd | 115 | 182.277 | 302970 | 0.89 | 0.7 | 200 | 90.8 | 80 | 120 | |
| 118 | Sn | 115 | 185.000 | 657588 | 0.41 | 6.9 | 200 | 89.0 | 80 | 120 | |
| 121 | Sb | 115 | 58.004 | 321165 | 0.45 | 5.7 | 200 | 26.2 | 80 | 120 | Fail |
| 137 | Ba | 115 | 663.711 | 1171062 | 0.16 | 443.2 | 200 | 110.2 | 80 | 120 | |
| 205 | Tl | 209 | 187.566 | 4228379 | 1.37 | 0.7 | 200 | 93.4 | 80 | 120 | |
| 208 | Pb | 209 | 714.657 | 21681898 | 1.44 | 574.4 | 200 | 70.1 | 80 | 120 | Fail |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 908248 | 0.82 | 904202 | 100.45 | 70 | 120 | |
| 72 | Ge | 650378 | 0.29 | 677615 | 95.98 | 70 | 120 | |
| 115 | In | 6130376 | 0.44 | 6287303 | 97.50 | 70 | 120 | |
| 209 | Bi | 13114022 | 1.89 | 14081817 | 93.13 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 17:34 | Sample Name | 1605121-01A MSD |
| Data Batch | 160523.b | Comment | MSD ICPMS_TSDOD1 |
| Data File Name | 194_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 248.965 | 10187 | 1.60 | 64.9 | 200 | 92.0 | 80 | 120 | |
| 9 | Be | 45 | 192.275 | 10386 | 0.20 | 2.9 | 200 | 94.7 | 80 | 120 | |
| 11 | B | 45 | 263.398 | 5409 | 0.32 | 82.7 | 200 | 90.4 | 80 | 120 | |
| 23 | Na | 45 | 6335.594 | 4717629 | 0.72 | 1676.6 | 1000 | 465.9 | 80 | 120 | Fail |
| 24 | Mg | 45 | 18991.621 | 7065638 | 1.89 | 15300.2 | 1000 | 369.1 | 80 | 120 | Fail |
| 27 | Al | 45 | 78375.432 | 10778392 | 1.29 | 73421.4 | 1000 | 495.4 | 80 | 120 | Fail |
| 39 | K | 45 | 22694.129 | 8648579 | 2.69 | 17631.4 | 1000 | 506.3 | 80 | 120 | Fail |
| 44 | Ca | 45 | 54906.410 | 1123640 | 0.80 | 62353.6 | 1000 | -744.7 | 80 | 120 | Fail |
| 47 | Ti | 45 | 391.795 | 55742 | 1.41 | 222.2 | 200 | 84.8 | 80 | 120 | |
| 51 | V | 45 | 314.599 | 1451600 | 0.34 | 110.2 | 200 | 102.2 | 80 | 120 | |
| 52 | Cr | 45 | 267.344 | 1458572 | 0.26 | 74.6 | 200 | 96.4 | 80 | 120 | |
| 55 | Mn | 45 | 756.133 | 2338810 | 0.43 | 611.1 | 200 | 72.5 | 80 | 120 | Fail |
| 56 | Fe | 45 | 76832.812 | 355941781 | 0.61 | 71064.7 | 1000 | 576.8 | 80 | 120 | Fail |
| 59 | Co | 72 | 216.293 | 1878326 | 0.88 | 24.3 | 200 | 96.0 | 80 | 120 | |
| 60 | Ni | 72 | 236.085 | 545229 | 0.64 | 41.0 | 200 | 97.5 | 80 | 120 | |
| 63 | Cu | 72 | 222.469 | 1395224 | 0.69 | 29.5 | 200 | 96.5 | 80 | 120 | |
| 66 | Zn | 72 | 457.646 | 499490 | 0.93 | 269.0 | 200 | 94.3 | 80 | 120 | |
| 75 | As | 72 | 224.464 | 208795 | 0.70 | 28.5 | 200 | 98.0 | 80 | 120 | |
| 78 | Se | 72 | 200.319 | 11107 | 1.16 | 5.4 | 200 | 97.5 | 80 | 120 | |
| 88 | Sr | 115 | 468.931 | 2002292 | 1.03 | 363.0 | 200 | 53.0 | 80 | 120 | Fail |
| 95 | Mo | 115 | 174.044 | 619481 | 0.97 | 1.7 | 200 | 86.2 | 80 | 120 | |
| 107 | Ag | 115 | 182.406 | 2018592 | 0.92 | 0.2 | 200 | 91.1 | 80 | 120 | |
| 111 | Cd | 115 | 184.628 | 308393 | 0.26 | 0.7 | 200 | 91.9 | 80 | 120 | |
| 118 | Sn | 115 | 193.811 | 692284 | 0.47 | 6.9 | 200 | 93.5 | 80 | 120 | |
| 121 | Sb | 115 | 60.606 | 337219 | 0.51 | 5.7 | 200 | 27.5 | 80 | 120 | Fail |
| 137 | Ba | 115 | 626.528 | 1110816 | 0.90 | 443.2 | 200 | 91.7 | 80 | 120 | |
| 205 | Tl | 209 | 186.907 | 4318880 | 0.76 | 0.7 | 200 | 93.1 | 80 | 120 | |
| 208 | Pb | 209 | 825.870 | 25686421 | 0.90 | 574.4 | 200 | 125.7 | 80 | 120 | Fail |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 913547 | 0.49 | 904202 | 101.03 | 70 | 120 | |
| 72 | Ge | 668777 | 0.36 | 677615 | 98.70 | 70 | 120 | |
| 115 | In | 6160793 | 1.09 | 6287303 | 97.99 | 70 | 120 | |
| 209 | Bi | 13442388 | 1.27 | 14081817 | 95.46 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 17:36 | Sample Name | CCV7-160523 |
| Data Batch | 160523.b | Comment | CCV ICPMS_TW |
| Data File Name | 195_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 200.533 | 8135 | 1.35 | 200 | 100.3 | 90 | 110 | |
| 9 | Be | 45 | 199.108 | 10659 | 1.12 | 200 | 99.6 | 90 | 110 | |
| 11 | B | 45 | 192.351 | 3963 | 3.77 | 200 | 96.2 | 90 | 110 | |
| 23 | Na | 45 | 4958.754 | 3666930 | 0.50 | 5000 | 99.2 | 90 | 110 | |
| 24 | Mg | 45 | 4934.561 | 1820986 | 0.59 | 5000 | 98.7 | 90 | 110 | |
| 27 | Al | 45 | 4863.340 | 665013 | 0.33 | 5000 | 97.3 | 90 | 110 | |
| 39 | K | 45 | 5142.346 | 1985331 | 0.49 | 5000 | 102.8 | 90 | 110 | |
| 44 | Ca | 45 | 4913.583 | 100530 | 0.82 | 5000 | 98.3 | 90 | 110 | |
| 47 | Ti | 45 | 195.543 | 27573 | 0.57 | 200 | 97.8 | 90 | 110 | |
| 51 | V | 45 | 199.689 | 914689 | 0.68 | 200 | 99.8 | 90 | 110 | |
| 52 | Cr | 45 | 200.365 | 1083632 | 0.63 | 200 | 100.2 | 90 | 110 | |
| 55 | Mn | 45 | 198.858 | 609734 | 0.38 | 200 | 99.4 | 90 | 110 | |
| 56 | Fe | 45 | 5118.348 | 23508307 | 1.35 | 5000 | 102.4 | 90 | 110 | |
| 59 | Co | 72 | 202.096 | 1755454 | 0.70 | 200 | 101.0 | 90 | 110 | |
| 60 | Ni | 72 | 204.444 | 472386 | 0.94 | 200 | 102.2 | 90 | 110 | |
| 63 | Cu | 72 | 205.299 | 1287968 | 0.19 | 200 | 102.6 | 90 | 110 | |
| 66 | Zn | 72 | 202.160 | 220888 | 0.44 | 200 | 101.1 | 90 | 110 | |
| 75 | As | 72 | 203.496 | 189349 | 0.18 | 200 | 101.7 | 90 | 110 | |
| 78 | Se | 72 | 200.924 | 11143 | 1.52 | 200 | 100.5 | 90 | 110 | |
| 88 | Sr | 115 | 189.873 | 824480 | 0.82 | 200 | 94.9 | 90 | 110 | |
| 95 | Mo | 115 | 191.571 | 692828 | 0.63 | 200 | 95.8 | 90 | 110 | |
| 107 | Ag | 115 | 195.139 | 2194474 | 1.17 | 200 | 97.6 | 90 | 110 | |
| 111 | Cd | 115 | 191.169 | 324505 | 0.75 | 200 | 95.6 | 90 | 110 | |
| 118 | Sn | 115 | 192.695 | 699498 | 1.20 | 200 | 96.3 | 90 | 110 | |
| 121 | Sb | 115 | 193.824 | 1095679 | 0.81 | 200 | 96.9 | 90 | 110 | |
| 137 | Ba | 115 | 190.723 | 343738 | 1.29 | 200 | 95.4 | 90 | 110 | |
| 205 | Tl | 209 | 192.429 | 4475739 | 0.68 | 200 | 96.2 | 90 | 110 | |
| 208 | Pb | 209 | 191.233 | 5986998 | 0.57 | 200 | 95.6 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 905381 | 0.68 | 904202 | 100.13 | 70 | 120 | |
| 72 | Ge | 668932 | 0.50 | 677615 | 98.72 | 70 | 120 | |
| 115 | In | 6260889 | 1.44 | 6287303 | 99.58 | 70 | 120 | |
| 209 | Bi | 13530454 | 1.12 | 14081817 | 96.08 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 17:40 | Sample Name | LCVL7-160523 |
| Data Batch | 160523.b | Comment | LCVLICPMS_TW |
| Data File Name | 197LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 9.525 | 411 | 5.20 | 10 | 95.2 | 70 | 130 | |
| 9 | Be | 45 | 1.010 | 58 | 13.09 | 1 | 101.0 | 70 | 130 | |
| 11 | B | 45 | 27.411 | 737 | 8.16 | 20 | 137.1 | 70 | 130 | Fail |
| 23 | Na | 45 | 99.279 | 109948 | 0.33 | 100 | 99.3 | 70 | 130 | |
| 24 | Mg | 45 | 96.405 | 38586 | 1.21 | 100 | 96.4 | 70 | 130 | |
| 27 | Al | 45 | 100.886 | 16494 | 2.98 | 100 | 100.9 | 70 | 130 | |
| 39 | K | 45 | 105.178 | 97717 | 0.48 | 100 | 105.2 | 70 | 130 | |
| 44 | Ca | 45 | 95.785 | 2987 | 2.87 | 100 | 95.8 | 70 | 130 | |
| 47 | Ti | 45 | 5.210 | 758 | 14.74 | 5 | 104.2 | 70 | 130 | |
| 51 | V | 45 | 0.651 | 7444 | 1.74 | 1 | 65.1 | 70 | 130 | Fail |
| 52 | Cr | 45 | 5.049 | 29231 | 1.28 | 5 | 101.0 | 70 | 130 | |
| 55 | Mn | 45 | 4.912 | 15702 | 2.04 | 5 | 98.2 | 70 | 130 | |
| 56 | Fe | 45 | 101.021 | 488863 | 0.45 | 100 | 101.0 | 70 | 130 | |
| 59 | Co | 72 | 5.041 | 45273 | 1.81 | 5 | 100.8 | 70 | 130 | |
| 60 | Ni | 72 | 4.925 | 12553 | 1.42 | 5 | 98.5 | 70 | 130 | |
| 63 | Cu | 72 | 5.413 | 36589 | 1.06 | 5 | 108.3 | 70 | 130 | |
| 66 | Zn | 72 | 5.143 | 6159 | 0.88 | 5 | 102.9 | 70 | 130 | |
| 75 | As | 72 | 5.110 | 5093 | 0.83 | 5 | 102.2 | 70 | 130 | |
| 78 | Se | 72 | 5.069 | 383 | 4.84 | 5 | 101.4 | 70 | 130 | |
| 88 | Sr | 115 | 4.846 | 22738 | 1.54 | 5 | 96.9 | 70 | 130 | |
| 95 | Mo | 115 | 4.746 | 17687 | 1.19 | 5 | 94.9 | 70 | 130 | |
| 107 | Ag | 115 | 1.945 | 22524 | 1.18 | 2 | 97.3 | 70 | 130 | |
| 111 | Cd | 115 | 1.013 | 1771 | 6.23 | 1 | 101.3 | 70 | 130 | |
| 118 | Sn | 115 | 4.858 | 18643 | 1.67 | 5 | 97.2 | 70 | 130 | |
| 121 | Sb | 115 | 1.971 | 11596 | 2.29 | 2 | 98.5 | 70 | 130 | |
| 137 | Ba | 115 | 4.770 | 8927 | 1.02 | 5 | 95.4 | 70 | 130 | |
| 205 | Tl | 209 | 0.953 | 22996 | 1.20 | 1 | 95.3 | 70 | 130 | |
| 208 | Pb | 209 | 1.044 | 34436 | 1.03 | 1 | 104.4 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 931071 | 0.15 | 904202 | 102.97 | 70 | 120 | |
| 72 | Ge | 689966 | 0.89 | 677615 | 101.82 | 70 | 120 | |
| 115 | In | 6438717 | 1.94 | 6287303 | 102.41 | 70 | 120 | |
| 209 | Bi | 14003625 | 0.05 | 14081817 | 99.44 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 17:42 | Sample Name | CCB7-160523 |
| Data Batch | 160523.b | Comment | CCB ICPMS_TW |
| Data File Name | 198_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.257 | 25 | 16.0 | 2 | 5 | |
| 9 | Be | 45 | 0.041 | 5 | 72.1 | 0.4 | 0.3 | |
| 11 | B | 45 | 7.204 | 331 | 13.4 | 10 | 10 | |
| 23 | Na | 45 | -5.112 | 31610 | 0.3 | 50 | 100 | |
| 24 | Mg | 45 | -2.846 | 969 | 6.7 | 50 | 100 | |
| 27 | Al | 45 | -0.042 | 2374 | 2.0 | 50 | 10 | |
| 39 | K | 45 | 0.039 | 57708 | 0.8 | 50 | 100 | |
| 44 | Ca | 45 | -6.991 | 853 | 9.3 | 50 | 100 | |
| 47 | Ti | 45 | 0.060 | 11 | 96.4 | 4 | 3 | |
| 51 | V | 45 | -0.359 | 2737 | 2.5 | 4 | 3 | |
| 52 | Cr | 45 | -0.056 | 871 | 6.7 | 2 | 2 | |
| 55 | Mn | 45 | 0.008 | 247 | 16.6 | 2 | 3 | |
| 56 | Fe | 45 | 1.690 | 20079 | 1.3 | 50 | 50 | |
| 59 | Co | 72 | 0.002 | 130 | 11.8 | 2 | 3 | |
| 60 | Ni | 72 | -0.225 | 303 | 23.8 | 2 | 3 | |
| 63 | Cu | 72 | 0.258 | 3305 | 6.6 | 2 | 2 | |
| 66 | Zn | 72 | -0.015 | 358 | 10.3 | 4 | 2 | |
| 75 | As | 72 | -0.043 | 154 | 2.0 | 2 | 2 | |
| 78 | Se | 72 | 0.246 | 110 | 9.8 | 1 | 2 | |
| 88 | Sr | 115 | -0.006 | 1116 | 8.7 | 4 | 3 | |
| 95 | Mo | 115 | 0.003 | 48 | 14.5 | 2 | 2 | |
| 107 | Ag | 115 | 0.036 | 457 | 11.5 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.005 | 12 | 56.8 | 0.4 | 0.3 | |
| 118 | Sn | 115 | -0.003 | 520 | 20.3 | 4 | 3 | |
| 121 | Sb | 115 | 0.045 | 403 | 15.8 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.019 | 129 | 27.2 | 2 | 3 | |
| 205 | Tl | 209 | 0.006 | 187 | 6.2 | 2 | 0.5 | |
| 208 | Pb | 209 | 0.048 | 2167 | 7.2 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 940303 | 0.90 | 904202 | 103.99 | 70 | 120 | |
| 72 | Ge | 696256 | 0.65 | 677615 | 102.75 | 70 | 120 | |
| 115 | In | 6527895 | 0.17 | 6287303 | 103.83 | 70 | 120 | |
| 209 | Bi | 14114328 | 1.27 | 14081817 | 100.23 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 18:04 | Sample Name | CCV8-160523 |
| Data Batch | 160523.b | Comment | CCV ICPMS_TW |
| Data File Name | 209_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 196.619 | 8200 | 0.94 | 200 | 98.3 | 90 | 110 | |
| 9 | Be | 45 | 193.954 | 10675 | 1.64 | 200 | 97.0 | 90 | 110 | |
| 11 | B | 45 | 196.426 | 4156 | 3.40 | 200 | 98.2 | 90 | 110 | |
| 23 | Na | 45 | 4985.373 | 3790081 | 0.53 | 5000 | 99.7 | 90 | 110 | |
| 24 | Mg | 45 | 4916.215 | 1865289 | 0.93 | 5000 | 98.3 | 90 | 110 | |
| 27 | Al | 45 | 4827.593 | 678709 | 0.77 | 5000 | 96.6 | 90 | 110 | |
| 39 | K | 45 | 5069.741 | 2013087 | 0.89 | 5000 | 101.4 | 90 | 110 | |
| 44 | Ca | 45 | 4846.466 | 101968 | 1.34 | 5000 | 96.9 | 90 | 110 | |
| 47 | Ti | 45 | 199.300 | 28891 | 2.25 | 200 | 99.6 | 90 | 110 | |
| 51 | V | 45 | 199.575 | 939912 | 1.16 | 200 | 99.8 | 90 | 110 | |
| 52 | Cr | 45 | 199.990 | 1112036 | 0.30 | 200 | 100.0 | 90 | 110 | |
| 55 | Mn | 45 | 195.659 | 616808 | 0.64 | 200 | 97.8 | 90 | 110 | |
| 56 | Fe | 45 | 5053.496 | 23866316 | 1.64 | 5000 | 101.1 | 90 | 110 | |
| 59 | Co | 72 | 197.553 | 1785638 | 0.40 | 200 | 98.8 | 90 | 110 | |
| 60 | Ni | 72 | 200.086 | 481096 | 0.56 | 200 | 100.0 | 90 | 110 | |
| 63 | Cu | 72 | 202.910 | 1324622 | 0.68 | 200 | 101.5 | 90 | 110 | |
| 66 | Zn | 72 | 200.717 | 228207 | 1.16 | 200 | 100.4 | 90 | 110 | |
| 75 | As | 72 | 199.459 | 193135 | 0.53 | 200 | 99.7 | 90 | 110 | |
| 78 | Se | 72 | 198.996 | 11484 | 0.95 | 200 | 99.5 | 90 | 110 | |
| 88 | Sr | 115 | 186.014 | 850451 | 0.83 | 200 | 93.0 | 90 | 110 | |
| 95 | Mo | 115 | 187.659 | 714575 | 0.94 | 200 | 93.8 | 90 | 110 | |
| 107 | Ag | 115 | 189.198 | 2239947 | 0.41 | 200 | 94.6 | 90 | 110 | |
| 111 | Cd | 115 | 185.175 | 330921 | 1.15 | 200 | 92.6 | 90 | 110 | |
| 118 | Sn | 115 | 186.781 | 713795 | 0.70 | 200 | 93.4 | 90 | 110 | |
| 121 | Sb | 115 | 188.452 | 1121524 | 0.30 | 200 | 94.2 | 90 | 110 | |
| 137 | Ba | 115 | 185.372 | 351712 | 1.15 | 200 | 92.7 | 90 | 110 | |
| 205 | Tl | 209 | 191.939 | 4622311 | 0.91 | 200 | 96.0 | 90 | 110 | |
| 208 | Pb | 209 | 188.598 | 6113177 | 0.71 | 200 | 94.3 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 930836 | 0.72 | 904202 | 102.95 | 70 | 120 | |
| 72 | Ge | 696094 | 0.72 | 677615 | 102.73 | 70 | 120 | |
| 115 | In | 6590841 | 0.27 | 6287303 | 104.83 | 70 | 120 | |
| 209 | Bi | 14009158 | 1.50 | 14081817 | 99.48 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 18:08 | Sample Name | LCVL8-160523 |
| Data Batch | 160523.b | Comment | LCVLICPMS_TW |
| Data File Name | 211LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 9.583 | 408 | 7.15 | 10 | 95.8 | 70 | 130 | |
| 9 | Be | 45 | 0.921 | 53 | 17.02 | 1 | 92.1 | 70 | 130 | |
| 11 | B | 45 | 21.415 | 607 | 3.96 | 20 | 107.1 | 70 | 130 | |
| 23 | Na | 45 | 98.054 | 107458 | 1.32 | 100 | 98.1 | 70 | 130 | |
| 24 | Mg | 45 | 94.890 | 37461 | 0.56 | 100 | 94.9 | 70 | 130 | |
| 27 | Al | 45 | 98.169 | 15882 | 1.72 | 100 | 98.2 | 70 | 130 | |
| 39 | K | 45 | 100.572 | 94560 | 1.49 | 100 | 100.6 | 70 | 130 | |
| 44 | Ca | 45 | 91.518 | 2857 | 5.47 | 100 | 91.5 | 70 | 130 | |
| 47 | Ti | 45 | 4.973 | 713 | 6.92 | 5 | 99.5 | 70 | 130 | |
| 51 | V | 45 | 0.656 | 7362 | 4.25 | 1 | 65.6 | 70 | 130 | Fail |
| 52 | Cr | 45 | 5.129 | 29239 | 1.91 | 5 | 102.6 | 70 | 130 | |
| 55 | Mn | 45 | 4.870 | 15344 | 0.41 | 5 | 97.4 | 70 | 130 | |
| 56 | Fe | 45 | 100.305 | 478474 | 1.18 | 100 | 100.3 | 70 | 130 | |
| 59 | Co | 72 | 5.048 | 44915 | 1.46 | 5 | 101.0 | 70 | 130 | |
| 60 | Ni | 72 | 4.891 | 12358 | 1.78 | 5 | 97.8 | 70 | 130 | |
| 63 | Cu | 72 | 5.328 | 35708 | 2.45 | 5 | 106.6 | 70 | 130 | |
| 66 | Zn | 72 | 5.094 | 6049 | 2.68 | 5 | 101.9 | 70 | 130 | |
| 75 | As | 72 | 5.087 | 5024 | 0.98 | 5 | 101.7 | 70 | 130 | |
| 78 | Se | 72 | 5.264 | 390 | 8.34 | 5 | 105.3 | 70 | 130 | |
| 88 | Sr | 115 | 4.902 | 22558 | 1.91 | 5 | 98.0 | 70 | 130 | |
| 95 | Mo | 115 | 4.704 | 17201 | 2.52 | 5 | 94.1 | 70 | 130 | |
| 107 | Ag | 115 | 1.882 | 21392 | 0.85 | 2 | 94.1 | 70 | 130 | |
| 111 | Cd | 115 | 0.973 | 1670 | 5.55 | 1 | 97.3 | 70 | 130 | |
| 118 | Sn | 115 | 4.799 | 18079 | 1.92 | 5 | 96.0 | 70 | 130 | |
| 121 | Sb | 115 | 1.887 | 10895 | 1.81 | 2 | 94.3 | 70 | 130 | |
| 137 | Ba | 115 | 4.856 | 8917 | 1.18 | 5 | 97.1 | 70 | 130 | |
| 205 | Tl | 209 | 0.969 | 22819 | 0.66 | 1 | 96.9 | 70 | 130 | |
| 208 | Pb | 209 | 0.997 | 32122 | 2.52 | 1 | 99.7 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 917677 | 1.29 | 904202 | 101.49 | 70 | 120 | |
| 72 | Ge | 683624 | 1.30 | 677615 | 100.89 | 70 | 120 | |
| 115 | In | 6317245 | 0.69 | 6287303 | 100.48 | 70 | 120 | |
| 209 | Bi | 13676535 | 2.17 | 14081817 | 97.12 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 18:10 | Sample Name | CCB8-160523 |
| Data Batch | 160523.b | Comment | CCB ICPMS_TW |
| Data File Name | 212_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.180 | 21 | 14.3 | 2 | 5 | |
| 9 | Be | 45 | 0.024 | 4 | 109.0 | 0.4 | 0.3 | |
| 11 | B | 45 | 0.402 | 186 | 6.8 | 10 | 10 | |
| 23 | Na | 45 | -4.289 | 31138 | 1.8 | 50 | 100 | |
| 24 | Mg | 45 | -2.680 | 998 | 2.8 | 50 | 100 | |
| 27 | Al | 45 | 0.297 | 2339 | 2.5 | 50 | 10 | |
| 39 | K | 45 | -3.035 | 54589 | 1.2 | 50 | 100 | |
| 44 | Ca | 45 | -8.889 | 785 | 12.5 | 50 | 100 | |
| 47 | Ti | 45 | 0.047 | 9 | 78.1 | 4 | 3 | |
| 51 | V | 45 | -0.339 | 2737 | 1.7 | 4 | 3 | |
| 52 | Cr | 45 | -0.046 | 897 | 2.8 | 2 | 2 | |
| 55 | Mn | 45 | 0.000 | 216 | 7.9 | 2 | 3 | |
| 56 | Fe | 45 | 1.769 | 19760 | 1.7 | 50 | 50 | |
| 59 | Co | 72 | -0.002 | 94 | 23.5 | 2 | 3 | |
| 60 | Ni | 72 | -0.248 | 238 | 8.2 | 2 | 3 | |
| 63 | Cu | 72 | 0.121 | 2314 | 4.0 | 2 | 2 | |
| 66 | Zn | 72 | -0.044 | 312 | 8.2 | 4 | 2 | |
| 75 | As | 72 | -0.055 | 138 | 7.7 | 2 | 2 | |
| 78 | Se | 72 | 0.343 | 111 | 10.9 | 1 | 2 | |
| 88 | Sr | 115 | 0.023 | 1171 | 6.7 | 4 | 3 | |
| 95 | Mo | 115 | 0.006 | 56 | 6.9 | 2 | 2 | |
| 107 | Ag | 115 | 0.029 | 348 | 16.3 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.005 | 12 | 83.3 | 0.4 | 0.3 | |
| 118 | Sn | 115 | -0.030 | 393 | 8.9 | 4 | 3 | |
| 121 | Sb | 115 | 0.021 | 247 | 9.7 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.004 | 94 | 32.8 | 2 | 3 | |
| 205 | Tl | 209 | 0.003 | 110 | 12.1 | 2 | 0.5 | |
| 208 | Pb | 209 | 0.031 | 1541 | 1.4 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 908326 | 0.83 | 904202 | 100.46 | 70 | 120 | |
| 72 | Ge | 668682 | 0.52 | 677615 | 98.68 | 70 | 120 | |
| 115 | In | 6133652 | 1.89 | 6287303 | 97.56 | 70 | 120 | |
| 209 | Bi | 13536040 | 1.75 | 14081817 | 96.12 | 70 | 120 | |

# Method Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 6:12 PM | Sample Name | MB-75236 |
| Data Batch | 160523.b | Comment | MBLKICPMS_TSDOD1 |
| Data File Name | 213_PB.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.214 | 23 | 35.39 | | |
| 9 | Be | 45 | 0.081 | 7 | 14.29 | | |
| 11 | B | 45 | -0.539 | 167 | 21.07 | | |
| 23 | Na | 45 | 3.805 | 37004 | 0.31 | | |
| 24 | Mg | 45 | -0.910 | 1648 | 7.95 | | |
| 27 | Al | 45 | -6.729 | 1376 | 7.79 | | |
| 39 | K | 45 | 6.463 | 58027 | 0.59 | | |
| 44 | Ca | 45 | 0.214 | 968 | 5.97 | | |
| 47 | Ti | 45 | 0.118 | 19 | 44.42 | | |
| 51 | V | 45 | -0.343 | 2711 | 2.17 | | |
| 52 | Cr | 45 | 0.288 | 2701 | 2.25 | | |
| 55 | Mn | 45 | 0.133 | 622 | 1.64 | | |
| 56 | Fe | 45 | 8.538 | 50818 | 0.86 | | |
| 59 | Co | 72 | 0.000 | 111 | 16.52 | | |
| 60 | Ni | 72 | 0.030 | 880 | 11.41 | | |
| 63 | Cu | 72 | 0.184 | 2708 | 2.32 | | |
| 66 | Zn | 72 | 2.382 | 2959 | 5.40 | | |
| 75 | As | 72 | -0.055 | 138 | 2.29 | | |
| 78 | Se | 72 | 0.165 | 102 | 14.96 | | |
| 88 | Sr | 115 | -0.089 | 726 | 8.35 | | |
| 95 | Mo | 115 | 0.011 | 79 | 20.84 | | |
| 107 | Ag | 115 | 0.022 | 283 | 1.18 | | |
| 111 | Cd | 115 | 0.003 | 8 | 24.71 | | |
| 118 | Sn | 115 | 3.706 | 14241 | 0.56 | | |
| 121 | Sb | 115 | 0.011 | 203 | 8.67 | | |
| 137 | Ba | 115 | 0.049 | 181 | 28.59 | | |
| 205 | Tl | 209 | 0.002 | 89 | 24.40 | | |
| 208 | Pb | 209 | 0.040 | 1916 | 3.13 | | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 906237 | 0.83 | 904202 | 100.23 | 70 | 120 | |
| 72 | Ge | 668810 | 0.36 | 677615 | 98.70 | 70 | 120 | |
| 115 | In | 6391144 | 1.20 | 6287303 | 101.65 | 70 | 120 | |
| 209 | Bi | 14064996 | 1.01 | 14081817 | 99.88 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 18:14 | Sample Name | LCS-75236 |
| Data Batch | 160523.b | Comment | LCS ICPMS_TSDOD1 |
| Data File Name | 214_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 199.993 | 8046 | 1.41 | 200 | 100.0 | 80 | 120 | |
| 9 | Be | 45 | 196.590 | 10439 | 0.39 | 200 | 98.3 | 80 | 120 | |
| 11 | B | 45 | 187.313 | 3832 | 0.40 | 200 | 93.7 | 80 | 120 | |
| 23 | Na | 45 | 4997.556 | 3665264 | 1.02 | 1000 | 499.8 | 80 | 120 | Fail |
| 24 | Mg | 45 | 4923.568 | 1802185 | 1.18 | 1000 | 492.4 | 80 | 120 | Fail |
| 27 | Al | 45 | 961.895 | 132289 | 0.84 | 1000 | 96.2 | 80 | 120 | |
| 39 | K | 45 | 5123.700 | 1962355 | 1.14 | 1000 | 512.4 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4884.870 | 99152 | 1.66 | 1000 | 488.5 | 80 | 120 | Fail |
| 47 | Ti | 45 | 201.060 | 28119 | 1.21 | 200 | 100.5 | 80 | 120 | |
| 51 | V | 45 | 203.952 | 926469 | 1.46 | 200 | 102.0 | 80 | 120 | |
| 52 | Cr | 45 | 204.635 | 1097736 | 0.23 | 200 | 102.3 | 80 | 120 | |
| 55 | Mn | 45 | 201.638 | 613254 | 0.53 | 200 | 100.8 | 80 | 120 | |
| 56 | Fe | 45 | 994.986 | 4542240 | 0.68 | 1000 | 99.5 | 80 | 120 | |
| 59 | Co | 72 | 201.209 | 1760874 | 0.68 | 200 | 100.6 | 80 | 120 | |
| 60 | Ni | 72 | 203.383 | 473436 | 0.86 | 200 | 101.7 | 80 | 120 | |
| 63 | Cu | 72 | 204.951 | 1295364 | 1.42 | 200 | 102.5 | 80 | 120 | |
| 66 | Zn | 72 | 199.207 | 219310 | 0.30 | 200 | 99.6 | 80 | 120 | |
| 75 | As | 72 | 203.193 | 190494 | 0.90 | 200 | 101.6 | 80 | 120 | |
| 78 | Se | 72 | 200.945 | 11228 | 0.61 | 200 | 100.5 | 80 | 120 | |
| 88 | Sr | 115 | 195.216 | 837690 | 1.22 | 200 | 97.6 | 80 | 120 | |
| 95 | Mo | 115 | 195.703 | 699397 | 0.44 | 200 | 97.9 | 80 | 120 | |
| 107 | Ag | 115 | 193.531 | 2150362 | 0.33 | 200 | 96.8 | 80 | 120 | |
| 111 | Cd | 115 | 191.689 | 321493 | 1.12 | 200 | 95.8 | 80 | 120 | |
| 118 | Sn | 115 | 197.753 | 709228 | 1.22 | 200 | 98.9 | 80 | 120 | |
| 121 | Sb | 115 | 190.110 | 1061881 | 0.96 | 200 | 95.1 | 80 | 120 | |
| 137 | Ba | 115 | 191.294 | 340654 | 0.88 | 200 | 95.6 | 80 | 120 | |
| 205 | Tl | 209 | 193.455 | 4413244 | 0.65 | 200 | 96.7 | 80 | 120 | |
| 208 | Pb | 209 | 192.995 | 5925849 | 0.65 | 200 | 96.5 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 898078 | 1.21 | 904202 | 99.32 | 70 | 120 | |
| 72 | Ge | 673988 | 0.96 | 677615 | 99.46 | 70 | 120 | |
| 115 | In | 6187091 | 2.05 | 6287303 | 98.41 | 70 | 120 | |
| 209 | Bi | 13270135 | 0.83 | 14081817 | 94.24 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 18:16 | Sample Name | LCSD-75236 |
| Data Batch | 160523.b | Comment | LCSDICPMS_TSDOD1 |
| Data File Name | 215_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 197.198 | 8044 | 0.39 | 200 | 98.6 | 80 | 120 | |
| 9 | Be | 45 | 198.610 | 10691 | 1.23 | 200 | 99.3 | 80 | 120 | |
| 11 | B | 45 | 194.183 | 4021 | 0.79 | 200 | 97.1 | 80 | 120 | |
| 23 | Na | 45 | 4955.449 | 3684851 | 0.75 | 1000 | 495.5 | 80 | 120 | Fail |
| 24 | Mg | 45 | 4900.564 | 1818479 | 0.16 | 1000 | 490.1 | 80 | 120 | Fail |
| 27 | Al | 45 | 970.236 | 135244 | 0.78 | 1000 | 97.0 | 80 | 120 | |
| 39 | K | 45 | 5110.019 | 1984051 | 0.50 | 1000 | 511.0 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4811.949 | 99017 | 0.94 | 1000 | 481.2 | 80 | 120 | Fail |
| 47 | Ti | 45 | 194.872 | 27631 | 0.49 | 200 | 97.4 | 80 | 120 | |
| 51 | V | 45 | 201.599 | 928548 | 0.48 | 200 | 100.8 | 80 | 120 | |
| 52 | Cr | 45 | 201.602 | 1096423 | 0.83 | 200 | 100.8 | 80 | 120 | |
| 55 | Mn | 45 | 197.532 | 609048 | 0.71 | 200 | 98.8 | 80 | 120 | |
| 56 | Fe | 45 | 989.604 | 4580126 | 0.68 | 1000 | 99.0 | 80 | 120 | |
| 59 | Co | 72 | 200.717 | 1763001 | 0.71 | 200 | 100.4 | 80 | 120 | |
| 60 | Ni | 72 | 201.506 | 470806 | 0.47 | 200 | 100.8 | 80 | 120 | |
| 63 | Cu | 72 | 203.012 | 1287911 | 0.57 | 200 | 101.5 | 80 | 120 | |
| 66 | Zn | 72 | 199.012 | 219898 | 1.01 | 200 | 99.5 | 80 | 120 | |
| 75 | As | 72 | 201.107 | 189220 | 0.15 | 200 | 100.6 | 80 | 120 | |
| 78 | Se | 72 | 196.361 | 11013 | 1.64 | 200 | 98.2 | 80 | 120 | |
| 88 | Sr | 115 | 188.578 | 821737 | 0.33 | 200 | 94.3 | 80 | 120 | |
| 95 | Mo | 115 | 192.374 | 698205 | 0.60 | 200 | 96.2 | 80 | 120 | |
| 107 | Ag | 115 | 190.324 | 2147665 | 0.27 | 200 | 95.2 | 80 | 120 | |
| 111 | Cd | 115 | 188.779 | 321560 | 1.03 | 200 | 94.4 | 80 | 120 | |
| 118 | Sn | 115 | 196.604 | 716125 | 1.30 | 200 | 98.3 | 80 | 120 | |
| 121 | Sb | 115 | 188.725 | 1070530 | 0.54 | 200 | 94.4 | 80 | 120 | |
| 137 | Ba | 115 | 189.469 | 342636 | 0.39 | 200 | 94.7 | 80 | 120 | |
| 205 | Tl | 209 | 188.696 | 4460744 | 0.82 | 200 | 94.3 | 80 | 120 | |
| 208 | Pb | 209 | 188.369 | 5993965 | 0.46 | 200 | 94.2 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 910406 | 0.73 | 904202 | 100.69 | 70 | 120 | |
| 72 | Ge | 676429 | 0.84 | 677615 | 99.82 | 70 | 120 | |
| 115 | In | 6282139 | 0.82 | 6287303 | 99.92 | 70 | 120 | |
| 209 | Bi | 13753054 | 1.39 | 14081817 | 97.67 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 6:20 PM | Sample Name | 1605098-17A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 217_ARF.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 63.548 | 2657 | 1.08 | 2000 | >RL |
| 9 | Be | 45 | 2.594 | 145 | 7.06 | 2000 | >RL |
| 11 | B | 45 | 80.298 | 1805 | 4.50 | 2000 | >RL |
| 23 | Na | 45 | 2293.182 | 1760540 | 0.39 | 25000 | >RL |
| 24 | Mg | 45 | 17067.458 | 6464087 | 1.40 | 25000 | >RL |
| 27 | Al | 45 | 67547.014 | 9456111 | 1.08 | 10000 | OUTCAL |
| 39 | K | 45 | 11552.983 | 4509852 | 0.51 | 25000 | >RL |
| 44 | Ca | 45 | 492896.854 | 10259299 | 1.29 | 25000 | OUTCAL |
| 47 | Ti | 45 | 226.818 | 32849 | 1.91 | 2000 | >RL |
| 51 | V | 45 | 123.446 | 582456 | 0.86 | 2000 | >RL |
| 52 | Cr | 45 | 58.658 | 326665 | 1.04 | 2000 | >RL |
| 55 | Mn | 45 | 796.783 | 2508592 | 0.60 | 2000 | >RL |
| 56 | Fe | 45 | 57823.984 | 272665376 | 1.18 | 10000 | OUTCAL |
| 59 | Co | 72 | 25.803 | 220100 | 0.52 | 2000 | >RL |
| 60 | Ni | 72 | 43.623 | 99567 | 0.48 | 2000 | >RL |
| 63 | Cu | 72 | 18.736 | 116789 | 2.15 | 2000 | >RL |
| 66 | Zn | 72 | 156.840 | 168312 | 1.10 | 2000 | >RL |
| 75 | As | 72 | 20.588 | 18973 | 1.54 | 2000 | >RL |
| 78 | Se | 72 | 4.736 | 346 | 4.09 | 2000 | >RL |
| 88 | Sr | 115 | 967.759 | 4121588 | 0.60 | 2000 | >RL |
| 95 | Mo | 115 | 2.657 | 9470 | 1.52 | 2000 | >RL |
| 107 | Ag | 115 | 0.113 | 1275 | 4.32 | 500 | |
| 111 | Cd | 115 | 0.569 | 951 | 3.06 | 2000 | >RL |
| 118 | Sn | 115 | 4.780 | 17528 | 3.32 | 2000 | >RL |
| 121 | Sb | 115 | 0.390 | 2294 | 2.04 | 500 | |
| 137 | Ba | 115 | 3233.638 | 5718399 | 2.88 | 2000 | OUTCAL |
| 205 | Tl | 209 | 0.596 | 13505 | 1.95 | 2000 | |
| 208 | Pb | 209 | 31.917 | 971786 | 0.20 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 929877 | 0.43 | 904202 | 102.84 | 70 | 120 | |
| 72 | Ge | 656678 | 1.25 | 677615 | 96.91 | 70 | 120 | |
| 115 | In | 6147352 | 1.99 | 6287303 | 97.77 | 70 | 120 | |
| 209 | Bi | 13152925 | 1.39 | 14081817 | 93.40 | 70 | 120 | |

# Dilution Sample (Dil) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 18:22 | Sample Name | 1605098-17A SD |
| Data Batch | 160523.b | Comment | SD ICPMS_TSDOD1 |
| Data File Name | 218_SD.d | Dilution | 25 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Value | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 13.799 | 587 | 3.96 | 63.5 | 108.6 | 110 | 90 | Good |
| 9 | Be | 45 | 0.534 | 32 | 29.81 | 2.6 | 102.9 | 110 | 90 | Good |
| 11 | B | 45 | 17.888 | 542 | 11.21 | 80.3 | 111.4 | 110 | 90 | |
| 23 | Na | 45 | 468.486 | 386785 | 0.86 | 2293.2 | 102.1 | 110 | 90 | Good |
| 24 | Mg | 45 | 3509.127 | 1327791 | 0.66 | 17067.5 | 102.8 | 110 | 90 | Good |
| 27 | Al | 45 | 13601.105 | 1901870 | 0.47 | 67547.0 | 100.7 | 110 | 90 | Good |
| 39 | K | 45 | 2367.075 | 967294 | 0.96 | 11553.0 | 102.4 | 110 | 90 | Good |
| 44 | Ca | 45 | 100598.663 | 2090276 | 0.65 | 492896.9 | 102.0 | 110 | 90 | Good |
| 47 | Ti | 45 | 47.319 | 6840 | 1.35 | 226.8 | 104.3 | 110 | 90 | Good |
| 51 | V | 45 | 25.459 | 123341 | 0.22 | 123.4 | 103.1 | 110 | 90 | Good |
| 52 | Cr | 45 | 12.326 | 69426 | 1.86 | 58.7 | 105.1 | 110 | 90 | Good |
| 55 | Mn | 45 | 166.060 | 521886 | 0.49 | 796.8 | 104.2 | 110 | 90 | Good |
| 56 | Fe | 45 | 12048.287 | 56703320 | 0.98 | 57824.0 | 104.2 | 110 | 90 | Good |
| 59 | Co | 72 | 5.339 | 46836 | 2.00 | 25.8 | 103.5 | 110 | 90 | Good |
| 60 | Ni | 72 | 8.908 | 21519 | 0.90 | 43.6 | 102.1 | 110 | 90 | Good |
| 63 | Cu | 72 | 4.077 | 27313 | 0.59 | 18.7 | 108.8 | 110 | 90 | Good |
| 66 | Zn | 72 | 33.164 | 36813 | 1.07 | 156.8 | 105.7 | 110 | 90 | Good |
| 75 | As | 72 | 4.222 | 4144 | 1.22 | 20.6 | 102.5 | 110 | 90 | Good |
| 78 | Se | 72 | 1.014 | 149 | 12.57 | 4.7 | 107.0 | 110 | 90 | Good |
| 88 | Sr | 115 | 194.750 | 860285 | 0.99 | 967.8 | 100.6 | 110 | 90 | Good |
| 95 | Mo | 115 | 0.528 | 1980 | 4.37 | 2.7 | 99.3 | 110 | 90 | Good |
| 107 | Ag | 115 | 0.050 | 608 | 12.87 | 0.1 | 222.8 | 110 | 90 | |
| 111 | Cd | 115 | 0.118 | 208 | 14.91 | 0.6 | 103.9 | 110 | 90 | Good |
| 118 | Sn | 115 | 0.925 | 3932 | 4.75 | 4.8 | 96.8 | 110 | 90 | Good |
| 121 | Sb | 115 | 0.095 | 680 | 3.43 | 0.4 | 121.3 | 110 | 90 | |
| 137 | Ba | 115 | 631.673 | 1157856 | 0.50 | 3233.6 | 97.7 | 110 | 90 | Good |
| 205 | Tl | 209 | 0.114 | 2763 | 4.53 | 0.6 | 95.5 | 110 | 90 | Good |
| 208 | Pb | 209 | 6.331 | 204413 | 0.51 | 31.9 | 99.2 | 110 | 90 | Good |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 927907 | 0.49 | 904202 | 102.62 | 70 | 120 | |
| 72 | Ge | 673997 | 0.80 | 677615 | 99.47 | 70 | 120 | |
| 115 | In | 6370468 | 1.89 | 6287303 | 101.32 | 70 | 120 | |
| 209 | Bi | 13917043 | 2.07 | 14081817 | 98.83 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 6:28 PM | Sample Name | 1605098-12A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 221SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 91.155 | 3837 | 1.80 | 2000 | >RL |
| 9 | Be | 45 | 4.950 | 277 | 9.57 | 2000 | >RL |
| 11 | B | 45 | 125.600 | 2742 | 3.06 | 2000 | >RL |
| 23 | Na | 45 | 4914.032 | 3763723 | 0.81 | 25000 | >RL |
| 24 | Mg | 45 | 13120.061 | 5010887 | 2.65 | 25000 | >RL |
| 27 | Al | 45 | 70288.052 | 9923010 | 2.13 | 10000 | OUTCAL |
| 39 | K | 45 | 21690.350 | 8488407 | 2.73 | 25000 | >RL |
| 44 | Ca | 45 | 58538.473 | 1229638 | 1.52 | 25000 | OUTCAL |
| 47 | Ti | 45 | 140.195 | 20478 | 3.36 | 2000 | >RL |
| 51 | V | 45 | 104.393 | 497347 | 0.52 | 2000 | >RL |
| 52 | Cr | 45 | 77.972 | 437445 | 0.32 | 2000 | >RL |
| 55 | Mn | 45 | 762.650 | 2421174 | 0.32 | 2000 | >RL |
| 56 | Fe | 45 | 139323.641 | 662540223 | 2.21 | 10000 | OUTCAL |
| 59 | Co | 72 | 28.996 | 254160 | 0.45 | 2000 | >RL |
| 60 | Ni | 72 | 51.460 | 120548 | 0.98 | 2000 | >RL |
| 63 | Cu | 72 | 12.623 | 81361 | 1.64 | 2000 | >RL |
| 66 | Zn | 72 | 297.150 | 327347 | 0.30 | 2000 | >RL |
| 75 | As | 72 | 38.628 | 36411 | 0.90 | 2000 | >RL |
| 78 | Se | 72 | 5.515 | 399 | 10.79 | 2000 | >RL |
| 88 | Sr | 115 | 598.460 | 2648669 | 0.28 | 2000 | >RL |
| 95 | Mo | 115 | 4.427 | 16373 | 1.66 | 2000 | >RL |
| 107 | Ag | 115 | 0.045 | 546 | 5.54 | 500 | |
| 111 | Cd | 115 | 0.056 | 100 | 13.33 | 2000 | |
| 118 | Sn | 115 | 5.294 | 20105 | 0.89 | 2000 | >RL |
| 121 | Sb | 115 | 0.241 | 1527 | 4.72 | 500 | |
| 137 | Ba | 115 | 100.422 | 184627 | 1.48 | 2000 | >RL |
| 205 | Tl | 209 | 0.541 | 12840 | 1.74 | 2000 | |
| 208 | Pb | 209 | 51.320 | 1633869 | 0.71 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 937691 | 1.11 | 904202 | 103.70 | 70 | 120 | |
| 72 | Ge | 674763 | 0.15 | 677615 | 99.58 | 70 | 120 | |
| 115 | In | 6386794 | 1.43 | 6287303 | 101.58 | 70 | 120 | |
| 209 | Bi | 13758556 | 1.75 | 14081817 | 97.70 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 6:30 PM | Sample Name | 1605098-13A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 222SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 60.949 | 2565 | 0.68 | 2000 | >RL |
| 9 | Be | 45 | 5.580 | 311 | 4.55 | 2000 | >RL |
| 11 | B | 45 | 118.797 | 2599 | 2.06 | 2000 | >RL |
| 23 | Na | 45 | 6909.084 | 5266730 | 2.98 | 25000 | >RL |
| 24 | Mg | 45 | 12661.252 | 4826042 | 2.64 | 25000 | >RL |
| 27 | Al | 45 | 69364.189 | 9771359 | 1.64 | 10000 | OUTCAL |
| 39 | K | 45 | 19977.813 | 7805785 | 1.17 | 25000 | >RL |
| 44 | Ca | 45 | 83965.413 | 1759580 | 1.47 | 25000 | OUTCAL |
| 47 | Ti | 45 | 118.011 | 17199 | 3.28 | 2000 | >RL |
| 51 | V | 45 | 91.228 | 434277 | 1.21 | 2000 | >RL |
| 52 | Cr | 45 | 67.491 | 378035 | 1.05 | 2000 | >RL |
| 55 | Mn | 45 | 2892.252 | 9162137 | 1.48 | 2000 | OUTCAL |
| 56 | Fe | 45 | 101100.599 | 479716070 | 0.64 | 10000 | OUTCAL |
| 59 | Co | 72 | 110.277 | 952253 | 0.73 | 2000 | >RL |
| 60 | Ni | 72 | 153.639 | 353081 | 1.19 | 2000 | >RL |
| 63 | Cu | 72 | 13.300 | 84393 | 0.99 | 2000 | >RL |
| 66 | Zn | 72 | 511.598 | 555138 | 0.57 | 2000 | >RL |
| 75 | As | 72 | 28.514 | 26536 | 1.04 | 2000 | >RL |
| 78 | Se | 72 | 9.610 | 617 | 7.23 | 2000 | >RL |
| 88 | Sr | 115 | 613.707 | 2647595 | 0.59 | 2000 | >RL |
| 95 | Mo | 115 | 3.435 | 12393 | 2.24 | 2000 | >RL |
| 107 | Ag | 115 | 0.042 | 502 | 8.00 | 500 | |
| 111 | Cd | 115 | 0.540 | 914 | 9.95 | 2000 | >RL |
| 118 | Sn | 115 | 5.243 | 19411 | 1.55 | 2000 | >RL |
| 121 | Sb | 115 | 0.288 | 1756 | 4.92 | 500 | |
| 137 | Ba | 115 | 177.323 | 317772 | 0.79 | 2000 | >RL |
| 205 | Tl | 209 | 1.204 | 28170 | 0.43 | 2000 | |
| 208 | Pb | 209 | 99.672 | 3133347 | 0.23 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 935696 | 0.41 | 904202 | 103.48 | 70 | 120 | |
| 72 | Ge | 664962 | 0.26 | 677615 | 98.13 | 70 | 120 | |
| 115 | In | 6226069 | 1.97 | 6287303 | 99.03 | 70 | 120 | |
| 209 | Bi | 13587004 | 1.75 | 14081817 | 96.49 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 6:32 PM | Sample Name | 1605098-14A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 223SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 54.648 | 2357 | 1.50 | 2000 | >RL |
| 9 | Be | 45 | 4.087 | 234 | 6.33 | 2000 | >RL |
| 11 | B | 45 | 113.662 | 2554 | 5.28 | 2000 | >RL |
| 23 | Na | 45 | 12416.392 | 9661106 | 1.21 | 25000 | >RL |
| 24 | Mg | 45 | 15547.859 | 6067025 | 0.62 | 25000 | >RL |
| 27 | Al | 45 | 75652.648 | 10911028 | 1.40 | 10000 | OUTCAL |
| 39 | K | 45 | 21372.186 | 8545204 | 1.59 | 25000 | >RL |
| 44 | Ca | 45 | 25670.314 | 551521 | 1.34 | 25000 | OUTCAL |
| 47 | Ti | 45 | 110.331 | 16463 | 1.38 | 2000 | >RL |
| 51 | V | 45 | 110.583 | 538033 | 0.35 | 2000 | >RL |
| 52 | Cr | 45 | 78.726 | 451296 | 0.12 | 2000 | >RL |
| 55 | Mn | 45 | 203.267 | 659521 | 0.20 | 2000 | >RL |
| 56 | Fe | 45 | 150054.266 | 729003438 | 0.94 | 10000 | OUTCAL |
| 59 | Co | 72 | 18.416 | 162731 | 0.52 | 2000 | >RL |
| 60 | Ni | 72 | 28.631 | 67964 | 0.49 | 2000 | >RL |
| 63 | Cu | 72 | 19.928 | 128535 | 0.31 | 2000 | >RL |
| 66 | Zn | 72 | 192.757 | 214143 | 0.12 | 2000 | >RL |
| 75 | As | 72 | 38.516 | 36591 | 1.26 | 2000 | >RL |
| 78 | Se | 72 | 6.148 | 438 | 7.05 | 2000 | >RL |
| 88 | Sr | 115 | 482.771 | 2131949 | 0.49 | 2000 | >RL |
| 95 | Mo | 115 | 2.191 | 8099 | 4.84 | 2000 | >RL |
| 107 | Ag | 115 | 0.035 | 437 | 8.67 | 500 | |
| 111 | Cd | 115 | 0.031 | 57 | 11.76 | 2000 | |
| 118 | Sn | 115 | 5.619 | 21264 | 2.33 | 2000 | >RL |
| 121 | Sb | 115 | 0.134 | 904 | 3.87 | 500 | |
| 137 | Ba | 115 | 136.919 | 251174 | 1.27 | 2000 | >RL |
| 205 | Tl | 209 | 0.596 | 13894 | 2.88 | 2000 | |
| 208 | Pb | 209 | 79.704 | 2494809 | 0.69 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 958073 | 0.69 | 904202 | 105.96 | 70 | 120 | |
| 72 | Ge | 680066 | 0.21 | 677615 | 100.36 | 70 | 120 | |
| 115 | In | 6371923 | 1.13 | 6287303 | 101.35 | 70 | 120 | |
| 209 | Bi | 13526856 | 1.15 | 14081817 | 96.06 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 6:34 PM | Sample Name | 1605098-15A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 224SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 53.290 | 2269 | 2.50 | 2000 | >RL |
| 9 | Be | 45 | 3.712 | 210 | 3.02 | 2000 | >RL |
| 11 | B | 45 | 110.048 | 2447 | 7.50 | 2000 | >RL |
| 23 | Na | 45 | 12900.174 | 9908772 | 1.79 | 25000 | >RL |
| 24 | Mg | 45 | 14615.073 | 5630927 | 0.95 | 25000 | >RL |
| 27 | Al | 45 | 69188.120 | 9852500 | 2.21 | 10000 | OUTCAL |
| 39 | K | 45 | 17473.230 | 6908839 | 1.31 | 25000 | >RL |
| 44 | Ca | 45 | 44132.790 | 935369 | 0.43 | 25000 | OUTCAL |
| 47 | Ti | 45 | 112.577 | 16586 | 0.72 | 2000 | >RL |
| 51 | V | 45 | 101.136 | 486201 | 0.71 | 2000 | >RL |
| 52 | Cr | 45 | 69.970 | 396148 | 0.18 | 2000 | >RL |
| 55 | Mn | 45 | 768.350 | 2460751 | 0.07 | 2000 | >RL |
| 56 | Fe | 45 | 122882.724 | 589435977 | 0.75 | 10000 | OUTCAL |
| 59 | Co | 72 | 48.703 | 429633 | 1.03 | 2000 | >RL |
| 60 | Ni | 72 | 54.673 | 128875 | 0.85 | 2000 | >RL |
| 63 | Cu | 72 | 17.198 | 111010 | 1.03 | 2000 | >RL |
| 66 | Zn | 72 | 228.628 | 253623 | 0.82 | 2000 | >RL |
| 75 | As | 72 | 37.307 | 35405 | 1.02 | 2000 | >RL |
| 78 | Se | 72 | 6.771 | 472 | 7.16 | 2000 | >RL |
| 88 | Sr | 115 | 397.869 | 1727526 | 1.09 | 2000 | >RL |
| 95 | Mo | 115 | 2.369 | 8610 | 0.39 | 2000 | >RL |
| 107 | Ag | 115 | 0.038 | 463 | 11.78 | 500 | |
| 111 | Cd | 115 | 0.123 | 212 | 7.08 | 2000 | |
| 118 | Sn | 115 | 5.476 | 20378 | 1.63 | 2000 | >RL |
| 121 | Sb | 115 | 0.153 | 1000 | 9.62 | 500 | |
| 137 | Ba | 115 | 106.747 | 192496 | 0.82 | 2000 | >RL |
| 205 | Tl | 209 | 0.650 | 14789 | 0.76 | 2000 | |
| 208 | Pb | 209 | 107.928 | 3294648 | 0.16 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 945909 | 0.48 | 904202 | 104.61 | 70 | 120 | |
| 72 | Ge | 679254 | 0.86 | 677615 | 100.24 | 70 | 120 | |
| 115 | In | 6263876 | 1.31 | 6287303 | 99.63 | 70 | 120 | |
| 209 | Bi | 13192507 | 1.27 | 14081817 | 93.68 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 6:36 PM | Sample Name | 1605098-16A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 225SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 65.326 | 2651 | 3.96 | 2000 | >RL |
| 9 | Be | 45 | 2.649 | 144 | 15.77 | 2000 | >RL |
| 11 | B | 45 | 67.299 | 1497 | 5.19 | 2000 | >RL |
| 23 | Na | 45 | 1329.167 | 1004928 | 0.93 | 25000 | >RL |
| 24 | Mg | 45 | 12793.568 | 4703997 | 1.04 | 25000 | >RL |
| 27 | Al | 45 | 66392.486 | 9022393 | 2.39 | 10000 | OUTCAL |
| 39 | K | 45 | 13004.487 | 4920980 | 0.95 | 25000 | >RL |
| 44 | Ca | 45 | 260684.381 | 5267765 | 2.82 | 25000 | OUTCAL |
| 47 | Ti | 45 | 243.559 | 34241 | 0.69 | 2000 | >RL |
| 51 | V | 45 | 107.013 | 490700 | 1.45 | 2000 | >RL |
| 52 | Cr | 45 | 64.737 | 349853 | 0.52 | 2000 | >RL |
| 55 | Mn | 45 | 650.634 | 1988540 | 0.88 | 2000 | >RL |
| 56 | Fe | 45 | 66044.898 | 302318904 | 0.99 | 10000 | OUTCAL |
| 59 | Co | 72 | 25.244 | 212739 | 0.20 | 2000 | >RL |
| 60 | Ni | 72 | 43.874 | 98923 | 0.57 | 2000 | >RL |
| 63 | Cu | 72 | 29.617 | 181479 | 1.07 | 2000 | >RL |
| 66 | Zn | 72 | 226.479 | 239933 | 1.37 | 2000 | >RL |
| 75 | As | 72 | 26.079 | 23692 | 0.53 | 2000 | >RL |
| 78 | Se | 72 | 4.469 | 328 | 5.77 | 2000 | >RL |
| 88 | Sr | 115 | 522.118 | 2225211 | 0.57 | 2000 | >RL |
| 95 | Mo | 115 | 1.790 | 6396 | 4.15 | 2000 | |
| 107 | Ag | 115 | 0.161 | 1803 | 5.95 | 500 | |
| 111 | Cd | 115 | 0.755 | 1261 | 3.13 | 2000 | >RL |
| 118 | Sn | 115 | 4.981 | 18246 | 1.96 | 2000 | >RL |
| 121 | Sb | 115 | 1.894 | 10652 | 4.58 | 500 | |
| 137 | Ba | 115 | 2824.771 | 4998544 | 0.67 | 2000 | OUTCAL |
| 205 | Tl | 209 | 0.589 | 13357 | 2.23 | 2000 | |
| 208 | Pb | 209 | 89.733 | 2730732 | 0.56 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 902677 | 0.27 | 904202 | 99.83 | 70 | 120 | |
| 72 | Ge | 648695 | 0.36 | 677615 | 95.73 | 70 | 120 | |
| 115 | In | 6149849 | 1.53 | 6287303 | 97.81 | 70 | 120 | |
| 209 | Bi | 13150843 | 1.25 | 14081817 | 93.39 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 6:38 PM | Sample Name | 1605098-18A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 226SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 86.830 | 3529 | 1.40 | 2000 | >RL |
| 9 | Be | 45 | 2.690 | 147 | 15.13 | 2000 | >RL |
| 11 | B | 45 | 104.974 | 2242 | 2.53 | 2000 | >RL |
| 23 | Na | 45 | 4045.556 | 2997320 | 0.30 | 25000 | >RL |
| 24 | Mg | 45 | 19206.782 | 7081095 | 1.95 | 25000 | >RL |
| 27 | Al | 45 | 59160.765 | 8062671 | 1.43 | 10000 | OUTCAL |
| 39 | K | 45 | 12810.897 | 4862238 | 2.58 | 25000 | >RL |
| 44 | Ca | 45 | 263354.076 | 5336608 | 1.75 | 25000 | OUTCAL |
| 47 | Ti | 45 | 152.011 | 21431 | 0.50 | 2000 | >RL |
| 51 | V | 45 | 106.862 | 491387 | 0.65 | 2000 | >RL |
| 52 | Cr | 45 | 56.534 | 306530 | 1.21 | 2000 | >RL |
| 55 | Mn | 45 | 821.280 | 2517052 | 0.51 | 2000 | >RL |
| 56 | Fe | 45 | 78946.132 | 362365274 | 2.28 | 10000 | OUTCAL |
| 59 | Co | 72 | 32.239 | 271847 | 1.37 | 2000 | >RL |
| 60 | Ni | 72 | 55.561 | 125148 | 0.73 | 2000 | >RL |
| 63 | Cu | 72 | 11.634 | 72259 | 1.75 | 2000 | >RL |
| 66 | Zn | 72 | 221.609 | 234955 | 1.39 | 2000 | >RL |
| 75 | As | 72 | 22.186 | 20198 | 2.08 | 2000 | >RL |
| 78 | Se | 72 | 6.236 | 423 | 7.10 | 2000 | >RL |
| 88 | Sr | 115 | 2247.284 | 9542376 | 0.82 | 2000 | OUTCAL |
| 95 | Mo | 115 | 3.061 | 10874 | 0.52 | 2000 | >RL |
| 107 | Ag | 115 | 0.050 | 581 | 7.22 | 500 | |
| 111 | Cd | 115 | 0.297 | 496 | 11.20 | 2000 | |
| 118 | Sn | 115 | 4.710 | 17221 | 2.02 | 2000 | >RL |
| 121 | Sb | 115 | 0.221 | 1351 | 6.36 | 500 | |
| 137 | Ba | 115 | 1090.616 | 1923792 | 0.17 | 2000 | >RL |
| 205 | Tl | 209 | 0.402 | 9211 | 2.29 | 2000 | |
| 208 | Pb | 209 | 31.376 | 964717 | 0.59 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 905191 | 0.33 | 904202 | 100.11 | 70 | 120 | |
| 72 | Ge | 649170 | 1.45 | 677615 | 95.80 | 70 | 120 | |
| 115 | In | 6129937 | 1.67 | 6287303 | 97.50 | 70 | 120 | |
| 209 | Bi | 13281923 | 0.82 | 14081817 | 94.32 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 6:40 PM | Sample Name | 1605098-19A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 227SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 101.365 | 4118 | 4.19 | 2000 | >RL |
| 9 | Be | 45 | 3.165 | 172 | 6.47 | 2000 | >RL |
| 11 | B | 45 | 140.826 | 2948 | 1.45 | 2000 | >RL |
| 23 | Na | 45 | 4366.358 | 3232593 | 0.97 | 25000 | >RL |
| 24 | Mg | 45 | 15410.930 | 5681766 | 2.87 | 25000 | >RL |
| 27 | Al | 45 | 56527.039 | 7704756 | 0.76 | 10000 | OUTCAL |
| 39 | K | 45 | 16308.462 | 6174939 | 1.58 | 25000 | >RL |
| 44 | Ca | 45 | 188556.528 | 3821578 | 0.53 | 25000 | OUTCAL |
| 47 | Ti | 45 | 152.716 | 21532 | 2.76 | 2000 | >RL |
| 51 | V | 45 | 83.936 | 386932 | 1.15 | 2000 | >RL |
| 52 | Cr | 45 | 51.879 | 281410 | 1.13 | 2000 | >RL |
| 55 | Mn | 45 | 806.542 | 2472197 | 0.60 | 2000 | >RL |
| 56 | Fe | 45 | 85016.407 | 390331496 | 2.53 | 10000 | OUTCAL |
| 59 | Co | 72 | 38.311 | 327983 | 1.17 | 2000 | >RL |
| 60 | Ni | 72 | 62.627 | 143133 | 1.43 | 2000 | >RL |
| 63 | Cu | 72 | 7.312 | 46678 | 0.39 | 2000 | >RL |
| 66 | Zn | 72 | 241.155 | 259571 | 1.15 | 2000 | >RL |
| 75 | As | 72 | 18.763 | 17371 | 0.38 | 2000 | >RL |
| 78 | Se | 72 | 6.518 | 444 | 5.30 | 2000 | >RL |
| 88 | Sr | 115 | 815.198 | 3464891 | 0.25 | 2000 | >RL |
| 95 | Mo | 115 | 2.224 | 7918 | 3.94 | 2000 | >RL |
| 107 | Ag | 115 | 0.042 | 494 | 7.46 | 500 | |
| 111 | Cd | 115 | 0.124 | 209 | 6.45 | 2000 | |
| 118 | Sn | 115 | 4.881 | 17845 | 2.45 | 2000 | >RL |
| 121 | Sb | 115 | 0.068 | 510 | 12.52 | 500 | |
| 137 | Ba | 115 | 77.182 | 136333 | 0.79 | 2000 | >RL |
| 205 | Tl | 209 | 0.348 | 8042 | 0.23 | 2000 | |
| 208 | Pb | 209 | 24.719 | 764595 | 1.11 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 905313 | 0.67 | 904202 | 100.12 | 70 | 120 | |
| 72 | Ge | 659107 | 0.61 | 677615 | 97.27 | 70 | 120 | |
| 115 | In | 6133659 | 0.46 | 6287303 | 97.56 | 70 | 120 | |
| 209 | Bi | 13364959 | 2.75 | 14081817 | 94.91 | 70 | 120 | |

# Post Digestion Spike Sample (PDS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 18:42 | Sample Name | 1605098-17A PDS |
| Data Batch | 160523.b | Comment | PDS ICPMS_TSDOD1 |
| Data File Name | 228_PDS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 250.441 | 10268 | 2.04 | 63.5 | 200 | 93.4 | 75 | 125 | |
| 9 | Be | 45 | 182.610 | 9884 | 0.53 | 2.6 | 200 | 90.0 | 75 | 125 | |
| 11 | B | 45 | 268.982 | 5531 | 0.99 | 80.3 | 200 | 94.3 | 75 | 125 | |
| 23 | Na | 45 | 7166.016 | 5342618 | 1.09 | 2293.2 | 5000 | 97.5 | 75 | 125 | |
| 24 | Mg | 45 | 22857.111 | 8521128 | 0.48 | 17067.5 | 5000 | 115.8 | 75 | 125 | |
| 27 | Al | 45 | 76528.603 | 10546018 | 1.02 | 67547.0 | 5000 | 179.6 | 75 | 125 | Fail |
| 39 | K | 45 | 17337.150 | 6634412 | 1.52 | 11553.0 | 5000 | 115.7 | 75 | 125 | |
| 44 | Ca | 45 | ######## | 11043170 | 1.00 | 492896.9 | 5000 | 921.0 | 75 | 125 | Fail |
| 47 | Ti | 45 | 437.511 | 62375 | 0.76 | 226.8 | 200 | 105.3 | 75 | 125 | |
| 51 | V | 45 | 321.051 | 1484296 | 1.28 | 123.4 | 200 | 98.8 | 75 | 125 | |
| 52 | Cr | 45 | 250.408 | 1369018 | 0.62 | 58.7 | 200 | 95.9 | 75 | 125 | |
| 55 | Mn | 45 | 1032.391 | 3199760 | 0.91 | 796.8 | 200 | 117.8 | 75 | 125 | |
| 56 | Fe | 45 | 67599.882 | 313814459 | 1.71 | 57824.0 | 5000 | 195.5 | 75 | 125 | Fail |
| 59 | Co | 72 | 214.622 | 1809809 | 0.37 | 25.8 | 200 | 94.4 | 75 | 125 | |
| 60 | Ni | 72 | 229.424 | 514534 | 0.32 | 43.6 | 200 | 92.9 | 75 | 125 | |
| 63 | Cu | 72 | 200.341 | 1220203 | 1.20 | 18.7 | 200 | 90.8 | 75 | 125 | |
| 66 | Zn | 72 | 349.434 | 370427 | 0.88 | 156.8 | 200 | 96.3 | 75 | 125 | |
| 75 | As | 72 | 213.534 | 192884 | 0.46 | 20.6 | 200 | 96.5 | 75 | 125 | |
| 78 | Se | 72 | 194.954 | 10499 | 0.61 | 4.7 | 200 | 95.1 | 75 | 125 | |
| 88 | Sr | 115 | 1217.099 | 5151980 | 0.24 | 967.8 | 200 | 124.7 | 75 | 125 | |
| 95 | Mo | 115 | 184.056 | 649627 | 0.30 | 2.7 | 200 | 90.7 | 75 | 125 | |
| 107 | Ag | 115 | 182.338 | 2000952 | 0.08 | 0.1 | 200 | 91.1 | 75 | 125 | |
| 111 | Cd | 115 | 172.319 | 285436 | 0.56 | 0.6 | 200 | 85.9 | 75 | 125 | |
| 118 | Sn | 115 | 190.959 | 676485 | 1.12 | 4.8 | 200 | 93.1 | 75 | 125 | |
| 121 | Sb | 115 | 182.331 | 1005730 | 0.76 | 0.4 | 200 | 91.0 | 75 | 125 | |
| 137 | Ba | 115 | 3716.544 | 6533778 | 1.63 | 3233.6 | 200 | 241.5 | 75 | 125 | Fail |
| 205 | Tl | 209 | 183.543 | 4071754 | 0.36 | 0.6 | 200 | 91.5 | 75 | 125 | |
| 208 | Pb | 209 | 216.432 | 6462462 | 0.34 | 31.9 | 200 | 92.3 | 75 | 125 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 915406 | 0.48 | 904202 | 101.24 | 70 | 120 | |
| 72 | Ge | 649421 | 0.69 | 677615 | 95.84 | 70 | 120 | |
| 115 | In | 6109967 | 1.43 | 6287303 | 97.18 | 70 | 120 | |
| 209 | Bi | 12903975 | 0.27 | 14081817 | 91.64 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 18:44 | Sample Name | 1605098-17A MS |
| Data Batch | 160523.b | Comment | MS ICPMS_TSDOD1 |
| Data File Name | 229_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 245.407 | 9912 | 1.20 | 63.5 | 200 | 90.9 | 80 | 120 | |
| 9 | Be | 45 | 183.756 | 9797 | 1.20 | 2.6 | 200 | 90.6 | 80 | 120 | |
| 11 | B | 45 | 264.437 | 5359 | 0.41 | 80.3 | 200 | 92.1 | 80 | 120 | |
| 23 | Na | 45 | 7174.420 | 5268271 | 1.31 | 2293.2 | 1000 | 488.1 | 80 | 120 | Fail |
| 24 | Mg | 45 | 21578.602 | 7924281 | 0.41 | 17067.5 | 1000 | 451.1 | 80 | 120 | Fail |
| 27 | Al | 45 | 73449.687 | 9971022 | 1.76 | 67547.0 | 1000 | 590.3 | 80 | 120 | Fail |
| 39 | K | 45 | 17030.683 | 6420161 | 0.54 | 11553.0 | 1000 | 547.8 | 80 | 120 | Fail |
| 44 | Ca | 45 | ######## | 10435537 | 0.94 | 492896.9 | 1000 | 2415.9 | 80 | 120 | Fail |
| 47 | Ti | 45 | 431.662 | 60619 | 0.40 | 226.8 | 200 | 102.4 | 80 | 120 | |
| 51 | V | 45 | 315.470 | 1436698 | 0.39 | 123.4 | 200 | 96.0 | 80 | 120 | |
| 52 | Cr | 45 | 240.485 | 1295166 | 0.59 | 58.7 | 200 | 90.9 | 80 | 120 | |
| 55 | Mn | 45 | 1028.607 | 3140090 | 0.53 | 796.8 | 200 | 115.9 | 80 | 120 | |
| 56 | Fe | 45 | 60916.868 | 278499953 | 2.48 | 57824.0 | 1000 | 309.3 | 80 | 120 | Fail |
| 59 | Co | 72 | 211.904 | 1752673 | 1.13 | 25.8 | 200 | 93.1 | 80 | 120 | |
| 60 | Ni | 72 | 231.766 | 509802 | 0.68 | 43.6 | 200 | 94.1 | 80 | 120 | |
| 63 | Cu | 72 | 202.245 | 1208133 | 0.14 | 18.7 | 200 | 91.8 | 80 | 120 | |
| 66 | Zn | 72 | 341.537 | 355100 | 0.31 | 156.8 | 200 | 92.3 | 80 | 120 | |
| 75 | As | 72 | 209.593 | 185692 | 0.35 | 20.6 | 200 | 94.5 | 80 | 120 | |
| 78 | Se | 72 | 190.555 | 10068 | 1.19 | 4.7 | 200 | 92.9 | 80 | 120 | |
| 88 | Sr | 115 | 1235.954 | 5090343 | 1.00 | 967.8 | 200 | 134.1 | 80 | 120 | Fail |
| 95 | Mo | 115 | 173.963 | 597384 | 0.32 | 2.7 | 200 | 85.7 | 80 | 120 | |
| 107 | Ag | 115 | 177.364 | 1893683 | 0.21 | 0.1 | 200 | 88.6 | 80 | 120 | |
| 111 | Cd | 115 | 177.668 | 286370 | 1.66 | 0.6 | 200 | 88.5 | 80 | 120 | |
| 118 | Sn | 115 | 182.219 | 628035 | 0.57 | 4.8 | 200 | 88.7 | 80 | 120 | |
| 121 | Sb | 115 | 52.580 | 282292 | 0.62 | 0.4 | 200 | 26.1 | 80 | 120 | Fail |
| 137 | Ba | 115 | 3769.018 | 6447260 | 0.13 | 3233.6 | 200 | 267.7 | 80 | 120 | Fail |
| 205 | Tl | 209 | 185.688 | 4124882 | 0.68 | 0.6 | 200 | 92.5 | 80 | 120 | |
| 208 | Pb | 209 | 213.139 | 6373391 | 1.01 | 31.9 | 200 | 90.6 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 901730 | 0.98 | 904202 | 99.73 | 70 | 120 | |
| 72 | Ge | 637011 | 1.51 | 677615 | 94.01 | 70 | 120 | |
| 115 | In | 5944419 | 1.29 | 6287303 | 94.55 | 70 | 120 | |
| 209 | Bi | 12923306 | 1.48 | 14081817 | 91.77 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 18:46 | Sample Name | 1605098-17A MSD |
| Data Batch | 160523.b | Comment | MSD ICPMS_TSDOD1 |
| Data File Name | 230_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 235.748 | 9426 | 2.47 | 63.5 | 200 | 86.1 | 80 | 120 | |
| 9 | Be | 45 | 174.162 | 9192 | 1.49 | 2.6 | 200 | 85.8 | 80 | 120 | |
| 11 | B | 45 | 244.769 | 4923 | 5.95 | 80.3 | 200 | 82.2 | 80 | 120 | |
| 23 | Na | 45 | 6707.970 | 4878545 | 0.76 | 2293.2 | 1000 | 441.5 | 80 | 120 | Fail |
| 24 | Mg | 45 | 20630.659 | 7499758 | 0.80 | 17067.5 | 1000 | 356.3 | 80 | 120 | Fail |
| 27 | Al | 45 | 70563.328 | 9482179 | 1.71 | 67547.0 | 1000 | 301.6 | 80 | 120 | Fail |
| 39 | K | 45 | 15891.240 | 5933911 | 1.58 | 11553.0 | 1000 | 433.8 | 80 | 120 | Fail |
| 44 | Ca | 45 | ######## | 9887554 | 2.83 | 492896.9 | 1000 | 193.9 | 80 | 120 | Fail |
| 47 | Ti | 45 | 398.373 | 55379 | 0.41 | 226.8 | 200 | 85.8 | 80 | 120 | |
| 51 | V | 45 | 296.494 | 1336933 | 0.95 | 123.4 | 200 | 86.5 | 80 | 120 | |
| 52 | Cr | 45 | 230.456 | 1228633 | 0.32 | 58.7 | 200 | 85.9 | 80 | 120 | |
| 55 | Mn | 45 | 1019.155 | 3079935 | 0.39 | 796.8 | 200 | 111.2 | 80 | 120 | |
| 56 | Fe | 45 | 56798.007 | 257094141 | 1.24 | 57824.0 | 1000 | -102.6 | 80 | 120 | Fail |
| 59 | Co | 72 | 198.711 | 1634483 | 0.29 | 25.8 | 200 | 86.5 | 80 | 120 | |
| 60 | Ni | 72 | 216.566 | 473791 | 0.81 | 43.6 | 200 | 86.5 | 80 | 120 | |
| 63 | Cu | 72 | 190.934 | 1134410 | 0.57 | 18.7 | 200 | 86.1 | 80 | 120 | |
| 66 | Zn | 72 | 334.563 | 345946 | 1.04 | 156.8 | 200 | 88.9 | 80 | 120 | |
| 75 | As | 72 | 197.923 | 174402 | 0.44 | 20.6 | 200 | 88.7 | 80 | 120 | |
| 78 | Se | 72 | 183.109 | 9624 | 2.82 | 4.7 | 200 | 89.2 | 80 | 120 | |
| 88 | Sr | 115 | 1105.940 | 4568420 | 1.02 | 967.8 | 200 | 69.1 | 80 | 120 | Fail |
| 95 | Mo | 115 | 163.600 | 563463 | 0.92 | 2.7 | 200 | 80.5 | 80 | 120 | |
| 107 | Ag | 115 | 170.266 | 1823298 | 0.48 | 0.1 | 200 | 85.1 | 80 | 120 | |
| 111 | Cd | 115 | 169.122 | 273383 | 0.46 | 0.6 | 200 | 84.3 | 80 | 120 | |
| 118 | Sn | 115 | 170.607 | 589774 | 0.27 | 4.8 | 200 | 82.9 | 80 | 120 | |
| 121 | Sb | 115 | 49.246 | 265188 | 0.24 | 0.4 | 200 | 24.4 | 80 | 120 | Fail |
| 137 | Ba | 115 | 3957.514 | 6790299 | 1.34 | 3233.6 | 200 | 361.9 | 80 | 120 | Fail |
| 205 | Tl | 209 | 178.932 | 3967516 | 0.57 | 0.6 | 200 | 89.2 | 80 | 120 | |
| 208 | Pb | 209 | 204.691 | 6108886 | 0.78 | 31.9 | 200 | 86.4 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 892585 | 0.27 | 904202 | 98.72 | 70 | 120 | |
| 72 | Ge | 633444 | 0.22 | 677615 | 93.48 | 70 | 120 | |
| 115 | In | 5962190 | 1.18 | 6287303 | 94.83 | 70 | 120 | |
| 209 | Bi | 12897887 | 0.43 | 14081817 | 91.59 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 18:48 | Sample Name | CCV9-160523 |
| Data Batch | 160523.b | Comment | CCV ICPMS_TW |
| Data File Name | 231_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 206.272 | 8358 | 0.43 | 200 | 103.1 | 90 | 110 | |
| 9 | Be | 45 | 198.307 | 10605 | 0.16 | 200 | 99.2 | 90 | 110 | |
| 11 | B | 45 | 192.878 | 3968 | 5.51 | 200 | 96.4 | 90 | 110 | |
| 23 | Na | 45 | 4984.259 | 3681924 | 0.64 | 5000 | 99.7 | 90 | 110 | |
| 24 | Mg | 45 | 4908.017 | 1809435 | 0.34 | 5000 | 98.2 | 90 | 110 | |
| 27 | Al | 45 | 4806.497 | 656618 | 0.89 | 5000 | 96.1 | 90 | 110 | |
| 39 | K | 45 | 5015.976 | 1935975 | 0.61 | 5000 | 100.3 | 90 | 110 | |
| 44 | Ca | 45 | 4895.834 | 100076 | 1.60 | 5000 | 97.9 | 90 | 110 | |
| 47 | Ti | 45 | 195.276 | 27509 | 1.87 | 200 | 97.6 | 90 | 110 | |
| 51 | V | 45 | 199.314 | 912072 | 1.39 | 200 | 99.7 | 90 | 110 | |
| 52 | Cr | 45 | 199.264 | 1076615 | 1.29 | 200 | 99.6 | 90 | 110 | |
| 55 | Mn | 45 | 195.545 | 598977 | 0.93 | 200 | 97.8 | 90 | 110 | |
| 56 | Fe | 45 | 5118.266 | 23485994 | 0.67 | 5000 | 102.4 | 90 | 110 | |
| 59 | Co | 72 | 199.345 | 1724754 | 0.73 | 200 | 99.7 | 90 | 110 | |
| 60 | Ni | 72 | 203.818 | 469075 | 0.41 | 200 | 101.9 | 90 | 110 | |
| 63 | Cu | 72 | 206.283 | 1289041 | 0.26 | 200 | 103.1 | 90 | 110 | |
| 66 | Zn | 72 | 200.744 | 218483 | 0.18 | 200 | 100.4 | 90 | 110 | |
| 75 | As | 72 | 198.593 | 184066 | 0.43 | 200 | 99.3 | 90 | 110 | |
| 78 | Se | 72 | 197.927 | 10935 | 0.41 | 200 | 99.0 | 90 | 110 | |
| 88 | Sr | 115 | 186.819 | 808325 | 0.82 | 200 | 93.4 | 90 | 110 | |
| 95 | Mo | 115 | 192.036 | 691990 | 0.79 | 200 | 96.0 | 90 | 110 | |
| 107 | Ag | 115 | 196.012 | 2195933 | 0.93 | 200 | 98.0 | 90 | 110 | |
| 111 | Cd | 115 | 189.344 | 320198 | 0.48 | 200 | 94.7 | 90 | 110 | |
| 118 | Sn | 115 | 189.573 | 685580 | 0.37 | 200 | 94.8 | 90 | 110 | |
| 121 | Sb | 115 | 190.345 | 1071956 | 0.41 | 200 | 95.2 | 90 | 110 | |
| 137 | Ba | 115 | 188.102 | 337728 | 0.62 | 200 | 94.1 | 90 | 110 | |
| 205 | Tl | 209 | 189.098 | 4483132 | 0.40 | 200 | 94.5 | 90 | 110 | |
| 208 | Pb | 209 | 188.063 | 6001421 | 0.85 | 200 | 94.0 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 904470 | 0.34 | 904202 | 100.03 | 70 | 120 | |
| 72 | Ge | 666291 | 0.31 | 677615 | 98.33 | 70 | 120 | |
| 115 | In | 6237747 | 1.35 | 6287303 | 99.21 | 70 | 120 | |
| 209 | Bi | 13791172 | 1.22 | 14081817 | 97.94 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 18:52 | Sample Name | LCVL9-160523 |
| Data Batch | 160523.b | Comment | LCVLICPMS_TW |
| Data File Name | 233LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.970 | 442 | 7.31 | 10 | 109.7 | 70 | 130 | |
| 9 | Be | 45 | 1.227 | 66 | 5.46 | 1 | 122.7 | 70 | 130 | |
| 11 | B | 45 | 22.186 | 592 | 12.10 | 20 | 110.9 | 70 | 130 | |
| 23 | Na | 45 | 101.676 | 104966 | 0.52 | 100 | 101.7 | 70 | 130 | |
| 24 | Mg | 45 | 98.160 | 36865 | 1.45 | 100 | 98.2 | 70 | 130 | |
| 27 | Al | 45 | 98.791 | 15216 | 0.97 | 100 | 98.8 | 70 | 130 | |
| 39 | K | 45 | 115.035 | 95354 | 0.17 | 100 | 115.0 | 70 | 130 | |
| 44 | Ca | 45 | 105.226 | 2991 | 6.87 | 100 | 105.2 | 70 | 130 | |
| 47 | Ti | 45 | 5.132 | 701 | 1.80 | 5 | 102.6 | 70 | 130 | |
| 51 | V | 45 | 0.595 | 6748 | 3.21 | 1 | 59.5 | 70 | 130 | Fail |
| 52 | Cr | 45 | 5.155 | 28004 | 0.71 | 5 | 103.1 | 70 | 130 | |
| 55 | Mn | 45 | 5.017 | 15062 | 3.22 | 5 | 100.3 | 70 | 130 | |
| 56 | Fe | 45 | 101.292 | 460378 | 0.57 | 100 | 101.3 | 70 | 130 | |
| 59 | Co | 72 | 5.098 | 43360 | 1.41 | 5 | 102.0 | 70 | 130 | |
| 60 | Ni | 72 | 4.862 | 11744 | 2.90 | 5 | 97.2 | 70 | 130 | |
| 63 | Cu | 72 | 5.449 | 34873 | 0.92 | 5 | 109.0 | 70 | 130 | |
| 66 | Zn | 72 | 5.049 | 5732 | 4.30 | 5 | 101.0 | 70 | 130 | |
| 75 | As | 72 | 4.979 | 4705 | 1.87 | 5 | 99.6 | 70 | 130 | |
| 78 | Se | 72 | 5.709 | 397 | 7.31 | 5 | 114.2 | 70 | 130 | |
| 88 | Sr | 115 | 4.657 | 21123 | 1.41 | 5 | 93.1 | 70 | 130 | |
| 95 | Mo | 115 | 4.645 | 16700 | 2.77 | 5 | 92.9 | 70 | 130 | |
| 107 | Ag | 115 | 1.917 | 21417 | 2.53 | 2 | 95.8 | 70 | 130 | |
| 111 | Cd | 115 | 0.940 | 1586 | 5.05 | 1 | 94.0 | 70 | 130 | |
| 118 | Sn | 115 | 4.713 | 17461 | 1.58 | 5 | 94.3 | 70 | 130 | |
| 121 | Sb | 115 | 1.983 | 11253 | 3.46 | 2 | 99.2 | 70 | 130 | |
| 137 | Ba | 115 | 4.915 | 8873 | 2.07 | 5 | 98.3 | 70 | 130 | |
| 205 | Tl | 209 | 0.954 | 22334 | 0.61 | 1 | 95.4 | 70 | 130 | |
| 208 | Pb | 209 | 0.969 | 31072 | 1.47 | 1 | 96.9 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 874574 | 0.97 | 904202 | 96.72 | 70 | 120 | |
| 72 | Ge | 653380 | 0.25 | 677615 | 96.42 | 70 | 120 | |
| 115 | In | 6210096 | 0.60 | 6287303 | 98.77 | 70 | 120 | |
| 209 | Bi | 13595194 | 1.09 | 14081817 | 96.54 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 18:54 | Sample Name | CCB9-160523 |
| Data Batch | 160523.b | Comment | CCB ICPMS_TW |
| Data File Name | 234_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.398 | 29 | 24.1 | 2 | 5 | |
| 9 | Be | 45 | 0.137 | 10 | 74.8 | 0.4 | 0.3 | |
| 11 | B | 45 | 3.282 | 233 | 7.1 | 10 | 10 | |
| 23 | Na | 45 | -1.675 | 31821 | 0.9 | 50 | 100 | |
| 24 | Mg | 45 | -2.805 | 916 | 9.0 | 50 | 100 | |
| 27 | Al | 45 | -0.549 | 2140 | 1.8 | 50 | 10 | |
| 39 | K | 45 | 12.717 | 58243 | 0.6 | 50 | 100 | |
| 44 | Ca | 45 | -0.597 | 918 | 1.6 | 50 | 100 | |
| 47 | Ti | 45 | 0.050 | 9 | 57.3 | 4 | 3 | |
| 51 | V | 45 | -0.444 | 2171 | 7.1 | 4 | 3 | |
| 52 | Cr | 45 | -0.035 | 922 | 12.6 | 2 | 2 | |
| 55 | Mn | 45 | 0.004 | 219 | 26.1 | 2 | 3 | |
| 56 | Fe | 45 | 1.857 | 19415 | 5.5 | 50 | 50 | |
| 59 | Co | 72 | 0.011 | 202 | 20.5 | 2 | 3 | |
| 60 | Ni | 72 | -0.243 | 242 | 5.6 | 2 | 3 | |
| 63 | Cu | 72 | 0.191 | 2674 | 8.2 | 2 | 2 | |
| 66 | Zn | 72 | -0.005 | 344 | 6.8 | 4 | 2 | |
| 75 | As | 72 | -0.051 | 137 | 5.6 | 2 | 2 | |
| 78 | Se | 72 | 0.467 | 115 | 9.6 | 1 | 2 | |
| 88 | Sr | 115 | 0.032 | 1209 | 4.9 | 4 | 3 | |
| 95 | Mo | 115 | 0.005 | 52 | 44.8 | 2 | 2 | |
| 107 | Ag | 115 | 0.034 | 408 | 5.7 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.012 | 23 | 37.8 | 0.4 | 0.3 | |
| 118 | Sn | 115 | 0.008 | 527 | 2.9 | 4 | 3 | |
| 121 | Sb | 115 | 0.032 | 311 | 25.3 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.057 | 188 | 6.7 | 2 | 3 | |
| 205 | Tl | 209 | 0.006 | 178 | 10.7 | 2 | 0.5 | |
| 208 | Pb | 209 | 0.024 | 1327 | 8.8 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 874232 | 0.82 | 904202 | 96.69 | 70 | 120 | |
| 72 | Ge | 649042 | 0.16 | 677615 | 95.78 | 70 | 120 | |
| 115 | In | 6131473 | 0.40 | 6287303 | 97.52 | 70 | 120 | |
| 209 | Bi | 13488906 | 1.01 | 14081817 | 95.79 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 6:56 PM | Sample Name | 1605098-20A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 235SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 119.586 | 4599 | 0.72 | 2000 | >RL |
| 9 | Be | 45 | 3.220 | 166 | 6.20 | 2000 | >RL |
| 11 | B | 45 | 156.022 | 3075 | 4.63 | 2000 | >RL |
| 23 | Na | 45 | 7364.642 | 5142354 | 2.33 | 25000 | >RL |
| 24 | Mg | 45 | 12752.332 | 4453405 | 0.37 | 25000 | >RL |
| 27 | Al | 45 | 54705.922 | 7060943 | 1.11 | 10000 | OUTCAL |
| 39 | K | 45 | 16557.270 | 5936419 | 0.75 | 25000 | >RL |
| 44 | Ca | 45 | 103065.469 | 1978896 | 1.16 | 25000 | OUTCAL |
| 47 | Ti | 45 | 163.915 | 21885 | 1.99 | 2000 | >RL |
| 51 | V | 45 | 79.631 | 347857 | 0.30 | 2000 | >RL |
| 52 | Cr | 45 | 51.932 | 266793 | 0.85 | 2000 | >RL |
| 55 | Mn | 45 | 162.249 | 471167 | 0.75 | 2000 | >RL |
| 56 | Fe | 45 | 89245.870 | 388051860 | 1.77 | 10000 | OUTCAL |
| 59 | Co | 72 | 19.129 | 156255 | 0.58 | 2000 | >RL |
| 60 | Ni | 72 | 25.472 | 55979 | 1.24 | 2000 | >RL |
| 63 | Cu | 72 | 6.674 | 40766 | 0.88 | 2000 | >RL |
| 66 | Zn | 72 | 198.884 | 204245 | 1.50 | 2000 | >RL |
| 75 | As | 72 | 19.493 | 17208 | 1.34 | 2000 | >RL |
| 78 | Se | 72 | 4.427 | 316 | 10.55 | 2000 | >RL |
| 88 | Sr | 115 | 1543.359 | 6151512 | 1.38 | 2000 | >RL |
| 95 | Mo | 115 | 1.352 | 4526 | 2.12 | 2000 | |
| 107 | Ag | 115 | 0.046 | 509 | 6.09 | 500 | |
| 111 | Cd | 115 | 0.034 | 57 | 17.65 | 2000 | |
| 118 | Sn | 115 | 5.055 | 17318 | 2.00 | 2000 | >RL |
| 121 | Sb | 115 | 0.124 | 764 | 3.52 | 500 | |
| 137 | Ba | 115 | 45.948 | 76138 | 0.25 | 2000 | >RL |
| 205 | Tl | 209 | 0.318 | 7249 | 2.67 | 2000 | |
| 208 | Pb | 209 | 20.591 | 627996 | 1.39 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 857422 | 1.12 | 904202 | 94.83 | 70 | 120 | |
| 72 | Ge | 628689 | 0.41 | 677615 | 92.78 | 70 | 120 | |
| 115 | In | 5756766 | 3.80 | 6287303 | 91.56 | 70 | 120 | |
| 209 | Bi | 13170184 | 0.71 | 14081817 | 93.53 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 6:58 PM | Sample Name | 1605098-21A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 236SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 62.594 | 2467 | 2.28 | 2000 | >RL |
| 9 | Be | 45 | 2.697 | 142 | 7.51 | 2000 | >RL |
| 11 | B | 45 | 74.498 | 1590 | 5.50 | 2000 | >RL |
| 23 | Na | 45 | 943.837 | 702294 | 0.74 | 25000 | >RL |
| 24 | Mg | 45 | 13345.618 | 4763456 | 1.99 | 25000 | >RL |
| 27 | Al | 45 | 65305.462 | 8615194 | 1.13 | 10000 | OUTCAL |
| 39 | K | 45 | 12804.620 | 4704543 | 1.05 | 25000 | >RL |
| 44 | Ca | 45 | 282265.401 | 5537073 | 0.86 | 25000 | OUTCAL |
| 47 | Ti | 45 | 221.398 | 30215 | 0.71 | 2000 | >RL |
| 51 | V | 45 | 107.811 | 479869 | 0.41 | 2000 | >RL |
| 52 | Cr | 45 | 58.070 | 304760 | 1.04 | 2000 | >RL |
| 55 | Mn | 45 | 655.538 | 1944918 | 0.41 | 2000 | >RL |
| 56 | Fe | 45 | 64507.833 | 286646060 | 2.04 | 10000 | OUTCAL |
| 59 | Co | 72 | 24.579 | 202211 | 0.67 | 2000 | >RL |
| 60 | Ni | 72 | 45.511 | 100149 | 0.84 | 2000 | >RL |
| 63 | Cu | 72 | 30.255 | 180948 | 1.14 | 2000 | >RL |
| 66 | Zn | 72 | 202.732 | 209712 | 0.43 | 2000 | >RL |
| 75 | As | 72 | 27.297 | 24201 | 0.28 | 2000 | >RL |
| 78 | Se | 72 | 4.267 | 310 | 5.32 | 2000 | >RL |
| 88 | Sr | 115 | 555.543 | 2243440 | 0.81 | 2000 | >RL |
| 95 | Mo | 115 | 1.980 | 6696 | 3.34 | 2000 | |
| 107 | Ag | 115 | 0.151 | 1615 | 3.53 | 500 | |
| 111 | Cd | 115 | 0.732 | 1159 | 1.58 | 2000 | >RL |
| 118 | Sn | 115 | 4.846 | 16837 | 2.13 | 2000 | >RL |
| 121 | Sb | 115 | 1.739 | 9271 | 0.83 | 500 | |
| 137 | Ba | 115 | 2211.074 | 3707668 | 0.41 | 2000 | OUTCAL |
| 205 | Tl | 209 | 0.582 | 12715 | 1.66 | 2000 | |
| 208 | Pb | 209 | 65.618 | 1925278 | 0.24 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 876262 | 0.57 | 904202 | 96.91 | 70 | 120 | |
| 72 | Ge | 633278 | 0.25 | 677615 | 93.46 | 70 | 120 | |
| 115 | In | 5828928 | 2.70 | 6287303 | 92.71 | 70 | 120 | |
| 209 | Bi | 12678102 | 0.84 | 14081817 | 90.03 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 7:00 PM | Sample Name | 1605098-22A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 237SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 77.213 | 3066 | 1.90 | 2000 | >RL |
| 9 | Be | 45 | 2.829 | 150 | 7.30 | 2000 | >RL |
| 11 | B | 45 | 95.069 | 1999 | 1.01 | 2000 | >RL |
| 23 | Na | 45 | 3182.810 | 2309535 | 0.88 | 25000 | >RL |
| 24 | Mg | 45 | 18962.069 | 6824964 | 2.38 | 25000 | >RL |
| 27 | Al | 45 | 77159.353 | 10266178 | 0.68 | 10000 | OUTCAL |
| 39 | K | 45 | 14195.283 | 5254525 | 0.48 | 25000 | >RL |
| 44 | Ca | 45 | 505771.829 | 10006864 | 1.15 | 25000 | OUTCAL |
| 47 | Ti | 45 | 224.442 | 30897 | 0.91 | 2000 | >RL |
| 51 | V | 45 | 146.513 | 656263 | 0.91 | 2000 | >RL |
| 52 | Cr | 45 | 66.287 | 350735 | 1.37 | 2000 | >RL |
| 55 | Mn | 45 | 1236.954 | 3701547 | 0.85 | 2000 | >RL |
| 56 | Fe | 45 | 74826.779 | 335369427 | 0.09 | 10000 | OUTCAL |
| 59 | Co | 72 | 33.822 | 272639 | 0.34 | 2000 | >RL |
| 60 | Ni | 72 | 57.991 | 124847 | 0.39 | 2000 | >RL |
| 63 | Cu | 72 | 21.758 | 127928 | 0.28 | 2000 | >RL |
| 66 | Zn | 72 | 195.354 | 198045 | 0.34 | 2000 | >RL |
| 75 | As | 72 | 27.457 | 23852 | 0.56 | 2000 | >RL |
| 78 | Se | 72 | 5.445 | 364 | 3.11 | 2000 | >RL |
| 88 | Sr | 115 | 1068.120 | 4220710 | 0.23 | 2000 | >RL |
| 95 | Mo | 115 | 3.298 | 10901 | 1.08 | 2000 | >RL |
| 107 | Ag | 115 | 0.126 | 1316 | 2.78 | 500 | |
| 111 | Cd | 115 | 0.644 | 998 | 7.14 | 2000 | >RL |
| 118 | Sn | 115 | 5.113 | 17367 | 3.12 | 2000 | >RL |
| 121 | Sb | 115 | 0.411 | 2240 | 4.77 | 500 | |
| 137 | Ba | 115 | 2897.103 | 4754640 | 0.51 | 2000 | OUTCAL |
| 205 | Tl | 209 | 0.658 | 14490 | 0.96 | 2000 | |
| 208 | Pb | 209 | 35.134 | 1039227 | 0.14 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 883858 | 0.76 | 904202 | 97.75 | 70 | 120 | |
| 72 | Ge | 620604 | 0.70 | 677615 | 91.59 | 70 | 120 | |
| 115 | In | 5707727 | 3.76 | 6287303 | 90.78 | 70 | 120 | |
| 209 | Bi | 12779976 | 1.86 | 14081817 | 90.76 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 7:02 PM | Sample Name | 1605098-23A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 238SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 100.759 | 3991 | 0.66 | 2000 | >RL |
| 9 | Be | 45 | 3.190 | 169 | 3.07 | 2000 | >RL |
| 11 | B | 45 | 119.556 | 2466 | 7.81 | 2000 | >RL |
| 23 | Na | 45 | 4610.171 | 3325483 | 0.12 | 25000 | >RL |
| 24 | Mg | 45 | 15324.852 | 5508678 | 0.79 | 25000 | >RL |
| 27 | Al | 45 | 62438.186 | 8295865 | 1.93 | 10000 | OUTCAL |
| 39 | K | 45 | 15357.301 | 5671910 | 0.83 | 25000 | >RL |
| 44 | Ca | 45 | 212717.744 | 4202863 | 0.49 | 25000 | OUTCAL |
| 47 | Ti | 45 | 181.628 | 24966 | 2.75 | 2000 | >RL |
| 51 | V | 45 | 106.669 | 478228 | 0.30 | 2000 | >RL |
| 52 | Cr | 45 | 58.889 | 311250 | 0.49 | 2000 | >RL |
| 55 | Mn | 45 | 449.183 | 1342285 | 0.23 | 2000 | >RL |
| 56 | Fe | 45 | 85271.252 | 381616367 | 0.74 | 10000 | OUTCAL |
| 59 | Co | 72 | 28.988 | 240863 | 0.24 | 2000 | >RL |
| 60 | Ni | 72 | 48.491 | 107723 | 0.98 | 2000 | >RL |
| 63 | Cu | 72 | 9.626 | 59167 | 2.06 | 2000 | >RL |
| 66 | Zn | 72 | 243.922 | 254780 | 0.31 | 2000 | >RL |
| 75 | As | 72 | 20.253 | 18183 | 1.10 | 2000 | >RL |
| 78 | Se | 72 | 5.651 | 386 | 3.97 | 2000 | >RL |
| 88 | Sr | 115 | 666.756 | 2736066 | 0.63 | 2000 | >RL |
| 95 | Mo | 115 | 1.537 | 5291 | 1.43 | 2000 | |
| 107 | Ag | 115 | 0.065 | 722 | 8.74 | 500 | |
| 111 | Cd | 115 | 0.209 | 339 | 3.46 | 2000 | |
| 118 | Sn | 115 | 4.843 | 17094 | 0.75 | 2000 | >RL |
| 121 | Sb | 115 | 0.122 | 777 | 7.07 | 500 | |
| 137 | Ba | 115 | 837.852 | 1427741 | 0.81 | 2000 | >RL |
| 205 | Tl | 209 | 0.331 | 7483 | 0.83 | 2000 | |
| 208 | Pb | 209 | 24.683 | 748173 | 1.18 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 882528 | 0.12 | 904202 | 97.60 | 70 | 120 | |
| 72 | Ge | 639659 | 0.72 | 677615 | 94.40 | 70 | 120 | |
| 115 | In | 5921921 | 1.57 | 6287303 | 94.19 | 70 | 120 | |
| 209 | Bi | 13092003 | 2.01 | 14081817 | 92.97 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 7:04 PM | Sample Name | 1605098-24A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 239SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 87.568 | 3434 | 1.10 | 2000 | >RL |
| 9 | Be | 45 | 2.765 | 145 | 2.86 | 2000 | >RL |
| 11 | B | 45 | 126.644 | 2575 | 0.58 | 2000 | >RL |
| 23 | Na | 45 | 4426.968 | 3161347 | 0.45 | 25000 | >RL |
| 24 | Mg | 45 | 11882.408 | 4227191 | 0.77 | 25000 | >RL |
| 27 | Al | 45 | 50226.704 | 6604006 | 1.71 | 10000 | OUTCAL |
| 39 | K | 45 | 14332.399 | 5241519 | 1.37 | 25000 | >RL |
| 44 | Ca | 45 | 200175.166 | 3913856 | 0.46 | 25000 | OUTCAL |
| 47 | Ti | 45 | 143.927 | 19578 | 1.77 | 2000 | >RL |
| 51 | V | 45 | 76.841 | 342058 | 0.99 | 2000 | >RL |
| 52 | Cr | 45 | 48.046 | 251500 | 0.58 | 2000 | >RL |
| 55 | Mn | 45 | 464.569 | 1373781 | 0.39 | 2000 | >RL |
| 56 | Fe | 45 | 75871.781 | 336006822 | 0.80 | 10000 | OUTCAL |
| 59 | Co | 72 | 23.028 | 191218 | 1.00 | 2000 | >RL |
| 60 | Ni | 72 | 41.291 | 91775 | 0.64 | 2000 | >RL |
| 63 | Cu | 72 | 6.992 | 43351 | 1.17 | 2000 | >RL |
| 66 | Zn | 72 | 186.909 | 195164 | 0.87 | 2000 | >RL |
| 75 | As | 72 | 17.277 | 15526 | 0.83 | 2000 | >RL |
| 78 | Se | 72 | 4.922 | 347 | 3.44 | 2000 | >RL |
| 88 | Sr | 115 | 2300.934 | 9604085 | 0.56 | 2000 | OUTCAL |
| 95 | Mo | 115 | 2.362 | 8258 | 1.80 | 2000 | >RL |
| 107 | Ag | 115 | 0.056 | 640 | 2.27 | 500 | |
| 111 | Cd | 115 | 0.071 | 120 | 21.70 | 2000 | |
| 118 | Sn | 115 | 4.725 | 16987 | 1.90 | 2000 | >RL |
| 121 | Sb | 115 | 0.083 | 581 | 6.72 | 500 | |
| 137 | Ba | 115 | 103.236 | 179101 | 0.87 | 2000 | >RL |
| 205 | Tl | 209 | 0.338 | 7678 | 3.79 | 2000 | |
| 208 | Pb | 209 | 22.447 | 682677 | 0.66 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 873330 | 0.48 | 904202 | 96.59 | 70 | 120 | |
| 72 | Ge | 639149 | 0.18 | 677615 | 94.32 | 70 | 120 | |
| 115 | In | 6025838 | 1.75 | 6287303 | 95.84 | 70 | 120 | |
| 209 | Bi | 13138448 | 2.55 | 14081817 | 93.30 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 7:06 PM | Sample Name | 1605098-25A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 240SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 105.908 | 4183 | 0.73 | 2000 | >RL |
| 9 | Be | 45 | 2.775 | 147 | 12.47 | 2000 | >RL |
| 11 | B | 45 | 145.521 | 2956 | 2.03 | 2000 | >RL |
| 23 | Na | 45 | 6243.263 | 4479265 | 0.21 | 25000 | >RL |
| 24 | Mg | 45 | 11784.490 | 4224863 | 0.91 | 25000 | >RL |
| 27 | Al | 45 | 49976.197 | 6622532 | 1.42 | 10000 | OUTCAL |
| 39 | K | 45 | 15076.708 | 5553701 | 0.87 | 25000 | >RL |
| 44 | Ca | 45 | 128603.209 | 2534276 | 0.51 | 25000 | OUTCAL |
| 47 | Ti | 45 | 165.948 | 22749 | 2.03 | 2000 | >RL |
| 51 | V | 45 | 73.803 | 331254 | 0.97 | 2000 | >RL |
| 52 | Cr | 45 | 47.792 | 252114 | 0.41 | 2000 | >RL |
| 55 | Mn | 45 | 348.843 | 1039618 | 0.50 | 2000 | >RL |
| 56 | Fe | 45 | 75232.833 | 335767738 | 1.08 | 10000 | OUTCAL |
| 59 | Co | 72 | 27.724 | 231307 | 0.59 | 2000 | >RL |
| 60 | Ni | 72 | 33.597 | 75184 | 0.38 | 2000 | >RL |
| 63 | Cu | 72 | 5.901 | 36995 | 1.80 | 2000 | >RL |
| 66 | Zn | 72 | 181.683 | 190638 | 0.26 | 2000 | >RL |
| 75 | As | 72 | 14.864 | 13448 | 1.90 | 2000 | >RL |
| 78 | Se | 72 | 5.224 | 365 | 7.47 | 2000 | >RL |
| 88 | Sr | 115 | 1871.557 | 7702447 | 2.44 | 2000 | >RL |
| 95 | Mo | 115 | 1.354 | 4682 | 3.69 | 2000 | |
| 107 | Ag | 115 | 0.043 | 493 | 11.72 | 500 | |
| 111 | Cd | 115 | 0.079 | 130 | 20.03 | 2000 | |
| 118 | Sn | 115 | 4.895 | 17331 | 3.06 | 2000 | >RL |
| 121 | Sb | 115 | 0.065 | 476 | 14.54 | 500 | |
| 137 | Ba | 115 | 53.563 | 91652 | 1.59 | 2000 | >RL |
| 205 | Tl | 209 | 0.283 | 6499 | 0.81 | 2000 | |
| 208 | Pb | 209 | 19.994 | 615039 | 1.13 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 880100 | 0.48 | 904202 | 97.33 | 70 | 120 | |
| 72 | Ge | 642266 | 0.45 | 677615 | 94.78 | 70 | 120 | |
| 115 | In | 5940480 | 0.71 | 6287303 | 94.48 | 70 | 120 | |
| 209 | Bi | 13282457 | 0.25 | 14081817 | 94.32 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 7:08 PM | Sample Name | 1605098-26A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 241SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 60.085 | 2402 | 0.85 | 2000 | >RL |
| 9 | Be | 45 | 2.635 | 141 | 10.92 | 2000 | >RL |
| 11 | B | 45 | 78.231 | 1685 | 1.32 | 2000 | >RL |
| 23 | Na | 45 | 888.512 | 672367 | 0.73 | 25000 | >RL |
| 24 | Mg | 45 | 13576.960 | 4913728 | 0.97 | 25000 | >RL |
| 27 | Al | 45 | 65064.984 | 8703909 | 1.07 | 10000 | OUTCAL |
| 39 | K | 45 | 12849.505 | 4786920 | 0.56 | 25000 | >RL |
| 44 | Ca | 45 | 310059.348 | 6167445 | 0.59 | 25000 | OUTCAL |
| 47 | Ti | 45 | 265.185 | 36697 | 1.57 | 2000 | >RL |
| 51 | V | 45 | 109.218 | 492885 | 1.10 | 2000 | >RL |
| 52 | Cr | 45 | 57.839 | 307808 | 1.22 | 2000 | >RL |
| 55 | Mn | 45 | 639.733 | 1924624 | 0.22 | 2000 | >RL |
| 56 | Fe | 45 | 63248.558 | 284994246 | 1.45 | 10000 | OUTCAL |
| 59 | Co | 72 | 24.036 | 197616 | 1.46 | 2000 | >RL |
| 60 | Ni | 72 | 40.760 | 89712 | 0.15 | 2000 | >RL |
| 63 | Cu | 72 | 23.662 | 141744 | 0.80 | 2000 | >RL |
| 66 | Zn | 72 | 203.538 | 210400 | 0.95 | 2000 | >RL |
| 75 | As | 72 | 30.819 | 27281 | 0.78 | 2000 | >RL |
| 78 | Se | 72 | 4.723 | 333 | 5.68 | 2000 | >RL |
| 88 | Sr | 115 | 574.877 | 2358566 | 0.97 | 2000 | >RL |
| 95 | Mo | 115 | 2.324 | 7978 | 2.36 | 2000 | >RL |
| 107 | Ag | 115 | 0.143 | 1553 | 3.87 | 500 | |
| 111 | Cd | 115 | 0.666 | 1072 | 1.77 | 2000 | >RL |
| 118 | Sn | 115 | 5.142 | 18123 | 1.91 | 2000 | >RL |
| 121 | Sb | 115 | 1.729 | 9365 | 0.43 | 500 | |
| 137 | Ba | 115 | 2220.641 | 3782612 | 0.33 | 2000 | OUTCAL |
| 205 | Tl | 209 | 0.598 | 13307 | 2.37 | 2000 | |
| 208 | Pb | 209 | 59.293 | 1771016 | 0.63 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 888538 | 0.25 | 904202 | 98.27 | 70 | 120 | |
| 72 | Ge | 632870 | 0.57 | 677615 | 93.40 | 70 | 120 | |
| 115 | In | 5924390 | 3.92 | 6287303 | 94.23 | 70 | 120 | |
| 209 | Bi | 12905209 | 0.71 | 14081817 | 91.64 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 7:10 PM | Sample Name | 1605098-27A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 242SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 66.196 | 2639 | 3.02 | 2000 | >RL |
| 9 | Be | 45 | 2.756 | 147 | 6.56 | 2000 | >RL |
| 11 | B | 45 | 87.986 | 1869 | 2.33 | 2000 | >RL |
| 23 | Na | 45 | 2842.384 | 2072738 | 0.69 | 25000 | >RL |
| 24 | Mg | 45 | 17854.294 | 6448013 | 1.91 | 25000 | >RL |
| 27 | Al | 45 | 66048.330 | 8816240 | 1.64 | 10000 | OUTCAL |
| 39 | K | 45 | 12144.888 | 4517879 | 0.29 | 25000 | >RL |
| 44 | Ca | 45 | 569907.764 | 11311898 | 0.86 | 25000 | OUTCAL |
| 47 | Ti | 45 | 236.394 | 32647 | 1.14 | 2000 | >RL |
| 51 | V | 45 | 129.854 | 583993 | 0.74 | 2000 | >RL |
| 52 | Cr | 45 | 73.527 | 390165 | 0.32 | 2000 | >RL |
| 55 | Mn | 45 | 1215.641 | 3649404 | 1.16 | 2000 | >RL |
| 56 | Fe | 45 | 61709.679 | 277457945 | 1.89 | 10000 | OUTCAL |
| 59 | Co | 72 | 29.532 | 241530 | 0.63 | 2000 | >RL |
| 60 | Ni | 72 | 54.471 | 119021 | 0.37 | 2000 | >RL |
| 63 | Cu | 72 | 19.894 | 118789 | 1.76 | 2000 | >RL |
| 66 | Zn | 72 | 161.929 | 166605 | 0.64 | 2000 | >RL |
| 75 | As | 72 | 25.145 | 22178 | 0.16 | 2000 | >RL |
| 78 | Se | 72 | 4.618 | 326 | 6.95 | 2000 | >RL |
| 88 | Sr | 115 | 1122.095 | 4558272 | 1.16 | 2000 | >RL |
| 95 | Mo | 115 | 9.024 | 30585 | 0.79 | 2000 | >RL |
| 107 | Ag | 115 | 0.122 | 1312 | 5.47 | 500 | |
| 111 | Cd | 115 | 0.626 | 1000 | 11.35 | 2000 | >RL |
| 118 | Sn | 115 | 4.938 | 17242 | 0.07 | 2000 | >RL |
| 121 | Sb | 115 | 0.569 | 3141 | 4.30 | 500 | |
| 137 | Ba | 115 | 3098.230 | 5225712 | 0.62 | 2000 | OUTCAL |
| 205 | Tl | 209 | 0.627 | 13809 | 1.53 | 2000 | |
| 208 | Pb | 209 | 37.189 | 1098931 | 0.49 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 886697 | 0.58 | 904202 | 98.06 | 70 | 120 | |
| 72 | Ge | 629623 | 0.53 | 677615 | 92.92 | 70 | 120 | |
| 115 | In | 5869068 | 4.58 | 6287303 | 93.35 | 70 | 120 | |
| 209 | Bi | 12766294 | 1.04 | 14081817 | 90.66 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 7:12 PM | Sample Name | 1605098-28A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 243SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 102.491 | 4017 | 0.79 | 2000 | >RL |
| 9 | Be | 45 | 3.560 | 186 | 3.96 | 2000 | >RL |
| 11 | B | 45 | 121.644 | 2480 | 3.75 | 2000 | >RL |
| 23 | Na | 45 | 5100.947 | 3637705 | 0.80 | 25000 | >RL |
| 24 | Mg | 45 | 16209.428 | 5765709 | 1.42 | 25000 | >RL |
| 27 | Al | 45 | 67654.947 | 8897219 | 2.38 | 10000 | OUTCAL |
| 39 | K | 45 | 16866.799 | 6159909 | 1.19 | 25000 | >RL |
| 44 | Ca | 45 | 165168.555 | 3230119 | 1.14 | 25000 | OUTCAL |
| 47 | Ti | 45 | 177.898 | 24196 | 1.80 | 2000 | >RL |
| 51 | V | 45 | 125.051 | 554104 | 0.55 | 2000 | >RL |
| 52 | Cr | 45 | 63.520 | 332171 | 0.43 | 2000 | >RL |
| 55 | Mn | 45 | 1350.720 | 3994463 | 0.99 | 2000 | >RL |
| 56 | Fe | 45 | 93163.230 | 412617895 | 0.99 | 10000 | OUTCAL |
| 59 | Co | 72 | 62.923 | 519442 | 0.56 | 2000 | >RL |
| 60 | Ni | 72 | 94.558 | 208034 | 0.95 | 2000 | >RL |
| 63 | Cu | 72 | 11.514 | 70038 | 1.85 | 2000 | >RL |
| 66 | Zn | 72 | 278.262 | 288786 | 0.52 | 2000 | >RL |
| 75 | As | 72 | 23.314 | 20776 | 2.04 | 2000 | >RL |
| 78 | Se | 72 | 7.777 | 494 | 2.32 | 2000 | >RL |
| 88 | Sr | 115 | 770.171 | 3167112 | 1.44 | 2000 | >RL |
| 95 | Mo | 115 | 1.682 | 5801 | 0.94 | 2000 | |
| 107 | Ag | 115 | 0.052 | 588 | 4.82 | 500 | |
| 111 | Cd | 115 | 0.478 | 772 | 6.49 | 2000 | >RL |
| 118 | Sn | 115 | 5.243 | 18511 | 0.77 | 2000 | >RL |
| 121 | Sb | 115 | 0.209 | 1247 | 5.41 | 500 | |
| 137 | Ba | 115 | 1033.612 | 1765379 | 1.00 | 2000 | >RL |
| 205 | Tl | 209 | 0.376 | 8540 | 3.30 | 2000 | |
| 208 | Pb | 209 | 28.515 | 867999 | 0.34 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 873484 | 1.26 | 904202 | 96.60 | 70 | 120 | |
| 72 | Ge | 635738 | 1.78 | 677615 | 93.82 | 70 | 120 | |
| 115 | In | 5935274 | 1.14 | 6287303 | 94.40 | 70 | 120 | |
| 209 | Bi | 13149923 | 1.57 | 14081817 | 93.38 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/16 7:14 PM | Sample Name | 1605098-29A |
| Data Batch | 160523.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 244SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 98.231 | 3897 | 3.03 | 2000 | >RL |
| 9 | Be | 45 | 2.980 | 158 | 2.92 | 2000 | >RL |
| 11 | B | 45 | 151.147 | 3077 | 4.23 | 2000 | >RL |
| 23 | Na | 45 | 5487.826 | 3958045 | 0.44 | 25000 | >RL |
| 24 | Mg | 45 | 14579.116 | 5248329 | 0.60 | 25000 | >RL |
| 27 | Al | 45 | 58324.747 | 7761465 | 1.25 | 10000 | OUTCAL |
| 39 | K | 45 | 15485.496 | 5727180 | 0.44 | 25000 | >RL |
| 44 | Ca | 45 | 236538.282 | 4680342 | 0.26 | 25000 | OUTCAL |
| 47 | Ti | 45 | 159.906 | 22015 | 3.26 | 2000 | >RL |
| 51 | V | 45 | 90.996 | 409174 | 0.25 | 2000 | >RL |
| 52 | Cr | 45 | 53.483 | 283198 | 0.41 | 2000 | >RL |
| 55 | Mn | 45 | 1012.775 | 3030715 | 0.33 | 2000 | >RL |
| 56 | Fe | 45 | 100370.721 | 449867413 | 0.64 | 10000 | OUTCAL |
| 59 | Co | 72 | 51.858 | 430139 | 1.34 | 2000 | >RL |
| 60 | Ni | 72 | 67.791 | 150058 | 1.05 | 2000 | >RL |
| 63 | Cu | 72 | 9.802 | 60119 | 2.03 | 2000 | >RL |
| 66 | Zn | 72 | 261.199 | 272381 | 1.09 | 2000 | >RL |
| 75 | As | 72 | 29.764 | 26596 | 1.34 | 2000 | >RL |
| 78 | Se | 72 | 7.451 | 480 | 5.02 | 2000 | >RL |
| 88 | Sr | 115 | 933.962 | 3929796 | 0.84 | 2000 | >RL |
| 95 | Mo | 115 | 2.818 | 9920 | 3.34 | 2000 | >RL |
| 107 | Ag | 115 | 0.049 | 568 | 6.03 | 500 | |
| 111 | Cd | 115 | 0.207 | 343 | 1.68 | 2000 | |
| 118 | Sn | 115 | 4.813 | 17421 | 1.46 | 2000 | >RL |
| 121 | Sb | 115 | 0.194 | 1196 | 8.50 | 500 | |
| 137 | Ba | 115 | 150.638 | 263320 | 0.53 | 2000 | >RL |
| 205 | Tl | 209 | 0.421 | 9578 | 3.08 | 2000 | |
| 208 | Pb | 209 | 34.319 | 1046440 | 1.21 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 883857 | 0.66 | 904202 | 97.75 | 70 | 120 | |
| 72 | Ge | 638679 | 1.45 | 677615 | 94.25 | 70 | 120 | |
| 115 | In | 6073845 | 2.17 | 6287303 | 96.60 | 70 | 120 | |
| 209 | Bi | 13171283 | 1.01 | 14081817 | 93.53 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 19:16 | Sample Name | CCV10-160523 |
| Data Batch | 160523.b | Comment | CCV ICPMS_TW |
| Data File Name | 245_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 199.337 | 7747 | 1.28 | 200 | 99.7 | 90 | 110 | |
| 9 | Be | 45 | 199.238 | 10219 | 0.46 | 200 | 99.6 | 90 | 110 | |
| 11 | B | 45 | 195.461 | 3855 | 0.92 | 200 | 97.7 | 90 | 110 | |
| 23 | Na | 45 | 4945.789 | 3504126 | 1.27 | 5000 | 98.9 | 90 | 110 | |
| 24 | Mg | 45 | 4916.061 | 1738188 | 0.86 | 5000 | 98.3 | 90 | 110 | |
| 27 | Al | 45 | 4788.192 | 627355 | 0.77 | 5000 | 95.8 | 90 | 110 | |
| 39 | K | 45 | 5057.076 | 1871568 | 0.46 | 5000 | 101.1 | 90 | 110 | |
| 44 | Ca | 45 | 4840.284 | 94900 | 0.93 | 5000 | 96.8 | 90 | 110 | |
| 47 | Ti | 45 | 195.231 | 26376 | 0.70 | 200 | 97.6 | 90 | 110 | |
| 51 | V | 45 | 199.312 | 874761 | 0.26 | 200 | 99.7 | 90 | 110 | |
| 52 | Cr | 45 | 199.590 | 1034256 | 0.93 | 200 | 99.8 | 90 | 110 | |
| 55 | Mn | 45 | 194.933 | 572673 | 0.89 | 200 | 97.5 | 90 | 110 | |
| 56 | Fe | 45 | 5120.463 | 22534128 | 1.01 | 5000 | 102.4 | 90 | 110 | |
| 59 | Co | 72 | 197.828 | 1657028 | 1.10 | 200 | 98.9 | 90 | 110 | |
| 60 | Ni | 72 | 203.309 | 453007 | 1.31 | 200 | 101.7 | 90 | 110 | |
| 63 | Cu | 72 | 204.165 | 1235230 | 0.28 | 200 | 102.1 | 90 | 110 | |
| 66 | Zn | 72 | 198.348 | 209015 | 0.47 | 200 | 99.2 | 90 | 110 | |
| 75 | As | 72 | 199.585 | 179099 | 0.27 | 200 | 99.8 | 90 | 110 | |
| 78 | Se | 72 | 195.020 | 10433 | 1.72 | 200 | 97.5 | 90 | 110 | |
| 88 | Sr | 115 | 188.208 | 785343 | 0.72 | 200 | 94.1 | 90 | 110 | |
| 95 | Mo | 115 | 190.716 | 662813 | 0.37 | 200 | 95.4 | 90 | 110 | |
| 107 | Ag | 115 | 193.487 | 2090714 | 0.12 | 200 | 96.7 | 90 | 110 | |
| 111 | Cd | 115 | 187.318 | 305519 | 0.54 | 200 | 93.7 | 90 | 110 | |
| 118 | Sn | 115 | 189.434 | 660717 | 0.41 | 200 | 94.7 | 90 | 110 | |
| 121 | Sb | 115 | 190.865 | 1036709 | 0.49 | 200 | 95.4 | 90 | 110 | |
| 137 | Ba | 115 | 187.444 | 324589 | 0.57 | 200 | 93.7 | 90 | 110 | |
| 205 | Tl | 209 | 189.891 | 4291810 | 0.41 | 200 | 94.9 | 90 | 110 | |
| 208 | Pb | 209 | 188.368 | 5730060 | 0.63 | 200 | 94.2 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 867483 | 0.62 | 904202 | 95.94 | 70 | 120 | |
| 72 | Ge | 645124 | 1.02 | 677615 | 95.21 | 70 | 120 | |
| 115 | In | 6015369 | 0.06 | 6287303 | 95.67 | 70 | 120 | |
| 209 | Bi | 13148061 | 1.32 | 14081817 | 93.37 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 19:20 | Sample Name | LCVL10-160523 |
| Data Batch | 160523.b | Comment | LCVLICPMS_TW |
| Data File Name | 247LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.304 | 403 | 6.35 | 10 | 103.0 | 70 | 130 | |
| 9 | Be | 45 | 1.091 | 57 | 10.67 | 1 | 109.1 | 70 | 130 | |
| 11 | B | 45 | 21.776 | 566 | 10.38 | 20 | 108.9 | 70 | 130 | |
| 23 | Na | 45 | 99.894 | 100221 | 0.40 | 100 | 99.9 | 70 | 130 | |
| 24 | Mg | 45 | 96.772 | 35149 | 0.56 | 100 | 96.8 | 70 | 130 | |
| 27 | Al | 45 | 99.559 | 14801 | 2.40 | 100 | 99.6 | 70 | 130 | |
| 39 | K | 45 | 115.922 | 92466 | 0.74 | 100 | 115.9 | 70 | 130 | |
| 44 | Ca | 45 | 94.122 | 2681 | 8.72 | 100 | 94.1 | 70 | 130 | |
| 47 | Ti | 45 | 5.082 | 671 | 5.07 | 5 | 101.6 | 70 | 130 | |
| 51 | V | 45 | 0.539 | 6280 | 1.43 | 1 | 53.9 | 70 | 130 | Fail |
| 52 | Cr | 45 | 5.025 | 26408 | 1.46 | 5 | 100.5 | 70 | 130 | |
| 55 | Mn | 45 | 4.868 | 14130 | 0.86 | 5 | 97.4 | 70 | 130 | |
| 56 | Fe | 45 | 101.373 | 445253 | 0.46 | 100 | 101.4 | 70 | 130 | |
| 59 | Co | 72 | 5.045 | 41452 | 1.85 | 5 | 100.9 | 70 | 130 | |
| 60 | Ni | 72 | 5.567 | 12880 | 1.45 | 5 | 111.3 | 70 | 130 | |
| 63 | Cu | 72 | 5.331 | 32983 | 1.93 | 5 | 106.6 | 70 | 130 | |
| 66 | Zn | 72 | 5.200 | 5693 | 4.43 | 5 | 104.0 | 70 | 130 | |
| 75 | As | 72 | 4.980 | 4544 | 2.14 | 5 | 99.6 | 70 | 130 | |
| 78 | Se | 72 | 5.749 | 386 | 1.03 | 5 | 115.0 | 70 | 130 | |
| 88 | Sr | 115 | 4.851 | 20522 | 1.18 | 5 | 97.0 | 70 | 130 | |
| 95 | Mo | 115 | 4.845 | 16281 | 0.27 | 5 | 96.9 | 70 | 130 | |
| 107 | Ag | 115 | 1.931 | 20161 | 0.62 | 2 | 96.5 | 70 | 130 | |
| 111 | Cd | 115 | 0.957 | 1509 | 3.13 | 1 | 95.7 | 70 | 130 | |
| 118 | Sn | 115 | 4.915 | 17004 | 1.32 | 5 | 98.3 | 70 | 130 | |
| 121 | Sb | 115 | 1.962 | 10410 | 3.32 | 2 | 98.1 | 70 | 130 | |
| 137 | Ba | 115 | 4.951 | 8355 | 0.46 | 5 | 99.0 | 70 | 130 | |
| 205 | Tl | 209 | 0.951 | 21277 | 2.46 | 1 | 95.1 | 70 | 130 | |
| 208 | Pb | 209 | 0.960 | 29397 | 2.03 | 1 | 96.0 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 845188 | 0.99 | 904202 | 93.47 | 70 | 120 | |
| 72 | Ge | 631145 | 0.98 | 677615 | 93.14 | 70 | 120 | |
| 115 | In | 5807235 | 2.47 | 6287303 | 92.36 | 70 | 120 | |
| 209 | Bi | 12987126 | 1.24 | 14081817 | 92.23 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 19:22 | Sample Name | CCB10-160523 |
| Data Batch | 160523.b | Comment | CCB ICPMS_TW |
| Data File Name | 248_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.289 | 24 | 52.0 | 2 | 5 | |
| 9 | Be | 45 | 0.043 | 5 | 65.5 | 0.4 | 0.3 | |
| 11 | B | 45 | 2.949 | 220 | 12.4 | 10 | 10 | |
| 23 | Na | 45 | -2.949 | 29962 | 1.5 | 50 | 100 | |
| 24 | Mg | 45 | -3.049 | 803 | 2.2 | 50 | 100 | |
| 27 | Al | 45 | 0.085 | 2155 | 3.9 | 50 | 10 | |
| 39 | K | 45 | 13.099 | 56581 | 1.1 | 50 | 100 | |
| 44 | Ca | 45 | -3.492 | 835 | 8.4 | 50 | 100 | |
| 47 | Ti | 45 | 0.043 | 8 | 24.7 | 4 | 3 | |
| 51 | V | 45 | -0.465 | 2015 | 6.5 | 4 | 3 | |
| 52 | Cr | 45 | -0.061 | 761 | 4.6 | 2 | 2 | |
| 55 | Mn | 45 | 0.010 | 228 | 10.0 | 2 | 3 | |
| 56 | Fe | 45 | 1.816 | 18633 | 2.7 | 50 | 50 | |
| 59 | Co | 72 | 0.002 | 122 | 22.9 | 2 | 3 | |
| 60 | Ni | 72 | -0.239 | 247 | 16.2 | 2 | 3 | |
| 63 | Cu | 72 | 0.067 | 1881 | 4.9 | 2 | 2 | |
| 66 | Zn | 72 | -0.046 | 296 | 4.7 | 4 | 2 | |
| 75 | As | 72 | -0.065 | 122 | 4.6 | 2 | 2 | |
| 78 | Se | 72 | 0.153 | 96 | 8.9 | 1 | 2 | |
| 88 | Sr | 115 | 0.049 | 1191 | 2.7 | 4 | 3 | |
| 95 | Mo | 115 | 0.004 | 48 | 42.6 | 2 | 2 | |
| 107 | Ag | 115 | 0.032 | 352 | 11.8 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.004 | 10 | 120.2 | 0.4 | 0.3 | |
| 118 | Sn | 115 | -0.024 | 384 | 12.9 | 4 | 3 | |
| 121 | Sb | 115 | 0.026 | 254 | 16.6 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.040 | 147 | 11.8 | 2 | 3 | |
| 205 | Tl | 209 | 0.004 | 123 | 23.1 | 2 | 0.5 | |
| 208 | Pb | 209 | 0.013 | 950 | 10.9 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 847188 | 0.63 | 904202 | 93.69 | 70 | 120 | |
| 72 | Ge | 636476 | 0.11 | 677615 | 93.93 | 70 | 120 | |
| 115 | In | 5694698 | 2.98 | 6287303 | 90.57 | 70 | 120 | |
| 209 | Bi | 13081229 | 0.74 | 14081817 | 92.89 | 70 | 120 | |

# ICP-MS4_160601A
# For

# DHL Work Order
# 1605098

# Lab Data Review Check List
## EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

| PROJECT AND BATCH NUMBERS ARE LISTED ON THE RUN LOG | Run ID: ICP-MS4_160601A<br>SOP: MET-ICPMS-01 | | | |
|---|---|---|---|---|
| **Review Item** | **Yes** | **No** | **N/A** | **2nd Level Review** |
| **Data Folder Contents**<br>1. Is the Prep Batch Report included?<br>***Check the Prep Start/End Dates, Sample Amounts, Bottle #s*** | X | | | X |
| 2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date?<br>***All standard/QC sample preparations shall be documented in LIMS*** | X | | | |
| 3. Is the Run Log and instrument sequence included?<br>***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time*** | X | | | |

## Daily Demonstration of Performance

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.**

| Review Item | Frequency | Limits | Pass | Fail (List Batch/Sample) **See Run Log** | | 2nd Level Review |
|---|---|---|---|---|---|---|
| Tune | Before ICAL | RSD ≤ 5% / Peak Width@10% <0.9amu | X | | | X |
| P/A Factor | Before ICAL | Increasing trend | X | | | |
| Initial Calibration Curve (ICAL) (Blank + 4 Standards) | Prior to samples and when ICV fails | R ≥ 0.995 (DoD)<br>R ≥ 0.998 (6020A) | X | | | |
| **Review Item** | **Frequency** | **Limits** | **Pass** | **Fail** | **N/A** | **Review** |
| ICSA (N/A for Method 200.8+U) | After calibration & every 12 hours | < RL (except Mn & Zn) | X | | | X |
| ICSAB (N/A for Method 200.8+U) | After calibration & every 12 hours | 80-120% (correct for ICSA result) | X | | | |
| **Note: LCVLs and ICSA/ICSAB are N/A for Method 200.8 or project-specific exceptions** | | | | | | |
| ICV (Second Source Verification) | After ICAL | 90-110% | X | | | X |
| ICB | After calibration | < MDL | X | | | |
| CCV | Every 10 samples | 90-110% | X | | | |
| CCB | Every 10 samples | < MDL (ALL + DoD) | X | | | |
| Internal Standards | Every sample and QC sample | > 70% (6020A)<br>60-125% (200.8)<br>30-120% (DoD) | X | | | |
| LCVL (6020A test code) | After ICAL, every 10 samples and end of run | 70-130% | | | X | |
| LCVL (All metals test codes except 200.8/6020A) | After ICAL and end of run | 70-130% | X | | | |
| Method Blank (MB) | Every Batch | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | X | | | |
| Filter/TCLP/SPLP Blank | Filter-Dissolved only TCLP / SPLP | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | | | X | |
| Lab Control Sample (LCS) | Every Batch | 80-120% | X | | | |
| Lab Control Sample Dup (LCSD) | Every Batch | 80-120% | X | | | |
| LCSD - RPD | Every LCS/LCSD | 15 (H2O) / 20 (Soil) | X | | | |
| Matrix Spike/ Matrix Spike Duplicate (MS/MSD) | Every Batch | 80-120% | X | | | |
| MSD - RPD | Every MS/MSD | 15 (H2O) / 20 (Soil) | X | | | |
| Dilution Test (SD) - RPD | Every Batch | 10 | X | | | |
| Post Digestion Spike (PDS) | Every Batch | 75-125 / 80-120 (6020A) | X | | | |

# Lab Data Review Check List
## EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

| Review Item | Criteria | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|---|
| **Sample Analysis**<br>1. Are all sample hold times met? | 6 months | X | | | X |
| 2. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed? | All results > high point of ICAL must be diluted | | | X | |
| **3. Are ALL reported analytes and reported results > MDL highlighted by the analyst?** | | X | **Confirm with analyst if LIMS result does not match Labcore** | | |

## VARIANCE REPORT

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.**

| NON-CONFORMANCES / VARIANCE | Criteria | Yes | No | N/A | 2nd Level |
|---|---|---|---|---|---|
| 1. Are all non-conformances and corrective actions included and noted? | All deviations from the method and SOP that affect data quality | | | X | X |
| 2. Does the variance require approval by the Technical Director/General Manager/QA Manager? | | | | X | |

TECHNICAL DIRECTOR / QA MANAGER APPROVAL
SIGNATURE AND DATE STAMP:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

| VARIANCE ITEM | REASON | CORRECTIVE ACTION |
|---|---|---|
| __ CCV out of control (± 10%) | __ Carryover from previous run | __ Reanalyze QC to confirm |
| __ CCB out of control (> MDL / >½ RL) | __ Cross contamination | __ Recalibrate |
| __ MB out of control (> RL / >½ RL) | __ Lab Artifact | __ Reprep/Reanalyze sample |
| __ LCS __ LCSD out of control (± 20%) | __ Prep Spike error (describe) | __ Reprep/Reanalyze Batch |
| __ MS __ MSD out of control (± 20%) | __ Matrix Effect | __ Reanalyze Batch/Sample/QC |
| __ RPD out of control for MS/MSD (15/25) | __ High Levels of Target Metals | __ Verify reagents are clean |
| __ Internal Standard(s) out of control (see Method) | __ Insufficient sample for QC | __ Reanalyze sample to confirm |
| __ No MS/MSD prepared - LCS/LCSD used instead | __ Digestion/Prep Error | __ Sample results ND w/ dilution |
| __ Missing QC (other than MS/MSD) | __ Analytical Error | __ Client notified and approved |
| __ QC sample(s) was mis-spiked | __ Client Request | __ Flag Data/ Case Narative |
| __ ICSA/ICSAB missing or out of control (± 20%) | | __ Accept data |
| __ LCVL out of control (± 30%) | | __ Cal Std high and sample ND |
| __ Other (describe below) | __ Other (describe below) | __ Other (describe below) |

**General Comments and Impact on Data**: See Run Log

Analyst: _____ Date of Completion: 06/01/2016

Second-Level Review: _____ Date Stamp: 06/01/2016

***REVIEWED/APPROVED***
*By Sherri Herschmann at 3:57:04 PM, 6/1/2016*

**DHL Analytical, Inc.**

**Run ID:** ICP-MS4_160601A **Run No.:** 86092

**Analytical Run Date:** 6/1/2016 **InstrumentID:** ICP-MS4

**Analyst:** Ryan Oliver

| SampID | DF | TestCode | SampType | Batch ID | Analysis Date/Time | Q | Comments |
|---|---|---|---|---|---|---|---|
| BLANK STD 1 | 1 | ICPMS_TWDOD | CAL | R86092 | 6/1/2016 10:24:00 AM | | |
| L2-160601 | 1 | ICPMS_TWDOD | CAL | R86092 | 6/1/2016 10:26:00 AM | | |
| L-160601 | 1 | ICPMS_TWDOD | CAL | R86092 | 6/1/2016 10:28:00 AM | | |
| 10X-160601 | 1 | ICPMS_TWDOD | CAL | R86092 | 6/1/2016 10:30:00 AM | | |
| 5X-160601 | 1 | ICPMS_TWDOD | CAL | R86092 | 6/1/2016 10:32:00 AM | | |
| 2X-160601 | 1 | ICPMS_TWDOD | CAL | R86092 | 6/1/2016 10:34:00 AM | | |
| H-160601 | 1 | ICPMS_TWDOD | CAL | R86092 | 6/1/2016 10:36:00 AM | | |
| H2-160601 | 1 | ICPMS_TWDOD | CAL | R86092 | 6/1/2016 10:38:00 AM | | |
| ICSA-160601 | 1 | ICPMS_TWDOD | ICSA | R86092 | 6/1/2016 10:44:00 AM | | |
| ICSAB-160601 | 1 | ICPMS_TWDOD | ICSB | R86092 | 6/1/2016 10:46:00 AM | | |
| ICV-160601 | 1 | ICPMS_TWDOD | ICV | R86092 | 6/1/2016 10:53:00 AM | | |
| LCVL-160601 | 1 | ICPMS_TWDOD | LCVL | R86092 | 6/1/2016 10:58:00 AM | | |
| ICB-160601 | 1 | ICPMS_TWDOD | ICB | R86092 | 6/1/2016 11:04:00 AM | | |
| MB-75402 | 5 | ICPMS_TSDOD1 | MBLK | 75402 | 6/1/2016 11:06:00 AM | | |
| LCS-75402 | 5 | ICPMS_TSDOD1 | LCS | 75402 | 6/1/2016 11:08:00 AM | | |
| LCSD-75402 | 5 | ICPMS_TSDOD1 | LCSD | 75402 | 6/1/2016 11:10:00 AM | | |
| 1605098-36A | 5 | ICPMS_TSDOD1 | SAMP | 75402 | 6/1/2016 11:14:00 AM | | |
| 1605098-36A SD | 25 | ICPMS_TSDOD1 | SD | 75402 | 6/1/2016 11:16:00 AM | | |
| 1605098-39A | 5 | ICPMS_TSDOD1 | SAMP | 75402 | 6/1/2016 11:18:00 AM | | |
| 1605098-36A PDS | 5 | ICPMS_TSDOD1 | PDS | 75402 | 6/1/2016 11:20:00 AM | | |
| 1605098-36A MS | 5 | ICPMS_TSDOD1 | MS | 75402 | 6/1/2016 11:22:00 AM | | No adverse effect on data due to slight boil over indicated on Prep Batch; Data accepted |
| 1605098-36A MSD | 5 | ICPMS_TSDOD1 | MSD | 75402 | 6/1/2016 11:24:00 AM | | |
| CCV1-160601 | 1 | ICPMS_TWDOD | CCV | R86092 | 6/1/2016 11:50:00 AM | | |
| LCVL1-160601 | 1 | ICPMS_TWDOD | LCVL | R86092 | 6/1/2016 11:58:00 AM | | |
| CCB1-160601 | 1 | ICPMS_TWDOD | CCB | R86092 | 6/1/2016 12:07:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160525 | ICPMS CCV 200/5000 PPB | | 08/23/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/23/2016 |
| MET-HCAL-16052 | ICPMS High Cal 500ppb/10ppm s | | 08/23/2016 |
| MET-ICV-160525 | ICPMS ICV 100 ppb | | 08/23/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16052 | ICPMS Low Cal2 1/20ppb std 2 | | 08/23/2016 |
| MET-LCAL-160525 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/23/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/23/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16052 | ICPMS Mid Cal 250/5000ppb std | | 08/23/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160520- | 10 PPM Ag+Sb PDS | | 11/18/2016 |
| MET-PDS-160520- | 10 PPM CUSTOM PDS SOLUTI | | 11/18/2016 |
| MET-PDS-160520- | 250 PPM Naturals+Al+Fe PDS | | 11/18/2016 |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 3:57:06 PM, 6/1/2016*

# Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\160601.b

## Acquisition Order

| # | Sequence Flow |
|---|---|
| 1 | Calibration Standards |
| 2 | Unknown Samples |
| 3 | Blank Samples |

**Calibration Standards:**

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 1 | CCB | | CAL ICPMS_TW | 1101 | |
| 2 | CCB | | CAL ICPMS_TW | 1101 | |
| 3 | CCB | | CAL ICPMS_TW | 1101 | |
| 4 | CCB | | CAL ICPMS_TW | 1102 | |
| 5 | CCB | | CAL ICPMS_TW | 1102 | |
| 6 | CCB | | CAL ICPMS_TW | 1102 | |
| 7 | CCB | | CAL ICPMS_TW | 1102 | |
| 8 | CCB | | CAL ICPMS_TW | 1103 | |
| 9 | CCB | | CAL ICPMS_TW | 1103 | |
| 10 | CCB | | CAL ICPMS_TW | 1103 | |
| 11 | CCB | | CAL ICPMS_TW | 1103 | |
| 12 | CalBlk | BLANK STD 1 | CAL ICPMS_TW | 2101 | |
| 13 | CalStd | L2-160601 | CAL ICPMS_TW | 2102 | |
| 14 | CalStd | L-160601 | CAL ICPMS_TW | 2103 | |
| 15 | CalStd | 10X-160601 | CAL ICPMS_TW | 2104 | |
| 16 | CalStd | 5X-160601 | CAL ICPMS_TW | 2105 | |
| 17 | CalStd | 2X-160601 | CAL ICPMS_TW | 2106 | |
| 18 | CalStd | H-160601 | CAL ICPMS_TW | 2107 | |
| 19 | CalStd | H2-160601 | CAL ICPMS_TW | 2108 | |
| 20 | ICB | BLANK | CCB ICPMS_TW | 1101 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | 1 | | |
| 13 | 2 | | |
| 14 | 3 | | |
| 15 | 4 | | |
| 16 | 5 | | |
| 17 | 6 | | |
| 18 | 7 | | |
| 19 | 8 | | |

# Sample List

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 20 | | | | | |
| 21 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 22 | ICSA | ICSA-160601 | ICSAICPMS_TW | 2109 | |
| 23 | ICSB | ICSAB-160601 | ICSBICPMS_TW | 2110 | |
| 24 | ICB | BLANK | CCB ICPMS_TW | 1101 | |
| 25 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 26 | ICV | ICV-160601 | ICV ICPMS_TW | 2111 | |
| 27 | ICB | ICB-160601 | ICB ICPMS_TW | 1101 | |
| 28 | LLICV | LCVL-160601 | LCVLICPMS_TW | 2112 | |
| 29 | ICB | ICB-160601 | ICB ICPMS_TW | 1102 | |
| 30 | ICB | ICB-160601 | ICB ICPMS_TW | 1103 | |
| 31 | PB | MB-75402 | MBLKICPMS_TSDOD1 | 2201 | |
| 32 | LCS_S | LCS-75402 | LCS ICPMS_TSDOD1 | 2202 | |
| 33 | LCS_S | LCSD-75402 | LCSDICPMS_TSDOD1 | 2203 | |
| 34 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 35 | AllRef | 1605098-36A | SAMPICPMS_TSDOD1 | 2204 | |
| 36 | SD | 1605098-36A SD | SD ICPMS_TSDOD1 | 2205 | |
| 37 | Sample | 1605098-39A | SAMPICPMS_TSDOD1 | 2206 | |
| 38 | PDS | 1605098-36A PDS | PDS ICPMS_TSDOD1 | 2207 | |
| 39 | MS_S | 1605098-36A MS | MS ICPMS_TSDOD1 | 2208 | |
| 40 | MS_S | 1605098-36A MSD | MSD ICPMS_TSDOD1 | 2209 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 21 | | | |
| 22 | | | |
| 23 | | | |
| 24 | | | |
| 25 | | | |
| 26 | | | |
| 27 | | | |
| 28 | | | |
| 29 | | | |
| 30 | | | |
| 31 | | 5 | |
| 32 | | 5 | |
| 33 | | 5 | |
| 34 | | | |
| 35 | | 5 | |
| 36 | | 25 | |
| 37 | | 5 | |
| 38 | | 5 | |
| 39 | | 5 | |
| 40 | | 5 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 41 | SAMP_W | 1605278-22C | SAMP6020A_W | 2301 | |
| 42 | SAMP_W | 1605278-23C | SAMP6020A_W | 2302 | |
| 43 | SAMP_W | 1605263-01A | SAMPICPMS_TW | 2303 | |
| 44 | SAMP_W | 1605263-03A | SAMPICPMS_TW | 2304 | |
| 45 | SAMP_W | 1605263-05A | SAMPICPMS_TW | 2305 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 46 | SAMP_W | 1605263-07A | SAMPICPMS_TW | 2306 |
| 47 | SAMP_W | 1605263-09A | SAMPICPMS_TW | 2307 |
| 48 | SAMP_W | 1605257-01A | SAMPICPMS_TW | 2308 |
| 49 | CCV | CCV1-160601 | CCV ICPMS_TW | 1207 |
| 50 | CCV | CCV1-160601 | CCV ICPMS_TW | 1207 |
| 51 | CCB | CCB1-160601 | CCB ICPMS_TW | 1102 |
| 52 | CCB | CCB1-160601 | CCB ICPMS_TW | 1102 |
| 53 | LLCCV | LCVL1-160601 | LCVLICPMS_TW | 2112 |
| 54 | CCB | CCB1-160601 | CCB ICPMS_TW | 1102 |
| 55 | CCB | CCB1-160601 | CCB ICPMS_TW | 1102 |
| 56 | CCB | CCB1-160601 | CCB ICPMS_TW | 1103 |
| 57 | CCB | CCB1-160601 | CCB ICPMS_TW | 1103 |
| 58 | PB_W | MB-75390 | MBLKICPMS_TW | 2401 |
| 59 | LCS_W | LCS-75390 | LCS ICPMS_TW | 2402 |
| 60 | LCS_W | LCSD-75390 | LCSDICPMS_TW | 2403 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 41 | | 1 | |
| 42 | | 1 | |
| 43 | | 1 | |
| 44 | | 1 | |
| 45 | | 1 | |
| 46 | | 1 | |
| 47 | | 1 | |
| 48 | | 1 | |
| 49 | | | |
| 50 | | | |
| 51 | | | |
| 52 | | | |
| 53 | | | |
| 54 | | | |
| 55 | | | |
| 56 | | | |
| 57 | | | |
| 58 | | 1 | |
| 59 | | 1 | |
| 60 | | 1 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 61 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 62 | AllRef | 1605278-13C | SAMP6020A_W | 2404 | |
| 63 | SD | 1605278-13C SD | SD 6020A_W | 2405 | |
| 64 | SAMP_W | 1605239-01A | SAMPICPMS_TW | 2406 | |
| 65 | SAMP_W | 1605239-01A | SAMPICPMS_TW | 2407 | |
| 66 | SAMP_W | 1605270-01B | SAMPICPMS_TW | 2408 | |
| 67 | SAMP_W | 1605259-01A | SAMPICPMS_TW | 2409 | |
| 68 | SAMP_W | 1605259-02A | SAMPICPMS_TW | 2410 | |
| 69 | SAMP_W | 1605278-18C | SAMP6020A_W | 2411 | |
| 70 | SAMP_W | 1605278-19C | SAMP6020A_W | 2412 | |
| 71 | SAMP_W | 1605278-20C | SAMP6020A_W | 2501 | |
| 72 | SAMP_W | 1605278-21C | SAMP6020A_W | 2502 | |
| 73 | PDS | 1605278-13C PDS | PDS ICPMS_TW | 2503 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 74 | MS_W | 1605278-13C MS | MS ICPMS_TW | 2504 |
| 75 | MS_W | 1605278-13C MSD | MSD ICPMS_TW | 2505 |
| 76 | CCV | CCV2-160601 | CCV ICPMS_TW | 1207 |
| 77 | CCB | CCB2-160601 | CCB ICPMS_TW | 1102 |
| 78 | CCB | CCB2-160601 | CCB ICPMS_TW | 1102 |
| 79 | CCB | CCB2-160601 | CCB ICPMS_TW | 1103 |
| 80 | CCB | CCB2-160601 | CCB ICPMS_TW | 1103 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 61 | | | |
| 62 | | 1 | |
| 63 | | 5 | |
| 64 | | 10 | |
| 65 | | 1 | |
| 66 | | 1 | |
| 67 | | 5000 | |
| 68 | | 2000 | |
| 69 | | 1 | |
| 70 | | 1 | |
| 71 | | 1 | |
| 72 | | 1 | |
| 73 | | 1 | |
| 74 | | 1 | |
| 75 | | 1 | |
| 76 | | | |
| 77 | | | |
| 78 | | | |
| 79 | | | |
| 80 | | | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 81 | CCV | CCV2-160601 | CCV ICPMS_TW | 1207 | |
| 82 | CCB | CCB2-160601 | CCB ICPMS_TW | 1102 | |
| 83 | CCB | CCB2-160601 | CCB ICPMS_TW | 1102 | |
| 84 | CCB | CCB2-160601 | CCB ICPMS_TW | 1103 | |
| 85 | CCB | CCB2-160601 | CCB ICPMS_TW | 1103 | |
| 86 | LLCCV | LCVL2-160601 | LCVLICPMS_TW | 2112 | |
| 87 | CCB | CCB2-160601 | CCB ICPMS_TW | 1103 | |
| 88 | PB_W | MB-75388 | MBLK6020A_W | 3101 | |
| 89 | LCS_W | LCS-75388 | LCS 6020A_W | 3102 | |
| 90 | LCS_W | LCSD-75388 | LCSD6020A_W | 3103 | |
| 91 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 92 | AllRef | 1605251-03C | SAMP6020A_W | 3104 | |
| 93 | SD | 1605251-03C SD | SD 6020A_W | 3105 | |
| 94 | SAMP_W | 1605243-02C | SAMP6020A_W | 3106 | |
| 95 | SAMP_W | 1605243-03C | SAMP6020A_W | 3107 | |
| 96 | SAMP_W | 1605243-04C | SAMP6020A_W | 3108 | |
| 97 | SAMP_W | 1605243-05C | SAMP6020A_W | 3109 | |
| 98 | SAMP_W | 1605251-04C | SAMP6020A_W | 3110 | |
| 99 | SAMP_W | 1605251-05C | SAMP6020A_W | 3111 | |
| 100 | SAMP_W | 1605251-06C | SAMP6020A_W | 3112 | |

# Sample List

| # | Level | Dilution | Skip |
|---|---|---|---|
| 81 | | | |
| 82 | | | |
| 83 | | | |
| 84 | | | |
| 85 | | | |
| 86 | | | |
| 87 | | | |
| 88 | | 1 | |
| 89 | | 1 | |
| 90 | | 1 | |
| 91 | | | |
| 92 | | 1 | |
| 93 | | 5 | |
| 94 | | 1 | |
| 95 | | 1 | |
| 96 | | 1 | |
| 97 | | 1 | |
| 98 | | 1 | |
| 99 | | 1 | |
| 100 | | 1 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 101 | SAMP_W | 1605251-07C | SAMP6020A_W | 3201 | |
| 102 | SAMP_W | 1605251-08C | SAMP6020A_W | 3202 | |
| 103 | PDS | 1605251-03C PDS | PDS 6020A_W | 3203 | |
| 104 | MS_W | 1605251-03C MS | MS 6020A_W | 3204 | |
| 105 | MS_W | 1605251-03C MSD | MSD 6020A_W | 3205 | |
| 106 | CCV | CCV3-160601 | CCV ICPMS_TW | 1207 | |
| 107 | CCB | CCB3-160601 | CCB ICPMS_TW | 1102 | |
| 108 | LLCCV | LCVL3-160601 | LCVLICPMS_TW | 2512 | |
| 109 | CCB | CCB3-160601 | CCB ICPMS_TW | 1103 | |
| 110 | SAMP_W | 1605251-11C | SAMP6020A_W | 3206 | |
| 111 | SAMP_W | 1605251-12C | SAMP6020A_W | 3207 | |
| 112 | SAMP_W | 1605251-13C | SAMP6020A_W | 3208 | |
| 113 | SAMP_W | 1605251-14C | SAMP6020A_W | 3209 | |
| 114 | SAMP_W | 1605251-15C | SAMP6020A_W | 3210 | |
| 115 | SAMP_W | 1605251-16C | SAMP6020A_W | 3211 | |
| 116 | SAMP_W | 1605278-14C | SAMP6020A_W | 3212 | |
| 117 | SAMP_W | 1605278-15C | SAMP6020A_W | 3301 | |
| 118 | SAMP_W | 1605278-16C | SAMP6020A_W | 3302 | |
| 119 | SAMP_W | 1605278-17C | SAMP6020A_W | 3303 | |
| 120 | CCV | CCV4-160601 | CCV ICPMS_TW | 1207 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 101 | | 1 | |
| 102 | | 1 | |
| 103 | | 1 | |
| 104 | | 1 | |
| 105 | | 1 | |
| 106 | | | |
| 107 | | | |

# Sample List

| | | |
|---|---|---|
| 108 | | |
| 109 | | |
| 110 | | 1 |
| 111 | | 1 |
| 112 | | 1 |
| 113 | | 1 |
| 114 | | 1 |
| 115 | | 1 |
| 116 | | 1 |
| 117 | | 1 |
| 118 | | 1 |
| 119 | | 1 |
| 120 | | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 121 | CCB | CCB4-160601 | CCB ICPMS_TW | 1102 | |
| 122 | LLCCV | LCVL4-160601 | LCVLICPMS_TW | 2512 | |
| 123 | CCB | CCB4-160601 | CCB ICPMS_TW | 1103 | |
| 124 | CCB | CCB4-160601 | CCB ICPMS_TW | 1102 | |
| 125 | CCB | CCB4-160601 | CCB ICPMS_TW | 1102 | |
| 126 | CCB | CCB4-160601 | CCB ICPMS_TW | 1102 | |
| 127 | CCB | CCB4-160601 | CCB ICPMS_TW | 1103 | |
| 128 | CCB | CCB4-160601 | CCB ICPMS_TW | 1103 | |
| 129 | CCB | CCB4-160601 | CCB ICPMS_TW | 1103 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 121 | | | |
| 122 | | | |
| 123 | | | |
| 124 | | | |
| 125 | | | |
| 126 | | | |
| 127 | | | |
| 128 | | | |
| 129 | | | |

**Unknown Samples:**

**Blank Samples:**

## Periodic Block

| # | Block Name | Period | Unit | Reset By |
|---|---|---|---|---|

## Sublist

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/31/2016 10:47:16 AM**
Digestion: **Start: 5/31/2016 11:31:00 AM / Stop: 5/31/2016 4:30:00 PM**
Prep End Date: **5/31/2016 4:41:59 PM**

Prep Batch **75402** Prep Code: **3050_IDOD** Technician: **Will Boston**

Prep Factor Units: **mL/g**

**Equipment List**

- Hot Block #4
- Thermometer #71
- Balance #20
- Pipette #P-01
- Pipette#-P-09

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605098-36A | Soil | | 1.12 | 50 | 44.643 | 1 of 1 | |
| 1605098-36A MS | Soil | | 1.03 | 50 | 48.544 | of | |
| Slight Boil over after first H2O2 | | | | | | | |
| 1605098-36A MSD | Soil | | 1.06 | 50 | 47.170 | of | |
| 1605098-36A PDS | Soil | | 1.12 | 50 | 44.643 | of | |
| 1605098-36A SD | Soil | | 1.12 | 50 | 44.643 | of | |
| 1605098-39A | Soil | | 1.09 | 50 | 45.872 | 1 of 1 | |
| LCS-75402 | Soil | | 1 | 50 | 50.000 | of | |
| LCSD-75402 | Soil | | 1 | 50 | 50.000 | of | |
| MB-75402 | Soil | | 1 | 50 | 50.000 | of | |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 3:58:13 PM, 6/1/2016*

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 10056 | Digestion Vessels | 1 | vessel | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 10 | ml | 01/10/2026 |
| 10137 | Hydrochloric Acid (trace metal grade) | 5 | ml | 01/10/2026 |
| 10318 | Hydrogen Peroxide, 30% | 3 | ml | 11/30/2017 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160519-3 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.5 | 08/17/2016 |
| MET-SPIKE-160519-4 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 1 | 08/17/2016 |
| MET-SPIKE-160520-5 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 1 | 08/18/2016 |

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/31/2016 10:47:16 AM**
Digestion:
Prep End Date:

Prep Batch **75402** Prep Code: **3050_IDOD** Technician: **Will Boston**

Prep Factor Units: **mL/g**

| Equipment List |
|---|
| Hot Block #4 |
| Thermometer #71 |
| Balance #20 |
| Pipette #P-01 |
| Pipette#-P-09 |

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605098-36A | Soil | | 1.12 | 50 | 50.000 | ~~1.12~~ of 1 | |
| 1605098-39A | Soil | | 1.09 | 50 | 50.000 | ~~1.09~~ of 1 | |
| LCS-75402 | Soil | | 1 | 50 | 50.000 | of | |
| LCSD-75402 | Soil | | 1 | 50 | 50.000 | of | |
| MB-75402 | Soil | | 1 | 50 | 50.000 | of | |
| 1605098-36A MS | | | 1.03 | | ~~1.03~~ | | slight boilover after first $H_2O_2$ |
| 1605098-36A MSD | | | 1.06 | | ~~1.06~~ | | |

| Number | Reagent Name | Amt | Units | Exp. Di |
|---|---|---|---|---|
| 10056 | Digestion Vessels | 1 | vessel | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 10 | ml | 01/10/2026 |
| 10137 | Hydrochloric Acid (trace metal grade) | 5 | ml | 01/10/2026 |
| 10318 | Hydrogen Peroxide, 30% | 3 | ml | 11/30/2017 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160519-3 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.5 | 08/17/2016 |
| MET-SPIKE-160519-4 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 1 | 08/17/2016 |
| MET-SPIKE-160520-5 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 1 | 08/18/2016 |

11:31 - 11:41
11:43 - 13:43
14:04 - 16:09
16:15 - 16:30

REVIEWED/APPROVED
By Sherri Herschmann at 3:58:19 PM, 6/1/2016

WBoston 05-31-16

# MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

| | | | | |
|---|---|---|---|---|
| **ANALYST:** | WB | **BALANCE #:** | 26 | |
| **TEST DATE:** | 05/31/2016 | **Water is at Room Temperatue (70-73°F) / (21-23°C)** | | |
| **PIPETTER LAB ID:** | P-01, P-09 | **WATER TEMP (°C):** | 21-23°C | |
| **TEST VOLUME:** | See Below | **WATER DENSITY:** | 0.998 | (0.9980-0.9976) |

| | |
|---|---|
| **REFERENCE:** | DoD QSM 5.0 |
| **# of REPLICATES:** | 3 |
| **LABWARE TYPE:** | MECHANICAL VOLUMETRIC PIPETTE |
| **FREQUENCY:** | DAILY BEFORE USE |
| **MEAN CRITERIA:** | ± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME) |
| **RSD CRITERIA:** | < 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS) |

| | |
|---|---|
| **1) RECORD ROOM AND WATER TEMPERATURE** | **% TEST VOL = Volume of H2O at °C/Test Volume * 100** |
| **2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.** | **%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100** |
| **3) WEIGH 3 REPLICATES AT THE TEST VOLUME.** | |
| **4) DETERMINE TOTAL WT.** | |
| **5) CALCULATE VOLUME OF H2O AT °C (in mL)** | **VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY** |

| | | | | | BIAS | PRECISION |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-01** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 5.00 | 5.0458 | 5.0357 | 100.71 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 5.0194 | 5.0094 | 100.19 | | |
| 3 | | 5.0158 | 5.0058 | 100.12 | | |
| AVERAGE (MEAN) | | 5.027 | 5.017 | 100.34 | | 0.326 |
| | | | | | | PASS |

| **PIPETTE ID: P-09** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
|---|---|---|---|---|---|---|
| 1 | 0.25 | 0.2516 | 0.2511 | 100.44 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 0.2506 | 0.2501 | 100.04 | | |
| 3 | | 0.2506 | 0.2501 | 100.04 | | |
| AVERAGE (MEAN) | | 0.251 | 0.250 | 100.17 | | 0.230 |
| | | | | | | PASS |

| **PIPETTE ID:** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
|---|---|---|---|---|---|---|
| 1 | | | | | | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | | | | | |
| 3 | | | | | | |
| AVERAGE (MEAN) | | | | | | |
| | | | | | | |

WMFoam 05-31-16

Analyst / Date

Dan Mercado 06/01/2016

Review and Approved / Date

# MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

| | | | |
|---|---|---|---|
| **ANALYST:** | RO | **BALANCE #:** | 30 |
| **TEST DATE:** | 06/01/2016 | **Water is at Room Temperatue (70-73°F) / (21-23°C)** | |
| **PIPETTER LAB ID:** | See Below | **WATER TEMP (°C):** | 21-23°C |
| **TEST VOLUME:** | See Below | **WATER DENSITY:** | 0.998 (0.9980-0.9976) |

| | |
|---|---|
| **REFERENCE:** | DoD QSM 5.0 |
| **# of REPLICATES:** | 3 |
| **LABWARE TYPE:** | MECHANICAL VOLUMETRIC PIPETTE |
| **FREQUENCY:** | DAILY BEFORE USE |
| **MEAN CRITERIA:** | ± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME) |
| **RSD CRITERIA:** | < 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS) |

**1) RECORD ROOM AND WATER TEMPERATURE**
**2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.**
**3) WEIGH 3 REPLICATES AT THE TEST VOLUME.**
**4) DETERMINE TOTAL WT.**
**5) CALCULATE VOLUME OF H2O AT °C (in mL)**

**% TEST VOL = Volume of H2O at °C/Test Volume * 100**

**%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100**

**VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY**

| | | | | | BIAS | PRECISION |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-31** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 4.00 | 3.9780 | 3.9700 | 99.25 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 3.9842 | 3.9762 | 99.41 | | |
| 3 | | 3.9970 | 3.9890 | 99.73 | | |
| **AVERAGE (MEAN)** | | **3.986** | **3.978** | **99.46** | | **0.243** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-21** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 1.00 | 1.0024 | 1.0004 | 100.04 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 1.0031 | 1.0011 | 100.11 | | |
| 3 | | 1.0015 | 0.9995 | 99.95 | | |
| **AVERAGE (MEAN)** | | **1.002** | **1.000** | **100.03** | | **0.080** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-39** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 0.500 | 0.5007 | 0.4997 | 99.94 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 0.5031 | 0.5021 | 100.42 | | |
| 3 | | 0.5033 | 0.5023 | 100.46 | | |
| **AVERAGE (MEAN)** | | **0.502** | **0.501** | **100.27** | | **0.288** |
| | | | | | | **PASS** |

Analyst / Date — 6/1/16

06/01/2016

Review and Approved / Date

# Calibration Summary Report

**Date Acquired** 6/1/2016 10:24
**Data Batch** 160601.b

| Level | Calibration File Name |
|---|---|
| 1 | 012CALB.d |
| 2 | 013CALS.d |
| 3 | 014CALS.d |
| 4 | 015CALS.d |
| 5 | 016CALS.d |
| 6 | 017CALS.d |
| 7 | 018CALS.d |
| 8 | 019CALS.d |

**Calibration Table**

| Ele | Corr Coef | Curve Equation |
|---|---|---|
| As | 1.0000 | y = 0.0012 * x + 3.0885E-004 |
| Be | 1.0000 | y = 3.8856E-005 * x + 2.5267E-006 |
| B | 1.0000 | y = 1.4341E-005 * x + 1.0030E-004 |
| Na | 1.0000 | y = 7.6168E-004 * x + 0.0405 |
| Mg | 1.0000 | y = 3.7502E-004 * x + 7.4757E-004 |
| Al | 1.0000 | y = 1.4401E-004 * x + 8.1797E-004 |
| K | 1.0000 | y = 4.2087E-004 * x + 0.0624 |
| Ca | 0.9998 | y = 2.2744E-005 * x + 5.5570E-004 |
| Ti | 1.0000 | y = 1.4786E-004 * x + 9.4893E-006 |
| V | 1.0000 | y = 0.0046 * x + 0.0046 |
| Cr | 1.0000 | y = 0.0053 * x + 0.0019 |
| Mn | 1.0000 | y = 0.0032 * x + 7.4442E-004 |
| Fe | 1.0000 | y = 0.0045 * x + 0.0102 |
| Co | 1.0000 | y = 0.0118 * x + 7.8585E-005 |
| Ni | 1.0000 | y = 0.0031 * x + 2.9650E-004 |
| Cu | 1.0000 | y = 0.0086 * x + 0.0042 |
| Zn | 1.0000 | y = 0.0014 * x + 3.5563E-004 |
| Se | 1.0000 | y = 7.4568E-005 * x + 1.9494E-004 |
| Sr | 1.0000 | y = 6.8603E-004 * x + 5.3175E-005 |
| Mo | 1.0000 | y = 5.2412E-004 * x + 4.4501E-006 |
| Ag | 1.0000 | y = 0.0015 * x + 5.7427E-006 |
| Cd | 1.0000 | y = 2.3409E-004 * x + 6.5692E-007 |
| Sn | 1.0000 | y = 5.2439E-004 * x + 1.9000E-004 |
| Sb | 1.0000 | y = 7.7186E-004 * x + 6.8611E-005 |
| Tl | 1.0000 | y = 0.0016 * x + 3.6466E-006 |
| Ba | 1.0000 | y = 2.6644E-004 * x + 6.3836E-006 |
| Pb | 1.0000 | y = 0.0022 * x + 1.6641E-004 |
| Li | 1.0000 | y = 3.0616E-005 * x + 1.0797E-005 |

REVIEWED BY
By Janice Whitt at 10:49:35 AM, 6/2/2016

# Calibration Summary Report

**Level 7 Cal**

| Ele | Conc | Calc | %Rec |
|---|---|---|---|
| As | 500 | 496.54 | 99 |
| Be | 500 | 507.05 | 101 |
| B | 500 | 499.99 | 100 |
| Na | 10000 | 9851.03 | 99 |
| Mg | 10000 | 9973.37 | 100 |
| Al | 10000 | 10008.05 | 100 |
| K | 10000 | 9880.23 | 99 |
| Ca | 10000 | 9570.44 | 96 |
| Ti | 500 | 498.86 | 100 |
| V | 500 | 502.05 | 100 |
| Cr | 500 | 509.13 | 102 |
| Mn | 500 | 498.45 | 100 |
| Fe | 10000 | 9981.77 | 100 |
| Co | 500 | 510.09 | 102 |
| Ni | 500 | 505.45 | 101 |
| Cu | 500 | 513.25 | 103 |
| Zn | 500 | 502.52 | 101 |
| Se | 500 | 499.12 | 100 |
| Sr | 500 | 503.76 | 101 |
| Mo | 500 | 503.82 | 101 |
| Ag | 500 | 500.68 | 100 |
| Cd | 500 | 502.56 | 101 |
| Sn | 500 | 515.69 | 103 |
| Sb | 500 | 501.57 | 100 |
| Tl | 500 | 502.18 | 100 |
| Ba | 500 | 500.72 | 100 |
| Pb | 500 | 503.30 | 101 |

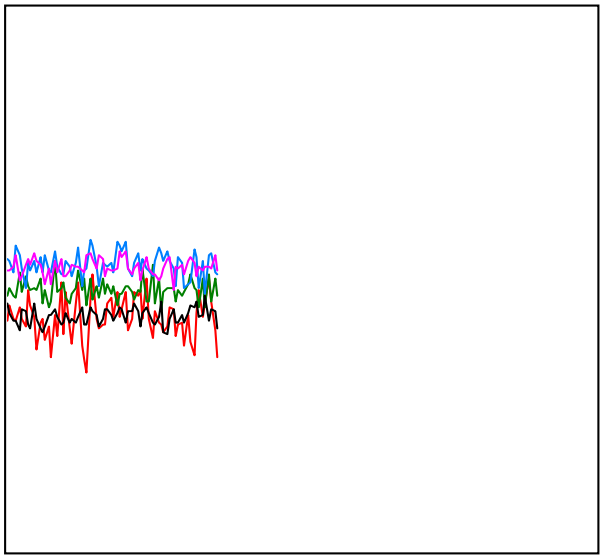
**Level 8 Cal**

| Ele | Conc | Calc | %Rec |
|---|---|---|---|
| As | 2000 | 2000.97 | 100 |
| Be | 2000 | 1998.43 | 100 |
| B | 2000 | 2000.19 | 100 |
| Na | 25000 | 25066.18 | 100 |
| Mg | 25000 | 25018.97 | 100 |
| K | 25000 | 25065.37 | 100 |
| Ca | 25000 | 25225.54 | 99 |
| Ti | 2000 | 1999.96 | 100 |
| V | 2000 | 1999.42 | 100 |
| Cr | 2000 | 1997.26 | 100 |
| Mn | 2000 | 2000.54 | 100 |
| Co | 2000 | 1996.44 | 100 |
| Ni | 2000 | 1997.83 | 100 |
| Cu | 2000 | 1995.59 | 100 |
| Zn | 2000 | 1998.75 | 100 |
| Se | 2000 | 1999.49 | 100 |
| Sr | 2000 | 1999.09 | 100 |
| Mo | 2000 | 1999.26 | 100 |
| Cd | 2000 | 1999.62 | 100 |
| Sn | 2000 | 1995.36 | 100 |
| Tl | 2000 | 1999.00 | 100 |
| Ba | 2000 | 2000.47 | 100 |
| Pb | 2000 | 1999.04 | 100 |
| Li | 2000 | 1997.85 | 100 |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 3:59:18 PM, 6/1/2016*

# Current Signal



| Mass | Range | Count | Avg. Count | RSD [%] |
|---|---|---|---|---|
| 51 | 500 | 178 | 214.6 | 9.05 |
| 59 | 2000 | 942 | 960.6 | 4.06 |
| 89 | 2000 | 1017 | 1052.1 | 4.35 |
| 140 | 5000 | 2584 | 2609.1 | 2.91 |
| 205 | 5000 | 2056 | 2161.2 | 3.53 |
| 156/140 | 1 | 0.503 % | 0.320 % | 41.32 |
| 75 | 20 | 3 | 8.1 | 41.30 |
| 78 | 50 | 13 | 14.2 | 31.10 |
| 56 | 5000 | 2401 | 2410.9 | 3.13 |
| 31 | 200 | 92 | 72.8 | 15.99 |
| **Integration Time [sec]** | | 0.10 | | |

**## Plasma Parameters ##**

| | | | |
|---|---|---|---|
| RF Power | 1550 | Carrier Gas | 0.48 |
| RF Matching | 1.90 | Option Gas | 0.0 |
| Smpl Depth | 8.0 | Nebulizer Pump | 0.10 |
| S/C Temp | 2 | | |

**## Lenses Parameters ##**

| | | | |
|---|---|---|---|
| Extract 1 | 0.0 | Omega Lens | 9.1 |
| Extract 2 | -195.0 | Cell Entrance | -40 |
| Omega Bias | -115 | Cell Exit | -60 |
| Deflect | 1.4 | | |

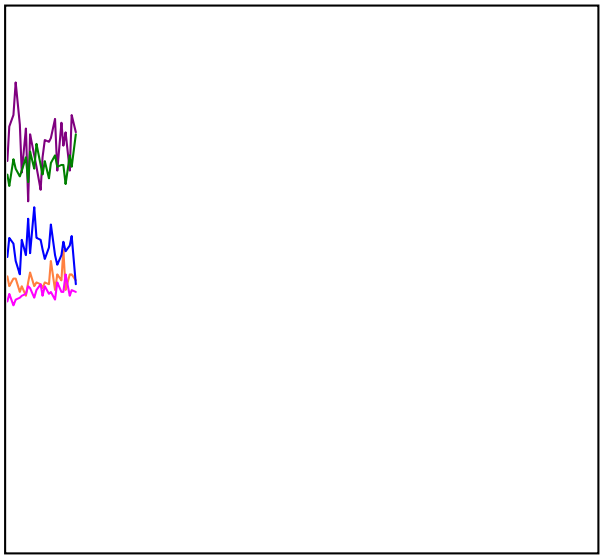
**## Cell Parameters ##**

| | | | |
|---|---|---|---|
| Use Gas | true | 3rd Gas Flow | 0 |
| He Flow | 4.7 | OctP Bias | -18.0 |
| H2 Flow | 0.0 | OctP RF | 200 |
| Energy Discrimination | 3.0 | | |

**Meters**

| | | | | | |
|---|---|---|---|---|---|
| IF/BK Press | 2.22E+2 | Pa | Carrier Gas(BP) | 7.96E+1 | kPa |
| Analyzer Press | 1.96E-4 | Pa | Reflected Power | 4 | W |
| Forward Power | 1549 | W | | | |

# Current Signal



| Mass | Range | Count | Avg. Count | RSD [%] |
|---|---|---|---|---|
| 7 | 1000 | 769 | 749.5 | 6.58 |
| 59 | 2000 | 1533 | 1418.5 | 3.17 |
| 89 | 5000 | 2494 | 2490.5 | 3.59 |
| 140 | 5000 | 2378 | 2378.6 | 2.55 |
| 205 | 2000 | 1432 | 1478.9 | 4.30 |
| 156/140 | 2 | 0.799 % | 0.861 % | 30.00 |
| 78 | 5000 | 2261 | 2227.7 | 2.66 |
| 63 | 1000 | 492 | 558.2 | 5.51 |
| 75 | 5000 | 4501 | 4468.5 | 2.13 |

**Integration Time [sec]** 0.10

**## Plasma Parameters ##**

| | | | |
|---|---|---|---|
| RF Power | 1550 | Carrier Gas | 0.48 |
| RF Matching | 1.90 | Option Gas | 0.0 |
| Smpl Depth | 8.0 | Nebulizer Pump | 0.10 |
| S/C Temp | 2 | | |

**## Lenses Parameters ##**

| | | | |
|---|---|---|---|
| Extract 1 | 0.0 | Omega Lens | 9.1 |
| Extract 2 | -195.0 | Cell Entrance | -40 |
| Omega Bias | -115 | Cell Exit | -60 |
| Deflect | 7.0 | | |

**## Cell Parameters ##**

| | | | |
|---|---|---|---|
| Use Gas | false | 3rd Gas Flow | 0 |
| He Flow | 4.2 | OctP Bias | -18.0 |
| H2 Flow | 0.0 | OctP RF | 200 |
| Energy Discrimination | 3.0 | | |

**Meters**

| | | | | | |
|---|---|---|---|---|---|
| IF/BK Press | 2.20E+2 | Pa | Carrier Gas(BP) | 8.00E+1 | kPa |
| Analyzer Press | 1.06E-4 | Pa | Reflected Power | 4 | W |
| Forward Power | 1550 | W | | | |

# US EPA Tune Check Sample Report

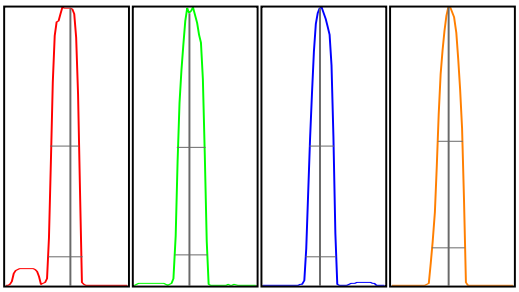
**Batch Folder** C:\Agilent\ICPMH\1\DATA\DHL TEMPLATE Li.b
**Report Comment**
**Instrument Name** ICPMS4 JP12361998

**[No gas]**

| Mass | Count (Mean) | RSD% (Actual) | RSD% (Required) | RSD% (Flag) |
|---|---|---|---|---|
| 7 | 469197 | 0.59 | 5.00 | |
| 59 | 777432 | 0.54 | 5.00 | |
| 115 | 1100957 | 0.60 | 5.00 | |
| 205 | 970001 | 0.48 | 5.00 | |

| Mass | Replicate 1 Count | Replicate 2 Count | Replicate 3 Count | Replicate 4 Count | Replicate 5 Count |
|---|---|---|---|---|---|
| 7 | 466708 | 470676 | 466603 | 473138 | 468862 |
| 59 | 783753 | 772423 | 775490 | 777282 | 778210 |
| 115 | 1110902 | 1101370 | 1096978 | 1093453 | 1102083 |
| 205 | 975577 | 967005 | 970055 | 963941 | 973426 |

**Integration Time [sec] =** 0.1



| Mass | Peak Height | Axis (Actual) | Axis (Required) | Axis (Flag) | Width-X% (Actual) | Width-X% (Required) | Width-X% (Flag) |
|---|---|---|---|---|---|---|---|
| 7 | 71266 | 7.10 | 6.9 - 7.1 | | 0.808 | 0.850 | |
| 59 | 127392 | 58.90 | 58.9 - 59.1 | | 0.788 | 0.850 | |
| 115 | 203222 | 114.95 | 114.9 - 115.1 | | 0.737 | 0.850 | |
| 205 | 171382 | 204.95 | 204.9 - 205.1 | | 0.792 | 0.850 | |

***REVIEWED/APPROVED***
*By Sherri Herschmann at 3:59:25 PM, 6/1/2016*

**X% =** 10 **Int Time [sec] =** 0.1 **Acq Time [sec] =** 135.05 **Y Axis =** Linear

**Tune Parameters**

**## Plasma Paramters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| RF Power | 1550 | W | Nebulizer Pump | 0.10 | rps |
| RF Matching | 1.90 | V | S/C Temp | 2 | ℃ |
| Smpl Depth | 8.0 | mm | Gas Switch | Dilution Gas | |
| Carrier Gas | 0.48 | L/min | Makeup/Dilution Gas | 0.57 | L/min |
| Option Gas | 0.0 | % | | | |

**## Lenses Parameters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| Extract 1 | 0.0 | V | Cell Entrance | -40 | V |
| Extract 2 | -195.0 | V | Cell Exit | -60 | V |
| Omega Bias | -115 | V | Deflect | 7.0 | V |
| Omega Lens | 9.1 | V | Plate Bias | -60 | V |

**## Cell Parameters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| Use Gas | false | | OctP Bias | -18.0 | V |
| He Flow | 0.0 | mL/min | OctP RF | 200 | V |
| H2 Flow | 0.0 | mL/min | Energy Discrimination | 3.0 | V |
| 3rd Gas Flow | 0 | % | | | |

# P/A Factor Tuning Report

## Current Sample

Sample Name: BLANK STD 1
Data File: 012CALB.d
Acquired: 06/01/2016 10:24:06

## Detector Parameters and P/A Factors

Discriminator: 4.5 mV
AnalogHV: 1762 V
PulseHV: 1253 V

Acquired: 06/01/2016 09:47:45

| Mass[u] | Element | P/A Factor |
|---|---|---|
| 6 | Li | 0.098727 |
| 9 | Be | 0.112529 |
| 23 | Na | 0.118712 |
| 24 | Mg | 0.123783 |
| 27 | Al | 0.127477 |
| 39 | K | 0.129467 |
| 45 | Sc | 0.130971 |
| 48 | | 0.131584 |
| 51 | V | 0.132069 |
| 52 | Cr | 0.136416 |
| 55 | Mn | 0.137977 |
| 59 | Co | 0.141135 |
| 60 | Ni | 0.141430 |
| 63 | Cu | 0.144094 |
| 66 | Zn | 0.143476 |
| 72 | | 0.143134 |
| 74 | Ge | 0.143951 |
| 75 | As | 0.142425 |
| 88 | Sr | 0.143942 |
| 89 | | 0.143049 |
| 95 | | 0.143053 |
| 97 | Mo | 0.143367 |
| 98 | Mo | 0.143979 |
| 99 | [Mo] | 0.144790 |
| 101 | | 0.145602 |
| 105 | | 0.148399 |
| 111 | Cd | 0.150279 |
| 114 | Cd | 0.149596 |
| 115 | In | 0.150224 |
| 118 | Sn | 0.148664 |
| 121 | | 0.149277 |
| 123 | Sb | 0.149634 |
| 135 | Ba | 0.148807 |
| 138 | | 0.150247 |
| 175 | | 0.153566 |
| 193 | | 0.155115 |
| 205 | Tl | 0.155856 |
| 206 | [Pb] | 0.156520 |
| 207 | [Pb] | 0.156606 |
| 208 | Pb | 0.157038 |
| 209 | Bi | 0.156969 |
| 232 | | 0.157417 |
| 238 | U | 0.157479 |
| 44 | Ca | Signal too low |
| 78 | Se | Signal too low |
| 107 | Ag | Signal too low |
| 172 | | Signal too low |

REVIEWED BY
By Janice Whitt at 10:49:51 AM, 6/2/2016

# Calibration Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 10:24 | Sample Name | BLANK STD 1 |
| Data Batch | 160601.b | Comment | CAL ICPMS_TW |
| Data File Name | 012CALB.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 11 | 13.48 |
| 9 | Be | 45 | 3 | 94.37 |
| 11 | B | 45 | 106 | 39.49 |
| 23 | Na | 45 | 42520 | 1.88 |
| 24 | Mg | 45 | 786 | 9.43 |
| 27 | Al | 45 | 859 | 7.96 |
| 39 | K | 45 | 65514 | 1.01 |
| 44 | Ca | 45 | 584 | 16.04 |
| 47 | Ti | 45 | 10 | 66.70 |
| 51 | V | 45 | 4842 | 2.38 |
| 52 | Cr | 45 | 2043 | 3.70 |
| 55 | Mn | 45 | 782 | 11.93 |
| 56 | Fe | 45 | 10761 | 0.86 |
| 59 | Co | 72 | 58 | 35.25 |
| 60 | Ni | 72 | 218 | 12.74 |
| 63 | Cu | 72 | 3107 | 0.95 |
| 66 | Zn | 72 | 261 | 3.90 |
| 75 | As | 72 | 227 | 3.27 |
| 78 | Se | 72 | 143 | 4.28 |
| 88 | Sr | 115 | 359 | 19.18 |
| 95 | Mo | 115 | 30 | 0.00 |
| 107 | Ag | 115 | 39 | 47.21 |
| 111 | Cd | 115 | 4 | 86.60 |
| 118 | Sn | 115 | 1280 | 5.71 |
| 121 | Sb | 115 | 462 | 5.78 |
| 137 | Ba | 115 | 43 | 53.85 |
| 205 | Tl | 209 | 48 | 16.12 |
| 208 | Pb | 209 | 2179 | 6.95 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD |
|---|---|---|---|
| 45 | Sc | 1050400 | 0.77 |
| 72 | Ge | 734358 | 0.63 |
| 115 | In | 6743146 | 1.94 |
| 209 | Bi | 13099945 | 1.43 |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 10:26 | Sample Name | L2-160601 |
| Data Batch | 160601.b | Comment | CAL ICPMS_TW |
| Data File Name | 013CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 48 | 17.09 |
| 9 | Be | 45 | 52 | 25.23 |
| 11 | B | 45 | 84 | 19.47 |
| 23 | Na | 45 | 61139 | 8.27 |
| 24 | Mg | 45 | 8143 | 2.95 |
| 27 | Al | 45 | 3680 | 3.51 |
| 39 | K | 45 | 72868 | 0.71 |
| 44 | Ca | 45 | 1090 | 4.36 |
| 47 | Ti | 45 | 184 | 28.07 |
| 51 | V | 45 | 9498 | 3.74 |
| 52 | Cr | 45 | 7925 | 1.70 |
| 55 | Mn | 45 | 3437 | 6.17 |
| 56 | Fe | 45 | 103481 | 0.13 |
| 59 | Co | 72 | 8876 | 0.11 |
| 60 | Ni | 72 | 2638 | 5.18 |
| 63 | Cu | 72 | 9016 | 1.96 |
| 66 | Zn | 72 | 1329 | 1.04 |
| 75 | As | 72 | 1073 | 3.63 |
| 78 | Se | 72 | 183 | 4.10 |
| 88 | Sr | 115 | 5062 | 5.40 |
| 95 | Mo | 115 | 3467 | 0.42 |
| 107 | Ag | 115 | 10312 | 1.43 |
| 111 | Cd | 115 | 1539 | 3.89 |
| 118 | Sn | 115 | 4935 | 3.48 |
| 121 | Sb | 115 | 5579 | 4.93 |
| 137 | Ba | 115 | 1743 | 2.33 |
| 205 | Tl | 209 | 20983 | 1.40 |
| 208 | Pb | 209 | 30164 | 2.04 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1034386 | 0.32 | 1050400 | 98.48 | 70 | 120 | |
| 72 | Ge | 725251 | 0.94 | 734358 | 98.76 | 70 | 120 | |
| 115 | In | 6757231 | 2.21 | 6743146 | 100.21 | 70 | 120 | |
| 209 | Bi | 13085808 | 1.19 | 13099945 | 99.89 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 10:28 | Sample Name | L-160601 |
| Data Batch | 160601.b | Comment | CAL ICPMS_TW |
| Data File Name | 014CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 342 | 7.60 |
| 9 | Be | 45 | 415 | 4.11 |
| 11 | B | 45 | 202 | 14.21 |
| 23 | Na | 45 | 198583 | 0.97 |
| 24 | Mg | 45 | 77178 | 0.63 |
| 27 | Al | 45 | 30263 | 1.55 |
| 39 | K | 45 | 146980 | 0.76 |
| 44 | Ca | 45 | 5282 | 1.12 |
| 47 | Ti | 45 | 1573 | 2.20 |
| 51 | V | 45 | 52353 | 1.15 |
| 52 | Cr | 45 | 57279 | 0.99 |
| 55 | Mn | 45 | 33395 | 1.81 |
| 56 | Fe | 45 | 941343 | 0.82 |
| 59 | Co | 72 | 87499 | 1.62 |
| 60 | Ni | 72 | 23532 | 0.59 |
| 63 | Cu | 72 | 66580 | 1.35 |
| 66 | Zn | 72 | 11083 | 1.96 |
| 75 | As | 72 | 8446 | 0.70 |
| 78 | Se | 72 | 688 | 2.89 |
| 88 | Sr | 115 | 45912 | 0.24 |
| 95 | Mo | 115 | 34057 | 1.02 |
| 107 | Ag | 115 | 99631 | 0.31 |
| 111 | Cd | 115 | 15318 | 2.02 |
| 118 | Sn | 115 | 36276 | 0.31 |
| 121 | Sb | 115 | 50806 | 0.31 |
| 137 | Ba | 115 | 17356 | 1.42 |
| 205 | Tl | 209 | 207669 | 0.59 |
| 208 | Pb | 209 | 281180 | 0.65 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1026054 | 0.78 | 1050400 | 97.68 | 70 | 120 | |
| 72 | Ge | 719454 | 1.01 | 734358 | 97.97 | 70 | 120 | |
| 115 | In | 6738260 | 0.72 | 6743146 | 99.93 | 70 | 120 | |
| 209 | Bi | 12823753 | 1.92 | 13099945 | 97.89 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 10:30 | Sample Name | 10X-160601 |
| Data Batch | 160601.b | Comment | CAL ICPMS_TW |
| Data File Name | 015CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 1584 | 2.46 |
| 9 | Be | 45 | 1965 | 2.10 |
| 11 | B | 45 | 823 | 13.16 |
| 23 | Na | 45 | 815386 | 0.18 |
| 24 | Mg | 45 | 385877 | 0.81 |
| 27 | Al | 45 | 147542 | 0.82 |
| 39 | K | 45 | 486135 | 0.59 |
| 44 | Ca | 45 | 22976 | 1.85 |
| 47 | Ti | 45 | 7642 | 1.32 |
| 51 | V | 45 | 239265 | 0.55 |
| 52 | Cr | 45 | 279355 | 0.72 |
| 55 | Mn | 45 | 164838 | 0.06 |
| 56 | Fe | 45 | 4691715 | 1.12 |
| 59 | Co | 72 | 433901 | 0.96 |
| 60 | Ni | 72 | 117034 | 0.72 |
| 63 | Cu | 72 | 323026 | 0.64 |
| 66 | Zn | 72 | 53196 | 0.40 |
| 75 | As | 72 | 41609 | 0.73 |
| 78 | Se | 72 | 2919 | 0.54 |
| 88 | Sr | 115 | 226609 | 0.68 |
| 95 | Mo | 115 | 172724 | 1.05 |
| 107 | Ag | 115 | 507522 | 0.65 |
| 111 | Cd | 115 | 77851 | 0.30 |
| 118 | Sn | 115 | 178709 | 0.83 |
| 121 | Sb | 115 | 257087 | 0.35 |
| 137 | Ba | 115 | 87923 | 0.72 |
| 205 | Tl | 209 | 1052753 | 0.36 |
| 208 | Pb | 209 | 1407074 | 0.32 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1024339 | 0.55 | 1050400 | 97.52 | 70 | 120 | |
| 72 | Ge | 712247 | 0.64 | 734358 | 96.99 | 70 | 120 | |
| 115 | In | 6634827 | 0.82 | 6743146 | 98.39 | 70 | 120 | |
| 209 | Bi | 13054581 | 0.92 | 13099945 | 99.65 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 10:32 | Sample Name | 5X-160601 |
| Data Batch | 160601.b | Comment | CAL ICPMS_TW |
| Data File Name | 016CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 3087 | 2.25 |
| 9 | Be | 45 | 3852 | 1.17 |
| 11 | B | 45 | 1590 | 11.19 |
| 23 | Na | 45 | 1566675 | 1.34 |
| 24 | Mg | 45 | 758036 | 0.28 |
| 27 | Al | 45 | 291761 | 1.07 |
| 39 | K | 45 | 895438 | 0.56 |
| 44 | Ca | 45 | 43900 | 1.22 |
| 47 | Ti | 45 | 15154 | 1.77 |
| 51 | V | 45 | 466760 | 0.24 |
| 52 | Cr | 45 | 544053 | 0.83 |
| 55 | Mn | 45 | 321151 | 0.30 |
| 56 | Fe | 45 | 9208334 | 1.32 |
| 59 | Co | 72 | 853302 | 1.35 |
| 60 | Ni | 72 | 226505 | 0.57 |
| 63 | Cu | 72 | 629008 | 0.55 |
| 66 | Zn | 72 | 102297 | 0.67 |
| 75 | As | 72 | 80743 | 0.56 |
| 78 | Se | 72 | 5541 | 1.33 |
| 88 | Sr | 115 | 448062 | 0.53 |
| 95 | Mo | 115 | 336853 | 1.12 |
| 107 | Ag | 115 | 992693 | 0.53 |
| 111 | Cd | 115 | 152081 | 1.30 |
| 118 | Sn | 115 | 347714 | 0.76 |
| 121 | Sb | 115 | 498686 | 0.37 |
| 137 | Ba | 115 | 171236 | 0.66 |
| 205 | Tl | 209 | 2066952 | 0.40 |
| 208 | Pb | 209 | 2779862 | 0.72 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1023046 | 0.03 | 1050400 | 97.40 | 70 | 120 | |
| 72 | Ge | 707128 | 1.07 | 734358 | 96.29 | 70 | 120 | |
| 115 | In | 6640281 | 0.68 | 6743146 | 98.47 | 70 | 120 | |
| 209 | Bi | 12859531 | 1.52 | 13099945 | 98.16 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 10:34 | Sample Name | 2X-160601 |
| Data Batch | 160601.b | Comment | CAL ICPMS_TW |
| Data File Name | 017CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 7761 | 1.92 |
| 9 | Be | 45 | 9825 | 1.86 |
| 11 | B | 45 | 3704 | 3.01 |
| 23 | Na | 45 | 3882576 | 0.41 |
| 24 | Mg | 45 | 1885733 | 0.61 |
| 27 | Al | 45 | 728580 | 1.15 |
| 39 | K | 45 | 2168298 | 0.36 |
| 44 | Ca | 45 | 110866 | 1.22 |
| 47 | Ti | 45 | 37770 | 2.64 |
| 51 | V | 45 | 1165971 | 0.76 |
| 52 | Cr | 45 | 1367421 | 0.49 |
| 55 | Mn | 45 | 810431 | 0.82 |
| 56 | Fe | 45 | 22849882 | 0.71 |
| 59 | Co | 72 | 2152979 | 0.20 |
| 60 | Ni | 72 | 570309 | 0.52 |
| 63 | Cu | 72 | 1573694 | 0.56 |
| 66 | Zn | 72 | 257305 | 1.46 |
| 75 | As | 72 | 204743 | 0.75 |
| 78 | Se | 72 | 13596 | 1.59 |
| 88 | Sr | 115 | 1125573 | 1.37 |
| 95 | Mo | 115 | 856966 | 0.50 |
| 107 | Ag | 115 | 2506705 | 0.08 |
| 111 | Cd | 115 | 381363 | 0.16 |
| 118 | Sn | 115 | 879285 | 1.13 |
| 121 | Sb | 115 | 1253747 | 0.97 |
| 137 | Ba | 115 | 429601 | 1.44 |
| 205 | Tl | 209 | 5275157 | 0.35 |
| 208 | Pb | 209 | 7032015 | 0.77 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1011649 | 0.30 | 1050400 | 96.31 | 70 | 120 | |
| 72 | Ge | 709409 | 0.52 | 734358 | 96.60 | 70 | 120 | |
| 115 | In | 6548843 | 0.80 | 6743146 | 97.12 | 70 | 120 | |
| 209 | Bi | 12650229 | 1.99 | 13099945 | 96.57 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 10:36 | Sample Name | H-160601 |
| Data Batch | 160601.b | Comment | CAL ICPMS_TW |
| Data File Name | 018CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 15832 | 0.63 |
| 9 | Be | 45 | 20012 | 0.68 |
| 11 | B | 45 | 7384 | 2.59 |
| 23 | Na | 45 | 7661126 | 1.42 |
| 24 | Mg | 45 | 3799280 | 0.70 |
| 27 | Al | 45 | 1464533 | 0.80 |
| 39 | K | 45 | 4286214 | 0.68 |
| 44 | Ca | 45 | 221628 | 1.12 |
| 47 | Ti | 45 | 74919 | 0.39 |
| 51 | V | 45 | 2336468 | 0.35 |
| 52 | Cr | 45 | 2753589 | 0.32 |
| 55 | Mn | 45 | 1622992 | 0.18 |
| 56 | Fe | 45 | 45499507 | 1.21 |
| 59 | Co | 72 | 4297048 | 0.59 |
| 60 | Ni | 72 | 1135443 | 0.39 |
| 63 | Cu | 72 | 3156306 | 0.17 |
| 66 | Zn | 72 | 511817 | 0.38 |
| 75 | As | 72 | 409518 | 0.51 |
| 78 | Se | 72 | 26703 | 1.04 |
| 88 | Sr | 115 | 2262747 | 0.52 |
| 95 | Mo | 115 | 1728938 | 0.71 |
| 107 | Ag | 115 | 5025335 | 0.55 |
| 111 | Cd | 115 | 770199 | 0.45 |
| 118 | Sn | 115 | 1771731 | 0.36 |
| 121 | Sb | 115 | 2534941 | 0.33 |
| 137 | Ba | 115 | 873380 | 0.77 |
| 205 | Tl | 209 | 10513808 | 0.74 |
| 208 | Pb | 209 | 14179350 | 0.29 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1015579 | 0.48 | 1050400 | 96.69 | 70 | 120 | |
| 72 | Ge | 713704 | 0.20 | 734358 | 97.19 | 70 | 120 | |
| 115 | In | 6548319 | 1.86 | 6743146 | 97.11 | 70 | 120 | |
| 209 | Bi | 12779623 | 1.09 | 13099945 | 97.55 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 10:38 | Sample Name | H2-160601 |
| Data Batch | 160601.b | Comment | CAL ICPMS_TW |
| Data File Name | 019CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 62375 | 0.96 |
| 9 | Be | 45 | 79174 | 1.02 |
| 11 | B | 45 | 29347 | 1.98 |
| 23 | Na | 45 | 19508704 | 0.58 |
| 24 | Mg | 45 | 9566457 | 1.97 |
| 27 | Al | 45 | 6122 | 5.96 |
| 39 | K | 45 | 10819476 | 1.41 |
| 44 | Ca | 45 | 585572 | 0.32 |
| 47 | Ti | 45 | 301548 | 1.52 |
| 51 | V | 45 | 9328845 | 1.64 |
| 52 | Cr | 45 | 10839313 | 0.25 |
| 55 | Mn | 45 | 6537384 | 0.97 |
| 56 | Fe | 45 | 61419 | 25.40 |
| 59 | Co | 72 | 16864213 | 1.27 |
| 60 | Ni | 72 | 4499372 | 0.69 |
| 63 | Cu | 72 | 12296695 | 0.64 |
| 66 | Zn | 72 | 2040446 | 0.62 |
| 75 | As | 72 | 1654087 | 0.40 |
| 78 | Se | 72 | 106840 | 0.38 |
| 88 | Sr | 115 | 8997686 | 2.19 |
| 95 | Mo | 115 | 6874479 | 2.43 |
| 107 | Ag | 115 | 4363 | 33.94 |
| 111 | Cd | 115 | 3071142 | 0.73 |
| 118 | Sn | 115 | 6866557 | 0.69 |
| 121 | Sb | 115 | 6298 | 7.38 |
| 137 | Ba | 115 | 3497271 | 1.00 |
| 205 | Tl | 209 | 41254524 | 1.08 |
| 208 | Pb | 209 | 55511814 | 0.33 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1019676 | 0.87 | 1050400 | 97.07 | 70 | 120 | |
| 72 | Ge | 715648 | 0.65 | 734358 | 97.45 | 70 | 120 | |
| 115 | In | 6561264 | 0.60 | 6743146 | 97.30 | 70 | 120 | |
| 209 | Bi | 12598387 | 1.16 | 13099945 | 96.17 | 70 | 120 | |

# Interference Check Solution A (ICS-A) Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 10:44 | Sample Name | ICSA-160601 |
| Data Batch | 160601.b | Comment | ICSAICPMS_TW |
| Data File Name | 022ICSA.d | Dilution | 1 |

| Mass | Name | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|
| 9 | Be | 0.148 | 8 | 27.7 | 1.2 | 0.8 | |
| 11 | B | 33.309 | 580 | 11.7 | 30 | 30 | FailAq FailSoil |
| 51 | V | -0.091 | 4208 | 0.7 | 10 | 10 | |
| 52 | Cr | 0.426 | 4227 | 4.3 | 8 | 5 | |
| 55 | Mn | 1.261 | 4802 | 3.5 | 8 | 10 | |
| 59 | Co | 0.591 | 4922 | 6.0 | 8 | 10 | |
| 60 | Ni | 0.470 | 1240 | 5.7 | 8 | 10 | |
| 63 | Cu | 0.269 | 4572 | 2.7 | 8 | 10 | |
| 66 | Zn | 1.482 | 1723 | 2.9 | 10 | 5 | |
| 75 | As | 0.703 | 782 | 7.0 | 4 | 5 | |
| 78 | Se | 0.468 | 160 | 6.3 | 2 | 5 | |
| 88 | Sr | 1.416 | 6447 | 5.2 | 10 | 10 | |
| 107 | Ag | 0.150 | 1486 | 3.3 | 0.8 | 2 | |
| 111 | Cd | 0.515 | 762 | 7.7 | 1.2 | 1 | |
| 118 | Sn | 2.076 | 8047 | 1.5 | 10 | 10 | |
| 121 | Sb | 0.426 | 2499 | 3.6 | 4 | 2.5 | |
| 137 | Ba | 0.379 | 676 | 21.5 | 8 | 10 | |
| 205 | Tl | 0.067 | 1370 | 8.0 | 4 | 1.5 | |
| 208 | Pb | 0.452 | 14065 | 3.8 | 1.2 | 1 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1003402 | 0.64 | 1050400 | 95.53 | 70 | 120 | |
| 72 | Ge | 698001 | 0.25 | 734358 | 95.05 | 70 | 120 | |
| 115 | In | 6291696 | 0.73 | 6743146 | 93.31 | 70 | 120 | |
| 209 | Bi | 12103641 | 0.51 | 13099945 | 92.39 | 70 | 120 | |

# Interference Check Solution AB (ICS-AB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 10:46 | Sample Name | ICSAB-160601 |
| Data Batch | 160601.b | Comment | ICSBICPMS_TW |
| Data File Name | 023ICSB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 51 | V | 45 | 40.038 | 189369 | 0.47 | 40 | 100.1 | 80 | 120 | |
| 52 | Cr | 45 | 21.169 | 115616 | 0.82 | 20 | 105.8 | 80 | 120 | |
| 55 | Mn | 45 | 19.339 | 63270 | 1.15 | 20 | 96.7 | 80 | 120 | |
| 59 | Co | 72 | 41.090 | 340426 | 0.85 | 40 | 102.7 | 80 | 120 | |
| 60 | Ni | 72 | 38.527 | 85297 | 1.12 | 40 | 96.3 | 80 | 120 | |
| 63 | Cu | 72 | 20.686 | 127936 | 0.65 | 20 | 103.4 | 80 | 120 | |
| 66 | Zn | 72 | 20.129 | 20398 | 1.32 | 20 | 100.6 | 80 | 120 | |
| 75 | As | 72 | 20.080 | 16492 | 1.48 | 20 | 100.4 | 80 | 120 | |
| 78 | Se | 72 | 19.410 | 1152 | 5.38 | 20 | 97.0 | 80 | 120 | |
| 107 | Ag | 115 | 19.423 | 188526 | 0.84 | 20 | 97.1 | 80 | 120 | |
| 111 | Cd | 115 | 10.046 | 14893 | 2.68 | 10 | 100.5 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1008846 | 0.88 | 1050400 | 96.04 | 70 | 120 | |
| 72 | Ge | 701791 | 0.76 | 734358 | 95.57 | 70 | 120 | |
| 115 | In | 6330318 | 0.79 | 6743146 | 93.88 | 70 | 120 | |
| 209 | Bi | 12060275 | 1.49 | 13099945 | 92.06 | 70 | 120 | |

# Initial Calibration Verification (ICV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 10:53 | Sample Name | ICV-160601 |
| Data Batch | 160601.b | Comment | ICV ICPMS_TW |
| Data File Name | 026_ICV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 102.515 | 3249 | 1.73 | 100 | 102.5 | 90 | 110 | |
| 9 | Be | 45 | 102.555 | 4114 | 1.91 | 100 | 102.6 | 90 | 110 | |
| 11 | B | 45 | 113.741 | 1787 | 5.42 | 100 | 113.7 | 90 | 110 | Fail |
| 23 | Na | 45 | 2563.705 | 2056471 | 1.15 | 2500 | 102.5 | 90 | 110 | |
| 24 | Mg | 45 | 2573.684 | 996519 | 0.90 | 2500 | 102.9 | 90 | 110 | |
| 27 | Al | 45 | 2547.887 | 379416 | 1.23 | 2500 | 101.9 | 90 | 110 | |
| 39 | K | 45 | 2518.200 | 1157788 | 0.83 | 2500 | 100.7 | 90 | 110 | |
| 44 | Ca | 45 | 2382.796 | 56488 | 1.66 | 2500 | 95.3 | 90 | 110 | |
| 47 | Ti | 45 | 101.664 | 15520 | 2.40 | 100 | 101.7 | 90 | 110 | |
| 51 | V | 45 | 102.533 | 488523 | 0.24 | 100 | 102.5 | 90 | 110 | |
| 52 | Cr | 45 | 105.461 | 581011 | 0.32 | 100 | 105.5 | 90 | 110 | |
| 55 | Mn | 45 | 98.837 | 327534 | 0.15 | 100 | 98.8 | 90 | 110 | |
| 56 | Fe | 45 | 2600.840 | 12052416 | 2.33 | 2500 | 104.0 | 90 | 110 | |
| 59 | Co | 72 | 104.950 | 897067 | 0.49 | 100 | 104.9 | 90 | 110 | |
| 60 | Ni | 72 | 102.989 | 234908 | 0.47 | 100 | 103.0 | 90 | 110 | |
| 63 | Cu | 72 | 103.332 | 647179 | 0.21 | 100 | 103.3 | 90 | 110 | |
| 66 | Zn | 72 | 104.112 | 107794 | 1.53 | 100 | 104.1 | 90 | 110 | |
| 75 | As | 72 | 100.934 | 84638 | 0.90 | 100 | 100.9 | 90 | 110 | |
| 78 | Se | 72 | 104.546 | 5786 | 0.21 | 100 | 104.5 | 90 | 110 | |
| 88 | Sr | 115 | 103.410 | 468757 | 0.49 | 100 | 103.4 | 90 | 110 | |
| 95 | Mo | 115 | 100.736 | 348635 | 0.36 | 100 | 100.7 | 90 | 110 | |
| 107 | Ag | 115 | 101.325 | 1025718 | 0.52 | 100 | 101.3 | 90 | 110 | |
| 111 | Cd | 115 | 100.698 | 155633 | 0.46 | 100 | 100.7 | 90 | 110 | |
| 118 | Sn | 115 | 107.527 | 373555 | 0.29 | 100 | 107.5 | 90 | 110 | |
| 121 | Sb | 115 | 102.454 | 522608 | 1.09 | 100 | 102.5 | 90 | 110 | |
| 137 | Ba | 115 | 101.263 | 178181 | 1.07 | 100 | 101.3 | 90 | 110 | |
| 205 | Tl | 209 | 100.963 | 2127637 | 1.16 | 100 | 101.0 | 90 | 110 | |
| 208 | Pb | 209 | 102.708 | 2914046 | 0.24 | 100 | 102.7 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1031748 | 1.19 | 1050400 | 98.22 | 70 | 120 | |
| 72 | Ge | 724146 | 0.57 | 734358 | 98.61 | 70 | 120 | |
| 115 | In | 6603114 | 1.22 | 6743146 | 97.92 | 70 | 120 | |
| 209 | Bi | 12862001 | 0.64 | 13099945 | 98.18 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 10:58 | Sample Name | LCVL-160601 |
| Data Batch | 160601.b | Comment | LCVLICPMS_TW |
| Data File Name | 028LICV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.174 | 341 | 2.61 | 10 | 101.7 | 70 | 130 | |
| 9 | Be | 45 | 0.963 | 42 | 29.54 | 1 | 96.3 | 70 | 130 | |
| 11 | B | 45 | 28.078 | 532 | 11.38 | 20 | 140.4 | 70 | 130 | Fail |
| 23 | Na | 45 | 104.364 | 126949 | 0.25 | 100 | 104.4 | 70 | 130 | |
| 24 | Mg | 45 | 100.166 | 40541 | 0.92 | 100 | 100.2 | 70 | 130 | |
| 27 | Al | 45 | 101.558 | 16341 | 1.51 | 100 | 101.6 | 70 | 130 | |
| 39 | K | 45 | 97.810 | 109561 | 0.46 | 100 | 97.8 | 70 | 130 | |
| 44 | Ca | 45 | 92.285 | 2809 | 0.52 | 100 | 92.3 | 70 | 130 | |
| 47 | Ti | 45 | 5.155 | 817 | 6.04 | 5 | 103.1 | 70 | 130 | |
| 51 | V | 45 | 1.044 | 9930 | 0.73 | 1 | 104.4 | 70 | 130 | |
| 52 | Cr | 45 | 5.208 | 31385 | 1.95 | 5 | 104.2 | 70 | 130 | |
| 55 | Mn | 45 | 4.731 | 16828 | 2.68 | 5 | 94.6 | 70 | 130 | |
| 56 | Fe | 45 | 101.742 | 493926 | 0.79 | 100 | 101.7 | 70 | 130 | |
| 59 | Co | 72 | 5.169 | 45027 | 1.01 | 5 | 103.4 | 70 | 130 | |
| 60 | Ni | 72 | 5.084 | 12014 | 3.51 | 5 | 101.7 | 70 | 130 | |
| 63 | Cu | 72 | 4.921 | 34342 | 0.15 | 5 | 98.4 | 70 | 130 | |
| 66 | Zn | 72 | 5.105 | 5629 | 1.35 | 5 | 102.1 | 70 | 130 | |
| 75 | As | 72 | 5.036 | 4516 | 2.85 | 5 | 100.7 | 70 | 130 | |
| 78 | Se | 72 | 5.142 | 426 | 3.60 | 5 | 102.8 | 70 | 130 | |
| 88 | Sr | 115 | 5.042 | 23831 | 0.44 | 5 | 100.8 | 70 | 130 | |
| 95 | Mo | 115 | 4.937 | 17592 | 2.06 | 5 | 98.7 | 70 | 130 | |
| 107 | Ag | 115 | 1.994 | 20784 | 2.30 | 2 | 99.7 | 70 | 130 | |
| 111 | Cd | 115 | 0.993 | 1581 | 5.02 | 1 | 99.3 | 70 | 130 | |
| 118 | Sn | 115 | 5.611 | 21256 | 1.80 | 5 | 112.2 | 70 | 130 | |
| 121 | Sb | 115 | 1.963 | 10747 | 0.87 | 2 | 98.1 | 70 | 130 | |
| 137 | Ba | 115 | 4.979 | 9043 | 3.59 | 5 | 99.6 | 70 | 130 | |
| 205 | Tl | 209 | 0.989 | 21413 | 3.60 | 1 | 98.9 | 70 | 130 | |
| 208 | Pb | 209 | 1.009 | 31517 | 1.64 | 1 | 100.9 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1058211 | 0.78 | 1050400 | 100.74 | 70 | 120 | |
| 72 | Ge | 737204 | 1.71 | 734358 | 100.39 | 70 | 120 | |
| 115 | In | 6786534 | 1.40 | 6743146 | 100.64 | 70 | 120 | |
| 209 | Bi | 13184750 | 0.75 | 13099945 | 100.65 | 70 | 120 | |

# Initial Calibration Blank (ICB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 11:04 | Sample Name | ICB-160601 |
| Data Batch | 160601.b | Comment | ICB ICPMS_TW |
| Data File Name | 030_ICB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.127 | 15 | 18.8 | 2 | 5 | |
| 9 | Be | 45 | 0.001 | 3 | 21.7 | 0.4 | 0.3 | |
| 11 | B | 45 | 4.358 | 170 | 10.9 | 10 | 10 | |
| 23 | Na | 45 | 3.891 | 45362 | 1.0 | 50 | 100 | |
| 24 | Mg | 45 | -0.736 | 492 | 6.1 | 50 | 100 | |
| 27 | Al | 45 | -0.899 | 719 | 3.0 | 50 | 10 | |
| 39 | K | 45 | -1.742 | 64369 | 1.6 | 50 | 100 | |
| 44 | Ca | 45 | 1.114 | 607 | 5.0 | 50 | 100 | |
| 47 | Ti | 45 | 0.022 | 13 | 90.2 | 4 | 3 | |
| 51 | V | 45 | 0.082 | 5205 | 7.1 | 4 | 3 | |
| 52 | Cr | 45 | -0.021 | 1912 | 4.3 | 2 | 2 | |
| 55 | Mn | 45 | -0.186 | 154 | 12.6 | 2 | 3 | |
| 56 | Fe | 45 | -0.079 | 10329 | 1.4 | 50 | 50 | |
| 59 | Co | 72 | 0.002 | 79 | 41.7 | 2 | 3 | |
| 60 | Ni | 72 | -0.020 | 172 | 24.0 | 2 | 3 | |
| 63 | Cu | 72 | -0.242 | 1591 | 1.2 | 2 | 2 | |
| 66 | Zn | 72 | -0.047 | 214 | 11.8 | 4 | 2 | |
| 75 | As | 72 | 0.013 | 240 | 6.6 | 2 | 2 | |
| 78 | Se | 72 | 0.030 | 146 | 8.0 | 1 | 2 | |
| 88 | Sr | 115 | -0.011 | 308 | 20.1 | 4 | 3 | |
| 95 | Mo | 115 | 0.014 | 81 | 22.6 | 2 | 2 | |
| 107 | Ag | 115 | 0.005 | 96 | 8.1 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.004 | 10 | 100.0 | 0.4 | 0.3 | |
| 118 | Sn | 115 | 0.365 | 2588 | 1.8 | 4 | 3 | |
| 121 | Sb | 115 | -0.030 | 309 | 19.4 | 2 | 0.8 | |
| 137 | Ba | 115 | -0.007 | 30 | 55.6 | 2 | 3 | |
| 205 | Tl | 209 | 0.002 | 92 | 17.8 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.015 | 1745 | 4.2 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1044250 | 0.51 | 1050400 | 99.41 | 70 | 120 | |
| 72 | Ge | 742138 | 1.01 | 734358 | 101.06 | 70 | 120 | |
| 115 | In | 6787985 | 1.76 | 6743146 | 100.66 | 70 | 120 | |
| 209 | Bi | 12987409 | 0.85 | 13099945 | 99.14 | 70 | 120 | |

# Method Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/16 11:06 AM | Sample Name | MB-75402 |
| Data Batch | 160601.b | Comment | MBLKICPMS_TSDOD1 |
| Data File Name | 031_PB.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | -0.115 | 8 | 15.06 | | |
| 9 | Be | 45 | 0.000 | 3 | 78.06 | | |
| 11 | B | 45 | 11.701 | 282 | 10.97 | | J |
| 23 | Na | 45 | 10.497 | 51004 | 0.89 | | |
| 24 | Mg | 45 | 3.394 | 2126 | 3.20 | | |
| 27 | Al | 45 | 23.850 | 4475 | 2.03 | | |
| 39 | K | 45 | 2.985 | 66951 | 1.11 | | |
| 44 | Ca | 45 | 60.958 | 2044 | 4.04 | | FAIL |
| 47 | Ti | 45 | 0.143 | 32 | 36.33 | | |
| 51 | V | 45 | -0.095 | 4394 | 3.10 | | |
| 52 | Cr | 45 | 0.853 | 6823 | 2.67 | | |
| 55 | Mn | 45 | 0.100 | 1121 | 8.99 | | |
| 56 | Fe | 45 | 7.851 | 47848 | 1.27 | | |
| 59 | Co | 72 | 0.011 | 148 | 14.67 | | |
| 60 | Ni | 72 | 0.797 | 2026 | 2.08 | | |
| 63 | Cu | 72 | -0.054 | 2720 | 4.42 | | |
| 66 | Zn | 72 | 2.705 | 3045 | 1.37 | | |
| 75 | As | 72 | 0.056 | 270 | 23.36 | | |
| 78 | Se | 72 | -0.218 | 129 | 12.74 | | |
| 88 | Sr | 115 | 0.398 | 2204 | 2.35 | | |
| 95 | Mo | 115 | 0.043 | 182 | 10.08 | | |
| 107 | Ag | 115 | 0.006 | 100 | 10.00 | | |
| 111 | Cd | 115 | 0.015 | 28 | 66.09 | | |
| 118 | Sn | 115 | 4.590 | 17556 | 0.57 | | J |
| 121 | Sb | 115 | -0.055 | 178 | 36.57 | | |
| 137 | Ba | 115 | 0.123 | 266 | 19.54 | | |
| 205 | Tl | 209 | 0.002 | 99 | 12.76 | | |
| 208 | Pb | 209 | 0.053 | 3749 | 2.13 | | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1052248 | 0.75 | 1050400 | 100.18 | 70 | 120 | |
| 72 | Ge | 722466 | 0.67 | 734358 | 98.38 | 70 | 120 | |
| 115 | In | 6760336 | 0.41 | 6743146 | 100.25 | 70 | 120 | |
| 209 | Bi | 13279612 | 1.76 | 13099945 | 101.37 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 11:08 | Sample Name | LCS-75402 |
| Data Batch | 160601.b | Comment | LCS ICPMS_TSDOD1 |
| Data File Name | 032_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 208.317 | 6658 | 0.92 | 200 | 104.2 | 80 | 120 | |
| 9 | Be | 45 | 204.740 | 8293 | 0.55 | 200 | 102.4 | 80 | 120 | |
| 11 | B | 45 | 223.134 | 3439 | 1.57 | 200 | 111.6 | 80 | 120 | |
| 23 | Na | 45 | 5249.490 | 4208900 | 0.17 | 1000 | 524.9 | 80 | 120 | Fail |
| 24 | Mg | 45 | 5245.282 | 2050658 | 0.60 | 1000 | 524.5 | 80 | 120 | Fail |
| 27 | Al | 45 | 1030.869 | 155558 | 0.19 | 1000 | 103.1 | 80 | 120 | |
| 39 | K | 45 | 5175.301 | 2334811 | 0.38 | 1000 | 517.5 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4954.086 | 118001 | 0.50 | 1000 | 495.4 | 80 | 120 | Fail |
| 47 | Ti | 45 | 205.933 | 31739 | 1.15 | 200 | 103.0 | 80 | 120 | |
| 51 | V | 45 | 208.101 | 996598 | 0.53 | 200 | 104.1 | 80 | 120 | |
| 52 | Cr | 45 | 211.777 | 1176473 | 0.39 | 200 | 105.9 | 80 | 120 | |
| 55 | Mn | 45 | 206.817 | 691470 | 0.35 | 200 | 103.4 | 80 | 120 | |
| 56 | Fe | 45 | 1058.301 | 4959564 | 0.74 | 1000 | 105.8 | 80 | 120 | |
| 59 | Co | 72 | 217.594 | 1846180 | 0.17 | 200 | 108.8 | 80 | 120 | |
| 60 | Ni | 72 | 216.001 | 488809 | 0.10 | 200 | 108.0 | 80 | 120 | |
| 63 | Cu | 72 | 216.524 | 1342807 | 0.39 | 200 | 108.3 | 80 | 120 | |
| 66 | Zn | 72 | 219.012 | 224800 | 0.81 | 200 | 109.5 | 80 | 120 | |
| 75 | As | 72 | 207.667 | 172621 | 0.60 | 200 | 103.8 | 80 | 120 | |
| 78 | Se | 72 | 210.396 | 11417 | 0.18 | 200 | 105.2 | 80 | 120 | |
| 88 | Sr | 115 | 209.197 | 949924 | 0.98 | 200 | 104.6 | 80 | 120 | |
| 95 | Mo | 115 | 208.449 | 722856 | 0.42 | 200 | 104.2 | 80 | 120 | |
| 107 | Ag | 115 | 208.158 | 2111569 | 0.21 | 200 | 104.1 | 80 | 120 | |
| 111 | Cd | 115 | 207.535 | 321415 | 0.44 | 200 | 103.8 | 80 | 120 | |
| 118 | Sn | 115 | 220.098 | 764893 | 0.83 | 200 | 110.0 | 80 | 120 | |
| 121 | Sb | 115 | 207.228 | 1058791 | 0.81 | 200 | 103.6 | 80 | 120 | |
| 137 | Ba | 115 | 207.912 | 366558 | 0.20 | 200 | 104.0 | 80 | 120 | |
| 205 | Tl | 209 | 211.104 | 4433363 | 0.23 | 200 | 105.6 | 80 | 120 | |
| 208 | Pb | 209 | 209.923 | 5933439 | 0.20 | 200 | 105.0 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1042110 | 0.49 | 1050400 | 99.21 | 70 | 120 | |
| 72 | Ge | 718806 | 0.40 | 734358 | 97.88 | 70 | 120 | |
| 115 | In | 6617217 | 1.49 | 6743146 | 98.13 | 70 | 120 | |
| 209 | Bi | 12818269 | 0.82 | 13099945 | 97.85 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 11:10 | Sample Name | LCSD-75402 |
| Data Batch | 160601.b | Comment | LCSDICPMS_TSDOD1 |
| Data File Name | 033_LS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 207.379 | 6638 | 1.86 | 200 | 103.7 | 80 | 120 | |
| 9 | Be | 45 | 206.645 | 8383 | 2.08 | 200 | 103.3 | 80 | 120 | |
| 11 | B | 45 | 222.039 | 3428 | 2.24 | 200 | 111.0 | 80 | 120 | |
| 23 | Na | 45 | 5200.996 | 4176971 | 0.68 | 1000 | 520.1 | 80 | 120 | Fail |
| 24 | Mg | 45 | 5236.142 | 2050303 | 0.62 | 1000 | 523.6 | 80 | 120 | Fail |
| 27 | Al | 45 | 1051.315 | 158875 | 0.71 | 1000 | 105.1 | 80 | 120 | |
| 39 | K | 45 | 5167.212 | 2334859 | 0.68 | 1000 | 516.7 | 80 | 120 | Fail |
| 44 | Ca | 45 | 4963.145 | 118393 | 0.52 | 1000 | 496.3 | 80 | 120 | Fail |
| 47 | Ti | 45 | 207.955 | 32101 | 1.64 | 200 | 104.0 | 80 | 120 | |
| 51 | V | 45 | 210.826 | 1011185 | 1.27 | 200 | 105.4 | 80 | 120 | |
| 52 | Cr | 45 | 212.814 | 1184119 | 1.07 | 200 | 106.4 | 80 | 120 | |
| 55 | Mn | 45 | 207.570 | 695074 | 0.86 | 200 | 103.8 | 80 | 120 | |
| 56 | Fe | 45 | 1058.607 | 4968576 | 0.47 | 1000 | 105.9 | 80 | 120 | |
| 59 | Co | 72 | 219.181 | 1844002 | 0.29 | 200 | 109.6 | 80 | 120 | |
| 60 | Ni | 72 | 223.569 | 501662 | 0.72 | 200 | 111.8 | 80 | 120 | |
| 63 | Cu | 72 | 222.020 | 1365247 | 0.37 | 200 | 111.0 | 80 | 120 | |
| 66 | Zn | 72 | 215.163 | 219004 | 1.07 | 200 | 107.6 | 80 | 120 | |
| 75 | As | 72 | 209.745 | 172886 | 0.43 | 200 | 104.9 | 80 | 120 | |
| 78 | Se | 72 | 212.851 | 11451 | 1.48 | 200 | 106.4 | 80 | 120 | |
| 88 | Sr | 115 | 207.775 | 953975 | 0.19 | 200 | 103.9 | 80 | 120 | |
| 95 | Mo | 115 | 209.485 | 734576 | 0.42 | 200 | 104.7 | 80 | 120 | |
| 107 | Ag | 115 | 207.683 | 2130247 | 0.46 | 200 | 103.8 | 80 | 120 | |
| 111 | Cd | 115 | 204.834 | 320799 | 0.49 | 200 | 102.4 | 80 | 120 | |
| 118 | Sn | 115 | 219.900 | 772765 | 0.45 | 200 | 110.0 | 80 | 120 | |
| 121 | Sb | 115 | 205.743 | 1062876 | 0.56 | 200 | 102.9 | 80 | 120 | |
| 137 | Ba | 115 | 207.048 | 369127 | 1.24 | 200 | 103.5 | 80 | 120 | |
| 205 | Tl | 209 | 213.492 | 4450235 | 1.10 | 200 | 106.7 | 80 | 120 | |
| 208 | Pb | 209 | 212.093 | 5950104 | 0.22 | 200 | 106.0 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1043732 | 0.72 | 1050400 | 99.37 | 70 | 120 | |
| 72 | Ge | 712777 | 0.62 | 734358 | 97.06 | 70 | 120 | |
| 115 | In | 6690449 | 0.71 | 6743146 | 99.22 | 70 | 120 | |
| 209 | Bi | 12723366 | 1.05 | 13099945 | 97.13 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/16 11:14 AM | Sample Name | 1605098-36A |
| Data Batch | 160601.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 035_ARF.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 93.485 | 2928 | 1.28 | 2000 | >RL |
| 9 | Be | 45 | 2.418 | 98 | 12.80 | 2000 | >RL |
| 11 | B | 45 | 154.789 | 2365 | 9.74 | 2000 | >RL |
| 23 | Na | 45 | 4012.942 | 3156680 | 0.59 | 25000 | >RL |
| 24 | Mg | 45 | 11565.759 | 4421632 | 0.54 | 25000 | >RL |
| 27 | Al | 45 | 56004.069 | 8221253 | 0.89 | 10000 | OUTCAL |
| 39 | K | 45 | 10939.860 | 4756406 | 0.35 | 25000 | >RL |
| 44 | Ca | 45 | 252861.458 | 5862342 | 0.89 | 25000 | OUTCAL |
| 47 | Ti | 45 | 145.066 | 21871 | 2.50 | 2000 | >RL |
| 51 | V | 45 | 93.231 | 439286 | 0.26 | 2000 | >RL |
| 52 | Cr | 45 | 102.508 | 558011 | 0.60 | 2000 | >RL |
| 55 | Mn | 45 | 261.192 | 853933 | 0.93 | 2000 | >RL |
| 56 | Fe | 45 | 65186.869 | 298154273 | 0.67 | 10000 | OUTCAL |
| 59 | Co | 72 | 15.350 | 125749 | 0.23 | 2000 | >RL |
| 60 | Ni | 72 | 43.967 | 96190 | 0.27 | 2000 | >RL |
| 63 | Cu | 72 | 8.804 | 55514 | 2.15 | 2000 | >RL |
| 66 | Zn | 72 | 148.949 | 147633 | 0.80 | 2000 | >RL |
| 75 | As | 72 | 17.189 | 13987 | 0.92 | 2000 | >RL |
| 78 | Se | 72 | 4.202 | 353 | 8.36 | 2000 | >RL |
| 88 | Sr | 115 | 1373.862 | 6014753 | 0.47 | 2000 | >RL |
| 95 | Mo | 115 | 3.199 | 10725 | 0.72 | 2000 | >RL |
| 107 | Ag | 115 | 0.039 | 422 | 10.30 | 500 | |
| 111 | Cd | 115 | 0.129 | 197 | 16.17 | 2000 | |
| 118 | Sn | 115 | 5.982 | 21227 | 0.47 | 2000 | >RL |
| 121 | Sb | 115 | 0.535 | 3075 | 3.83 | 500 | |
| 137 | Ba | 115 | 284.697 | 484085 | 0.24 | 2000 | >RL |
| 205 | Tl | 209 | 0.374 | 7625 | 2.22 | 2000 | |
| 208 | Pb | 209 | 27.583 | 753910 | 0.52 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1019258 | 0.29 | 1050400 | 97.04 | 70 | 120 | |
| 72 | Ge | 693731 | 0.30 | 734358 | 94.47 | 70 | 120 | |
| 115 | In | 6383708 | 2.58 | 6743146 | 94.67 | 70 | 120 | |
| 209 | Bi | 12368218 | 1.88 | 13099945 | 94.41 | 70 | 120 | |

# Dilution Sample (Dil) Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 11:16 | Sample Name | 1605098-36A SD |
| Data Batch | 160601.b | Comment | SD ICPMS_TSDOD1 |
| Data File Name | 036_SD.d | Dilution | 25 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Value | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 18.504 | 621 | 3.46 | 93.5 | 99.0 | 110 | 90 | Good |
| 9 | Be | 45 | 0.470 | 22 | 12.93 | 2.4 | 97.1 | 110 | 90 | Good |
| 11 | B | 45 | 41.671 | 750 | 14.63 | 154.8 | 134.6 | 110 | 90 | |
| 23 | Na | 45 | 767.242 | 671795 | 0.40 | 4012.9 | 95.6 | 110 | 90 | Good |
| 24 | Mg | 45 | 2234.188 | 901579 | 0.81 | 11565.8 | 96.6 | 110 | 90 | Good |
| 27 | Al | 45 | 11145.346 | 1726482 | 0.42 | 56004.1 | 99.5 | 110 | 90 | Good |
| 39 | K | 45 | 2108.585 | 1021112 | 0.27 | 10939.9 | 96.4 | 110 | 90 | Good |
| 44 | Ca | 45 | 48792.202 | 1193678 | 0.75 | 252861.5 | 96.5 | 110 | 90 | Good |
| 47 | Ti | 45 | 28.328 | 4514 | 3.81 | 145.1 | 97.6 | 110 | 90 | Good |
| 51 | V | 45 | 17.536 | 91174 | 0.53 | 93.2 | 94.0 | 110 | 90 | Good |
| 52 | Cr | 45 | 20.011 | 116584 | 0.30 | 102.5 | 97.6 | 110 | 90 | Good |
| 55 | Mn | 45 | 51.293 | 177520 | 0.68 | 261.2 | 98.2 | 110 | 90 | Good |
| 56 | Fe | 45 | 12835.959 | 61940211 | 2.14 | 65186.9 | 98.5 | 110 | 90 | Good |
| 59 | Co | 72 | 3.063 | 26558 | 0.86 | 15.4 | 99.8 | 110 | 90 | Good |
| 60 | Ni | 72 | 8.720 | 20333 | 0.46 | 44.0 | 99.2 | 110 | 90 | Good |
| 63 | Cu | 72 | 1.568 | 12993 | 2.60 | 8.8 | 89.0 | 110 | 90 | |
| 66 | Zn | 72 | 29.953 | 31581 | 1.75 | 148.9 | 100.5 | 110 | 90 | Good |
| 75 | As | 72 | 3.235 | 2965 | 3.03 | 17.2 | 94.1 | 110 | 90 | Good |
| 78 | Se | 72 | 0.739 | 183 | 6.95 | 4.2 | 88.0 | 110 | 90 | |
| 88 | Sr | 115 | 255.727 | 1234911 | 0.49 | 1373.9 | 93.1 | 110 | 90 | Good |
| 95 | Mo | 115 | 0.577 | 2158 | 1.61 | 3.2 | 90.1 | 110 | 90 | Good |
| 107 | Ag | 115 | 0.013 | 177 | 8.65 | 0.0 | 160.0 | 110 | 90 | |
| 111 | Cd | 115 | 0.053 | 92 | 33.39 | 0.1 | 206.4 | 110 | 90 | |
| 118 | Sn | 115 | 1.029 | 5133 | 1.39 | 6.0 | 86.0 | 110 | 90 | |
| 121 | Sb | 115 | 0.065 | 836 | 5.98 | 0.5 | 60.6 | 110 | 90 | |
| 137 | Ba | 115 | 52.470 | 98420 | 1.07 | 284.7 | 92.2 | 110 | 90 | Good |
| 205 | Tl | 209 | 0.072 | 1632 | 11.03 | 0.4 | 95.9 | 110 | 90 | Good |
| 208 | Pb | 209 | 5.132 | 154505 | 0.67 | 27.6 | 93.0 | 110 | 90 | Good |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1075118 | 0.70 | 1050400 | 102.35 | 70 | 120 | |
| 72 | Ge | 733084 | 0.19 | 734358 | 99.83 | 70 | 120 | |
| 115 | In | 7037919 | 1.26 | 6743146 | 104.37 | 70 | 120 | |
| 209 | Bi | 13460556 | 1.13 | 13099945 | 102.75 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/16 11:18 AM | Sample Name | 1605098-39A |
| Data Batch | 160601.b | Comment | SAMPICPMS_TSDOD1 |
| Data File Name | 037SMPL.d | Dilution | 5 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 81.232 | 2634 | 3.22 | 2000 | >RL |
| 9 | Be | 45 | 2.789 | 117 | 22.61 | 2000 | >RL |
| 11 | B | 45 | 138.083 | 2194 | 3.51 | 2000 | >RL |
| 23 | Na | 45 | 2436.667 | 1999624 | 0.20 | 25000 | >RL |
| 24 | Mg | 45 | 12812.268 | 5067250 | 1.41 | 25000 | >RL |
| 27 | Al | 45 | 53966.226 | 8195537 | 0.91 | 10000 | OUTCAL |
| 39 | K | 45 | 11521.877 | 5178967 | 1.74 | 25000 | >RL |
| 44 | Ca | 45 | 168302.238 | 4036743 | 0.13 | 25000 | OUTCAL |
| 47 | Ti | 45 | 172.965 | 26976 | 1.57 | 2000 | >RL |
| 51 | V | 45 | 115.393 | 561308 | 0.63 | 2000 | >RL |
| 52 | Cr | 45 | 78.255 | 441172 | 1.03 | 2000 | >RL |
| 55 | Mn | 45 | 2703.172 | 9134960 | 0.55 | 2000 | OUTCAL |
| 56 | Fe | 45 | 143815.878 | 680469306 | 1.07 | 10000 | OUTCAL |
| 59 | Co | 72 | 37.008 | 313160 | 0.45 | 2000 | >RL |
| 60 | Ni | 72 | 66.353 | 149883 | 0.44 | 2000 | >RL |
| 63 | Cu | 72 | 18.454 | 116897 | 1.19 | 2000 | >RL |
| 66 | Zn | 72 | 273.217 | 279595 | 1.74 | 2000 | >RL |
| 75 | As | 72 | 24.569 | 20561 | 1.51 | 2000 | >RL |
| 78 | Se | 72 | 6.088 | 465 | 12.86 | 2000 | >RL |
| 88 | Sr | 115 | 432.636 | 1948225 | 0.13 | 2000 | >RL |
| 95 | Mo | 115 | 3.270 | 11276 | 2.77 | 2000 | >RL |
| 107 | Ag | 115 | 0.077 | 808 | 7.67 | 500 | |
| 111 | Cd | 115 | 0.506 | 782 | 8.04 | 2000 | >RL |
| 118 | Sn | 115 | 6.402 | 23277 | 2.24 | 2000 | >RL |
| 121 | Sb | 115 | 1.936 | 10258 | 5.47 | 500 | |
| 137 | Ba | 115 | 1897.533 | 3318130 | 0.96 | 2000 | >RL |
| 205 | Tl | 209 | 0.719 | 15149 | 1.65 | 2000 | |
| 208 | Pb | 209 | 64.330 | 1820383 | 0.13 | 2000 | >RL |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1054415 | 0.38 | 1050400 | 100.38 | 70 | 120 | |
| 72 | Ge | 716790 | 0.24 | 734358 | 97.61 | 70 | 120 | |
| 115 | In | 6563179 | 0.83 | 6743146 | 97.33 | 70 | 120 | |
| 209 | Bi | 12825563 | 1.97 | 13099945 | 97.91 | 70 | 120 | |

# Post Digestion Spike Sample (PDS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 11:20 | Sample Name | 1605098-36A PDS |
| Data Batch | 160601.b | Comment | PDS ICPMS_TSDOD1 |
| Data File Name | 038_PDS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 283.924 | 9163 | 0.40 | 93.5 | 200 | 95.2 | 75 | 125 | |
| 9 | Be | 45 | 189.615 | 7758 | 2.54 | 2.4 | 200 | 93.6 | 75 | 125 | |
| 11 | B | 45 | 348.561 | 5368 | 2.38 | 154.8 | 200 | 96.9 | 75 | 125 | |
| 23 | Na | 45 | 8902.785 | 7181400 | 0.74 | 4012.9 | 5000 | 97.8 | 75 | 125 | |
| 24 | Mg | 45 | 16503.918 | 6516572 | 1.59 | 11565.8 | 5000 | 98.8 | 75 | 125 | |
| 27 | Al | 45 | 62885.986 | 9534596 | 2.60 | 56004.1 | 5000 | 137.6 | 75 | 125 | Fail |
| 39 | K | 45 | 15838.862 | 7083134 | 0.70 | 10939.9 | 5000 | 98.0 | 75 | 125 | |
| 44 | Ca | 45 | ######## | 6301282 | 1.96 | 252861.5 | 5000 | 205.6 | 75 | 125 | Fail |
| 47 | Ti | 45 | 344.973 | 53706 | 0.61 | 145.1 | 200 | 100.0 | 75 | 125 | |
| 51 | V | 45 | 292.166 | 1411470 | 0.54 | 93.2 | 200 | 99.5 | 75 | 125 | |
| 52 | Cr | 45 | 303.407 | 1701818 | 1.20 | 102.5 | 200 | 100.4 | 75 | 125 | |
| 55 | Mn | 45 | 459.065 | 1549561 | 0.46 | 261.2 | 200 | 98.9 | 75 | 125 | |
| 56 | Fe | 45 | 72598.559 | 342944724 | 1.32 | 65186.9 | 5000 | 148.2 | 75 | 125 | Fail |
| 59 | Co | 72 | 219.753 | 1827137 | 0.50 | 15.4 | 200 | 102.2 | 75 | 125 | |
| 60 | Ni | 72 | 244.363 | 541881 | 0.68 | 44.0 | 200 | 100.2 | 75 | 125 | |
| 63 | Cu | 72 | 204.444 | 1242662 | 0.70 | 8.8 | 200 | 97.8 | 75 | 125 | |
| 66 | Zn | 72 | 347.922 | 349817 | 0.66 | 148.9 | 200 | 99.5 | 75 | 125 | |
| 75 | As | 72 | 218.400 | 177896 | 0.18 | 17.2 | 200 | 100.6 | 75 | 125 | |
| 78 | Se | 72 | 203.393 | 10821 | 1.81 | 4.2 | 200 | 99.6 | 75 | 125 | |
| 88 | Sr | 115 | 1600.334 | 7275491 | 0.44 | 1373.9 | 200 | 113.2 | 75 | 125 | |
| 95 | Mo | 115 | 197.086 | 684526 | 0.71 | 3.2 | 200 | 96.9 | 75 | 125 | |
| 107 | Ag | 115 | 188.119 | 1911260 | 0.65 | 0.0 | 200 | 94.0 | 75 | 125 | |
| 111 | Cd | 115 | 188.811 | 292886 | 0.23 | 0.1 | 200 | 94.3 | 75 | 125 | |
| 118 | Sn | 115 | 214.046 | 745056 | 0.36 | 6.0 | 200 | 104.0 | 75 | 125 | |
| 121 | Sb | 115 | 205.523 | 1051656 | 0.47 | 0.5 | 200 | 102.5 | 75 | 125 | |
| 137 | Ba | 115 | 491.397 | 867650 | 1.18 | 284.7 | 200 | 103.3 | 75 | 125 | |
| 205 | Tl | 209 | 202.107 | 4203827 | 0.09 | 0.4 | 200 | 100.9 | 75 | 125 | |
| 208 | Pb | 209 | 229.709 | 6430333 | 0.44 | 27.6 | 200 | 101.1 | 75 | 125 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1052764 | 0.59 | 1050400 | 100.23 | 70 | 120 | |
| 72 | Ge | 704398 | 0.35 | 734358 | 95.92 | 70 | 120 | |
| 115 | In | 6626572 | 0.27 | 6743146 | 98.27 | 70 | 120 | |
| 209 | Bi | 12695509 | 0.55 | 13099945 | 96.91 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 11:22 | Sample Name | 1605098-36A MS |
| Data Batch | 160601.b | Comment | MS ICPMS_TSDOD1 |
| Data File Name | 039_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 289.409 | 9273 | 1.17 | 93.5 | 200 | 98.0 | 80 | 120 | |
| 9 | Be | 45 | 191.152 | 7767 | 2.90 | 2.4 | 200 | 94.4 | 80 | 120 | |
| 11 | B | 45 | 369.719 | 5648 | 2.86 | 154.8 | 200 | 107.5 | 80 | 120 | |
| 23 | Na | 45 | 8557.070 | 6855948 | 3.10 | 4012.9 | 1000 | 454.4 | 80 | 120 | Fail |
| 24 | Mg | 45 | 16420.703 | 6436714 | 2.44 | 11565.8 | 1000 | 485.5 | 80 | 120 | Fail |
| 27 | Al | 45 | 61092.301 | 9196723 | 0.49 | 56004.1 | 1000 | 508.8 | 80 | 120 | Fail |
| 39 | K | 45 | 15755.644 | 6996275 | 0.67 | 10939.9 | 1000 | 481.6 | 80 | 120 | Fail |
| 44 | Ca | 45 | ######## | 6100889 | 1.71 | 252861.5 | 1000 | 375.5 | 80 | 120 | Fail |
| 47 | Ti | 45 | 294.854 | 45582 | 1.26 | 145.1 | 200 | 74.9 | 80 | 120 | Fail |
| 51 | V | 45 | 288.677 | 1384844 | 0.87 | 93.2 | 200 | 97.7 | 80 | 120 | |
| 52 | Cr | 45 | 276.668 | 1541025 | 0.13 | 102.5 | 200 | 87.1 | 80 | 120 | |
| 55 | Mn | 45 | 375.918 | 1260084 | 1.18 | 261.2 | 200 | 57.4 | 80 | 120 | Fail |
| 56 | Fe | 45 | 66169.732 | 310374165 | 0.43 | 65186.9 | 1000 | 98.3 | 80 | 120 | |
| 59 | Co | 72 | 216.878 | 1810924 | 0.92 | 15.4 | 200 | 100.8 | 80 | 120 | |
| 60 | Ni | 72 | 229.633 | 511412 | 0.95 | 44.0 | 200 | 92.8 | 80 | 120 | |
| 63 | Cu | 72 | 207.080 | 1264038 | 0.26 | 8.8 | 200 | 99.1 | 80 | 120 | |
| 66 | Zn | 72 | 337.512 | 340814 | 0.45 | 148.9 | 200 | 94.3 | 80 | 120 | |
| 75 | As | 72 | 215.332 | 176153 | 0.51 | 17.2 | 200 | 99.1 | 80 | 120 | |
| 78 | Se | 72 | 204.674 | 10934 | 1.18 | 4.2 | 200 | 100.2 | 80 | 120 | |
| 88 | Sr | 115 | 1451.483 | 6611996 | 2.06 | 1373.9 | 200 | 38.8 | 80 | 120 | Fail |
| 95 | Mo | 115 | 192.126 | 668628 | 0.58 | 3.2 | 200 | 94.5 | 80 | 120 | |
| 107 | Ag | 115 | 193.987 | 1974694 | 0.24 | 0.0 | 200 | 97.0 | 80 | 120 | |
| 111 | Cd | 115 | 190.630 | 296324 | 1.43 | 0.1 | 200 | 95.3 | 80 | 120 | |
| 118 | Sn | 115 | 207.698 | 724435 | 0.81 | 6.0 | 200 | 100.9 | 80 | 120 | |
| 121 | Sb | 115 | 77.462 | 397441 | 0.75 | 0.5 | 200 | 38.5 | 80 | 120 | Fail |
| 137 | Ba | 115 | 344.012 | 608570 | 1.05 | 284.7 | 200 | 29.7 | 80 | 120 | Fail |
| 205 | Tl | 209 | 202.221 | 4231476 | 0.81 | 0.4 | 200 | 100.9 | 80 | 120 | |
| 208 | Pb | 209 | 222.837 | 6276146 | 0.37 | 27.6 | 200 | 97.6 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1045299 | 0.82 | 1050400 | 99.51 | 70 | 120 | |
| 72 | Ge | 707449 | 0.89 | 734358 | 96.34 | 70 | 120 | |
| 115 | In | 6640658 | 1.64 | 6743146 | 98.48 | 70 | 120 | |
| 209 | Bi | 12773638 | 1.26 | 13099945 | 97.51 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 11:24 | Sample Name | 1605098-36A MSD |
| Data Batch | 160601.b | Comment | MSD ICPMS_TSDOD1 |
| Data File Name | 040_MSS.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 312.812 | 10033 | 0.88 | 93.5 | 200 | 109.7 | 80 | 120 | |
| 9 | Be | 45 | 197.805 | 8046 | 2.01 | 2.4 | 200 | 97.7 | 80 | 120 | |
| 11 | B | 45 | 380.778 | 5819 | 2.43 | 154.8 | 200 | 113.0 | 80 | 120 | |
| 23 | Na | 45 | 9634.606 | 7721608 | 2.20 | 4012.9 | 1000 | 562.2 | 80 | 120 | Fail |
| 24 | Mg | 45 | 18251.707 | 7163300 | 2.97 | 11565.8 | 1000 | 668.6 | 80 | 120 | Fail |
| 27 | Al | 45 | 76089.131 | 11467646 | 2.00 | 56004.1 | 1000 | 2008.5 | 80 | 120 | Fail |
| 39 | K | 45 | 16114.955 | 7162434 | 1.30 | 10939.9 | 1000 | 517.5 | 80 | 120 | Fail |
| 44 | Ca | 45 | ######## | 5956840 | 1.55 | 252861.5 | 1000 | -260.5 | 80 | 120 | Fail |
| 47 | Ti | 45 | 258.343 | 39981 | 1.04 | 145.1 | 200 | 56.6 | 80 | 120 | Fail |
| 51 | V | 45 | 312.679 | 1501202 | 0.45 | 93.2 | 200 | 109.7 | 80 | 120 | |
| 52 | Cr | 45 | 295.889 | 1649777 | 0.59 | 102.5 | 200 | 96.7 | 80 | 120 | |
| 55 | Mn | 45 | 362.708 | 1217110 | 0.51 | 261.2 | 200 | 50.8 | 80 | 120 | Fail |
| 56 | Fe | 45 | 70360.425 | 330404742 | 1.74 | 65186.9 | 1000 | 517.4 | 80 | 120 | Fail |
| 59 | Co | 72 | 221.975 | 1847201 | 0.96 | 15.4 | 200 | 103.3 | 80 | 120 | |
| 60 | Ni | 72 | 240.989 | 534882 | 0.83 | 44.0 | 200 | 98.5 | 80 | 120 | |
| 63 | Cu | 72 | 216.743 | 1318373 | 0.48 | 8.8 | 200 | 104.0 | 80 | 120 | |
| 66 | Zn | 72 | 359.610 | 361860 | 0.15 | 148.9 | 200 | 105.3 | 80 | 120 | |
| 75 | As | 72 | 221.185 | 180317 | 0.59 | 17.2 | 200 | 102.0 | 80 | 120 | |
| 78 | Se | 72 | 203.920 | 10858 | 0.71 | 4.2 | 200 | 99.9 | 80 | 120 | |
| 88 | Sr | 115 | 1432.786 | 6471916 | 0.92 | 1373.9 | 200 | 29.5 | 80 | 120 | Fail |
| 95 | Mo | 115 | 197.231 | 680631 | 0.91 | 3.2 | 200 | 97.0 | 80 | 120 | |
| 107 | Ag | 115 | 196.464 | 1983282 | 0.29 | 0.0 | 200 | 98.2 | 80 | 120 | |
| 111 | Cd | 115 | 196.470 | 302827 | 0.35 | 0.1 | 200 | 98.2 | 80 | 120 | |
| 118 | Sn | 115 | 213.861 | 739650 | 0.57 | 6.0 | 200 | 103.9 | 80 | 120 | |
| 121 | Sb | 115 | 77.080 | 392183 | 0.17 | 0.5 | 200 | 38.3 | 80 | 120 | Fail |
| 137 | Ba | 115 | 355.849 | 624325 | 0.09 | 284.7 | 200 | 35.6 | 80 | 120 | Fail |
| 205 | Tl | 209 | 209.799 | 4302286 | 0.34 | 0.4 | 200 | 104.7 | 80 | 120 | |
| 208 | Pb | 209 | 236.422 | 6524983 | 0.68 | 27.6 | 200 | 104.4 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1046431 | 0.26 | 1050400 | 99.62 | 70 | 120 | |
| 72 | Ge | 705069 | 1.38 | 734358 | 96.01 | 70 | 120 | |
| 115 | In | 6584682 | 0.93 | 6743146 | 97.65 | 70 | 120 | |
| 209 | Bi | 12516250 | 0.28 | 13099945 | 95.54 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 11:50 | Sample Name | CCV1-160601 |
| Data Batch | 160601.b | Comment | CCV ICPMS_TW |
| Data File Name | 050_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 205.404 | 6629 | 1.34 | 200 | 102.7 | 90 | 110 | |
| 9 | Be | 45 | 202.205 | 8270 | 0.48 | 200 | 101.1 | 90 | 110 | |
| 11 | B | 45 | 277.962 | 4299 | 3.11 | 200 | 139.0 | 90 | 110 | Fail |
| 23 | Na | 45 | 5301.069 | 4291420 | 0.81 | 5000 | 106.0 | 90 | 110 | |
| 24 | Mg | 45 | 5078.085 | 2004788 | 0.39 | 5000 | 101.6 | 90 | 110 | |
| 27 | Al | 45 | 4998.640 | 758382 | 0.45 | 5000 | 100.0 | 90 | 110 | |
| 39 | K | 45 | 5011.897 | 2285336 | 1.13 | 5000 | 100.2 | 90 | 110 | |
| 44 | Ca | 45 | 4727.503 | 113739 | 1.26 | 5000 | 94.6 | 90 | 110 | |
| 47 | Ti | 45 | 203.206 | 31628 | 1.57 | 200 | 101.6 | 90 | 110 | |
| 51 | V | 45 | 203.888 | 986063 | 0.31 | 200 | 101.9 | 90 | 110 | |
| 52 | Cr | 45 | 205.795 | 1154538 | 0.60 | 200 | 102.9 | 90 | 110 | |
| 55 | Mn | 45 | 201.617 | 680688 | 0.46 | 200 | 100.8 | 90 | 110 | |
| 56 | Fe | 45 | 5196.023 | 24545232 | 1.46 | 5000 | 103.9 | 90 | 110 | |
| 59 | Co | 72 | 213.050 | 1820918 | 0.50 | 200 | 106.5 | 90 | 110 | |
| 60 | Ni | 72 | 209.488 | 477553 | 0.79 | 200 | 104.7 | 90 | 110 | |
| 63 | Cu | 72 | 212.770 | 1329276 | 0.04 | 200 | 106.4 | 90 | 110 | |
| 66 | Zn | 72 | 208.098 | 215175 | 0.91 | 200 | 104.0 | 90 | 110 | |
| 75 | As | 72 | 204.053 | 170868 | 0.49 | 200 | 102.0 | 90 | 110 | |
| 78 | Se | 72 | 206.630 | 11298 | 1.35 | 200 | 103.3 | 90 | 110 | |
| 88 | Sr | 115 | 202.066 | 937083 | 1.33 | 200 | 101.0 | 90 | 110 | |
| 95 | Mo | 115 | 201.972 | 715342 | 0.99 | 200 | 101.0 | 90 | 110 | |
| 107 | Ag | 115 | 202.822 | 2101306 | 0.43 | 200 | 101.4 | 90 | 110 | |
| 111 | Cd | 115 | 201.243 | 318328 | 0.60 | 200 | 100.6 | 90 | 110 | |
| 118 | Sn | 115 | 206.720 | 733785 | 0.36 | 200 | 103.4 | 90 | 110 | |
| 121 | Sb | 115 | 200.313 | 1045208 | 0.72 | 200 | 100.2 | 90 | 110 | |
| 137 | Ba | 115 | 200.757 | 361490 | 0.22 | 200 | 100.4 | 90 | 110 | |
| 205 | Tl | 209 | 200.647 | 4353650 | 0.40 | 200 | 100.3 | 90 | 110 | |
| 208 | Pb | 209 | 198.762 | 5804941 | 0.25 | 200 | 99.4 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1052342 | 0.79 | 1050400 | 100.18 | 70 | 120 | |
| 72 | Ge | 724095 | 0.48 | 734358 | 98.60 | 70 | 120 | |
| 115 | In | 6757336 | 0.43 | 6743146 | 100.21 | 70 | 120 | |
| 209 | Bi | 13246010 | 1.61 | 13099945 | 101.12 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 11:58 | Sample Name | LCVL1-160601 |
| Data Batch | 160601.b | Comment | LCVLICPMS_TW |
| Data File Name | 053LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 11.242 | 375 | 7.88 | 10 | 112.4 | 70 | 130 | |
| 9 | Be | 45 | 1.268 | 55 | 21.20 | 1 | 126.8 | 70 | 130 | |
| 11 | B | 45 | 62.105 | 1046 | 8.99 | 20 | 310.5 | 70 | 130 | Fail |
| 23 | Na | 45 | 252.104 | 245359 | 0.37 | 100 | 252.1 | 70 | 130 | Fail |
| 24 | Mg | 45 | 101.605 | 41001 | 0.80 | 100 | 101.6 | 70 | 130 | |
| 27 | Al | 45 | 101.210 | 16245 | 2.00 | 100 | 101.2 | 70 | 130 | |
| 39 | K | 45 | 102.455 | 111328 | 1.00 | 100 | 102.5 | 70 | 130 | |
| 44 | Ca | 45 | 91.953 | 2793 | 1.24 | 100 | 92.0 | 70 | 130 | |
| 47 | Ti | 45 | 4.800 | 759 | 8.24 | 5 | 96.0 | 70 | 130 | |
| 51 | V | 45 | 1.052 | 9943 | 3.37 | 1 | 105.2 | 70 | 130 | |
| 52 | Cr | 45 | 5.181 | 31148 | 0.70 | 5 | 103.6 | 70 | 130 | |
| 55 | Mn | 45 | 4.781 | 16952 | 1.68 | 5 | 95.6 | 70 | 130 | |
| 56 | Fe | 45 | 102.482 | 496097 | 0.65 | 100 | 102.5 | 70 | 130 | |
| 59 | Co | 72 | 5.219 | 44789 | 1.23 | 5 | 104.4 | 70 | 130 | |
| 60 | Ni | 72 | 5.201 | 12099 | 0.78 | 5 | 104.0 | 70 | 130 | |
| 63 | Cu | 72 | 5.027 | 34498 | 1.40 | 5 | 100.5 | 70 | 130 | |
| 66 | Zn | 72 | 5.133 | 5574 | 0.78 | 5 | 102.7 | 70 | 130 | |
| 75 | As | 72 | 5.119 | 4518 | 2.96 | 5 | 102.4 | 70 | 130 | |
| 78 | Se | 72 | 5.618 | 446 | 1.79 | 5 | 112.4 | 70 | 130 | |
| 88 | Sr | 115 | 5.091 | 23841 | 0.79 | 5 | 101.8 | 70 | 130 | |
| 95 | Mo | 115 | 5.012 | 17691 | 1.47 | 5 | 100.2 | 70 | 130 | |
| 107 | Ag | 115 | 2.014 | 20798 | 1.05 | 2 | 100.7 | 70 | 130 | |
| 111 | Cd | 115 | 0.972 | 1533 | 3.20 | 1 | 97.2 | 70 | 130 | |
| 118 | Sn | 115 | 5.243 | 19763 | 1.65 | 5 | 104.9 | 70 | 130 | |
| 121 | Sb | 115 | 1.956 | 10613 | 0.87 | 2 | 97.8 | 70 | 130 | |
| 137 | Ba | 115 | 4.980 | 8962 | 4.59 | 5 | 99.6 | 70 | 130 | |
| 205 | Tl | 209 | 0.989 | 21126 | 1.33 | 1 | 98.9 | 70 | 130 | |
| 208 | Pb | 209 | 0.943 | 29204 | 2.98 | 1 | 94.3 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1055311 | 0.44 | 1050400 | 100.47 | 70 | 120 | |
| 72 | Ge | 726156 | 0.55 | 734358 | 98.88 | 70 | 120 | |
| 115 | In | 6723725 | 0.85 | 6743146 | 99.71 | 70 | 120 | |
| 209 | Bi | 13004937 | 1.19 | 13099945 | 99.27 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 6/1/2016 12:07 | Sample Name | CCB1-160601 |
| Data Batch | 160601.b | Comment | CCB ICPMS_TW |
| Data File Name | 057_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.148 | 17 | 30.8 | 2 | 5 | |
| 9 | Be | 45 | -0.010 | 2 | 89.2 | 0.4 | 0.3 | |
| 11 | B | 45 | 41.671 | 758 | 5.6 | 10 | 10 | FailAq FailSoil |
| 23 | Na | 45 | 114.659 | 138772 | 0.5 | 50 | 100 | FailAq FailSoil |
| 24 | Mg | 45 | -0.918 | 438 | 11.1 | 50 | 100 | |
| 27 | Al | 45 | -1.026 | 728 | 8.7 | 50 | 10 | |
| 39 | K | 45 | -0.411 | 67534 | 0.5 | 50 | 100 | |
| 44 | Ca | 45 | -4.323 | 496 | 14.5 | 50 | 100 | |
| 47 | Ti | 45 | -0.043 | 3 | 0.0 | 4 | 3 | |
| 51 | V | 45 | -0.012 | 4945 | 2.5 | 4 | 3 | |
| 52 | Cr | 45 | -0.022 | 1983 | 3.2 | 2 | 2 | |
| 55 | Mn | 45 | -0.154 | 271 | 6.1 | 2 | 3 | |
| 56 | Fe | 45 | 0.178 | 11990 | 1.2 | 50 | 50 | |
| 59 | Co | 72 | 0.002 | 79 | 12.2 | 2 | 3 | |
| 60 | Ni | 72 | -0.022 | 169 | 14.5 | 2 | 3 | |
| 63 | Cu | 72 | -0.211 | 1807 | 10.7 | 2 | 2 | |
| 66 | Zn | 72 | -0.036 | 228 | 6.6 | 4 | 2 | |
| 75 | As | 72 | -0.020 | 214 | 21.8 | 2 | 2 | |
| 78 | Se | 72 | 0.247 | 160 | 12.6 | 1 | 2 | |
| 88 | Sr | 115 | -0.002 | 356 | 6.1 | 4 | 3 | |
| 95 | Mo | 115 | 0.001 | 34 | 34.0 | 2 | 2 | |
| 107 | Ag | 115 | 0.004 | 87 | 13.9 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.003 | 10 | 88.2 | 0.4 | 0.3 | |
| 118 | Sn | 115 | -0.129 | 841 | 1.9 | 4 | 3 | |
| 121 | Sb | 115 | -0.036 | 278 | 23.8 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.009 | 59 | 54.4 | 2 | 3 | |
| 205 | Tl | 209 | 0.001 | 73 | 20.8 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.052 | 667 | 7.9 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 1085771 | 0.41 | 1050400 | 103.37 | 70 | 120 | |
| 72 | Ge | 748846 | 1.53 | 734358 | 101.97 | 70 | 120 | |
| 115 | In | 6869413 | 2.72 | 6743146 | 101.87 | 70 | 120 | |
| 209 | Bi | 13151515 | 1.03 | 13099945 | 100.39 | 70 | 120 | |

# Pmoist
# For

# DHL Work Order
# 1605098

# PMOIST_160512A
# For

# DHL Work Order
# 1605098

**DHL Analytical, Inc.**

**Run ID:** **PMOIST_160512A** **Run No.:** 85807

**Analytical Run Date:** 5/12/2016 **InstrumentID:** Pmoist

**Analyst:** Will Boston

| SampID | DF | TestCode | SampType | Batch ID | Analysis Date/Time | Q | Comments |
|---|---|---|---|---|---|---|---|
| 1605071-37A | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605097-16A | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605097-17A | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605097-18A | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605097-19A | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605097-20A | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605097-21A | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605097-23A | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605097-26A | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605098-31A | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605098-34A | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605098-37A | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605098-40A | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605098-41A | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605099-01C | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605130-01C | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605133-04B | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605133-05B | 1 | PMOIST | SAMP | 75130 | 5/13/2016 12:52:20 PM | | |
| 1605098-40A DUP | 1 | PMOIST | SAMP DUP | 75130 | 5/13/2016 12:52:20 PM | | |

*REVIEWED/APPROVED*

*By Sherri Herschmann at 4:59:47 PM, 5/13/2016*

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/12/2016 10:04:47 AM**
Digestion: **Start: 5/12/2016 5:47:00 PM / Stop: 5/13/2016 8:51:00 AM**
Prep End Date: **5/13/2016 12:52:20 PM**

Prep Batch **75130** Prep Code: **PMOIST_PREP** Technician: **Will Boston**

Prep Factor Units: **mL/g**

**Equipment List**

Oven #2
Balance #20
Thermometer # 81

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605071-37A | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| DOD redo | | | | | | | |
| 1605097-16A | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| DOD redo | | | | | | | |
| 1605097-17A | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| DOD redo | | | | | | | |
| 1605097-18A | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| DOD redo | | | | | | | |
| 1605097-19A | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| DOD redo | | | | | | | |
| 1605097-20A | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605097-21A | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605097-23A | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605097-26A | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605098-31A | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605098-34A | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605098-37A | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605098-40A | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605098-40A DUP | Soil | | 10 | 10 | 1.000 | of | |
| 1605098-41A | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605099-01C | Sludge | | 10 | 10 | 1.000 | of 2 | |
| 1605130-01C | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605133-04B | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605133-05B | Soil | | 10 | 10 | 1.000 | 1 of 1 | |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 4:59:50 PM, 5/13/2016*

Method Requirements: Samples dried to constant weight (12-16 hours) at oven temperature of 110 ± 5°C

Constant Weight is achieved if 2nd weight is <0.1% of 1st weight

[(Final Weight - 2nd Weight) / (Final Weight)] x 100%

| RUN ID: | 160512 PMOIST A | | | | |
|---|---|---|---|---|---|
| Date Started: | 05/12/2016 | Date Ended: | 05/13/16 | Date Ended: | |
| Time Started: | 17:47 | Time Ended: | 08:51 | Time Ended: | |
| Analyst Start: | WB | Analyst End: | WB | Analyst End: | |
| Balance # | 20 | Balance # | 20 | Balance # | |
| Oven # | FISHER-2 | Thermometer # | 81 | 2nd Weighing - if 1st dry is <12 hrs | |
| | | Correction Factor | 0.0 | | |
| Initial Temperature | 107.4°C | Final Temperature | 107.5 | | |

| Sample ID | Tare Wt (g) | Tare + Sample (g) | Final Wt (g) | 2nd Weight | <0.1% (Y/N) |
|---|---|---|---|---|---|
| SampID | | | | | |
| 1605071-37A | 1.04 | 12.94 | 12.00 | | |
| 1605097-16A | 1.01 | 12.41 | 10.18 | | |
| 1605097-17A | 0.99 | 12.16 | 10.98 | | |
| 1605097-18A | 0.99 | 12.94 | 12.14 | | |
| 1605097-19A | 1.02 | 12.52 | 11.52 | | |
| 1605097-20A | 1.02 | 12.11 | 10.67 | | |
| 1605097-21A | 1.03 | 13.29 | 11.81 | | |
| 1605097-23A | 1.00 | 12.58 | 10.88 | | |
| 1605097-26A | 1.03 | 13.20 | 11.25 | | |
| 1605098-31A | 1.05 | 12.70 | 11.34 | | |
| 1605098-34A | 1.01 | 12.45 | 11.52 | | |
| 1605098-37A | 1.02 | 12.91 | 11.81 | | |
| 1605098-40A | 1.07 | 13.63 | 12.65 | | |
| 1605098-41A | 1.0 | 12.94 | 11.83 | | |
| 1605099-01C | 1.00 | 12.66 | 4.11 | | |
| 1605130-01C | 0.99 | 13.67 | 10.25 | | |
| 1605133-04B | 1.01 | 13.95 | 10.83 | | |
| 1605133-05B | 1.01 | 13.16 | 10.07 | | |
| 160 5098-40 DUP | 0.99 | 12.87 | 11.99 | | |
| | | | | | |
| | | | | | |

| Data Folder Contents | Review Items | Check | 2nd Level Review |
|---|---|---|---|
| Hard Copies MUST match LIMS data | | | |
| 1. Is the Prep Batch Report included? | Prep Start/End Dates<br>SampAmt=10, FinVol=10<br>20 field samples/batch, 1 DUP/batch | X | X |
| 2. Is the Run Log included? | Test Code, Sample Type<br>Batch ID, and Analysis Date/Time | X | |
| 3. Is PMOIST bench sheet included? | Bench sheet vs. LIMS - Single Analyte Worksheet | X | |
| 4. Is the RPD for the sample DUP ≤30%? | If RPD fails criteria, then state reason below: | X | |

Analyst: [signature] Date: 05/13/16

[signature] 05/13/2016

REVIEWED/APPROVED

By Sherri Herschmann at 4:59:55 PM, 5/13/2016

# PMOIST_160519A
# For

# DHL Work Order
# 1605098

**DHL Analytical, Inc.**

**Run ID:** **PMOIST_160519A** **Run No.:** 85919

**Analytical Run Date:** 5/19/2016 **InstrumentID:** Pmoist

**Analyst:** Will Boston

| SampID | DF | TestCode | SampType | Batch ID | Analysis Date/Time | Q | Comments |
|---|---|---|---|---|---|---|---|
| 1605071-32A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605071-38A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605098-35A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605098-38A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605144-17A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605144-18A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605144-19A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605144-20A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605144-21A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605148-01A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605185-01A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605185-02A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605185-03A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605185-04A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605185-05A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605187-01A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605187-02A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605187-03A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605187-04A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605187-05A | 1 | PMOIST | SAMP | 75243 | 5/20/2016 9:12:00 AM | | |
| 1605187-01A DUP | 1 | PMOIST | DUP | 75243 | 5/20/2016 9:12:00 AM | | |

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/19/2016 2:01:48 PM**
Digestion: **Start: 5/19/2016 4:51:00 PM / Stop: 5/20/2016 9:12:00 AM**
Prep End Date: **5/20/2016 10:30:00 AM**

Prep Batch **75243** Prep Code: **PMOIST_PREP** Technician: **Will Boston**

Prep Factor Units: **mL/g**

**Equipment List**

Oven #2
Balance #20
Thermometer # 81

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | | | Cleanup |
|---|---|---|---|---|---|---|---|---|---|
| 1605071-32A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605071-38A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605098-35A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605098-38A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605144-17A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605144-18A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605144-19A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605144-20A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605144-21A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605148-01A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605185-01A | Soil | | 10 | 10 | 1.000 | | of | 2 | |
| 1605185-02A | Soil | | 10 | 10 | 1.000 | | of | 2 | |
| 1605185-03A | Soil | | 10 | 10 | 1.000 | | of | 2 | |
| 1605185-04A | Soil | | 10 | 10 | 1.000 | | of | 2 | |
| 1605185-05A | Soil | | 10 | 10 | 1.000 | | of | 2 | |
| 1605187-01A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605187-01A DUP | Soil | | 10 | 10 | 1.000 | | of | | |
| 1605187-02A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605187-03A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605187-04A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605187-05A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/19/2016 2:01:48 PM**
Digestion: **Start: 5/19/2016 4:51:00 PM / Stop: 5/20/2016 9:12:00 AM**
Prep End Date: **5/20/2016 10:30:00 AM**

Prep Batch **75243** Prep Code: **PMOIST_PREP** Technician: **Will Boston**

Prep Factor Units: **mL/g**

**Equipment List**

Oven #2
Balance #20
Thermometer # 81

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | | | Cleanup |
|---|---|---|---|---|---|---|---|---|---|
| 1605071-32A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605071-38A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605098-35A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605098-38A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605144-17A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605144-18A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605144-19A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605144-20A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605144-21A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605148-01A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605185-01A | Soil | | 10 | 10 | 1.000 | | of | 2 | |
| 1605185-02A | Soil | | 10 | 10 | 1.000 | | of | 2 | |
| 1605185-03A | Soil | | 10 | 10 | 1.000 | | of | 2 | |
| 1605185-04A | Soil | | 10 | 10 | 1.000 | | of | 2 | |
| 1605185-05A | Soil | | 10 | 10 | 1.000 | | of | 2 | |
| 1605187-01A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605187-01A DUP | Soil | | 10 | 10 | 1.000 | | of | | |
| 1605187-02A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605187-03A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605187-04A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |
| 1605187-05A | Soil | | 10 | 10 | 1.000 | 1 | of | 1 | |

***REVIEWED BY***
*By Janice Whitt at 4:09:41 PM, 5/20/2016*

# Percent Moisture - Bench Sheet

Enter ALL weights into the DHL LIMS - Single Analyte Worksheet

Method Requirements: Samples dried to constant weight (12-16 hours) at oven temperature of 110 ± 5°C

Constant Weight is achieved if 2nd weight is <0.1% of 1st weight

[(Final Weight - 2nd Weight) / (Final Weight)] x 100%

| | | | | | |
|---|---|---|---|---|---|
| RUN ID: | 160519 PMOIST A | | | | |
| Date Started: | 05/19/2016 | Date Ended: | 05-20-16 | Date Ended: | |
| Time Started: | 16:51 | Time Ended: | 09:12 | Time Ended: | |
| Analyst Start: | WB | Analyst End: | WB | Analyst End: | |
| Balance # | 20 | Balance # | 20 | Balance # | |
| Oven # | FISHER-2 | Thermometer # | 81 | 2nd Weighing - if 1st dry is <12 hrs | |
| | | Correction Factor | 0.0 | | |
| Initial Temperature | 107.9°C | Final Temperature | 107.8°C | | |

| Sample ID | Tare Wt (g) | Tare + Sample (g) | Final Wt (g) | 2nd Weight | <0.1% (Y/N) |
|---|---|---|---|---|---|
| SampID | | | | | |
| 1605071-32A | 1.01 | 12.55 | 9.12 | | |
| 1605071-38A | 0.98 | 13.25 | 11.70 | | |
| 1605098-35A | 1.03 | 12.36 | 11.60 | | |
| 1605098-38A | 1.01 | 12.01 | 10.95 | | |
| 1605144-17A | 0.99 | 12.80 | 10.36 | | |
| 1605144-18A | 1.02 | 12.46 | 10.34 | | |
| 1605144-19A | 1.02 | 12.69 | 12.09 | | |
| 1605144-20A | 1.02 | 12.37 | 9.88 | | |
| 1605144-21A | 1.02 | 12.40 | 10.06 | | |
| 1605148-01A | 1.01 | 12.54 | 10.04 | | |
| 1605185-01A | 1.02 | 13.23 | 10.53 | | |
| 1605185-02A | 1.01 | 12.44 | 9.86 | | |
| 1605185-03A | 1.02 | 13.00 | 10.55 | | |
| 1605185-04A | 0.99 | 13.33 | 10.70 | | |
| 1605185-05A | 1.00 | 13.32 | 10.57 | | |
| 1605187-01A | 1.00 | 13.44 | 13.05 | | |
| 1605187-02A | 1.00 | 12.23 | 11.98 | | |
| 1605187-03A | 1.01 | 13.00 | 12.75 | | |
| 1605187-04A | 1.02 | 12.58 | 12.36 | | |
| 1605187-05A | 1.01 | 12.39 | 12.16 | | |
| 1605187-01A DUP | 1.02 | 13.69 | 13.30 | | |

| Data Folder Contents | Review Items | Check | 2nd Level Review |
|---|---|---|---|
| Hard Copies MUST match LIMS data | | | |
| 1. Is the Prep Batch Report included? | Prep Start/End Dates<br>SampAmt=10, FinVol=10<br>20 field samples/batch, 1 DUP/batch | X | |
| 2. Is the Run Log included? | Test Code, Sample Type<br>Batch ID, and Analysis Date/Time | X | x |
| 3. Is PMOIST bench sheet included? | Bench sheet vs. LIMS - Single Analyte Worksheet | X | |
| 4. Is the RPD for the sample DUP ≤30%? | If RPD fails criteria, then state reason below: | X | |

Analyst: WMReyes 05-20-16 Date:

Second-Level Review: Janice Whitt Date: 5/20/2016

F:\IC\Pmoist\PMOIST 2016\160519 PMOIST A



REVIEWED BY
By Janice Whitt at 4:13:23 PM, 5/20/2016

# PMOIST_160526A
# For

# DHL Work Order
# 1605098

**DHL Analytical, Inc.**

**Run ID:** **PMOIST_160526A** **Run No.:** 86052

**Analytical Run Date:** 5/26/2016 **InstrumentID:** Pmoist

**Analyst:** Will Boston

| SampID | DF | TestCode | SampType | Batch ID | Analysis Date/Time | Q | Comments |
|---|---|---|---|---|---|---|---|
| 1605098-36A | 1 | PMOIST | SAMP | 75367 | 5/27/2016 10:11:00 AM | | |
| 1605098-39A | 1 | PMOIST | SAMP | 75367 | 5/27/2016 10:11:00 AM | | |
| 1605224-01C | 1 | PMOIST | SAMP | 75367 | 5/27/2016 10:11:00 AM | | |
| 1605224-02C | 1 | PMOIST | SAMP | 75367 | 5/27/2016 10:11:00 AM | | |
| 1605224-03C | 1 | PMOIST | SAMP | 75367 | 5/27/2016 10:11:00 AM | | |
| 1605224-04C | 1 | PMOIST | SAMP | 75367 | 5/27/2016 10:11:00 AM | | |
| 1605228-03B | 1 | PMOIST | SAMP | 75367 | 5/27/2016 10:11:00 AM | | |
| 1605228-04B | 1 | PMOIST | SAMP | 75367 | 5/27/2016 10:11:00 AM | | |
| 1605245-01C | 1 | PMOIST | SAMP | 75367 | 5/27/2016 10:11:00 AM | | |
| 1605245-02C | 1 | PMOIST | SAMP | 75367 | 5/27/2016 10:11:00 AM | | |
| 1605245-03C | 1 | PMOIST | SAMP | 75367 | 5/27/2016 10:11:00 AM | | |
| 1605252-01C | 1 | PMOIST | SAMP | 75367 | 5/27/2016 10:11:00 AM | | |
| 1605252-03C | 1 | PMOIST | SAMP | 75367 | 5/27/2016 10:11:00 AM | | |
| 1605252-04C | 1 | PMOIST | SAMP | 75367 | 5/27/2016 10:11:00 AM | | |
| 1605252-05C | 1 | PMOIST | SAMP | 75367 | 5/27/2016 10:11:00 AM | | |
| 1605252-06C | 1 | PMOIST | SAMP | 75367 | 5/27/2016 10:11:00 AM | | |
| 1605252-04C DUP | 1 | PMOIST | ~~SAMP~~ DUP | 75367 | 5/27/2016 10:11:00 AM | | |



# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/26/2016 1:04:59 PM**
Digestion: **Start: 5/26/2016 4:23:00 PM / Stop: 5/27/2016 10:11:00 AM**
Prep End Date: **5/27/2016 11:27:10 AM**

Prep Batch **75367** Prep Code: **PMOIST_PREP** Technician: **Will Boston**

Prep Factor Units: **mL/g**

**Equipment List**

Oven #2
Balance #20
Thermometer # 81

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605098-36A | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605098-39A | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605224-01C | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605224-02C | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605224-03C | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605224-04C | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605228-03B | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605228-04B | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605245-01C | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605245-02C | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605245-03C | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605252-01C | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605252-03C | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605252-04C | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605252-04C DUP | Soil | | 10 | 10 | 1.000 | of | |
| 1605252-05C | Soil | | 10 | 10 | 1.000 | 1 of 1 | |
| 1605252-06C | Soil | | 10 | 10 | 1.000 | 1 of 1 | |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 11:51:47 AM, 5/27/2016*

# Percent Moisture - Bench Sheet

Enter ALL weights into the DHL LIMS - Single Analyte Worksheet

Method Requirements: Samples dried to constant weight (12-16 hours) at oven temperature of 110 ± 5°C

Constant Weight is achieved if 2nd weight is <0.1% of 1st weight

[(Final Weight - 2nd Weight) / (Final Weight)] x 100%

| | | | | | |
|---|---|---|---|---|---|
| RUN ID: | 160526 PMOIST A | | | | |
| Date Started: | 05/26/2016 | Date Ended: | 05/27/16 | Date Ended: | |
| Time Started: | 16:23 | Time Ended: | 10:11 | Time Ended: | |
| Analyst Start: | WB | Analyst End: | WB | Analyst End: | |
| Balance # | 20 | Balance # | 20 | Balance # | |
| Oven # | FISHER-2 | Thermometer # | 81 | 2nd Weighing - if 1st dry is <12 hrs | |
| | | Correction Factor | 0.0 | | |
| Initial Temperature | 107.1 | Final Temperature | 107.3 | | |

| Sample ID | Tare Wt (g) | Tare + Sample (g) | Final Wt (g) | 2nd Weight | <0.1% (Y/N) |
|---|---|---|---|---|---|
| Samp ID | | | | | |
| 1605098-36A | 1.01 | 12.37 | 10.59 | | |
| 1605098-39A | 1.01 | 12.39 | 11.38 | | |
| 1605224-01C | 1.00 | 12.79 | 9.84 | | |
| 1605224-02C | 1.01 | 12.70 | 10.82 | | |
| 1605224-03C | 0.98 | 13.60 | 11.10 | | |
| 1605224-04C | 1.01 | 13.14 | 10.73 | | |
| 1605228-03B | 1.02 | 13.63 | 11.14 | | |
| 1605228-04B | 0.98 | 13.70 | 11.26 | | |
| 1605245-01C | 1.01 | 12.95 | 11.01 | | |
| 1605245-02C | 1.02 | 13.58 | 9.80 | | |
| 1605245-03C | 1.03 | 12.58 | 10.56 | | |
| 1605252-01C | 1.00 | 12.35 | 11.38 | | |
| 1605252-03C | 1.00 | 12.66 | 11.12 | | |
| 1605252-04C | 0.99 | 12.45 | 11.15 | | |
| 1605252-05C | 1.00 | 12.19 | 11.14 | | |
| 1605252-06C | 1.00 | 12.41 | 11.24 | | |
| 1605252-04CDUP | 1.02 | 13.50 | 12.08 | | |
| | | | | | |
| | | | | | |
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| | | | | | |

REVIEWED/APPROVED

By Sherri Herschmann at 11:51:52 AM, 5/27/2016

| Data Folder Contents | Review Items | Check | 2nd Level Review |
|---|---|---|---|
| Hard Copies MUST match LIMS data | | | |
| 1. Is the Prep Batch Report included? | Prep Start/End Dates<br>SampAmt=10, FinVol=10<br>20 field samples/batch, 1 DUP/batch | X | X |
| 2. Is the Run Log included? | Test Code, Sample Type<br>Batch ID, and Analysis Date/Time | X | |
| 3. Is PMOIST bench sheet included? | Bench sheet vs. LIMS - Single Analyte Worksheet | X | |
| 4. Is the RPD for the sample DUP ≤30%? | If RPD fails criteria, then state reason below: | X | |

Analyst: WB Date: 05-27-16

Second-Level Review: [signature] Date: 05/27/2016

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№ 70076

# CHAIN-OF-CUSTODY

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DATE: May 10, 2016 PAGE 1 OF 4
PO #: 04295091.0000.00044 DHL WORK ORDER #: 160521
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 04295091.0000.00044 COLLECTOR: G. Ferguson

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

| Field Sample I.D. | DHL Lab # | Date | Time | Matrix | Container Type | # of Containers | PRESERVATION: HCl | $HNO_3$ | $H_2SO_4$ ☐ NaOH ☐ | ICE | UNPRESERVED | ANALYSES | FIELD NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SGR-DU050 (0-2)-A | 01 | 5-10-16 | 1001 | S | Bag | 1 | | | | X | | X X X

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# CHAIN-OF-CUSTODY

№ 70075

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DATE: MAY 10, 2016 PAGE 2 OF 4
PO #: 04285081.0000.00044 DHL WORK ORDER #: 1605121
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 04285081.0000.00044 COLLECTOR: C. Ferguson

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

| Field Sample I.D. | DHL Lab # | Date | Time | Matrix | Container Type | # of Containers | PRESERVATION: HCl | $HNO_3$ | $H_2SO_4$ ☐ NaOH ☐ | ICE | UNPRESERVED | ANALYSES: BTEX ☐ MTBE ☐ (METHOD 8021) | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ Lead | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | FIELD NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SGR-DU074(0-2)-A | 16 | 5-10-16 | 1200 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(2-4)-A | 17 | 5-10-16 | 1201 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(4-6)-A | 18 | 5-10-16 | 1202 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(6-8)-A | 19 | 5-10-16 | 1204 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(8-10)-A | 20 | 5-10-16 | 1205 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(0-2)-B | 21 | 5-10-16 | 1208 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(2-4)-B | 22 | 5-10-16 | 1209 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(4-6)-B | 23 | 5-10-16 | 1210 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(6-8)-B | 24 | 5-10-16 | 1211 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(8-10)-B | 25 | 5-10-16 | 1212 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(0-2)-C | 26 | 5-10-16 | 1214 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(2-4)-C | 27 | 5-10-16 | 1215 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(4-6)-C | 28 | 5-10-16 | 1217 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(6-8)-C | 29 | 5-10-16 | 1218 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(8-10)-C | 30 | 5-10-16 | 1219 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |

| RELINQUISHED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) |
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| [signature] | 5-10-16 1800 | [signature] |
| RELINQUISHED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) |
| [signature] | 5/11/16 930 | [signature] |
| RELINQUISHED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) |

☐ DHL DISPOSAL @ $5.00 each ☐ Return 4

**TURN AROUND TIME**
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ ____

**LABORATORY USE ONLY:**
RECEIVING TEMP: 0.3 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☑ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☑ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY 1.3, 1.3, 1.8, 1.1, 0.9, 2.8
☐ HAND DELIVERED

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№ 70074

# CHAIN-OF-CUSTODY

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DATE: May 10, 2016 PAGE 3 OF 4
PO #: 04295091.0000.00044 DHL WORK ORDER #: 160521
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 04295091.0000.00044 COLLECTOR: G. Ferguson

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

| Field Sample I.D. | DHL Lab # | Date | Time | Matrix | Container Type | # of Containers | PRESERVATION: HCl | $HNO_3$ | $H_2SO_4$ ☐ NaOH ☐ | ICE | UNPRESERVED | ANALYSES | FIELD NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SGR-DU046 (0-2)-A | 31 | 5-10-16 | 1420 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (2-4)-A | 32 | 5-10-16 | 1429 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (4-6)-A | 33 | 5-10-16 | 1430 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (6-8)-A | 34 | 5-10-16 | 1431 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (8-10)-A | 35 | 5-10-16 | 1432 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (0-2)-B | 36 | 5-10-16 | 1455 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (2-4)-B | 37 | 5-10-16 | 1456 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (4-6)-B | 38 | 5-10-16 | 1457 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (6-8)-B | 39 | 5-10-16 | 1458 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (8-10)-B | 40 | 5-10-16 | 1500 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (0-2)-C | 41 | 5-10-16 | 1502 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (2-4)-C | 42 | 5-10-16 | 1503 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (4-6)-C | 43 | 5-10-16 | 1504 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (6-8)-C | 44 | 5-10-16 | 1505 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (8-10)-C | 45 | 5-10-16 | 1506 | S | Bag | 1 | | | | X | | X | |

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ T PHOS, AMMONIA ☐ 8321 HERB ☐ T PHOS, METALS 200.8 ☐ DISS. METALS ☐ Lead METALS 6020 ☐ METALS ☐ RCRA ☐ TX11 ☐ PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS ☐ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

RELINQUISHED BY: (Signature) DATE/TIME 5/10/16 1500 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 5/11/16 930 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

5

**TURN AROUND TIME**
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

**LABORATORY USE ONLY:**
RECEIVING TEMP: 0.3 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY 1.3, 1.3, 1.8, 1.1, 2.9, 2.8
☐ HAND DELIVERED

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# CHAIN-OF-CUSTODY

№ 70073

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DATE: May 10, 2016 PAGE 4 OF 4
PO #: 04285081.0000.00014 DHL WORK ORDER #: 1605121
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 04285081.0000.00014 COLLECTOR: G. Ransom

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl, $HNO_3$, $H_2SO_4$ ☐ NaOH ☐, ICE, UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ (METHOD 8021) | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ Lead | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

| Field Sample I.D. | DHL Lab # | Date | Time | Matrix | Container Type | # of Containers | HCl | $HNO_3$ | $H_2SO_4$ ☐ NaOH ☐ | ICE | UNPRESERVED | ANALYSES | FIELD NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EB15 (20160510) | 46 | 5-10-16 | 0830 | W | Glass/Poly | 2 | | X | | X | | BTEX, 8270 PEST, METALS 6020, Lead, PH, TPH 1005 | |
| EB16 (2016 0510) | 47 | 5-10-16 | 1600 | W | Glass/Poly | 2 | | X | | X | | BTEX, 8270 PEST, METALS 6020, Lead, PH, TPH 1005 | |

RELINQUISHED BY: (Signature) DATE/TIME 5-10-16 / 1800 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 5/11/16 920 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

6

**TURN AROUND TIME**
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☐
OTHER ☐ _____

**LABORATORY USE ONLY:**
RECEIVING TEMP: 0.3 THERM #: 29
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY 1.3, 1.3, 1.8, 1.1, 2.9, 2.4
☐ HAND DELIVERED

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

**CLIENT:** Arcadis
**Project:** Laredo SGR
**Project No:** 04285081.0000.00044
**Lab Order:** 1605121

**Client Sample ID:** SGR-DU050(0-2)-A
**Lab ID:** 1605121-01
**Collection Date:** 05/10/16 10:01 AM
**Matrix:** SOIL

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 131 | J | 0.0909 | 0.273 | 0.136 | | mg/Kg-dry | 5 | 05/23/16 05:08 PM |
| IS: Bismuth | 96.0 | | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:08 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 1.45 | | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Acenaphthylene | 0.0710 | | 0.0473 | 0.0947 | 0.0710 | U | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Anthracene | 4.28 | | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Benzo[a]anthracene | 35.5 | | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Benzo[a]pyrene | 45.2 | D | 0.237 | 0.473 | 0.355 | | mg/Kg-dry | 50 | 05/20/16 11:05 AM |
| Benzo[b]fluoranthene | 42.2 | | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Benzo[e]pyrene | 32.8 | | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Benzo[g,h,i]perylene | 33.7 | | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Benzo[j]fluoranthene | 21.4 | | 0.0473 | 0.0947 | 0.0710 | N | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Benzo[k]fluoranthene | 21.2 | | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Chrysene | 44.0 | D | 0.237 | 0.473 | 0.355 | | mg/Kg-dry | 50 | 05/20/16 11:05 AM |
| Dibenz[a,h]anthracene | 7.57 | | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Fluoranthene | 58.2 | D | 0.237 | 0.473 | 0.355 | | mg/Kg-dry | 50 | 05/20/16 11:05 AM |
| Fluorene | 0.701 | | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Indeno[1,2,3-cd]pyrene | 28.5 | | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Phenanthrene | 20.2 | | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Pyrene | 52.7 | D | 0.237 | 0.473 | 0.355 | | mg/Kg-dry | 50 | 05/20/16 11:05 AM |
| IS: Acenaphthene-d10 | 98.0 | | 0 | 50-200 | 0 | | %REC | 50 | 05/20/16 11:05 AM |
| IS: Acenaphthene-d10 | 96.8 | | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:58 PM |
| IS: Chrysene-d12 | 88.6 | | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:58 PM |
| IS: Chrysene-d12 | 83.6 | | 0 | 50-200 | 0 | | %REC | 50 | 05/20/16 11:05 AM |
| IS: Naphthalene-d8 | 95.6 | | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:58 PM |
| IS: Naphthalene-d8 | 92.5 | | 0 | 50-200 | 0 | | %REC | 50 | 05/20/16 11:05 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(0-2)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-01 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:01 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| IS: Perylene-d12 | 86.3 | 0 | 50-200 | 0 | | %REC | 50 | 05/20/16 11:05 AM |
| IS: Perylene-d12 | 94.2 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:58 PM |
| IS: Phenanthrene-d10 | 84.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:58 PM |
| IS: Phenanthrene-d10 | 78.9 | 0 | 50-200 | 0 | | %REC | 50 | 05/20/16 11:05 AM |
| Surr: 2-Fluorobiphenyl | 83.1 | 0 | 46-115 | 0 | | %REC | 10 | 05/19/16 10:58 PM |
| Surr: 2-Fluorobiphenyl | 93.2 | 0 | 46-115 | 0 | | %REC | 50 | 05/20/16 11:05 AM |
| Surr: 4-Terphenyl-d14 | 87.1 | 0 | 58-133 | 0 | | %REC | 50 | 05/20/16 11:05 AM |
| Surr: 4-Terphenyl-d14 | 81.7 | 0 | 58-133 | 0 | | %REC | 10 | 05/19/16 10:58 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(2-4)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-02 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:02 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 8.46 | J | 0.0833 | 0.250 | 0.125 | | mg/Kg-dry | 5 | 05/23/16 05:18 PM |
| IS: Bismuth | 98.1 | | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:18 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0789 | | 0.0464 | 0.0929 | 0.0696 | J | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Acenaphthylene | 0.0696 | | 0.0464 | 0.0929 | 0.0696 | U | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Anthracene | 0.273 | | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Benzo[a]anthracene | 1.28 | | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Benzo[a]pyrene | 1.46 | | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Benzo[b]fluoranthene | 1.26 | | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Benzo[e]pyrene | 0.991 | | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Benzo[g,h,i]perylene | 0.979 | | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Benzo[j]fluoranthene | 0.690 | | 0.0464 | 0.0929 | 0.0696 | N | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Benzo[k]fluoranthene | 0.680 | | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Chrysene | 1.59 | | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Dibenz[a,h]anthracene | 0.198 | | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Fluoranthene | 2.67 | | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Fluorene | 0.0696 | | 0.0464 | 0.0929 | 0.0696 | U | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Indeno[1,2,3-cd]pyrene | 0.836 | | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Phenanthrene | 1.30 | | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Pyrene | 2.40 | | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| IS: Acenaphthene-d10 | 105 | | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 06:39 PM |
| IS: Chrysene-d12 | 91.0 | | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 06:39 PM |
| IS: Naphthalene-d8 | 98.9 | | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 06:39 PM |
| IS: Perylene-d12 | 92.7 | | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 06:39 PM |
| IS: Phenanthrene-d10 | 87.6 | | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 06:39 PM |
| Surr: 2-Fluorobiphenyl | 84.2 | | 0 | 46-115 | 0 | | %REC | 10 | 05/19/16 06:39 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(2-4)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-02 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:02 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 80.6 | 0 | 58-133 | 0 | | %REC | 10 | 05/19/16 06:39 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(4-6)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-03 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:05 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 3.39 J | 0.0935 | 0.280 | 0.140 | | mg/Kg-dry | 5 | 05/23/16 05:20 PM |
| IS: Bismuth | 98.1 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:20 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Acenaphthylene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Anthracene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Benzo[a]anthracene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Benzo[a]pyrene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Benzo[b]fluoranthene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Benzo[e]pyrene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Benzo[g,h,i]perylene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Benzo[j]fluoranthene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | NU | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Benzo[k]fluoranthene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Chrysene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Dibenz[a,h]anthracene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Fluoranthene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Fluorene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Indeno[1,2,3-cd]pyrene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Phenanthrene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Pyrene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| IS: Acenaphthene-d10 | 104 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:16 PM |
| IS: Chrysene-d12 | 88.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:16 PM |
| IS: Naphthalene-d8 | 97.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:16 PM |
| IS: Perylene-d12 | 90.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:16 PM |
| IS: Phenanthrene-d10 | 86.0 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:16 PM |
| Surr: 2-Fluorobiphenyl | 90.9 | 0 | 46-115 | 0 | | %REC | 10 | 05/19/16 07:16 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(4-6)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-03 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:05 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 84.4 | 0 | 58-133 | 0 | | %REC | 10 | 05/19/16 07:16 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(6-8)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-04 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:06 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 4.55 J | 0.0893 | 0.268 | 0.134 | | mg/Kg-dry | 5 | 05/23/16 05:22 PM |
| IS: Bismuth | 99.6 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:22 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Acenaphthylene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Anthracene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Benzo[a]anthracene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Benzo[a]pyrene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Benzo[b]fluoranthene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Benzo[e]pyrene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Benzo[g,h,i]perylene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Benzo[j]fluoranthene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | NU | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Benzo[k]fluoranthene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Chrysene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Dibenz[a,h]anthracene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Fluoranthene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Fluorene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Indeno[1,2,3-cd]pyrene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Phenanthrene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Pyrene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| IS: Acenaphthene-d10 | 107 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:54 PM |
| IS: Chrysene-d12 | 92.1 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:54 PM |
| IS: Naphthalene-d8 | 99.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:54 PM |
| IS: Perylene-d12 | 93.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:54 PM |
| IS: Phenanthrene-d10 | 86.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:54 PM |
| Surr: 2-Fluorobiphenyl | 88.1 | 0 | 46-115 | 0 | | %REC | 10 | 05/19/16 07:54 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(6-8)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-04 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:06 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 82.7 | 0 | 58-133 | 0 | | %REC | 10 | 05/19/16 07:54 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(8-10)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-05 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:09 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 7.28 J | 0.0943 | 0.283 | 0.142 | | mg/Kg-dry | 5 | 05/23/16 05:24 PM |
| IS: Bismuth | 101 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:24 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Acenaphthylene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Anthracene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Benzo[a]anthracene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Benzo[a]pyrene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Benzo[b]fluoranthene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Benzo[e]pyrene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Benzo[g,h,i]perylene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Benzo[j]fluoranthene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | NU | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Benzo[k]fluoranthene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Chrysene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Dibenz[a,h]anthracene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Fluoranthene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Fluorene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Indeno[1,2,3-cd]pyrene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Phenanthrene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Pyrene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| IS: Acenaphthene-d10 | 107 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 08:31 PM |
| IS: Chrysene-d12 | 88.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 08:31 PM |
| IS: Naphthalene-d8 | 98.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 08:31 PM |
| IS: Perylene-d12 | 91.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 08:31 PM |
| IS: Phenanthrene-d10 | 85.7 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 08:31 PM |
| Surr: 2-Fluorobiphenyl | 85.2 | 0 | 46-115 | 0 | | %REC | 10 | 05/19/16 08:31 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(8-10)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-05 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:09 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 78.1 | 0 | 58-133 | 0 | | %REC | 10 | 05/19/16 08:31 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(0-2)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-06 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:13 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 144 J | 0.0926 | 0.278 | 0.139 | | mg/Kg-dry | 5 | 05/23/16 05:26 PM |
| IS: Bismuth | 98.1 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:26 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 1.26 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Acenaphthylene | 0.0740 | 0.0494 | 0.0987 | 0.0740 | U | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Anthracene | 3.75 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Benzo[a]anthracene | 27.3 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Benzo[a]pyrene | 34.2 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Benzo[b]fluoranthene | 32.1 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Benzo[e]pyrene | 24.8 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Benzo[g,h,i]perylene | 25.2 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Benzo[j]fluoranthene | 16.1 | 0.0494 | 0.0987 | 0.0740 | N | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Benzo[k]fluoranthene | 16.2 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Chrysene | 34.8 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Dibenz[a,h]anthracene | 5.53 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Fluoranthene | 48.9 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Fluorene | 0.569 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Indeno[1,2,3-cd]pyrene | 21.2 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Phenanthrene | 18.0 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Pyrene | 43.4 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| IS: Acenaphthene-d10 | 92.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 06:22 AM |
| IS: Chrysene-d12 | 86.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 06:22 AM |
| IS: Naphthalene-d8 | 93.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 06:22 AM |
| IS: Perylene-d12 | 90.1 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 06:22 AM |
| IS: Phenanthrene-d10 | 77.8 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 06:22 AM |
| Surr: 2-Fluorobiphenyl | 85.0 | 0 | 46-115 | 0 | | %REC | 10 | 05/20/16 06:22 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(0-2)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-06 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:13 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 79.5 | 0 | 58-133 | 0 | | %REC | 10 | 05/20/16 06:22 AM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(2-4)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-07 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:14 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 13.1 | J | 0.0926 | 0.278 | 0.139 | | mg/Kg-dry | 5 | 05/23/16 05:28 PM |
| IS: Bismuth | 93.6 | | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:28 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.300 | | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Acenaphthylene | 0.0691 | | 0.0460 | 0.0921 | 0.0691 | U | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Anthracene | 1.43 | | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Benzo[a]anthracene | 6.37 | | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Benzo[a]pyrene | 7.04 | | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Benzo[b]fluoranthene | 6.59 | | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Benzo[e]pyrene | 4.95 | | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Benzo[g,h,i]perylene | 4.72 | | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Benzo[j]fluoranthene | 3.30 | | 0.0460 | 0.0921 | 0.0691 | N | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Benzo[k]fluoranthene | 3.28 | | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Chrysene | 7.63 | | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Dibenz[a,h]anthracene | 1.08 | | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Fluoranthene | 13.0 | | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Fluorene | 0.265 | | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Indeno[1,2,3-cd]pyrene | 4.02 | | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Phenanthrene | 6.03 | | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Pyrene | 11.0 | | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| IS: Acenaphthene-d10 | 98.6 | | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:07 AM |
| IS: Chrysene-d12 | 87.7 | | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:07 AM |
| IS: Naphthalene-d8 | 96.9 | | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:07 AM |
| IS: Perylene-d12 | 91.1 | | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:07 AM |
| IS: Phenanthrene-d10 | 79.4 | | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:07 AM |
| Surr: 2-Fluorobiphenyl | 84.3 | | 0 | 46-115 | 0 | | %REC | 10 | 05/20/16 05:07 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(2-4)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-07 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:14 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 76.5 | 0 | 58-133 | 0 | | %REC | 10 | 05/20/16 05:07 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(4-6)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-08 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:15 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 3.59 J | 0.0893 | 0.268 | 0.134 | | mg/Kg-dry | 5 | 05/23/16 05:44 PM |
| IS: Bismuth | 100 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:44 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Acenaphthylene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Anthracene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Benzo[a]anthracene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Benzo[a]pyrene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Benzo[b]fluoranthene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Benzo[e]pyrene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Benzo[g,h,i]perylene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Benzo[j]fluoranthene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | NU | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Benzo[k]fluoranthene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Chrysene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Dibenz[a,h]anthracene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Fluoranthene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Fluorene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Indeno[1,2,3-cd]pyrene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Phenanthrene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Pyrene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| IS: Acenaphthene-d10 | 105 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:08 PM |
| IS: Chrysene-d12 | 91.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:08 PM |
| IS: Naphthalene-d8 | 99.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:08 PM |
| IS: Perylene-d12 | 94.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:08 PM |
| IS: Phenanthrene-d10 | 85.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:08 PM |
| Surr: 2-Fluorobiphenyl | 85.1 | 0 | 46-115 | 0 | | %REC | 10 | 05/19/16 09:08 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(4-6)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-08 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:15 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 78.0 | 0 | 58-133 | 0 | | %REC | 10 | 05/19/16 09:08 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(6-8)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-09 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:16 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 4.99 | J | 0.0901 | 0.270 | 0.135 | | mg/Kg-dry | 5 | 05/23/16 05:46 PM |
| IS: Bismuth | 98.8 | | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:46 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Acenaphthylene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Anthracene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Benzo[a]anthracene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Benzo[a]pyrene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Benzo[b]fluoranthene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Benzo[e]pyrene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Benzo[g,h,i]perylene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Benzo[j]fluoranthene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | NU | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Benzo[k]fluoranthene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Chrysene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Dibenz[a,h]anthracene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Fluoranthene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Fluorene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Indeno[1,2,3-cd]pyrene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Phenanthrene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Pyrene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| IS: Acenaphthene-d10 | 99.8 | | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:44 PM |
| IS: Chrysene-d12 | 84.5 | | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:44 PM |
| IS: Naphthalene-d8 | 94.3 | | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:44 PM |
| IS: Perylene-d12 | 88.2 | | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:44 PM |
| IS: Phenanthrene-d10 | 81.4 | | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:44 PM |
| Surr: 2-Fluorobiphenyl | 87.1 | | 0 | 46-115 | 0 | | %REC | 10 | 05/19/16 09:44 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(6-8)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-09 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:16 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 79.3 | 0 | 58-133 | 0 | | %REC | 10 | 05/19/16 09:44 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(8-10)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-10 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:17 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 6.25 J | 0.0870 | 0.261 | 0.130 | | mg/Kg-dry | 5 | 05/23/16 05:48 PM |
| IS: Bismuth | 98.5 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:48 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Acenaphthylene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Anthracene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Benzo[a]anthracene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Benzo[a]pyrene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Benzo[b]fluoranthene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Benzo[e]pyrene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Benzo[g,h,i]perylene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Benzo[j]fluoranthene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | NU | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Benzo[k]fluoranthene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Chrysene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Dibenz[a,h]anthracene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Fluoranthene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Fluorene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Indeno[1,2,3-cd]pyrene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Phenanthrene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Pyrene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| IS: Acenaphthene-d10 | 107 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:21 PM |
| IS: Chrysene-d12 | 90.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:21 PM |
| IS: Naphthalene-d8 | 99.0 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:21 PM |
| IS: Perylene-d12 | 92.2 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:21 PM |
| IS: Phenanthrene-d10 | 86.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:21 PM |
| Surr: 2-Fluorobiphenyl | 86.0 | 0 | 46-115 | 0 | | %REC | 10 | 05/19/16 10:21 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(8-10)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-10 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:17 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 75.2 | 0 | 58-133 | 0 | | %REC | 10 | 05/19/16 10:21 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(0-2)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-11 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:24 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 63.1 | J | 0.0862 | 0.259 | 0.129 | | mg/Kg-dry | 5 | 05/23/16 05:50 PM |
| IS: Bismuth | 95.9 | | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:50 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.424 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Acenaphthylene | 0.0749 | | 0.0500 | 0.0999 | 0.0749 | U | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Anthracene | 1.66 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Benzo[a]anthracene | 10.8 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Benzo[a]pyrene | 12.5 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Benzo[b]fluoranthene | 11.9 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Benzo[e]pyrene | 9.04 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Benzo[g,h,i]perylene | 9.00 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Benzo[j]fluoranthene | 5.99 | | 0.0500 | 0.0999 | 0.0749 | N | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Benzo[k]fluoranthene | 5.90 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Chrysene | 13.3 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Dibenz[a,h]anthracene | 1.98 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Fluoranthene | 20.4 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Fluorene | 0.183 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Indeno[1,2,3-cd]pyrene | 7.68 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Phenanthrene | 8.42 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Pyrene | 17.7 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| IS: Acenaphthene-d10 | 91.6 | | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:45 AM |
| IS: Chrysene-d12 | 81.9 | | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:45 AM |
| IS: Naphthalene-d8 | 88.4 | | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:45 AM |
| IS: Perylene-d12 | 85.6 | | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:45 AM |
| IS: Phenanthrene-d10 | 77.3 | | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:45 AM |
| Surr: 2-Fluorobiphenyl | 84.7 | | 0 | 46-115 | 0 | | %REC | 10 | 05/20/16 05:45 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(0-2)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-11 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:24 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 79.2 | 0 | 58-133 | 0 | | %REC | 10 | 05/20/16 05:45 AM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(2-4)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-12 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:25 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 7.71 J | 0.0943 | 0.283 | 0.142 | | mg/Kg-dry | 5 | 05/23/16 05:52 PM |
| IS: Bismuth | 95.5 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:52 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Acenaphthylene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Anthracene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Benzo[a]anthracene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Benzo[a]pyrene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Benzo[b]fluoranthene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Benzo[e]pyrene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Benzo[g,h,i]perylene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Benzo[j]fluoranthene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | NU | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Benzo[k]fluoranthene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Chrysene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Dibenz[a,h]anthracene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Fluoranthene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Fluorene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Indeno[1,2,3-cd]pyrene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Phenanthrene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Pyrene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| IS: Acenaphthene-d10 | 97.0 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:16 AM |
| IS: Chrysene-d12 | 82.1 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:16 AM |
| IS: Naphthalene-d8 | 93.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:16 AM |
| IS: Perylene-d12 | 84.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:16 AM |
| IS: Phenanthrene-d10 | 76.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:16 AM |
| Surr: 2-Fluorobiphenyl | 86.9 | 0 | 46-115 | 0 | | %REC | 10 | 05/20/16 03:16 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(2-4)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-12 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:25 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 79.0 | 0 | 58-133 | 0 | | %REC | 10 | 05/20/16 03:16 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(4-6)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-13 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:26 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 2.87 J | 0.0943 | 0.283 | 0.142 | | mg/Kg-dry | 5 | 05/23/16 05:54 PM |
| IS: Bismuth | 97.1 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:54 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Acenaphthylene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Anthracene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Benzo[a]anthracene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Benzo[a]pyrene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Benzo[b]fluoranthene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Benzo[e]pyrene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Benzo[g,h,i]perylene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Benzo[j]fluoranthene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | NU | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Benzo[k]fluoranthene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Chrysene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Dibenz[a,h]anthracene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Fluoranthene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Fluorene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Indeno[1,2,3-cd]pyrene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Phenanthrene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Pyrene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| IS: Acenaphthene-d10 | 98.7 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:53 AM |
| IS: Chrysene-d12 | 85.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:53 AM |
| IS: Naphthalene-d8 | 95.2 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:53 AM |
| IS: Perylene-d12 | 87.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:53 AM |
| IS: Phenanthrene-d10 | 77.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:53 AM |
| Surr: 2-Fluorobiphenyl | 88.5 | 0 | 46-115 | 0 | | %REC | 10 | 05/20/16 03:53 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(4-6)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-13 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:26 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 76.7 | 0 | 58-133 | 0 | | %REC | 10 | 05/20/16 03:53 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(6-8)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-14 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:27 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 3.87 J | 0.0847 | 0.254 | 0.127 | | mg/Kg-dry | 5 | 05/23/16 05:56 PM |
| IS: Bismuth | 95.7 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:56 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Acenaphthylene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Anthracene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Benzo[a]anthracene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Benzo[a]pyrene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Benzo[b]fluoranthene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Benzo[e]pyrene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Benzo[g,h,i]perylene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Benzo[j]fluoranthene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | NU | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Benzo[k]fluoranthene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Chrysene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Dibenz[a,h]anthracene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Fluoranthene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Fluorene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Indeno[1,2,3-cd]pyrene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Phenanthrene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Pyrene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| IS: Acenaphthene-d10 | 101 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 04:30 AM |
| IS: Chrysene-d12 | 84.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 04:30 AM |
| IS: Naphthalene-d8 | 96.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 04:30 AM |
| IS: Perylene-d12 | 87.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 04:30 AM |
| IS: Phenanthrene-d10 | 78.8 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 04:30 AM |
| Surr: 2-Fluorobiphenyl | 86.8 | 0 | 46-115 | 0 | | %REC | 10 | 05/20/16 04:30 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(6-8)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-14 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:27 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 79.2 | 0 | 58-133 | 0 | | %REC | 10 | 05/20/16 04:30 AM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(8-10)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-15 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:28 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 6.33 | J | 0.0847 | 0.254 | 0.127 | | mg/Kg-dry | 5 | 05/23/16 05:58 PM |
| IS: Bismuth | 95.6 | | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:58 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Acenaphthylene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Anthracene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Benzo[a]anthracene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Benzo[a]pyrene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Benzo[b]fluoranthene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Benzo[e]pyrene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Benzo[g,h,i]perylene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Benzo[j]fluoranthene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | NU | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Benzo[k]fluoranthene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Chrysene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Dibenz[a,h]anthracene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Fluoranthene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Fluorene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Indeno[1,2,3-cd]pyrene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Phenanthrene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Pyrene | 0.0706 | | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| IS: Acenaphthene-d10 | 76.6 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 03:40 PM |
| IS: Chrysene-d12 | 77.7 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 03:40 PM |
| IS: Naphthalene-d8 | 91.7 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 03:40 PM |
| IS: Perylene-d12 | 75.5 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 03:40 PM |
| IS: Phenanthrene-d10 | 72.5 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 03:40 PM |
| Surr: 2-Fluorobiphenyl | 82.0 | | 0 | 46-115 | 0 | | %REC | 10 | 05/23/16 03:40 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(8-10)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-15 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:28 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 74.4 | 0 | 58-133 | 0 | | %REC | 10 | 05/23/16 03:40 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(0-2)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-16 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:00 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 205 | J | 0.0870 | 0.261 | 0.130 | | mg/Kg-dry | 5 | 05/23/16 06:00 PM |
| IS: Bismuth | 98.5 | | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 06:00 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 1.72 | | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Acenaphthylene | 0.148 | | 0.0988 | 0.198 | 0.148 | U | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Anthracene | 7.12 | | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Benzo[a]anthracene | 47.3 | | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Benzo[a]pyrene | 55.1 | | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Benzo[b]fluoranthene | 50.7 | | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Benzo[e]pyrene | 39.9 | | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Benzo[g,h,i]perylene | 36.7 | | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Benzo[j]fluoranthene | 27.4 | | 0.0988 | 0.198 | 0.148 | N | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Benzo[k]fluoranthene | 26.3 | | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Chrysene | 53.0 | | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Dibenz[a,h]anthracene | 8.64 | | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Fluoranthene | 78.6 | | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Fluorene | 1.10 | | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Indeno[1,2,3-cd]pyrene | 30.6 | | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Phenanthrene | 31.9 | | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Pyrene | 66.4 | | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| IS: Acenaphthene-d10 | 83.3 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 02:53 AM |
| IS: Chrysene-d12 | 77.7 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 02:53 AM |
| IS: Naphthalene-d8 | 99.0 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 02:53 AM |
| IS: Perylene-d12 | 76.6 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 02:53 AM |
| IS: Phenanthrene-d10 | 75.8 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 02:53 AM |
| Surr: 2-Fluorobiphenyl | 76.1 | | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 02:53 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(0-2)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-16 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:00 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 69.2 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 02:53 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(2-4)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-17 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:01 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 26.1 J | 0.0909 | 0.273 | 0.136 | | mg/Kg-dry | 5 | 05/23/16 06:02 PM |
| IS: Bismuth | 98.6 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 06:02 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.407 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Acenaphthylene | 0.144 | 0.0958 | 0.192 | 0.144 | U | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Anthracene | 1.56 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Benzo[a]anthracene | 10.3 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Benzo[a]pyrene | 12.4 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Benzo[b]fluoranthene | 11.2 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Benzo[e]pyrene | 8.88 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Benzo[g,h,i]perylene | 7.71 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Benzo[j]fluoranthene | 6.08 | 0.0958 | 0.192 | 0.144 | N | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Benzo[k]fluoranthene | 5.91 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Chrysene | 11.5 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Dibenz[a,h]anthracene | 1.78 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Fluoranthene | 17.8 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Fluorene | 0.250 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Indeno[1,2,3-cd]pyrene | 6.49 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Phenanthrene | 6.76 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Pyrene | 15.2 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| IS: Acenaphthene-d10 | 79.5 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:40 PM |
| IS: Chrysene-d12 | 76.6 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:40 PM |
| IS: Naphthalene-d8 | 94.3 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:40 PM |
| IS: Perylene-d12 | 75.7 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:40 PM |
| IS: Phenanthrene-d10 | 73.0 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:40 PM |
| Surr: 2-Fluorobiphenyl | 81.2 | 0 | 46-115 | 0 | | %REC | 20 | 05/23/16 09:40 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(2-4)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-17 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:01 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 71.4 | 0 | 58-133 | 0 | | %REC | 20 | 05/23/16 09:40 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(4-6)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-18 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:02 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 67.1 | J | 0.0971 | 0.291 | 0.146 | | mg/Kg-dry | 5 | 05/25/16 05:37 PM |
| IS: Bismuth | 96.3 | | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:37 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 1.74 | | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Acenaphthylene | 0.138 | | 0.0917 | 0.183 | 0.138 | U | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Anthracene | 6.12 | | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Benzo[a]anthracene | 41.6 | | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Benzo[a]pyrene | 48.7 | | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Benzo[b]fluoranthene | 44.2 | | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Benzo[e]pyrene | 35.0 | | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Benzo[g,h,i]perylene | 33.0 | | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Benzo[j]fluoranthene | 24.0 | | 0.0917 | 0.183 | 0.138 | N | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Benzo[k]fluoranthene | 23.0 | | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Chrysene | 47.0 | | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Dibenz[a,h]anthracene | 7.65 | | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Fluoranthene | 66.4 | | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Fluorene | 1.12 | | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Indeno[1,2,3-cd]pyrene | 26.9 | | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Phenanthrene | 26.0 | | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Pyrene | 57.0 | | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| IS: Acenaphthene-d10 | 82.5 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 03:33 AM |
| IS: Chrysene-d12 | 77.7 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 03:33 AM |
| IS: Naphthalene-d8 | 98.1 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 03:33 AM |
| IS: Perylene-d12 | 77.1 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 03:33 AM |
| IS: Phenanthrene-d10 | 75.8 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 03:33 AM |
| Surr: 2-Fluorobiphenyl | 69.4 | | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 03:33 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(4-6)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-18 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:02 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 62.9 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 03:33 AM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(6-8)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-19 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:04 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 20.1 J | 0.0943 | 0.283 | 0.142 | | mg/Kg-dry | 5 | 05/25/16 05:39 PM |
| IS: Bismuth | 93.1 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:39 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.222 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Acenaphthylene | 0.144 | 0.0957 | 0.191 | 0.144 | U | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Anthracene | 0.817 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Benzo[a]anthracene | 5.45 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Benzo[a]pyrene | 6.69 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Benzo[b]fluoranthene | 5.89 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Benzo[e]pyrene | 4.79 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Benzo[g,h,i]perylene | 4.16 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Benzo[j]fluoranthene | 3.21 | 0.0957 | 0.191 | 0.144 | N | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Benzo[k]fluoranthene | 3.13 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Chrysene | 6.08 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Dibenz[a,h]anthracene | 0.967 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Fluoranthene | 9.35 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Fluorene | 0.154 | 0.0957 | 0.191 | 0.144 | J | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Indeno[1,2,3-cd]pyrene | 3.52 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Phenanthrene | 3.48 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Pyrene | 7.97 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| IS: Acenaphthene-d10 | 81.1 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 10:20 PM |
| IS: Chrysene-d12 | 81.1 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 10:20 PM |
| IS: Naphthalene-d8 | 94.7 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 10:20 PM |
| IS: Perylene-d12 | 81.9 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 10:20 PM |
| IS: Phenanthrene-d10 | 75.7 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 10:20 PM |
| Surr: 2-Fluorobiphenyl | 70.6 | 0 | 46-115 | 0 | | %REC | 20 | 05/23/16 10:20 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(6-8)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-19 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:04 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 65.0 | 0 | 58-133 | 0 | | %REC | 20 | 05/23/16 10:20 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(8-10)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-20 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:05 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 48.3 J | 0.0962 | 0.288 | 0.144 | | mg/Kg-dry | 5 | 05/25/16 05:41 PM |
| IS: Bismuth | 96.6 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:41 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 1.44 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Acenaphthylene | 0.149 | 0.0992 | 0.198 | 0.149 | U | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Anthracene | 5.06 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Benzo[a]anthracene | 34.1 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Benzo[a]pyrene | 40.6 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Benzo[b]fluoranthene | 36.7 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Benzo[e]pyrene | 29.4 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Benzo[g,h,i]perylene | 27.0 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Benzo[j]fluoranthene | 19.8 | 0.0992 | 0.198 | 0.149 | N | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Benzo[k]fluoranthene | 19.6 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Chrysene | 38.5 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Dibenz[a,h]anthracene | 6.34 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Fluoranthene | 54.8 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Fluorene | 0.895 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Indeno[1,2,3-cd]pyrene | 22.5 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Phenanthrene | 21.6 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Pyrene | 46.4 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| IS: Acenaphthene-d10 | 81.3 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:13 AM |
| IS: Chrysene-d12 | 77.2 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:13 AM |
| IS: Naphthalene-d8 | 101 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:13 AM |
| IS: Perylene-d12 | 76.4 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:13 AM |
| IS: Phenanthrene-d10 | 76.1 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:13 AM |
| Surr: 2-Fluorobiphenyl | 72.2 | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 04:13 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(8-10)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-20 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:05 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 65.5 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 04:13 AM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(0-2)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-21 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:08 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 202 | J | 0.0962 | 0.288 | 0.144 | | mg/Kg-dry | 5 | 05/25/16 05:43 PM |
| IS: Bismuth | 95.8 | | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:43 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 1.30 | | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Acenaphthylene | 0.149 | | 0.0991 | 0.198 | 0.149 | U | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Anthracene | 4.92 | | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Benzo[a]anthracene | 33.0 | | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Benzo[a]pyrene | 38.1 | | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Benzo[b]fluoranthene | 34.8 | | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Benzo[e]pyrene | 27.5 | | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Benzo[g,h,i]perylene | 25.0 | | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Benzo[j]fluoranthene | 19.2 | | 0.0991 | 0.198 | 0.149 | N | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Benzo[k]fluoranthene | 18.9 | | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Chrysene | 37.5 | | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Dibenz[a,h]anthracene | 6.02 | | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Fluoranthene | 54.8 | | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Fluorene | 0.763 | | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Indeno[1,2,3-cd]pyrene | 21.1 | | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Phenanthrene | 21.8 | | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Pyrene | 46.5 | | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| IS: Acenaphthene-d10 | 76.7 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:53 AM |
| IS: Chrysene-d12 | 71.5 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:53 AM |
| IS: Naphthalene-d8 | 95.2 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:53 AM |
| IS: Perylene-d12 | 70.5 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:53 AM |
| IS: Phenanthrene-d10 | 69.8 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:53 AM |
| Surr: 2-Fluorobiphenyl | 77.3 | | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 04:53 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(0-2)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-21 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:08 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 68.8 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 04:53 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(2-4)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-22 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:09 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 17.3 | J | 0.0909 | 0.273 | 0.136 | | mg/Kg-dry | 5 | 05/25/16 05:33 PM |
| IS: Bismuth | 95.4 | | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:33 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.205 | | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Acenaphthylene | 0.0712 | | 0.0475 | 0.0950 | 0.0712 | U | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Anthracene | 0.656 | | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Benzo[a]anthracene | 4.62 | | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Benzo[a]pyrene | 5.78 | | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Benzo[b]fluoranthene | 5.27 | | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Benzo[e]pyrene | 4.19 | | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Benzo[g,h,i]perylene | 3.73 | JL | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Benzo[j]fluoranthene | 2.82 | JL | 0.0475 | 0.0950 | 0.0712 | N | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Benzo[k]fluoranthene | 2.71 | JL | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Chrysene | 5.26 | | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Dibenz[a,h]anthracene | 0.816 | | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Fluoranthene | 7.73 | | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Fluorene | 0.130 | | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Indeno[1,2,3-cd]pyrene | 3.03 | JL | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Phenanthrene | 2.92 | JL | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Pyrene | 6.65 | | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| IS: Acenaphthene-d10 | 78.4 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 07:00 PM |
| IS: Chrysene-d12 | 78.8 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 07:00 PM |
| IS: Naphthalene-d8 | 92.9 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 07:00 PM |
| IS: Perylene-d12 | 78.2 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 07:00 PM |
| IS: Phenanthrene-d10 | 75.2 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 07:00 PM |
| Surr: 2-Fluorobiphenyl | 78.7 | | 0 | 46-115 | 0 | | %REC | 10 | 05/23/16 07:00 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(2-4)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-22 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:09 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 69.7 | 0 | 58-133 | 0 | | %REC | 10 | 05/23/16 07:00 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(4-6)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-23 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:10 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 116 | J | 0.0980 | 0.294 | 0.147 | | mg/Kg-dry | 5 | 05/25/16 05:45 PM |
| IS: Bismuth | 97.0 | | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:45 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 2.18 | | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Acenaphthylene | 0.148 | | 0.0986 | 0.197 | 0.148 | U | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Anthracene | 7.99 | | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Benzo[a]anthracene | 52.5 | | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Benzo[a]pyrene | 61.7 | | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Benzo[b]fluoranthene | 56.9 | | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Benzo[e]pyrene | 44.5 | | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Benzo[g,h,i]perylene | 42.4 | | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Benzo[j]fluoranthene | 30.7 | | 0.0986 | 0.197 | 0.148 | N | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Benzo[k]fluoranthene | 29.1 | | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Chrysene | 59.0 | | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Dibenz[a,h]anthracene | 9.81 | | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Fluoranthene | 85.3 | | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Fluorene | 1.36 | | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Indeno[1,2,3-cd]pyrene | 34.5 | | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Phenanthrene | 34.2 | | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Pyrene | 72.6 | | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| IS: Acenaphthene-d10 | 80.7 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 05:34 AM |
| IS: Chrysene-d12 | 74.8 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 05:34 AM |
| IS: Naphthalene-d8 | 104 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 05:34 AM |
| IS: Perylene-d12 | 73.3 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 05:34 AM |
| IS: Phenanthrene-d10 | 74.9 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 05:34 AM |
| Surr: 2-Fluorobiphenyl | 77.9 | | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 05:34 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(4-6)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-23 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:10 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 68.7 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 05:34 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(6-8)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-24 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:11 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 19.8 | J | 0.0980 | 0.294 | 0.147 | | mg/Kg-dry | 5 | 05/25/16 05:47 PM |
| IS: Bismuth | 96.3 | | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:47 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.512 | | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Acenaphthylene | 0.139 | | 0.0929 | 0.186 | 0.139 | U | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Anthracene | 1.42 | | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Benzo[a]anthracene | 12.3 | | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Benzo[a]pyrene | 15.9 | | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Benzo[b]fluoranthene | 14.4 | | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Benzo[e]pyrene | 11.6 | | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Benzo[g,h,i]perylene | 10.6 | | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Benzo[j]fluoranthene | 7.84 | | 0.0929 | 0.186 | 0.139 | N | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Benzo[k]fluoranthene | 7.56 | | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Chrysene | 14.4 | | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Dibenz[a,h]anthracene | 2.42 | | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Fluoranthene | 18.8 | | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Fluorene | 0.292 | | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Indeno[1,2,3-cd]pyrene | 8.66 | | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Phenanthrene | 6.24 | | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Pyrene | 16.5 | | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| IS: Acenaphthene-d10 | 75.9 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:14 AM |
| IS: Chrysene-d12 | 72.5 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:14 AM |
| IS: Naphthalene-d8 | 101 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:14 AM |
| IS: Perylene-d12 | 71.2 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:14 AM |
| IS: Phenanthrene-d10 | 69.0 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:14 AM |
| Surr: 2-Fluorobiphenyl | 80.0 | | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 06:14 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(6-8)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-24 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:11 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 73.3 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 06:14 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(8-10)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-25 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:12 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 33.9 | J | 0.0971 | 0.291 | 0.146 | | mg/Kg-dry | 5 | 05/25/16 05:49 PM |
| IS: Bismuth | 95.3 | | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:49 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.598 | | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Acenaphthylene | 0.148 | | 0.0985 | 0.197 | 0.148 | U | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Anthracene | 1.65 | | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Benzo[a]anthracene | 14.1 | | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Benzo[a]pyrene | 17.4 | | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Benzo[b]fluoranthene | 15.9 | | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Benzo[e]pyrene | 12.8 | | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Benzo[g,h,i]perylene | 11.3 | | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Benzo[j]fluoranthene | 8.66 | | 0.0985 | 0.197 | 0.148 | N | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Benzo[k]fluoranthene | 8.34 | | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Chrysene | 16.5 | | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Dibenz[a,h]anthracene | 2.66 | | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Fluoranthene | 22.3 | | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Fluorene | 0.329 | | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Indeno[1,2,3-cd]pyrene | 9.42 | | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Phenanthrene | 7.64 | | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Pyrene | 19.5 | | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| IS: Acenaphthene-d10 | 81.8 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:54 AM |
| IS: Chrysene-d12 | 79.1 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:54 AM |
| IS: Naphthalene-d8 | 104 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:54 AM |
| IS: Perylene-d12 | 78.6 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:54 AM |
| IS: Phenanthrene-d10 | 74.3 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:54 AM |
| Surr: 2-Fluorobiphenyl | 74.6 | | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 06:54 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(8-10)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-25 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:12 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 70.6 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 06:54 AM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(0-2)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-26 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:14 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 178 | J | 0.0943 | 0.283 | 0.142 | | mg/Kg-dry | 5 | 05/25/16 05:51 PM |
| IS: Bismuth | 95.7 | | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:51 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.590 | | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Acenaphthylene | 0.147 | | 0.0979 | 0.196 | 0.147 | U | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Anthracene | 2.33 | | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Benzo[a]anthracene | 15.7 | | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Benzo[a]pyrene | 18.7 | | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Benzo[b]fluoranthene | 17.3 | | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Benzo[e]pyrene | 13.7 | | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Benzo[g,h,i]perylene | 12.2 | | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Benzo[j]fluoranthene | 9.41 | | 0.0979 | 0.196 | 0.147 | N | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Benzo[k]fluoranthene | 9.12 | | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Chrysene | 18.0 | | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Dibenz[a,h]anthracene | 2.86 | | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Fluoranthene | 27.1 | | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Fluorene | 0.362 | | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Indeno[1,2,3-cd]pyrene | 10.3 | | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Phenanthrene | 10.5 | | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Pyrene | 23.1 | | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| IS: Acenaphthene-d10 | 80.4 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 07:33 AM |
| IS: Chrysene-d12 | 77.6 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 07:33 AM |
| IS: Naphthalene-d8 | 106 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 07:33 AM |
| IS: Perylene-d12 | 77.1 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 07:33 AM |
| IS: Phenanthrene-d10 | 73.2 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 07:33 AM |
| Surr: 2-Fluorobiphenyl | 80.6 | | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 07:33 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(0-2)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-26 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:14 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 73.3 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 07:33 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(2-4)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-27 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:15 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 61.6 | J | 0.0990 | 0.297 | 0.149 | | mg/Kg-dry | 5 | 05/25/16 05:53 PM |
| IS: Bismuth | 93.5 | | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:53 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.693 | | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Acenaphthylene | 0.149 | | 0.0993 | 0.199 | 0.149 | U | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Anthracene | 2.40 | | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Benzo[a]anthracene | 16.9 | | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Benzo[a]pyrene | 20.8 | | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Benzo[b]fluoranthene | 19.3 | | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Benzo[e]pyrene | 15.2 | | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Benzo[g,h,i]perylene | 13.6 | | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Benzo[j]fluoranthene | 10.4 | | 0.0993 | 0.199 | 0.149 | N | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Benzo[k]fluoranthene | 9.94 | | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Chrysene | 19.6 | | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Dibenz[a,h]anthracene | 3.18 | | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Fluoranthene | 28.8 | | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Fluorene | 0.394 | | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Indeno[1,2,3-cd]pyrene | 11.4 | | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Phenanthrene | 10.5 | | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Pyrene | 24.6 | | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| IS: Acenaphthene-d10 | 79.2 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 08:13 AM |
| IS: Chrysene-d12 | 77.9 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 08:13 AM |
| IS: Naphthalene-d8 | 106 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 08:13 AM |
| IS: Perylene-d12 | 76.8 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 08:13 AM |
| IS: Phenanthrene-d10 | 73.2 | | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 08:13 AM |
| Surr: 2-Fluorobiphenyl | 73.4 | | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 08:13 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(2-4)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-27 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:15 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 65.6 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 08:13 AM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(4-6)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-28 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:17 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 143 | J | 0.0990 | 0.297 | 0.149 | | mg/Kg-dry | 5 | 05/25/16 06:09 PM |
| IS: Bismuth | 96.7 | | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:09 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 2.66 | | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Acenaphthylene | 0.360 | | 0.240 | 0.480 | 0.360 | U | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Anthracene | 8.40 | | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Benzo[a]anthracene | 61.6 | | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Benzo[a]pyrene | 75.9 | | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Benzo[b]fluoranthene | 68.9 | | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Benzo[e]pyrene | 55.0 | | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Benzo[g,h,i]perylene | 49.3 | | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Benzo[j]fluoranthene | 37.1 | | 0.240 | 0.480 | 0.360 | N | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Benzo[k]fluoranthene | 35.7 | | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Chrysene | 70.7 | | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Dibenz[a,h]anthracene | 11.2 | | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Fluoranthene | 99.6 | | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Fluorene | 1.48 | | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Indeno[1,2,3-cd]pyrene | 40.7 | | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Phenanthrene | 37.6 | | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Pyrene | 86.3 | | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| IS: Acenaphthene-d10 | 85.5 | | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 07:40 PM |
| IS: Chrysene-d12 | 79.7 | | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 07:40 PM |
| IS: Naphthalene-d8 | 100 | | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 07:40 PM |
| IS: Perylene-d12 | 77.6 | | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 07:40 PM |
| IS: Phenanthrene-d10 | 78.5 | | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 07:40 PM |
| Surr: 2-Fluorobiphenyl | 67.6 | | 0 | 46-115 | 0 | | %REC | 50 | 05/23/16 07:40 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(4-6)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-28 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:17 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 60.9 | 0 | 58-133 | 0 | | %REC | 50 | 05/23/16 07:40 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(6-8)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-29 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:18 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 13.4 | J | 0.0917 | 0.275 | 0.138 | | mg/Kg-dry | 5 | 05/25/16 06:11 PM |
| IS: Bismuth | 93.1 | | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:11 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.134 | | 0.0941 | 0.188 | 0.141 | J | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Acenaphthylene | 0.141 | | 0.0941 | 0.188 | 0.141 | U | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Anthracene | 0.363 | | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Benzo[a]anthracene | 3.15 | | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Benzo[a]pyrene | 4.33 | | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Benzo[b]fluoranthene | 3.96 | | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Benzo[e]pyrene | 3.21 | | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Benzo[g,h,i]perylene | 2.92 | | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Benzo[j]fluoranthene | 2.12 | | 0.0941 | 0.188 | 0.141 | N | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Benzo[k]fluoranthene | 2.03 | | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Chrysene | 3.74 | | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Dibenz[a,h]anthracene | 0.637 | | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Fluoranthene | 4.85 | | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Fluorene | 0.141 | | 0.0941 | 0.188 | 0.141 | U | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Indeno[1,2,3-cd]pyrene | 2.37 | | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Phenanthrene | 1.59 | | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Pyrene | 4.37 | | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| IS: Acenaphthene-d10 | 80.6 | | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:00 PM |
| IS: Chrysene-d12 | 81.2 | | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:00 PM |
| IS: Naphthalene-d8 | 94.4 | | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:00 PM |
| IS: Perylene-d12 | 80.5 | | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:00 PM |
| IS: Phenanthrene-d10 | 75.4 | | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:00 PM |
| Surr: 2-Fluorobiphenyl | 75.3 | | 0 | 46-115 | 0 | | %REC | 20 | 05/23/16 09:00 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(6-8)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-29 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:18 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 68.2 | 0 | 58-133 | 0 | | %REC | 20 | 05/23/16 09:00 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(8-10)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-30 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:19 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 70.4 | J | 0.0971 | 0.291 | 0.146 | | mg/Kg-dry | 5 | 05/25/16 06:13 PM |
| IS: Bismuth | 94.6 | | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:13 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 4.05 | | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Acenaphthylene | 0.361 | | 0.241 | 0.481 | 0.361 | U | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Anthracene | 14.4 | | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Benzo[a]anthracene | 91.6 | | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Benzo[a]pyrene | 110 | | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Benzo[b]fluoranthene | 100 | | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Benzo[e]pyrene | 79.7 | | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Benzo[g,h,i]perylene | 72.8 | | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Benzo[j]fluoranthene | 54.1 | | 0.241 | 0.481 | 0.361 | N | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Benzo[k]fluoranthene | 52.8 | | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Chrysene | 105 | | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Dibenz[a,h]anthracene | 16.7 | | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Fluoranthene | 150 | | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Fluorene | 2.76 | | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Indeno[1,2,3-cd]pyrene | 59.4 | | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Phenanthrene | 59.8 | | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Pyrene | 128 | | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| IS: Acenaphthene-d10 | 83.5 | | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 08:20 PM |
| IS: Chrysene-d12 | 77.9 | | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 08:20 PM |
| IS: Naphthalene-d8 | 98.8 | | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 08:20 PM |
| IS: Perylene-d12 | 75.9 | | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 08:20 PM |
| IS: Phenanthrene-d10 | 76.4 | | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 08:20 PM |
| Surr: 2-Fluorobiphenyl | 97.2 | | 0 | 46-115 | 0 | | %REC | 50 | 05/23/16 08:20 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(8-10)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-30 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:19 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 91.8 | 0 | 58-133 | 0 | | %REC | 50 | 05/23/16 08:20 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(0-2)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-31 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:28 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 19.5 | J | 0.0952 | 0.286 | 0.143 | | mg/Kg-dry | 5 | 05/25/16 06:15 PM |
| IS: Bismuth | 93.9 | | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:15 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.0749 | | 0.0500 | 0.0999 | 0.0749 | U | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Acenaphthylene | 0.0749 | | 0.0500 | 0.0999 | 0.0749 | U | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Anthracene | 0.0749 | | 0.0500 | 0.0999 | 0.0749 | U | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Benzo[a]anthracene | 0.212 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Benzo[a]pyrene | 0.263 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Benzo[b]fluoranthene | 0.262 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Benzo[e]pyrene | 0.209 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Benzo[g,h,i]perylene | 0.194 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Benzo[j]fluoranthene | 0.138 | | 0.0500 | 0.0999 | 0.0749 | N | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Benzo[k]fluoranthene | 0.137 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Chrysene | 0.253 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Dibenz[a,h]anthracene | 0.0749 | | 0.0500 | 0.0999 | 0.0749 | U | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Fluoranthene | 0.358 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Fluorene | 0.0749 | | 0.0500 | 0.0999 | 0.0749 | U | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Indeno[1,2,3-cd]pyrene | 0.153 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Phenanthrene | 0.138 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Pyrene | 0.316 | | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| IS: Acenaphthene-d10 | 78.1 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 04:21 PM |
| IS: Chrysene-d12 | 78.6 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 04:21 PM |
| IS: Naphthalene-d8 | 90.4 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 04:21 PM |
| IS: Perylene-d12 | 77.8 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 04:21 PM |
| IS: Phenanthrene-d10 | 75.9 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 04:21 PM |
| Surr: 2-Fluorobiphenyl | 75.7 | | 0 | 46-115 | 0 | | %REC | 10 | 05/23/16 04:21 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(0-2)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-31 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:28 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 66.2 | 0 | 58-133 | 0 | | %REC | 10 | 05/23/16 04:21 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(2-4)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-32 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:29 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 8.53 J | 0.0971 | 0.291 | 0.146 | | mg/Kg-dry | 5 | 05/25/16 06:17 PM |
| IS: Bismuth | 91.2 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:17 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Acenaphthylene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Anthracene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Benzo[a]anthracene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Benzo[a]pyrene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Benzo[b]fluoranthene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Benzo[e]pyrene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Benzo[g,h,i]perylene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Benzo[j]fluoranthene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | NU | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Benzo[k]fluoranthene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Chrysene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Dibenz[a,h]anthracene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Fluoranthene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Fluorene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Indeno[1,2,3-cd]pyrene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Phenanthrene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Pyrene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| IS: Acenaphthene-d10 | 81.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:01 PM |
| IS: Chrysene-d12 | 81.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:01 PM |
| IS: Naphthalene-d8 | 95.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:01 PM |
| IS: Perylene-d12 | 79.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:01 PM |
| IS: Phenanthrene-d10 | 76.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:01 PM |
| Surr: 2-Fluorobiphenyl | 73.2 | 0 | 46-115 | 0 | | %REC | 10 | 05/23/16 05:01 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(2-4)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-32 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:29 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 66.5 | 0 | 58-133 | 0 | | %REC | 10 | 05/23/16 05:01 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(4-6)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-33 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:30 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 8.14 | J | 0.0971 | 0.291 | 0.146 | | mg/Kg-dry | 5 | 05/25/16 06:19 PM |
| IS: Bismuth | 91.2 | | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:19 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.0724 | | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Acenaphthylene | 0.0724 | | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Anthracene | 0.0724 | | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Benzo[a]anthracene | 0.0724 | | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Benzo[a]pyrene | 0.0724 | | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Benzo[b]fluoranthene | 0.0724 | | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Benzo[e]pyrene | 0.0724 | | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Benzo[g,h,i]perylene | 0.0724 | | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Benzo[j]fluoranthene | 0.0724 | | 0.0483 | 0.0965 | 0.0724 | NU | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Benzo[k]fluoranthene | 0.0724 | | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Chrysene | 0.0724 | | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Dibenz[a,h]anthracene | 0.0724 | | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Fluoranthene | 0.0496 | | 0.0483 | 0.0965 | 0.0724 | J | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Fluorene | 0.0724 | | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Indeno[1,2,3-cd]pyrene | 0.0724 | | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Phenanthrene | 0.0724 | | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Pyrene | 0.0724 | | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| IS: Acenaphthene-d10 | 77.7 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:40 PM |
| IS: Chrysene-d12 | 80.5 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:40 PM |
| IS: Naphthalene-d8 | 90.9 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:40 PM |
| IS: Perylene-d12 | 78.9 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:40 PM |
| IS: Phenanthrene-d10 | 75.7 | | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:40 PM |
| Surr: 2-Fluorobiphenyl | 73.2 | | 0 | 46-115 | 0 | | %REC | 10 | 05/23/16 05:40 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(4-6)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-33 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:30 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 65.6 | 0 | 58-133 | 0 | | %REC | 10 | 05/23/16 05:40 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(6-8)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-34 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:31 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 15.7 J | 0.0971 | 0.291 | 0.146 | | mg/Kg-dry | 5 | 05/25/16 06:21 PM |
| IS: Bismuth | 91.6 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:21 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Acenaphthylene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Anthracene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Benzo[a]anthracene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Benzo[a]pyrene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Benzo[b]fluoranthene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Benzo[e]pyrene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Benzo[g,h,i]perylene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Benzo[j]fluoranthene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | NU | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Benzo[k]fluoranthene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Chrysene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Dibenz[a,h]anthracene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Fluoranthene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Fluorene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Indeno[1,2,3-cd]pyrene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Phenanthrene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Pyrene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| IS: Acenaphthene-d10 | 78.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 06:20 PM |
| IS: Chrysene-d12 | 79.1 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 06:20 PM |
| IS: Naphthalene-d8 | 94.0 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 06:20 PM |
| IS: Perylene-d12 | 77.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 06:20 PM |
| IS: Phenanthrene-d10 | 74.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 06:20 PM |
| Surr: 2-Fluorobiphenyl | 77.8 | 0 | 46-115 | 0 | | %REC | 10 | 05/23/16 06:20 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(6-8)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-34 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:31 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 70.9 | 0 | 58-133 | 0 | | %REC | 10 | 05/23/16 06:20 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(8-10)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-35 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:32 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 12.8 | 0.0962 | 0.288 | 0.144 | J | mg/Kg-dry | 5 | 05/25/16 06:23 PM |
| IS: Bismuth | 91.1 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:23 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Acenaphthylene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Anthracene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Benzo[a]anthracene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Benzo[a]pyrene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Benzo[b]fluoranthene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Benzo[e]pyrene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Benzo[g,h,i]perylene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Benzo[j]fluoranthene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | NU | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Benzo[k]fluoranthene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Chrysene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Dibenz[a,h]anthracene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Fluoranthene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Fluorene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Indeno[1,2,3-cd]pyrene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Phenanthrene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Pyrene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| IS: Acenaphthene-d10 | 102 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 11:41 AM |
| IS: Chrysene-d12 | 83.0 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 11:41 AM |
| IS: Naphthalene-d8 | 97.1 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 11:41 AM |
| IS: Perylene-d12 | 86.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 11:41 AM |
| IS: Phenanthrene-d10 | 76.2 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 11:41 AM |
| Surr: 2-Fluorobiphenyl | 89.4 | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 11:41 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(8-10)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-35 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:32 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 76.2 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 11:41 AM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(0-2)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-36 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:55 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 10.9 | J | 0.0943 | 0.283 | 0.142 | | mg/Kg-dry | 5 | 05/25/16 06:25 PM |
| IS: Bismuth | 92.0 | | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:25 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0732 | | 0.0488 | 0.0977 | 0.0732 | U | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Acenaphthylene | 0.0732 | | 0.0488 | 0.0977 | 0.0732 | U | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Anthracene | 0.0732 | | 0.0488 | 0.0977 | 0.0732 | U | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Benzo[a]anthracene | 0.219 | | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Benzo[a]pyrene | 0.299 | | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Benzo[b]fluoranthene | 0.292 | | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Benzo[e]pyrene | 0.235 | | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Benzo[g,h,i]perylene | 0.230 | | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Benzo[j]fluoranthene | 0.123 | | 0.0488 | 0.0977 | 0.0732 | N | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Benzo[k]fluoranthene | 0.130 | | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Chrysene | 0.295 | | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Dibenz[a,h]anthracene | 0.0732 | | 0.0488 | 0.0977 | 0.0732 | U | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Fluoranthene | 0.411 | | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Fluorene | 0.0732 | | 0.0488 | 0.0977 | 0.0732 | U | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Indeno[1,2,3-cd]pyrene | 0.179 | | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Phenanthrene | 0.145 | | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Pyrene | 0.376 | | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| IS: Acenaphthene-d10 | 104 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:18 PM |
| IS: Chrysene-d12 | 86.1 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:18 PM |
| IS: Naphthalene-d8 | 100 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:18 PM |
| IS: Perylene-d12 | 90.1 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:18 PM |
| IS: Phenanthrene-d10 | 78.6 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:18 PM |
| Surr: 2-Fluorobiphenyl | 90.9 | | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 12:18 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(0-2)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-36 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:55 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 78.7 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 12:18 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(2-4)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-37 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:56 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 6.80 J | 0.0926 | 0.278 | 0.139 | | mg/Kg-dry | 5 | 05/25/16 06:27 PM |
| IS: Bismuth | 89.2 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:27 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Acenaphthylene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Anthracene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Benzo[a]anthracene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Benzo[a]pyrene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Benzo[b]fluoranthene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Benzo[e]pyrene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Benzo[g,h,i]perylene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Benzo[j]fluoranthene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | NU | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Benzo[k]fluoranthene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Chrysene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Dibenz[a,h]anthracene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Fluoranthene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Fluorene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Indeno[1,2,3-cd]pyrene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Phenanthrene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Pyrene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| IS: Acenaphthene-d10 | 98.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:56 PM |
| IS: Chrysene-d12 | 79.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:56 PM |
| IS: Naphthalene-d8 | 89.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:56 PM |
| IS: Perylene-d12 | 82.0 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:56 PM |
| IS: Phenanthrene-d10 | 74.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:56 PM |
| Surr: 2-Fluorobiphenyl | 91.5 | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 12:56 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(2-4)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-37 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:56 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 77.1 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 12:56 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(4-6)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-38 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:57 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **KL** |
| Lead | 8.72 J | 0.0917 | 0.275 | 0.138 | | mg/Kg-dry | 5 | 05/26/16 01:54 PM |
| IS: Bismuth | 75.2 | 0 | 30-120 | 0 | | %REC | 5 | 05/26/16 01:54 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Acenaphthylene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Anthracene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Benzo[a]anthracene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Benzo[a]pyrene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Benzo[b]fluoranthene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Benzo[e]pyrene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Benzo[g,h,i]perylene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Benzo[j]fluoranthene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | NU | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Benzo[k]fluoranthene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Chrysene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Dibenz[a,h]anthracene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Fluoranthene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Fluorene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Indeno[1,2,3-cd]pyrene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Phenanthrene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Pyrene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| IS: Acenaphthene-d10 | 102 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 01:32 PM |
| IS: Chrysene-d12 | 81.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 01:32 PM |
| IS: Naphthalene-d8 | 98.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 01:32 PM |
| IS: Perylene-d12 | 85.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 01:32 PM |
| IS: Phenanthrene-d10 | 76.0 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 01:32 PM |
| Surr: 2-Fluorobiphenyl | 90.5 | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 01:32 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(4-6)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-38 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:57 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 77.8 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 01:32 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(6-8)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-39 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:58 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **KL** |
| Lead | 15.5 | J | 0.0885 | 0.265 | 0.133 | | mg/Kg-dry | 5 | 05/26/16 02:00 PM |
| IS: Bismuth | 76.9 | | 0 | 30-120 | 0 | | %REC | 5 | 05/26/16 02:00 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Acenaphthylene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Anthracene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Benzo[a]anthracene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Benzo[a]pyrene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Benzo[b]fluoranthene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Benzo[e]pyrene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Benzo[g,h,i]perylene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Benzo[j]fluoranthene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | NU | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Benzo[k]fluoranthene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Chrysene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Dibenz[a,h]anthracene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Fluoranthene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Fluorene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Indeno[1,2,3-cd]pyrene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Phenanthrene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Pyrene | 0.0728 | | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| IS: Acenaphthene-d10 | 103 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:10 PM |
| IS: Chrysene-d12 | 83.4 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:10 PM |
| IS: Naphthalene-d8 | 100 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:10 PM |
| IS: Perylene-d12 | 86.5 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:10 PM |
| IS: Phenanthrene-d10 | 77.4 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:10 PM |
| Surr: 2-Fluorobiphenyl | 85.8 | | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 02:10 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(6-8)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-39 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:58 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 73.6 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 02:10 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(8-10)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-40 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:00 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **KL** |
| Lead | 13.7 J | 0.100 | 0.300 | 0.150 | | mg/Kg-dry | 5 | 05/26/16 02:06 PM |
| IS: Bismuth | 78.4 | 0 | 30-120 | 0 | | %REC | 5 | 05/26/16 02:06 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0719 | 0.0479 | 0.0959 | 0.0719 | U | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Acenaphthylene | 0.0719 | 0.0479 | 0.0959 | 0.0719 | U | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Anthracene | 0.0719 | 0.0479 | 0.0959 | 0.0719 | U | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Benzo[a]anthracene | 0.281 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Benzo[a]pyrene | 0.571 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Benzo[b]fluoranthene | 0.507 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Benzo[e]pyrene | 0.414 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Benzo[g,h,i]perylene | 0.425 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Benzo[j]fluoranthene | 0.200 | 0.0479 | 0.0959 | 0.0719 | N | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Benzo[k]fluoranthene | 0.206 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Chrysene | 0.445 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Dibenz[a,h]anthracene | 0.0719 | 0.0479 | 0.0959 | 0.0719 | U | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Fluoranthene | 0.294 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Fluorene | 0.0719 | 0.0479 | 0.0959 | 0.0719 | U | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Indeno[1,2,3-cd]pyrene | 0.323 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Phenanthrene | 0.0542 | 0.0479 | 0.0959 | 0.0719 | J | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Pyrene | 0.355 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| IS: Acenaphthene-d10 | 104 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:46 PM |
| IS: Chrysene-d12 | 81.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:46 PM |
| IS: Naphthalene-d8 | 100 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:46 PM |
| IS: Perylene-d12 | 83.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:46 PM |
| IS: Phenanthrene-d10 | 78.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:46 PM |
| Surr: 2-Fluorobiphenyl | 88.1 | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 02:46 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(8-10)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-40 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:00 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 78.5 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 02:46 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(0-2)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-41 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:02 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **KL** |
| Lead | 19.8 | J | 0.0971 | 0.291 | 0.146 | | mg/Kg-dry | 5 | 05/26/16 02:12 PM |
| IS: Bismuth | 80.9 | | 0 | 30-120 | 0 | | %REC | 5 | 05/26/16 02:12 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.128 | | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Acenaphthylene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Anthracene | 0.182 | | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Benzo[a]anthracene | 1.64 | | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Benzo[a]pyrene | 2.15 | | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Benzo[b]fluoranthene | 1.94 | | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Benzo[e]pyrene | 1.57 | | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Benzo[g,h,i]perylene | 1.53 | | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Benzo[j]fluoranthene | 0.986 | | 0.0498 | 0.0995 | 0.0746 | N | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Benzo[k]fluoranthene | 0.956 | | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Chrysene | 2.20 | | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Dibenz[a,h]anthracene | 0.271 | | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Fluoranthene | 2.77 | | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Fluorene | 0.0746 | | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Indeno[1,2,3-cd]pyrene | 1.27 | | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Phenanthrene | 0.995 | | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Pyrene | 2.66 | | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| IS: Acenaphthene-d10 | 99.5 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 03:24 PM |
| IS: Chrysene-d12 | 80.7 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 03:24 PM |
| IS: Naphthalene-d8 | 91.9 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 03:24 PM |
| IS: Perylene-d12 | 84.4 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 03:24 PM |
| IS: Phenanthrene-d10 | 76.2 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 03:24 PM |
| Surr: 2-Fluorobiphenyl | 84.1 | | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 03:24 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(0-2)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-41 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:02 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 70.6 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 03:24 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(2-4)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-42 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:03 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **KL** |
| Lead | 7.38 | J | 0.0909 | 0.273 | 0.136 | | mg/Kg-dry | 5 | 05/26/16 02:17 PM |
| IS: Bismuth | 69.8 | | 0 | 30-120 | 0 | | %REC | 5 | 05/26/16 02:17 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0739 | | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Acenaphthylene | 0.0739 | | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Anthracene | 0.0634 | | 0.0493 | 0.0985 | 0.0739 | J | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Benzo[a]anthracene | 0.496 | | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Benzo[a]pyrene | 0.614 | | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Benzo[b]fluoranthene | 0.544 | | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Benzo[e]pyrene | 0.433 | | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Benzo[g,h,i]perylene | 0.416 | | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Benzo[j]fluoranthene | 0.254 | | 0.0493 | 0.0985 | 0.0739 | N | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Benzo[k]fluoranthene | 0.256 | | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Chrysene | 0.635 | | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Dibenz[a,h]anthracene | 0.0549 | | 0.0493 | 0.0985 | 0.0739 | J | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Fluoranthene | 1.01 | | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Fluorene | 0.0739 | | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Indeno[1,2,3-cd]pyrene | 0.327 | | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Phenanthrene | 0.328 | | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Pyrene | 0.890 | | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| IS: Acenaphthene-d10 | 103 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:01 PM |
| IS: Chrysene-d12 | 83.9 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:01 PM |
| IS: Naphthalene-d8 | 99.4 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:01 PM |
| IS: Perylene-d12 | 88.0 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:01 PM |
| IS: Phenanthrene-d10 | 76.1 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:01 PM |
| Surr: 2-Fluorobiphenyl | 88.2 | | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 04:01 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(2-4)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-42 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:03 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 76.0 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 04:01 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(4-6)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-43 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:04 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **KL** |
| Lead | 7.96 | 0.0971 | 0.291 | 0.146 | | mg/Kg-dry | 5 | 05/26/16 01:42 PM |
| IS: Bismuth | 72.2 | 0 | 30-120 | 0 | | %REC | 5 | 05/26/16 01:42 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Acenaphthylene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Anthracene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Benzo[a]anthracene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Benzo[a]pyrene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Benzo[b]fluoranthene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Benzo[e]pyrene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Benzo[g,h,i]perylene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Benzo[j]fluoranthene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | NU | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Benzo[k]fluoranthene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Chrysene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Dibenz[a,h]anthracene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Fluoranthene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Fluorene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Indeno[1,2,3-cd]pyrene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Phenanthrene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Pyrene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| IS: Acenaphthene-d10 | 104 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:38 PM |
| IS: Chrysene-d12 | 81.7 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:38 PM |
| IS: Naphthalene-d8 | 98.7 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:38 PM |
| IS: Perylene-d12 | 85.8 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:38 PM |
| IS: Phenanthrene-d10 | 77.2 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:38 PM |
| Surr: 2-Fluorobiphenyl | 88.9 | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 04:38 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(4-6)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-43 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:04 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 73.7 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 04:38 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(6-8)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-44 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:05 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **KL** |
| Lead | 11.4 | J | 0.0855 | 0.256 | 0.128 | | mg/Kg-dry | 5 | 05/26/16 02:23 PM |
| IS: Bismuth | 66.7 | | 0 | 30-120 | 0 | | %REC | 5 | 05/26/16 02:23 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Acenaphthylene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Anthracene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Benzo[a]anthracene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Benzo[a]pyrene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Benzo[b]fluoranthene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Benzo[e]pyrene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Benzo[g,h,i]perylene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Benzo[j]fluoranthene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | NU | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Benzo[k]fluoranthene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Chrysene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Dibenz[a,h]anthracene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Fluoranthene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Fluorene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Indeno[1,2,3-cd]pyrene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Phenanthrene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Pyrene | 0.0743 | | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| IS: Acenaphthene-d10 | 105 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:16 PM |
| IS: Chrysene-d12 | 86.4 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:16 PM |
| IS: Naphthalene-d8 | 102 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:16 PM |
| IS: Perylene-d12 | 89.7 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:16 PM |
| IS: Phenanthrene-d10 | 79.1 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:16 PM |
| Surr: 2-Fluorobiphenyl | 83.6 | | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 05:16 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(6-8)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-44 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:05 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 69.8 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 05:16 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(8-10)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-45 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:06 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | | **SW6020A** | | | | | Analyst: **KL** |
| Lead | 16.1 | J | 0.0855 | 0.256 | 0.128 | | mg/Kg-dry | 5 | 05/26/16 02:29 PM |
| IS: Bismuth | 67.9 | | 0 | 30-120 | 0 | | %REC | 5 | 05/26/16 02:29 PM |
| **PAHS: GC/MS** | | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Acenaphthylene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Anthracene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Benzo[a]anthracene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Benzo[a]pyrene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Benzo[b]fluoranthene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Benzo[e]pyrene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Benzo[g,h,i]perylene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Benzo[j]fluoranthene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | NU | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Benzo[k]fluoranthene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Chrysene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Dibenz[a,h]anthracene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Fluoranthene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Fluorene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Indeno[1,2,3-cd]pyrene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Phenanthrene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Pyrene | 0.0741 | | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| IS: Acenaphthene-d10 | 107 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:54 PM |
| IS: Chrysene-d12 | 86.9 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:54 PM |
| IS: Naphthalene-d8 | 105 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:54 PM |
| IS: Perylene-d12 | 91.2 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:54 PM |
| IS: Phenanthrene-d10 | 78.8 | | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:54 PM |
| Surr: 2-Fluorobiphenyl | 82.6 | | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 05:54 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(8-10)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-45 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:06 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 70.1 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 05:54 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | EB15(20160510) |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-46 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 08:30 AM |
| **Lab Order:** | 1605121 | **Matrix:** | EQUIP BLANK |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - WATER** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 0.000900 | 0.000300 | 0.00100 | 0.000900 | U | mg/L | 1 | 05/20/16 02:16 PM |
| IS: Bismuth | 98.3 | 0 | 30-120 | 0 | | %REC | 1 | 05/20/16 02:16 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0000638 | 0.0000399 | 0.0000798 | 0.0000638 | U | mg/L | 1 | 05/18/16 11:17 PM |
| Acenaphthylene | 0.0000638 | 0.0000399 | 0.0000798 | 0.0000638 | U | mg/L | 1 | 05/18/16 11:17 PM |
| Anthracene | 0.0000638 | 0.0000399 | 0.0000798 | 0.0000638 | U | mg/L | 1 | 05/18/16 11:17 PM |
| Benzo[a]anthracene | 0.000218 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Benzo[a]pyrene | 0.000313 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Benzo[b]fluoranthene | 0.000332 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Benzo[e]pyrene | 0.000247 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Benzo[g,h,i]perylene | 0.000230 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Benzo[j]fluoranthene | 0.000161 | 0.0000399 | 0.0000798 | 0.0000638 | N | mg/L | 1 | 05/18/16 11:17 PM |
| Benzo[k]fluoranthene | 0.000169 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Chrysene | 0.000308 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Dibenz[a,h]anthracene | 0.0000493 | 0.0000399 | 0.0000798 | 0.0000638 | J | mg/L | 1 | 05/18/16 11:17 PM |
| Fluoranthene | 0.000210 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Fluorene | 0.0000638 | 0.0000399 | 0.0000798 | 0.0000638 | U | mg/L | 1 | 05/18/16 11:17 PM |
| Indeno[1,2,3-cd]pyrene | 0.000209 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Phenanthrene | 0.0000638 | 0.0000399 | 0.0000798 | 0.0000638 | U | mg/L | 1 | 05/18/16 11:17 PM |
| Pyrene | 0.000196 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| IS: Acenaphthene-d10 | 87.3 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:17 PM |
| IS: Chrysene-d12 | 86.8 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:17 PM |
| IS: Naphthalene-d8 | 85.9 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:17 PM |
| IS: Perylene-d12 | 86.1 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:17 PM |
| IS: Phenanthrene-d10 | 84.3 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:17 PM |
| Surr: 2-Fluorobiphenyl | 60.7 | 0 | 53-106 | 0 | | %REC | 1 | 05/18/16 11:17 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | EB15(20160510) |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-46 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 08:30 AM |
| **Lab Order:** | 1605121 | **Matrix:** | EQUIP BLANK |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 69.8 | 0 | 58-132 | 0 | | %REC | 1 | 05/18/16 11:17 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | EB16(20160510) |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-47 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 04:00 PM |
| **Lab Order:** | 1605121 | **Matrix:** | EQUIP BLANK |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - WATER** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 0.000900 | 0.000300 | 0.00100 | 0.000900 | U | mg/L | 1 | 05/20/16 02:18 PM |
| IS: Bismuth | 98.2 | 0 | 30-120 | 0 | | %REC | 1 | 05/20/16 02:18 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0000632 | 0.0000395 | 0.0000790 | 0.0000632 | U | mg/L | 1 | 05/18/16 11:54 PM |
| Acenaphthylene | 0.0000632 | 0.0000395 | 0.0000790 | 0.0000632 | U | mg/L | 1 | 05/18/16 11:54 PM |
| Anthracene | 0.0000632 | 0.0000395 | 0.0000790 | 0.0000632 | U | mg/L | 1 | 05/18/16 11:54 PM |
| Benzo[a]anthracene | 0.000444 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Benzo[a]pyrene | 0.000727 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Benzo[b]fluoranthene | 0.000756 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Benzo[e]pyrene | 0.000553 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Benzo[g,h,i]perylene | 0.000526 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Benzo[j]fluoranthene | 0.000358 | 0.0000395 | 0.0000790 | 0.0000632 | N | mg/L | 1 | 05/18/16 11:54 PM |
| Benzo[k]fluoranthene | 0.000376 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Chrysene | 0.000630 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Dibenz[a,h]anthracene | 0.000129 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Fluoranthene | 0.000359 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Fluorene | 0.0000632 | 0.0000395 | 0.0000790 | 0.0000632 | U | mg/L | 1 | 05/18/16 11:54 PM |
| Indeno[1,2,3-cd]pyrene | 0.000486 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Phenanthrene | 0.0000622 | 0.0000395 | 0.0000790 | 0.0000632 | J | mg/L | 1 | 05/18/16 11:54 PM |
| Pyrene | 0.000363 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| IS: Acenaphthene-d10 | 92.6 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:54 PM |
| IS: Chrysene-d12 | 91.5 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:54 PM |
| IS: Naphthalene-d8 | 92.5 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:54 PM |
| IS: Perylene-d12 | 92.7 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:54 PM |
| IS: Phenanthrene-d10 | 89.2 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:54 PM |
| Surr: 2-Fluorobiphenyl | 64.4 | 0 | 53-106 | 0 | | %REC | 1 | 05/18/16 11:54 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | EB16(20160510) |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-47 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 04:00 PM |
| **Lab Order:** | 1605121 | **Matrix:** | EQUIP BLANK |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 69.3 | 0 | 58-132 | 0 | | %REC | 1 | 05/18/16 11:54 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

June 02, 2016

Alex Walter
Arcadis
8725 Rosehill #350
Lenexa, Kansas 66215
TEL: (913) 492-0900
FAX (913) 492-0902

Order No.: 1605121

RE: Laredo SGR

Dear Alex Walter:

DHL Analytical, Inc. received 47 sample(s) on 5/11/2016 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of DoD QSM Ver 5 and NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. This report shall not be reproduced except in full without the written approval of DHL Analytical, Inc. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-16-16

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DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 70076

# CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill Suite 350 Lenexa, KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: Erica.Denkenberger@arcadis.com

DATE: May 10, 2016 PAGE 1 OF 4
PO #: 04295091.0000.00044 DHL WORK ORDER #: 160521
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 04295091.0000.00044 COLLECTOR: G. Ferguson

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

| Field Sample I.D. | DHL Lab # | Date | Time | Matrix | Container Type | # of Containers | PRESERVATION: HCl | $HNO_3$ | $H_2SO_4$ ☐ NaOH ☐ | ICE | UNPRESERVED | ANALYSES | FIELD NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SGR-DU050 (0-2)-A | 01 | 5-10-16 | 1001 | S | Bag | 1 | | | | X | | X X X

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Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

# CHAIN-OF-CUSTODY

№ 70075

CLIENT: Arcadis
ADDRESS: 8725 Rosehill Suite 350 Lenexa, KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: Erika.Denkenberger@arcadis.com

DATE: MAY 10, 2016 PAGE 2 OF 4
PO #: 04285081.0000.00044 DHL WORK ORDER #: 1605121
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 04285081.0000.00044 COLLECTOR: C. Ferguson

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

| Field Sample I.D. | DHL Lab # | Date | Time | Matrix | Container Type | # of Containers | PRESERVATION: HCl | $HNO_3$ | $H_2SO_4$ ☐ NaOH ☐ | ICE | UNPRESERVED | ANALYSES: BTEX ☐ MTBE ☐ (METHOD 8021) | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ Lead | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | FIELD NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SGR-DU074(0-2)-A | 16 | 5-10-16 | 1200 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(2-4)-A | 17 | 5-10-16 | 1201 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(4-6)-A | 18 | 5-10-16 | 1202 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(6-8)-A | 19 | 5-10-16 | 1204 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(8-10)-A | 20 | 5-10-16 | 1205 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(0-2)-B | 21 | 5-10-16 | 1208 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(2-4)-B | 22 | 5-10-16 | 1209 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(4-6)-B | 23 | 5-10-16 | 1210 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(6-8)-B | 24 | 5-10-16 | 1211 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(8-10)-B | 25 | 5-10-16 | 1212 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(0-2)-C | 26 | 5-10-16 | 1214 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(2-4)-C | 27 | 5-10-16 | 1215 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(4-6)-C | 28 | 5-10-16 | 1217 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(6-8)-C | 29 | 5-10-16 | 1218 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |
| SGR-DU074(8-10)-C | 30 | 5-10-16 | 1219 | S | Bag | 1 | | | | X | | | | | X | | | | | | X | | | | | | | |

| RELINQUISHED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) |
|---|---|---|
| [signature] | 5-10-16 1800 | [signature] |
| RELINQUISHED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) |
| [signature] | 5/11/16 930 | [signature] |
| RELINQUISHED BY: (Signature) | DATE/TIME | RECEIVED BY: (Signature) |

☐ DHL DISPOSAL @ $5.00 each ☐ Return 4

**TURN AROUND TIME**
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ ____

**LABORATORY USE ONLY:**
RECEIVING TEMP: 0.3 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☑ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☑ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY 1.3, 1.3, 1.8, 1.1, 0.9, 2.8
☐ HAND DELIVERED

DHL ANALYTICAL
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Phone (512) 388-8222 ■ FAX (512) 388-8229
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E-Mail: login@dhlanalytical.com

№ 70074

# CHAIN-OF-CUSTODY

CLIENT: Arcadis
ADDRESS: 8725 Rosehill Suite 350 Lenexa, KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: Alex.Walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: Erika.Denkenberger@arcadis.com

DATE: May 10, 2016 PAGE 3 OF 4
PO #: 04295091.0000.00044 DHL WORK ORDER #: 160521
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 04295091.0000.00044 COLLECTOR: G. Ferguson

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

| Field Sample I.D. | DHL Lab # | Date | Time | Matrix | Container Type | # of Containers | PRESERVATION: HCl | $HNO_3$ | $H_2SO_4$ ☐ NaOH ☐ | ICE | UNPRESERVED | ANALYSES | FIELD NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SGR-DU046 (0-2)-A | 31 | 5-10-16 | 1420 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (2-4)-A | 32 | 5-10-16 | 1429 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (4-6)-A | 33 | 5-10-16 | 1430 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (6-8)-A | 34 | 5-10-16 | 1431 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (8-10)-A | 35 | 5-10-16 | 1432 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (0-2)-B | 36 | 5-10-16 | 1455 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (2-4)-B | 37 | 5-10-16 | 1456 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (4-6)-B | 38 | 5-10-16 | 1457 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (6-8)-B | 39 | 5-10-16 | 1458 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (8-10)-B | 40 | 5-10-16 | 1500 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (0-2)-C | 41 | 5-10-16 | 1502 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (2-4)-C | 42 | 5-10-16 | 1503 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (4-6)-C | 43 | 5-10-16 | 1504 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (6-8)-C | 44 | 5-10-16 | 1505 | S | Bag | 1 | | | | X | | X | |
| SGR-DU046 (8-10)-C | 45 | 5-10-16 | 1506 | S | Bag | 1 | | | | X | | X | |

ANALYSES: BTEX ☐ MTBE ☐ [METHOD 8021] TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ SVOC 8270 ☐ PAH8270 ☐ HOLD PAH ☐ SVOC 625 ☐ 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ 8270 PCB ☐ 8270 O-P PEST ☐ 8082 PCB ☐ T PHOS, AMMONIA ☐ 8321 HERB ☐ T PHOS, METALS 200.8 ☐ DISS. METALS ☐ Lead METALS 6020 ☐ METALS ☐ RCRA ☐ TX11 ☐ PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ CHLORIDE ☐ ANIONS ☐ TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ RCI ☐ FLASHPOINT ☐ DGAS ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

RELINQUISHED BY: (Signature) DATE/TIME 5/10/16 1500 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 5/11/16 930 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

5

**TURN AROUND TIME**
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐ _____

**LABORATORY USE ONLY:**
RECEIVING TEMP: 0.3 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY 1.3, 1.3, 1.8, 1.1, 2.9, 2.8
☐ HAND DELIVERED

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

# CHAIN-OF-CUSTODY

№ 70073

CLIENT: Arcadis
ADDRESS: 8725 Rosehill Suite 350 Lenexa, KS 66215
PHONE: 913 645 3203 FAX/E-MAIL: alex.walter@arcadis.com
DATA REPORTED TO: Alex Walter
ADDITIONAL REPORT COPIES TO: Erika.Ankerberger@arcadis.com

DATE: May 10, 2016 PAGE 4 OF 4
PO #: 04285081.0000.00014 DHL WORK ORDER #: 1605121
PROJECT LOCATION OR NAME: Laredo SGR
CLENT PROJECT #: 04285081.0000.00014 COLLECTOR: G. Ransom

Authorize 5% surcharge for TRRP Report? ☐ Yes ☐ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID SO=SOLID
SE=SEDIMENT

PRESERVATION: HCl, $HNO_3$, $H_2SO_4$ ☐ NaOH ☐, ICE, UNPRESERVED

ANALYSES: BTEX ☐ MTBE ☐ (METHOD 8021) | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO (METHOD 8015) ☐ DRO (METHOD 8105) ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ Lead | PH ☐ HEX CHROM ☐ ALKALINITY ☐ COD ☐ | CHLORIDE ☐ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐

| Field Sample I.D. | DHL Lab # | Date | Time | Matrix | Container Type | # of Containers | HCl | $HNO_3$ | $H_2SO_4$ ☐ NaOH ☐ | ICE | UNPRESERVED | ANALYSES | FIELD NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EB15 (20160510) | 46 | 5-10-16 | 0830 | W | Glass/Poly | 2 | | X | | X | | BTEX, 8270 PEST, METALS 6020, Lead, PH, TPH 1005 | |
| EB16 (2016 0510) | 47 | 5-10-16 | 1600 | W | Glass/Poly | 2 | | X | | X | | BTEX, 8270 PEST, METALS 6020, Lead, PH, TPH 1005 | |

RELINQUISHED BY: (Signature) DATE/TIME 5-10-16 / 1800 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME 5/11/16 920 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return

6

**TURN AROUND TIME**
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☐
OTHER ☐ _____

**LABORATORY USE ONLY:**
RECEIVING TEMP: 0.3 THERM #: 29
CUSTODY SEALS: ☐ BROKEN ☒ INTACT ☐ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY 1.3, 1.3, 1.8, 1.1, 2.9, 2.4
☐ HAND DELIVERED

ORIGIN ID:LRDA (915) 433-1761
GARETT FERGUSON
ARCADIS US, INC.
7010 BOB BULLOCK LOOP

LAREDO, TX 78041
UNITED STATES US

SHIP DATE: 10MAY16
ACTWGT: 70.00 LB
CAD: 1660358/INET3730
DIMS: 24x13x15 IN

BILL SENDER

JENNIFER BARKER
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF: 04285081.0000.00044
INV:
PO: 04285081.0000.00044 DEPT:

540J1/63237/27F

FedEx Express

5 of 6

WED - 11 MAY 10:30A
PRIORITY OVERNIGHT

MPS# 0263 7762 9904 8411
Mstr# 7762 9904 7963

0201

78664
TX-US AUS

44 BSMA

CUSTODY SEAL
DATE: 5-10-
SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

ORIGIN ID:LRDA (915) 433-1761
GARETT FERGUSON
ARCADIS US, INC.
7010 BOB BULLOCK LOOP

LAREDO, TX 78041
UNITED STATES US

SHIP DATE: 10MAY16
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DIMS: 24x13x15 IN

BILL SENDER

JENNIFER BARKER
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF: 04285081.0000.00044
INV:
PO: 04285081.0000.00044 DEPT:

540J163231727F

FedEx Express

WED - 11 MAY 10:30A
PRIORITY OVERNIGHT

2 of 6
MPS# 0263 7762 9904 8157
Mstr# 7762 9904 7963
0201

78664
TX-US AUS

44 BSMA

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

CUSTODY SEAL
DATE
SIGNATURE

ORIGIN ID:LRDA (915) 433-1761
GARETT FERGUSON
ARCADIS US, INC.
7010 BOB BULLOCK LOOP

LAREDO, TX 78041
UNITED STATES US

SHIP DATE: 10MAY16
ACTWGT: 70.00 LB
CAD: 1660358/INET3730
DIMS: 24x13x15 IN

BILL SENDER

JENNIFER BARKER
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF: 04285081.0000.00044
INV:
PO: 04285081.0000.00044 DEPT:

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FedEx Express

WED - 11 MAY 10:30A
PRIORITY OVERNIGHT

6 of 6
MPS# 0263 7762 9904 8260
Mstr# 7762 9904 7963
0201

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TX-US AUS

44 BSMA

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

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ORIGIN ID:LRDA (915) 433-1761
ARCADIS
7010 BOB BULLOCK LOOP
LAREDO, TX 78041
UNITED STATES US

ACTWGT: 70.00 LB
CAD: 006994464/SSFE1203
DIMS: 20x15x13 IN
BILL THIRD PARTY

TO DHL ANALYTICAL
2300 DOUBLE CREEK DR.
ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

REL# 3785346

WED - 11 MAY 10:30A
PRIORITY OVERNIGHT

TRK# 0201 7830 3605 0940

44 BSMA

78664
TX-US AUS

CUSTODY SEAL
DATE 5-11-16
SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

ORIGIN ID:LRDA (915) 433-1761
GARETT FERGUSON
ARCADIS US, INC.
7010 BOB BULLOCK LOOP
LAREDO, TX 78041
UNITED STATES US

SHIP DATE: 10MAY16
ACTWGT: 70.00 LB
CAD: 1660358/INET3730
DIMS: 24x13x15 IN
BILL SENDER

TO JENNIFER BARKER
DHL ANALYTICAL
2300 DOUBLE CREEK DR
ROUND ROCK TX 78664
(512) 388-8222 REF: 04285081.0000.00044
INV:
PO: 04285081.0000.00044 DEPT:

FedEx Express

WED - 11 MAY 10:30A
PRIORITY OVERNIGHT

1 of 6
TRK# 0201 7762 9904 7963
## MASTER ##

44 BSMA

78664
TX-US AUS

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

CUSTODY SEAL
DATE 5-10-16
SIGNATURE

ORIGIN ID:LRDA (915) 433-1761
GARETT FERGUSON
ARCADIS US, INC.
7010 BOB BULLOCK LOOP

LAREDO, TX 78041
UNITED STATES US

SHIP DATE: 10MAY16
ACTWGT: 70.00 LB
CAD: 1660358/INET3730
DIMS: 24x13x15 IN

BILL SENDER

JENNIFER BARKER
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF: 04285081.0000.00044
INV:
PO: 04285081.0000.00044 DEPT:

540J163223/727F

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PRIORITY OVERNIGHT

4 of 6
MPS# 0263 7762 9904 8363
Mstr# 7762 9904 7963
0201

78664
TX-US AUS

44 BSMA

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

CUSTODY SEAL
DATE 5-10-16
SIGNATURE

ORIGIN ID:LRDA (915) 433-1761
GARETT FERGUSON
ARCADIS US, INC.
7010 BOB BULLOCK LOOP

LAREDO, TX 78041
UNITED STATES US

SHIP DATE: 10MAY16
ACTWGT: 70.00 LB
CAD: 1660358/INET3730
DIMS: 24x13x15 IN

BILL SENDER

JENNIFER BARKER
DHL ANALYTICAL
2300 DOUBLE CREEK DR

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INV:
PO: 04285081.0000.00044 DEPT:

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FedEx Express

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PRIORITY OVERNIGHT

3 of 6
MPS# 0263 7762 9904 8065
Mstr# 7762 9904 7963
0201

78664
TX-US AUS

44 BSMA

QEC
Quality Environmental Containers
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CUSTODY SEAL
DATE 5-10-16
SIGNATURE

**DHL Analytical, Inc.**

## Sample Receipt Checklist

Client Name **Arcadis** Date Received: **5/11/2016**

Work Order Number **1605121** Received by **JB**

Checklist completed by: _____ 5/11/2016 Reviewed by _____ 5/11/2016
Signature Date Initials Date

Carrier name FedEx 1day

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shippping container/cooler? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | **2.8** °C |
| Water - VOA vials have zero headspace? | Yes ☐ | No ☐ | No VOA vials submitted ☑ |
| Water - pH<2 acceptable upon receipt? | Yes ☑ | No ☐ | NA ☐ LOT # 8086 |
| | Adjusted? | nre | Checked by |
| Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt? | Yes ☐ | No ☐ | NA ☑ LOT # |
| | Adjusted? _____ | | Checked by |

Any No response must be detailed in the comments section below.

Client contacted Date contacted: Person contacted

Contacted by: Regarding:

Comments: _____

_____

_____

Corrective Action _____

Page 1 of 1

## DHL Analytical, Inc.
## Laboratory Review Checklist: Reportable Data

| | |
|---|---|
| **Project Name:** Laredo SGR | **Date:** 6/2/2016 |
| **Reviewer Name:** Angie O'Donnell | **Laboratory Work Order:** 1605121 |
| **Prep Batch Number(s):** See Prep Dates Report | **Run Batch:** See Analytical Dates Report |

| #[1] | A[2] | Description | Yes | No | NA[3] | NR[4] | ER#[5] |
|---|---|---|---|---|---|---|---|
| | | **Chain-of-Custody (C-O-C)** | | | | | |
| **R1** | OI | **1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt? | **X** | | | | **R1-01** |
| | | **2)** Were all departures from standard conditions described in an exception report? | | **X** | | | |
| **R2** | OI | **Sample and Quality Control (QC) Identification** | | | | | |
| | | **1)** Are all field sample ID numbers cross-referenced to the laboratory ID numbers? | **X** | | | | |
| | | **2)** Are all laboratory ID numbers cross-referenced to the corresponding QC data? | **X** | | | | |
| **R3** | OI | **Test Reports** | | | | | |
| | | **1)** Were all samples prepared and analyzed within holding times? | **X** | | | | |
| | | **2)** Other than those results < MQL, were all other raw values bracketed by calibration standards? | **X** | | | | |
| | | **3)** Were calculations checked by a peer or supervisor? | **X** | | | | |
| | | **4)** Were all analyte identifications checked by a peer or supervisor? | **X** | | | | |
| | | **5)** Were sample detection limits reported for all analytes not detected? | **X** | | | | |
| | | **6)** Were all results for soil and sediment samples reported on a dry weight basis? | **X** | | | | |
| | | **7)** Were % moisture (or solids) reported for all soil and sediment samples? | **X** | | | | |
| | | **8)** Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035? | | | **X** | | |
| | | **9)** If required for the project, TICs reported? | | | **X** | | |
| **R4** | O | **Surrogate Recovery Data** | | | | | |
| | | **1)** Were surrogates added prior to extraction? | **X** | | | | |
| | | **2)** Were surrogate percent recoveries in all samples within the laboratory QC limits? | **X** | | | | |
| **R5** | OI | **Test Reports/Summary Forms for Blank Samples** | | | | | |
| | | **1)** Were appropriate type(s) of blanks analyzed? | **X** | | | | |
| | | **2)** Were blanks analyzed at the appropriate frequency? | **X** | | | | |
| | | **3)** Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures? | **X** | | | | |
| | | **4)** Were blank concentrations < MQL? | **X** | | | | |
| **R6** | OI | **Laboratory Control Samples (LCS):** | | | | | |
| | | **1)** Were all COCs included in the LCS? | **X** | | | | |
| | | **2)** Was each LCS taken through the entire analytical procedure, including prep and cleanup steps? | **X** | | | | |
| | | **3)** Were LCSs analyzed at the required frequency? | **X** | | | | |
| | | **4)** Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits? | **X** | | | | |
| | | **5)** Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs? | **X** | | | | |
| | | **6)** Was the LCSD RPD within QC limits (if applicable)? | **X** | | | | |
| **R7** | OI | **Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data** | | | | | |
| | | **1)** Were the project/method specified analytes included in the MS and MSD? | **X** | | | | |
| | | **2)** Were MS/MSD analyzed at the appropriate frequency? | **X** | | | | |
| | | **3)** Were MS (and MSD, if applicable) %Rs within the laboratory QC limits? | | **X** | | | **R7-03** |
| | | **4)** Were MS/MSD RPDs within laboratory QC limits? | | **X** | | | **R7-04** |
| **R8** | OI | **Analytical Duplicate Data** | | | | | |
| | | **1)** Were appropriate analytical duplicates analyzed for each matrix? | **X** | | | | |
| | | **2)** Were analytical duplicates analyzed at the appropriate frequency? | **X** | | | | |
| | | **3)** Were RPDs or relative standard deviations within the laboratory QC limits? | **X** | | | | |
| **R9** | OI | **Method Quantitation Limits (MQLs):** | | | | | |
| | | **1)** Are the MQLs for each method analyte included in the laboratory data package? | **X** | | | | |
| | | **2)** Do the MQLs correspond to the concentration of the lowest non-zero calibration standard? | **X** | | | | |
| | | **3)** Are unadjusted MQLs and DCSs included in the laboratory data package? | **X** | | | | |
| **R10** | OI | **Other Problems/Anomalies** | | | | | |
| | | **1)** Are all known problems/anomalies/special conditions noted in this LRC and ER? | **X** | | | | **R10-01** |
| | | **2)** Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results? | **X** | | | | |
| | | **3)** Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package? | **X** | | | | |

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

## DHL Analytical, Inc.
## Laboratory Review Checklist (continued): Supporting Data

**Project Name:** Laredo SGR | **Date:** 6/2/2016

**Reviewer Name:** Angie O'Donnell | **Laboratory Work Order:** 1605121

| #[1] | A[2] | Description | Yes | No | NA[3] | NR[4] | ER#[5] |
|---|---|---|---|---|---|---|---|
| **S1** | OI | **Initial Calibration (ICAL)** | | | | | |
| | | **1)** Were response factors and/or relative response factors for each analyte within QC limits? | **X** | | | | |
| | | **2)** Were percent RSDs or correlation coefficient criteria met? | **X** | | | | |
| | | **3)** Was the number of standards recommended in the method used for all analytes? | **X** | | | | |
| | | **4)** Were all points generated between the lowest and highest standard used to calculate the curve? | **X** | | | | |
| | | **5)** Are ICAL data available for all instruments used? | **X** | | | | |
| | | **6)** Has the initial calibration curve been verified using an appropriate second source standard? | **X** | | | | |
| **S2** | OI | **Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):** | | | | | |
| | | **1)** Was the CCV analyzed at the method-required frequency? | **X** | | | | |
| | | **2)** Were percent differences for each analyte within the method-required QC limits? | **X** | | | | |
| | | **3)** Was the ICAL curve verified for each analyte? | **X** | | | | |
| | | **4)** Was the absolute value of the analyte concentration in the inorganic CCB < MDL? | **X** | | | | |
| **S3** | O | **Mass Spectral Tuning:** | | | | | |
| | | **1)** Was the appropriate compound for the method used for tuning? | **X** | | | | |
| | | **2)** Were ion abundance data within the method-required QC limits? | **X** | | | | |
| **S4** | O | **Internal Standards (IS):** | | | | | |
| | | **1)** Were IS area counts and retention times within the method-required QC limits? | **X** | | | | |
| **S5** | OI | **Raw Data (NELAC Section 5.5.10)** | | | | | |
| | | **1)** Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst? | **X** | | | | |
| | | **2)** Were data associated with manual integrations flagged on the raw data? | **X** | | | | |
| **S6** | O | **Dual Column Confirmation** | | | | | |
| | | **1)** Did dual column confirmation results meet the method-required QC? | | | **X** | | |
| **S7** | O | **Tentatively Identified Compounds (TICs):** | | | | | |
| | | **1)** If TICs were requested, were the mass spectra and TIC data subject to appropriate checks? | | | **X** | | |
| **S8** | I | **Interference Check Sample (ICS) Results:** | | | | | |
| | | **1)** Were percent recoveries within method QC limits? | **X** | | | | |
| **S9** | I | **Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions** | | | | | |
| | | **1)** Were percent differences, recoveries, and the linearity within the QC limits specified in the method? | **X** | | | | |
| **S10** | OI | **Method Detection Limit (MDL) Studies** | | | | | |
| | | **1)** Was a MDL study performed for each reported analyte? | **X** | | | | |
| | | **2)** Is the MDL either adjusted or supported by the analysis of DCSs? | **X** | | | | |
| **S11** | OI | **Proficiency Test Reports:** | | | | | |
| | | **1)** Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies? | **X** | | | | |
| **S12** | OI | **Standards Documentation** | | | | | |
| | | **1)** Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources? | **X** | | | | |
| **S13** | OI | **Compound/Analyte Identification Procedures** | | | | | |
| | | **1)** Are the procedures for compound/analyte identification documented? | **X** | | | | |
| **S14** | OI | **Demonstration of Analyst Competency (DOC)** | | | | | |
| | | **1)** Was DOC conducted consistent with NELAC Chapter 5 – Appendix C? | **X** | | | | |
| | | **2)** Is documentation of the analyst's competency up-to-date and on file? | **X** | | | | |
| **S15** | OI | **Verification/Validation Documentation for Methods** (NELAC Chapter 5) | | | | | |
| | | **1)** Are all the methods used to generate the data documented, verified, and validated, where applicable? | **X** | | | | |
| **S16** | OI | **Laboratory Standard Operating Procedures (SOPs):** | | | | | |
| | | **1)** Are laboratory SOPs current and on file for each method performed? | **X** | | | | |

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

# Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

**Release Statement:** I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on June 1-5, 2015. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

John DuPont – General Manager

Scott Schroeder – Technical Director



Signature

06/02/16

Date

**CLIENT:** Arcadis
**Project:** Laredo SGR
**Lab Order:** 1605121

# CASE NARRATIVE

This case narrative describes abnormalities and deviations that may affect the results and summarizes all known issues that need to be highlighted for the data user to assess the results. This case narrative and the report contents are compliant with DoD QSM Ver. 5.0 and NELAC.

The "U" flag indicates the results for that sample are nondetect.

Samples were analyzed using the methods outlined in the following references:

Method SW8270D-LL - PAH Analysis (The compound Benzo[j]fluoranthene is not NELAC or DOD Certified)
Method SW6020A- Metals Analysis

Exception Report R1-01

Samples were received on and log-in performed on 5/11/2016. A total of 47 samples were received and analyzed. The samples arrived in good condition and were properly packaged.

Exception Report R7-03 and R7-04

For Metals Analysis, for water Batch 75180, the recovery of Lead for the Matrix Spike (1605097-27 MS) was below the method control limits. This is flagged accordingly in the QC Summary Report. This analyte was within method control limits in the associated LCS. The client approved of the DHL Analytical action to note this in the case narrative and proceed with analysis. No further corrective action was taken.

For Metals Analysis, for soil Batch 75237, the recovery and RPD of Lead for the Matrix Spike and Matrix Spike Duplicate (1605121-01 MS/MSD) were outside of the method control limits. These are flagged accordingly in the QC Summary Report. This analyte was within method control limits in the associated LCS. The client approved of the DHL Analytical action to note this in the case narrative and proceed with analysis. No further corrective action was taken.

For PAH Analysis, for soil batches 75225 and 75218, the recoveries of up to fourteen compounds for the Matrix Spike and Matrix Spike Duplicate(s) (1605121-22 , -01 MS/MSD) were outside of the method control limits. These were flagged accordingly in the QC Summary Report. The recoveries of these compounds were within method control limits in the associated LCS. The client approved of the DHL Analytical action to note this in the case narrative and proceed with analysis. No further corrective action was taken.

Exception Report R10-01

For PAH Analysis, the samples were diluted due to observed color of extract; dilution meets project specifications.

For PAH Analysis, some samples were analyzed at higher dilution than usual, due to very dark color extract observed.

For all of the surface and subsurface samples in this workorder, DHL Analytical performed an Incremental Sampling Method (ISM) according to an internal SOP, as approved by the client and included in the project QAPP. This workorder consist of the following sample types: sub-surface Samples (DHL WO # 1605074-01 through -45) processed to pass #10 sieve (2mm). Of those subsurface samples twenty-three samples had insufficient sample volume for these samples to perform the sub-sampling procedure as stated in the SOP and the entire sieved sample mass was used for the analysis.

A summary of project communication follows:

The Subcontract Agreement No. D16-003 for Arcadis Project No. 04285081.0000.00043 was sent to DHL Analytical from client and signed on 1/6/2016, the contract for work signed and approved by both parties on 1/12/2016. A Modification No. 01-D16-003 was signed by both parties on 4/21/2016.

The bottlekit was requested from Ana Gutierrez of Arcadis sent via email to John DuPont on 4/21/2016.
The following DHL Bottle Orders:
#6941 sent on 4/28/2016 via Lonestar Overnight Ground to arrive by 5/2/2016
#6942 sent on 5/3/2016 via Lonestar Overnight Ground to arrive by 5/4/2016
#6943 sent on 5/6/2016 via Lonestar Overnight Ground to arrive by 5/9/2016
#6944 sent on 5/10/2016 via Lonestar Overnight Ground to arrive by 5/11/2016.

This sample delivery group arrives at DHL Analytical on and Sample Summary was sent on 5/11/2016. Associated shipping documents are kept in the project folder and/or client folder as part of the Administrative records filed in the QA office.

DHL project manager/qa staff discussed with client the following issues:
email communications 5/13/2016 - from J. DuPont to the Arcadis Kansas Laredo email group regarding request to dilute based on color of extract
email communications 5/27/2016 - from J. DuPont to L. Mott of Arcadis regarding exceedance(s) for various MS/MSDs for PAH analysis and an and recovery of MS/MSD and RPD for Lead exceeded limits. The client accepted the corrective action for the quality exceedances on 5/31/2016.

## DHL Analytical, Inc.

**Date:** *02-Jun-16*

**CLIENT:** Arcadis
**Project:** Laredo SGR
**Lab Order:** 1605121

# Work Order Sample Summary

| Lab Smp ID | Client Sample ID | Tag Number | Date Collected | Date Recved |
|---|---|---|---|---|
| 1605121-01 | SGR-DU050(0-2)-A | | 05/10/16 10:01 AM | 5/11/2016 |
| 1605121-02 | SGR-DU050(2-4)-A | | 05/10/16 10:02 AM | 5/11/2016 |
| 1605121-03 | SGR-DU050(4-6)-A | | 05/10/16 10:05 AM | 5/11/2016 |
| 1605121-04 | SGR-DU050(6-8)-A | | 05/10/16 10:06 AM | 5/11/2016 |
| 1605121-05 | SGR-DU050(8-10)-A | | 05/10/16 10:09 AM | 5/11/2016 |
| 1605121-06 | SGR-DU050(0-2)-B | | 05/10/16 10:13 AM | 5/11/2016 |
| 1605121-07 | SGR-DU050(2-4)-B | | 05/10/16 10:14 AM | 5/11/2016 |
| 1605121-08 | SGR-DU050(4-6)-B | | 05/10/16 10:15 AM | 5/11/2016 |
| 1605121-09 | SGR-DU050(6-8)-B | | 05/10/16 10:16 AM | 5/11/2016 |
| 1605121-10 | SGR-DU050(8-10)-B | | 05/10/16 10:17 AM | 5/11/2016 |
| 1605121-11 | SGR-DU050(0-2)-C | | 05/10/16 10:24 AM | 5/11/2016 |
| 1605121-12 | SGR-DU050(2-4)-C | | 05/10/16 10:25 AM | 5/11/2016 |
| 1605121-13 | SGR-DU050(4-6)-C | | 05/10/16 10:26 AM | 5/11/2016 |
| 1605121-14 | SGR-DU050(6-8)-C | | 05/10/16 10:27 AM | 5/11/2016 |
| 1605121-15 | SGR-DU050(8-10)-C | | 05/10/16 10:28 AM | 5/11/2016 |
| 1605121-16 | SGR-DU074(0-2)-A | | 05/10/16 12:00 PM | 5/11/2016 |
| 1605121-17 | SGR-DU074(2-4)-A | | 05/10/16 12:01 PM | 5/11/2016 |
| 1605121-18 | SGR-DU074(4-6)-A | | 05/10/16 12:02 PM | 5/11/2016 |
| 1605121-19 | SGR-DU074(6-8)-A | | 05/10/16 12:04 PM | 5/11/2016 |
| 1605121-20 | SGR-DU074(8-10)-A | | 05/10/16 12:05 PM | 5/11/2016 |
| 1605121-21 | SGR-DU074(0-2)-B | | 05/10/16 12:08 PM | 5/11/2016 |
| 1605121-22 | SGR-DU074(2-4)-B | | 05/10/16 12:09 PM | 5/11/2016 |
| 1605121-23 | SGR-DU074(4-6)-B | | 05/10/16 12:10 PM | 5/11/2016 |
| 1605121-24 | SGR-DU074(6-8)-B | | 05/10/16 12:11 PM | 5/11/2016 |
| 1605121-25 | SGR-DU074(8-10)-B | | 05/10/16 12:12 PM | 5/11/2016 |
| 1605121-26 | SGR-DU074(0-2)-C | | 05/10/16 12:14 PM | 5/11/2016 |
| 1605121-27 | SGR-DU074(2-4)-C | | 05/10/16 12:15 PM | 5/11/2016 |
| 1605121-28 | SGR-DU074(4-6)-C | | 05/10/16 12:17 PM | 5/11/2016 |
| 1605121-29 | SGR-DU074(6-8)-C | | 05/10/16 12:18 PM | 5/11/2016 |
| 1605121-30 | SGR-DU074(8-10)-C | | 05/10/16 12:19 PM | 5/11/2016 |
| 1605121-31 | SGR-DU046(0-2)-A | | 05/10/16 02:28 PM | 5/11/2016 |
| 1605121-32 | SGR-DU046(2-4)-A | | 05/10/16 02:29 PM | 5/11/2016 |
| 1605121-33 | SGR-DU046(4-6)-A | | 05/10/16 02:30 PM | 5/11/2016 |
| 1605121-34 | SGR-DU046(6-8)-A | | 05/10/16 02:31 PM | 5/11/2016 |
| 1605121-35 | SGR-DU046(8-10)-A | | 05/10/16 02:32 PM | 5/11/2016 |
| 1605121-36 | SGR-DU046(0-2)-B | | 05/10/16 02:55 PM | 5/11/2016 |
| 1605121-37 | SGR-DU046(2-4)-B | | 05/10/16 02:56 PM | 5/11/2016 |
| 1605121-38 | SGR-DU046(4-6)-B | | 05/10/16 02:57 PM | 5/11/2016 |
| 1605121-39 | SGR-DU046(6-8)-B | | 05/10/16 02:58 PM | 5/11/2016 |
| 1605121-40 | SGR-DU046(8-10)-B | | 05/10/16 03:00 PM | 5/11/2016 |
| 1605121-41 | SGR-DU046(0-2)-C | | 05/10/16 03:02 PM | 5/11/2016 |
| 1605121-42 | SGR-DU046(2-4)-C | | 05/10/16 03:03 PM | 5/11/2016 |

**CLIENT:** Arcadis
**Project:** Laredo SGR
**Lab Order:** 1605121

# Work Order Sample Summary

| Lab Smp ID | Client Sample ID | Tag Number | Date Collected | Date Recved |
|---|---|---|---|---|
| 1605121-43 | SGR-DU046(4-6)-C | | 05/10/16 03:04 PM | 5/11/2016 |
| 1605121-44 | SGR-DU046(6-8)-C | | 05/10/16 03:05 PM | 5/11/2016 |
| 1605121-45 | SGR-DU046(8-10)-C | | 05/10/16 03:06 PM | 5/11/2016 |
| 1605121-46 | EB15(20160510) | | 05/10/16 08:30 AM | 5/11/2016 |
| 1605121-47 | EB16(20160510) | | 05/10/16 04:00 PM | 5/11/2016 |

**Lab Order:** 1605121
**Client:** Arcadis
**Project:** Laredo SGR

# PREP DATES REPORT

| Sample ID | Client Sample ID | Collection Date | Matrix | Test Number | Test Name | Prep Date | Batch ID |
|---|---|---|---|---|---|---|---|
| 1605121-01A | SGR-DU050(0-2)-A | 05/10/16 10:01 AM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 08:50 AM | 75218 |
| | SGR-DU050(0-2)-A | 05/10/16 10:01 AM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 08:50 AM | 75218 |
| | SGR-DU050(0-2)-A | 05/10/16 10:01 AM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| | SGR-DU050(0-2)-A | 05/10/16 10:01 AM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| 1605121-02A | SGR-DU050(2-4)-A | 05/10/16 10:02 AM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 08:50 AM | 75218 |
| | SGR-DU050(2-4)-A | 05/10/16 10:02 AM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| 1605121-03A | SGR-DU050(4-6)-A | 05/10/16 10:05 AM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 08:50 AM | 75218 |
| | SGR-DU050(4-6)-A | 05/10/16 10:05 AM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| 1605121-04A | SGR-DU050(6-8)-A | 05/10/16 10:06 AM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 08:50 AM | 75218 |
| | SGR-DU050(6-8)-A | 05/10/16 10:06 AM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| 1605121-05A | SGR-DU050(8-10)-A | 05/10/16 10:09 AM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 08:50 AM | 75218 |
| | SGR-DU050(8-10)-A | 05/10/16 10:09 AM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| 1605121-06A | SGR-DU050(0-2)-B | 05/10/16 10:13 AM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 08:50 AM | 75218 |
| | SGR-DU050(0-2)-B | 05/10/16 10:13 AM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| 1605121-07A | SGR-DU050(2-4)-B | 05/10/16 10:14 AM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 08:50 AM | 75218 |
| | SGR-DU050(2-4)-B | 05/10/16 10:14 AM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| 1605121-08A | SGR-DU050(4-6)-B | 05/10/16 10:15 AM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 08:50 AM | 75218 |
| | SGR-DU050(4-6)-B | 05/10/16 10:15 AM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| 1605121-09A | SGR-DU050(6-8)-B | 05/10/16 10:16 AM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 08:50 AM | 75218 |
| | SGR-DU050(6-8)-B | 05/10/16 10:16 AM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| 1605121-10A | SGR-DU050(8-10)-B | 05/10/16 10:17 AM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 08:50 AM | 75218 |
| | SGR-DU050(8-10)-B | 05/10/16 10:17 AM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| 1605121-11A | SGR-DU050(0-2)-C | 05/10/16 10:24 AM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 08:50 AM | 75218 |
| | SGR-DU050(0-2)-C | 05/10/16 10:24 AM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| 1605121-12A | SGR-DU050(2-4)-C | 05/10/16 10:25 AM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 08:50 AM | 75218 |
| | SGR-DU050(2-4)-C | 05/10/16 10:25 AM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| 1605121-13A | SGR-DU050(4-6)-C | 05/10/16 10:26 AM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 08:50 AM | 75218 |
| | SGR-DU050(4-6)-C | 05/10/16 10:26 AM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |

**Lab Order:** 1605121
**Client:** Arcadis
**Project:** Laredo SGR

# PREP DATES REPORT

| Sample ID | Client Sample ID | Collection Date | Matrix | Test Number | Test Name | Prep Date | Batch ID |
|---|---|---|---|---|---|---|---|
| 1605121-14A | SGR-DU050(6-8)-C | 05/10/16 10:27 AM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 08:50 AM | 75218 |
| | SGR-DU050(6-8)-C | 05/10/16 10:27 AM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| 1605121-15A | SGR-DU050(8-10)-C | 05/10/16 10:28 AM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU050(8-10)-C | 05/10/16 10:28 AM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| 1605121-16A | SGR-DU074(0-2)-A | 05/10/16 12:00 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU074(0-2)-A | 05/10/16 12:00 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| 1605121-17A | SGR-DU074(2-4)-A | 05/10/16 12:01 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU074(2-4)-A | 05/10/16 12:01 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:13 AM | 75237 |
| 1605121-18A | SGR-DU074(4-6)-A | 05/10/16 12:02 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU074(4-6)-A | 05/10/16 12:02 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-19A | SGR-DU074(6-8)-A | 05/10/16 12:04 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU074(6-8)-A | 05/10/16 12:04 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-20A | SGR-DU074(8-10)-A | 05/10/16 12:05 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU074(8-10)-A | 05/10/16 12:05 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-21A | SGR-DU074(0-2)-B | 05/10/16 12:08 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU074(0-2)-B | 05/10/16 12:08 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-22A | SGR-DU074(2-4)-B | 05/10/16 12:09 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU074(2-4)-B | 05/10/16 12:09 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-23A | SGR-DU074(4-6)-B | 05/10/16 12:10 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU074(4-6)-B | 05/10/16 12:10 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-24A | SGR-DU074(6-8)-B | 05/10/16 12:11 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU074(6-8)-B | 05/10/16 12:11 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-25A | SGR-DU074(8-10)-B | 05/10/16 12:12 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU074(8-10)-B | 05/10/16 12:12 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-26A | SGR-DU074(0-2)-C | 05/10/16 12:14 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU074(0-2)-C | 05/10/16 12:14 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-27A | SGR-DU074(2-4)-C | 05/10/16 12:15 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU074(2-4)-C | 05/10/16 12:15 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |

**Lab Order:** 1605121
**Client:** Arcadis
**Project:** Laredo SGR

# PREP DATES REPORT

| Sample ID | Client Sample ID | Collection Date | Matrix | Test Number | Test Name | Prep Date | Batch ID |
|---|---|---|---|---|---|---|---|
| 1605121-28A | SGR-DU074(4-6)-C | 05/10/16 12:17 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU074(4-6)-C | 05/10/16 12:17 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-29A | SGR-DU074(6-8)-C | 05/10/16 12:18 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU074(6-8)-C | 05/10/16 12:18 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-30A | SGR-DU074(8-10)-C | 05/10/16 12:19 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU074(8-10)-C | 05/10/16 12:19 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-31A | SGR-DU046(0-2)-A | 05/10/16 02:28 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU046(0-2)-A | 05/10/16 02:28 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-32A | SGR-DU046(2-4)-A | 05/10/16 02:29 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU046(2-4)-A | 05/10/16 02:29 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-33A | SGR-DU046(4-6)-A | 05/10/16 02:30 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU046(4-6)-A | 05/10/16 02:30 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-34A | SGR-DU046(6-8)-A | 05/10/16 02:31 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/18/16 01:25 PM | 75225 |
| | SGR-DU046(6-8)-A | 05/10/16 02:31 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-35A | SGR-DU046(8-10)-A | 05/10/16 02:32 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/19/16 08:40 AM | 75227 |
| | SGR-DU046(8-10)-A | 05/10/16 02:32 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-36A | SGR-DU046(0-2)-B | 05/10/16 02:55 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/19/16 08:40 AM | 75227 |
| | SGR-DU046(0-2)-B | 05/10/16 02:55 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-37A | SGR-DU046(2-4)-B | 05/10/16 02:56 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/19/16 08:40 AM | 75227 |
| | SGR-DU046(2-4)-B | 05/10/16 02:56 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/19/16 10:36 AM | 75238 |
| 1605121-38A | SGR-DU046(4-6)-B | 05/10/16 02:57 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/19/16 08:40 AM | 75227 |
| | SGR-DU046(4-6)-B | 05/10/16 02:57 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/20/16 09:40 AM | 75258 |
| 1605121-39A | SGR-DU046(6-8)-B | 05/10/16 02:58 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/19/16 08:40 AM | 75227 |
| | SGR-DU046(6-8)-B | 05/10/16 02:58 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/20/16 09:40 AM | 75258 |
| 1605121-40A | SGR-DU046(8-10)-B | 05/10/16 03:00 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/19/16 08:40 AM | 75227 |
| | SGR-DU046(8-10)-B | 05/10/16 03:00 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/20/16 09:40 AM | 75258 |
| 1605121-41A | SGR-DU046(0-2)-C | 05/10/16 03:02 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/19/16 08:40 AM | 75227 |
| | SGR-DU046(0-2)-C | 05/10/16 03:02 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/20/16 09:40 AM | 75258 |

**Lab Order:** 1605121
**Client:** Arcadis
**Project:** Laredo SGR

# PREP DATES REPORT

| Sample ID | Client Sample ID | Collection Date | Matrix | Test Number | Test Name | Prep Date | Batch ID |
|---|---|---|---|---|---|---|---|
| 1605121-42A | SGR-DU046(2-4)-C | 05/10/16 03:03 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/19/16 08:40 AM | 75227 |
| | SGR-DU046(2-4)-C | 05/10/16 03:03 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/20/16 09:40 AM | 75258 |
| 1605121-43A | SGR-DU046(4-6)-C | 05/10/16 03:04 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/19/16 08:40 AM | 75227 |
| | SGR-DU046(4-6)-C | 05/10/16 03:04 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/20/16 09:40 AM | 75258 |
| 1605121-44A | SGR-DU046(6-8)-C | 05/10/16 03:05 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/19/16 08:40 AM | 75227 |
| | SGR-DU046(6-8)-C | 05/10/16 03:05 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/20/16 09:40 AM | 75258 |
| 1605121-45A | SGR-DU046(8-10)-C | 05/10/16 03:06 PM | Soil | SW3550C | Soil Prep Sonication: PAH | 05/19/16 08:40 AM | 75227 |
| | SGR-DU046(8-10)-C | 05/10/16 03:06 PM | Soil | SW3050B | Soil Prep Total Metals: ICP-MS | 05/20/16 09:40 AM | 75258 |
| 1605121-46A | EB15(20160510) | 05/10/16 08:30 AM | Equip Blank | SW3005A | Aq Prep Metals : ICP-MS | 05/19/16 08:30 AM | 75180 |
| 1605121-46B | EB15(20160510) | 05/10/16 08:30 AM | Equip Blank | SW3510C | Aq Prep Sep Funnel: PAH | 05/13/16 08:48 AM | 75146 |
| 1605121-47A | EB16(20160510) | 05/10/16 04:00 PM | Equip Blank | SW3005A | Aq Prep Metals : ICP-MS | 05/19/16 08:30 AM | 75180 |
| 1605121-47B | EB16(20160510) | 05/10/16 04:00 PM | Equip Blank | SW3510C | Aq Prep Sep Funnel: PAH | 05/13/16 08:48 AM | 75146 |

**Lab Order:** 1605121
**Client:** Arcadis
**Project:** Laredo SGR

# ISM PREP DATES REPORT

| Sample ID | Client Sample ID | Collection Date | Matrix | Test Number | Test Name | Prep Date | Batch ID |
|---|---|---|---|---|---|---|---|
| 1605121-01A | SGR-DU050(0-2)-A | 5/10/2016 10:01:00 AM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-02A | SGR-DU050(2-4)-A | 5/10/2016 10:02:00 AM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-03A | SGR-DU050(4-6)-A | 5/10/2016 10:05:00 AM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-04A | SGR-DU050(6-8)-A | 5/10/2016 10:06:00 AM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-05A | SGR-DU050(8-10)-A | 5/10/2016 10:09:00 AM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-06A | SGR-DU050(0-2)-B | 5/10/2016 10:13:00 AM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-07A | SGR-DU050(2-4)-B | 5/10/2016 10:14:00 AM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-08A | SGR-DU050(4-6)-B | 5/10/2016 10:15:00 AM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-09A | SGR-DU050(6-8)-B | 5/10/2016 10:16:00 AM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-10A | SGR-DU050(8-10)-B | 5/10/2016 10:17:00 AM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-11A | SGR-DU050(0-2)-C | 5/10/2016 10:24:00 AM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-12A | SGR-DU050(2-4)-C | 5/10/2016 10:25:00 AM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-13A | SGR-DU050(4-6)-C | 5/10/2016 10:26:00 AM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-14A | SGR-DU050(6-8)-C | 5/10/2016 10:27:00 AM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-15A | SGR-DU050(8-10)-C | 5/10/2016 10:28:00 AM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-16A | SGR-DU074(0-2)-A | 5/10/2016 12:00:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-17A | SGR-DU074(2-4)-A | 5/10/2016 12:01:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-18A | SGR-DU074(4-6)-A | 5/10/2016 12:02:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-19A | SGR-DU074(6-8)-A | 5/10/2016 12:04:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-20A | SGR-DU074(8-10)-A | 5/10/2016 12:05:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 1:00:00 PM | 75155 |
| 1605121-21A | SGR-DU074(0-2)-B | 5/10/2016 12:08:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-22A | SGR-DU074(2-4)-B | 5/10/2016 12:09:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-23A | SGR-DU074(4-6)-B | 5/10/2016 12:10:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-24A | SGR-DU074(6-8)-B | 5/10/2016 12:11:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-25A | SGR-DU074(8-10)-B | 5/10/2016 12:12:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-26A | SGR-DU074(0-2)-C | 5/10/2016 12:14:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-27A | SGR-DU074(2-4)-C | 5/10/2016 12:15:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-28A | SGR-DU074(4-6)-C | 5/10/2016 12:17:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |

**Lab Order:** 1605121
**Client:** Arcadis
**Project:** Laredo SGR

# ISM PREP DATES REPORT

| Sample ID | Client Sample ID | Collection Date | Matrix | Test Number | Test Name | Prep Date | Batch ID |
|---|---|---|---|---|---|---|---|
| 1605121-29A | SGR-DU074(6-8)-C | 5/10/2016 12:18:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-30A | SGR-DU074(8-10)-C | 5/10/2016 12:19:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-31A | SGR-DU046(0-2)-A | 5/10/2016 2:28:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-32A | SGR-DU046(2-4)-A | 5/10/2016 2:29:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-33A | SGR-DU046(4-6)-A | 5/10/2016 2:30:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-34A | SGR-DU046(6-8)-A | 5/10/2016 2:31:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-35A | SGR-DU046(8-10)-A | 5/10/2016 2:32:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-36A | SGR-DU046(0-2)-B | 5/10/2016 2:55:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-37A | SGR-DU046(2-4)-B | 5/10/2016 2:56:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-38A | SGR-DU046(4-6)-B | 5/10/2016 2:57:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-39A | SGR-DU046(6-8)-B | 5/10/2016 2:58:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-40A | SGR-DU046(8-10)-B | 5/10/2016 3:00:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/13/2016 3:00:00 PM | 75159 |
| 1605121-41A | SGR-DU046(0-2)-C | 5/10/2016 3:02:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/16/2016 3:40:00 PM | 75188 |
| 1605121-42A | SGR-DU046(2-4)-C | 5/10/2016 3:03:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/16/2016 3:40:00 PM | 75188 |
| 1605121-43A | SGR-DU046(4-6)-C | 5/10/2016 3:04:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/16/2016 3:40:00 PM | 75188 |
| 1605121-44A | SGR-DU046(6-8)-C | 5/10/2016 3:05:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/16/2016 3:40:00 PM | 75188 |
| 1605121-45A | SGR-DU046(8-10)-C | 5/10/2016 3:06:00 PM | Soil | ISM-2 | Incremental Sample Prep 2mm Sieve | 5/16/2016 3:40:00 PM | 75188 |

**Lab Order:** 1605121
**Client:** Arcadis
**Project:** Laredo SGR

# ANALYTICAL DATES REPORT

| Sample ID | Client Sample ID | Matrix | Test Number | Test Name | Batch ID | Dilution | Analysis Date | Run ID |
|---|---|---|---|---|---|---|---|---|
| 1605121-01A | SGR-DU050(0-2)-A | Soil | SW8270D-LL | PAHs: GC/MS | 75218 | 50 | 05/20/16 11:05 AM | GCMS8_160519B |
| | SGR-DU050(0-2)-A | Soil | SW8270D-LL | PAHs: GC/MS | 75218 | 10 | 05/19/16 10:58 PM | GCMS8_160519B |
| | SGR-DU050(0-2)-A | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 05:08 PM | ICP-MS4_160523F |
| | SGR-DU050(0-2)-A | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/24/16 12:33 PM | ICP-MS4_160524B |
| 1605121-02A | SGR-DU050(2-4)-A | Soil | SW8270D-LL | PAHs: GC/MS | 75218 | 10 | 05/19/16 06:39 PM | GCMS8_160519B |
| | SGR-DU050(2-4)-A | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 05:18 PM | ICP-MS4_160523F |
| 1605121-03A | SGR-DU050(4-6)-A | Soil | SW8270D-LL | PAHs: GC/MS | 75218 | 10 | 05/19/16 07:16 PM | GCMS8_160519B |
| | SGR-DU050(4-6)-A | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 05:20 PM | ICP-MS4_160523F |
| 1605121-04A | SGR-DU050(6-8)-A | Soil | SW8270D-LL | PAHs: GC/MS | 75218 | 10 | 05/19/16 07:54 PM | GCMS8_160519B |
| | SGR-DU050(6-8)-A | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 05:22 PM | ICP-MS4_160523F |
| 1605121-05A | SGR-DU050(8-10)-A | Soil | SW8270D-LL | PAHs: GC/MS | 75218 | 10 | 05/19/16 08:31 PM | GCMS8_160519B |
| | SGR-DU050(8-10)-A | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 05:24 PM | ICP-MS4_160523F |
| 1605121-06A | SGR-DU050(0-2)-B | Soil | SW8270D-LL | PAHs: GC/MS | 75218 | 10 | 05/20/16 06:22 AM | GCMS8_160519B |
| | SGR-DU050(0-2)-B | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 05:26 PM | ICP-MS4_160523F |
| 1605121-07A | SGR-DU050(2-4)-B | Soil | SW8270D-LL | PAHs: GC/MS | 75218 | 10 | 05/20/16 05:07 AM | GCMS8_160519B |
| | SGR-DU050(2-4)-B | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 05:28 PM | ICP-MS4_160523F |
| 1605121-08A | SGR-DU050(4-6)-B | Soil | SW8270D-LL | PAHs: GC/MS | 75218 | 10 | 05/19/16 09:08 PM | GCMS8_160519B |
| | SGR-DU050(4-6)-B | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 05:44 PM | ICP-MS4_160523F |
| 1605121-09A | SGR-DU050(6-8)-B | Soil | SW8270D-LL | PAHs: GC/MS | 75218 | 10 | 05/19/16 09:44 PM | GCMS8_160519B |
| | SGR-DU050(6-8)-B | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 05:46 PM | ICP-MS4_160523F |
| 1605121-10A | SGR-DU050(8-10)-B | Soil | SW8270D-LL | PAHs: GC/MS | 75218 | 10 | 05/19/16 10:21 PM | GCMS8_160519B |
| | SGR-DU050(8-10)-B | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 05:48 PM | ICP-MS4_160523F |
| 1605121-11A | SGR-DU050(0-2)-C | Soil | SW8270D-LL | PAHs: GC/MS | 75218 | 10 | 05/20/16 05:45 AM | GCMS8_160519B |
| | SGR-DU050(0-2)-C | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 05:50 PM | ICP-MS4_160523F |
| 1605121-12A | SGR-DU050(2-4)-C | Soil | SW8270D-LL | PAHs: GC/MS | 75218 | 10 | 05/20/16 03:16 AM | GCMS8_160519B |
| | SGR-DU050(2-4)-C | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 05:52 PM | ICP-MS4_160523F |
| 1605121-13A | SGR-DU050(4-6)-C | Soil | SW8270D-LL | PAHs: GC/MS | 75218 | 10 | 05/20/16 03:53 AM | GCMS8_160519B |
| | SGR-DU050(4-6)-C | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 05:54 PM | ICP-MS4_160523F |

**Lab Order:** 1605121
**Client:** Arcadis
**Project:** Laredo SGR

# ANALYTICAL DATES REPORT

| Sample ID | Client Sample ID | Matrix | Test Number | Test Name | Batch ID | Dilution | Analysis Date | Run ID |
|---|---|---|---|---|---|---|---|---|
| 1605121-14A | SGR-DU050(6-8)-C | Soil | SW8270D-LL | PAHs: GC/MS | 75218 | 10 | 05/20/16 04:30 AM | GCMS8_160519B |
| | SGR-DU050(6-8)-C | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 05:56 PM | ICP-MS4_160523F |
| 1605121-15A | SGR-DU050(8-10)-C | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 10 | 05/23/16 03:40 PM | GCMS6_160523A |
| | SGR-DU050(8-10)-C | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 05:58 PM | ICP-MS4_160523F |
| 1605121-16A | SGR-DU074(0-2)-A | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 20 | 05/24/16 02:53 AM | GCMS6_160523A |
| | SGR-DU074(0-2)-A | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 06:00 PM | ICP-MS4_160523F |
| 1605121-17A | SGR-DU074(2-4)-A | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 20 | 05/23/16 09:40 PM | GCMS6_160523A |
| | SGR-DU074(2-4)-A | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75237 | 5 | 05/23/16 06:02 PM | ICP-MS4_160523F |
| 1605121-18A | SGR-DU074(4-6)-A | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 20 | 05/24/16 03:33 AM | GCMS6_160523A |
| | SGR-DU074(4-6)-A | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 05:37 PM | ICP-MS4_160525D |
| 1605121-19A | SGR-DU074(6-8)-A | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 20 | 05/23/16 10:20 PM | GCMS6_160523A |
| | SGR-DU074(6-8)-A | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 05:39 PM | ICP-MS4_160525D |
| 1605121-20A | SGR-DU074(8-10)-A | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 20 | 05/24/16 04:13 AM | GCMS6_160523A |
| | SGR-DU074(8-10)-A | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 05:41 PM | ICP-MS4_160525D |
| 1605121-21A | SGR-DU074(0-2)-B | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 20 | 05/24/16 04:53 AM | GCMS6_160523A |
| | SGR-DU074(0-2)-B | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 05:43 PM | ICP-MS4_160525D |
| 1605121-22A | SGR-DU074(2-4)-B | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 10 | 05/23/16 07:00 PM | GCMS6_160523A |
| | SGR-DU074(2-4)-B | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 05:33 PM | ICP-MS4_160525D |
| 1605121-23A | SGR-DU074(4-6)-B | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 20 | 05/24/16 05:34 AM | GCMS6_160523A |
| | SGR-DU074(4-6)-B | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 05:45 PM | ICP-MS4_160525D |
| 1605121-24A | SGR-DU074(6-8)-B | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 20 | 05/24/16 06:14 AM | GCMS6_160523A |
| | SGR-DU074(6-8)-B | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 05:47 PM | ICP-MS4_160525D |
| 1605121-25A | SGR-DU074(8-10)-B | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 20 | 05/24/16 06:54 AM | GCMS6_160523A |
| | SGR-DU074(8-10)-B | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 05:49 PM | ICP-MS4_160525D |
| 1605121-26A | SGR-DU074(0-2)-C | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 20 | 05/24/16 07:33 AM | GCMS6_160523A |
| | SGR-DU074(0-2)-C | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 05:51 PM | ICP-MS4_160525D |
| 1605121-27A | SGR-DU074(2-4)-C | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 20 | 05/24/16 08:13 AM | GCMS6_160523A |
| | SGR-DU074(2-4)-C | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 05:53 PM | ICP-MS4_160525D |

**Lab Order:** 1605121
**Client:** Arcadis
**Project:** Laredo SGR

# ANALYTICAL DATES REPORT

| Sample ID | Client Sample ID | Matrix | Test Number | Test Name | Batch ID | Dilution | Analysis Date | Run ID |
|---|---|---|---|---|---|---|---|---|
| 1605121-28A | SGR-DU074(4-6)-C | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 50 | 05/23/16 07:40 PM | GCMS6_160523A |
| | SGR-DU074(4-6)-C | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 06:09 PM | ICP-MS4_160525D |
| 1605121-29A | SGR-DU074(6-8)-C | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 20 | 05/23/16 09:00 PM | GCMS6_160523A |
| | SGR-DU074(6-8)-C | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 06:11 PM | ICP-MS4_160525D |
| 1605121-30A | SGR-DU074(8-10)-C | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 50 | 05/23/16 08:20 PM | GCMS6_160523A |
| | SGR-DU074(8-10)-C | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 06:13 PM | ICP-MS4_160525D |
| 1605121-31A | SGR-DU046(0-2)-A | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 10 | 05/23/16 04:21 PM | GCMS6_160523A |
| | SGR-DU046(0-2)-A | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 06:15 PM | ICP-MS4_160525D |
| 1605121-32A | SGR-DU046(2-4)-A | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 10 | 05/23/16 05:01 PM | GCMS6_160523A |
| | SGR-DU046(2-4)-A | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 06:17 PM | ICP-MS4_160525D |
| 1605121-33A | SGR-DU046(4-6)-A | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 10 | 05/23/16 05:40 PM | GCMS6_160523A |
| | SGR-DU046(4-6)-A | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 06:19 PM | ICP-MS4_160525D |
| 1605121-34A | SGR-DU046(6-8)-A | Soil | SW8270D-LL | PAHs: GC/MS | 75225 | 10 | 05/23/16 06:20 PM | GCMS6_160523A |
| | SGR-DU046(6-8)-A | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 06:21 PM | ICP-MS4_160525D |
| 1605121-35A | SGR-DU046(8-10)-A | Soil | SW8270D-LL | PAHs: GC/MS | 75227 | 10 | 05/24/16 11:41 AM | GCMS8_160524A |
| | SGR-DU046(8-10)-A | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 06:23 PM | ICP-MS4_160525D |
| 1605121-36A | SGR-DU046(0-2)-B | Soil | SW8270D-LL | PAHs: GC/MS | 75227 | 10 | 05/24/16 12:18 PM | GCMS8_160524A |
| | SGR-DU046(0-2)-B | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 06:25 PM | ICP-MS4_160525D |
| 1605121-37A | SGR-DU046(2-4)-B | Soil | SW8270D-LL | PAHs: GC/MS | 75227 | 10 | 05/24/16 12:56 PM | GCMS8_160524A |
| | SGR-DU046(2-4)-B | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75238 | 5 | 05/25/16 06:27 PM | ICP-MS4_160525D |
| 1605121-38A | SGR-DU046(4-6)-B | Soil | SW8270D-LL | PAHs: GC/MS | 75227 | 10 | 05/24/16 01:32 PM | GCMS8_160524A |
| | SGR-DU046(4-6)-B | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75258 | 5 | 05/26/16 01:54 PM | ICP-MS3_160526A |
| 1605121-39A | SGR-DU046(6-8)-B | Soil | SW8270D-LL | PAHs: GC/MS | 75227 | 10 | 05/24/16 02:10 PM | GCMS8_160524A |
| | SGR-DU046(6-8)-B | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75258 | 5 | 05/26/16 02:00 PM | ICP-MS3_160526A |
| 1605121-40A | SGR-DU046(8-10)-B | Soil | SW8270D-LL | PAHs: GC/MS | 75227 | 10 | 05/24/16 02:46 PM | GCMS8_160524A |
| | SGR-DU046(8-10)-B | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75258 | 5 | 05/26/16 02:06 PM | ICP-MS3_160526A |
| 1605121-41A | SGR-DU046(0-2)-C | Soil | SW8270D-LL | PAHs: GC/MS | 75227 | 10 | 05/24/16 03:24 PM | GCMS8_160524A |
| | SGR-DU046(0-2)-C | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75258 | 5 | 05/26/16 02:12 PM | ICP-MS3_160526A |

**Lab Order:** 1605121
**Client:** Arcadis
**Project:** Laredo SGR

# ANALYTICAL DATES REPORT

| Sample ID | Client Sample ID | Matrix | Test Number | Test Name | Batch ID | Dilution | Analysis Date | Run ID |
|---|---|---|---|---|---|---|---|---|
| 1605121-42A | SGR-DU046(2-4)-C | Soil | SW8270D-LL | PAHs: GC/MS | 75227 | 10 | 05/24/16 04:01 PM | GCMS8_160524A |
| | SGR-DU046(2-4)-C | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75258 | 5 | 05/26/16 02:17 PM | ICP-MS3_160526A |
| 1605121-43A | SGR-DU046(4-6)-C | Soil | SW8270D-LL | PAHs: GC/MS | 75227 | 10 | 05/24/16 04:38 PM | GCMS8_160524A |
| | SGR-DU046(4-6)-C | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75258 | 5 | 05/26/16 01:42 PM | ICP-MS3_160526A |
| 1605121-44A | SGR-DU046(6-8)-C | Soil | SW8270D-LL | PAHs: GC/MS | 75227 | 10 | 05/24/16 05:16 PM | GCMS8_160524A |
| | SGR-DU046(6-8)-C | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75258 | 5 | 05/26/16 02:23 PM | ICP-MS3_160526A |
| 1605121-45A | SGR-DU046(8-10)-C | Soil | SW8270D-LL | PAHs: GC/MS | 75227 | 10 | 05/24/16 05:54 PM | GCMS8_160524A |
| | SGR-DU046(8-10)-C | Soil | SW6020A | Trace Metals: ICP-MS - Solid | 75258 | 5 | 05/26/16 02:29 PM | ICP-MS3_160526A |
| 1605121-46A | EB15(20160510) | Equip Blank | SW6020A | Trace Metals: ICP-MS - Water | 75180 | 1 | 05/20/16 02:16 PM | ICP-MS4_160520C |
| 1605121-46B | EB15(20160510) | Equip Blank | SW8270D-LL | PAHs: GC/MS | 75146 | 1 | 05/18/16 11:17 PM | GCMS8_160518B |
| 1605121-47A | EB16(20160510) | Equip Blank | SW6020A | Trace Metals: ICP-MS - Water | 75180 | 1 | 05/20/16 02:18 PM | ICP-MS4_160520C |
| 1605121-47B | EB16(20160510) | Equip Blank | SW8270D-LL | PAHs: GC/MS | 75146 | 1 | 05/18/16 11:54 PM | GCMS8_160518B |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(0-2)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-01 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:01 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 131 | 0.0909 | 0.273 | 0.136 | | mg/Kg-dry | 5 | 05/23/16 05:08 PM |
| IS: Bismuth | 96.0 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:08 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 1.45 | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Acenaphthylene | 0.0710 | 0.0473 | 0.0947 | 0.0710 | U | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Anthracene | 4.28 | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Benzo[a]anthracene | 35.5 | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Benzo[a]pyrene | 45.2 | 0.237 | 0.473 | 0.355 | | mg/Kg-dry | 50 | 05/20/16 11:05 AM |
| Benzo[b]fluoranthene | 42.2 | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Benzo[e]pyrene | 32.8 | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Benzo[g,h,i]perylene | 33.7 | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Benzo[j]fluoranthene | 21.4 | 0.0473 | 0.0947 | 0.0710 | N | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Benzo[k]fluoranthene | 21.2 | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Chrysene | 44.0 | 0.237 | 0.473 | 0.355 | | mg/Kg-dry | 50 | 05/20/16 11:05 AM |
| Dibenz[a,h]anthracene | 7.57 | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Fluoranthene | 58.2 | 0.237 | 0.473 | 0.355 | | mg/Kg-dry | 50 | 05/20/16 11:05 AM |
| Fluorene | 0.701 | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Indeno[1,2,3-cd]pyrene | 28.5 | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Phenanthrene | 20.2 | 0.0473 | 0.0947 | 0.0710 | | mg/Kg-dry | 10 | 05/19/16 10:58 PM |
| Pyrene | 52.7 | 0.237 | 0.473 | 0.355 | | mg/Kg-dry | 50 | 05/20/16 11:05 AM |
| IS: Acenaphthene-d10 | 98.0 | 0 | 50-200 | 0 | | %REC | 50 | 05/20/16 11:05 AM |
| IS: Acenaphthene-d10 | 96.8 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:58 PM |
| IS: Chrysene-d12 | 88.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:58 PM |
| IS: Chrysene-d12 | 83.6 | 0 | 50-200 | 0 | | %REC | 50 | 05/20/16 11:05 AM |
| IS: Naphthalene-d8 | 95.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:58 PM |
| IS: Naphthalene-d8 | 92.5 | 0 | 50-200 | 0 | | %REC | 50 | 05/20/16 11:05 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(0-2)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-01 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:01 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| IS: Perylene-d12 | 86.3 | 0 | 50-200 | 0 | | %REC | 50 | 05/20/16 11:05 AM |
| IS: Perylene-d12 | 94.2 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:58 PM |
| IS: Phenanthrene-d10 | 84.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:58 PM |
| IS: Phenanthrene-d10 | 78.9 | 0 | 50-200 | 0 | | %REC | 50 | 05/20/16 11:05 AM |
| Surr: 2-Fluorobiphenyl | 83.1 | 0 | 46-115 | 0 | | %REC | 10 | 05/19/16 10:58 PM |
| Surr: 2-Fluorobiphenyl | 93.2 | 0 | 46-115 | 0 | | %REC | 50 | 05/20/16 11:05 AM |
| Surr: 4-Terphenyl-d14 | 87.1 | 0 | 58-133 | 0 | | %REC | 50 | 05/20/16 11:05 AM |
| Surr: 4-Terphenyl-d14 | 81.7 | 0 | 58-133 | 0 | | %REC | 10 | 05/19/16 10:58 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(2-4)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-02 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:02 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 8.46 | 0.0833 | 0.250 | 0.125 | | mg/Kg-dry | 5 | 05/23/16 05:18 PM |
| IS: Bismuth | 98.1 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:18 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0789 | 0.0464 | 0.0929 | 0.0696 | J | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Acenaphthylene | 0.0696 | 0.0464 | 0.0929 | 0.0696 | U | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Anthracene | 0.273 | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Benzo[a]anthracene | 1.28 | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Benzo[a]pyrene | 1.46 | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Benzo[b]fluoranthene | 1.26 | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Benzo[e]pyrene | 0.991 | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Benzo[g,h,i]perylene | 0.979 | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Benzo[j]fluoranthene | 0.690 | 0.0464 | 0.0929 | 0.0696 | N | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Benzo[k]fluoranthene | 0.680 | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Chrysene | 1.59 | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Dibenz[a,h]anthracene | 0.198 | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Fluoranthene | 2.67 | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Fluorene | 0.0696 | 0.0464 | 0.0929 | 0.0696 | U | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Indeno[1,2,3-cd]pyrene | 0.836 | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Phenanthrene | 1.30 | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| Pyrene | 2.40 | 0.0464 | 0.0929 | 0.0696 | | mg/Kg-dry | 10 | 05/19/16 06:39 PM |
| IS: Acenaphthene-d10 | 105 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 06:39 PM |
| IS: Chrysene-d12 | 91.0 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 06:39 PM |
| IS: Naphthalene-d8 | 98.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 06:39 PM |
| IS: Perylene-d12 | 92.7 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 06:39 PM |
| IS: Phenanthrene-d10 | 87.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 06:39 PM |
| Surr: 2-Fluorobiphenyl | 84.2 | 0 | 46-115 | 0 | | %REC | 10 | 05/19/16 06:39 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(2-4)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-02 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:02 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 80.6 | 0 | 58-133 | 0 | | %REC | 10 | 05/19/16 06:39 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(4-6)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-03 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:05 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 3.39 | 0.0935 | 0.280 | 0.140 | | mg/Kg-dry | 5 | 05/23/16 05:20 PM |
| IS: Bismuth | 98.1 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:20 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Acenaphthylene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Anthracene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Benzo[a]anthracene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Benzo[a]pyrene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Benzo[b]fluoranthene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Benzo[e]pyrene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Benzo[g,h,i]perylene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Benzo[j]fluoranthene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | NU | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Benzo[k]fluoranthene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Chrysene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Dibenz[a,h]anthracene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Fluoranthene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Fluorene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Indeno[1,2,3-cd]pyrene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Phenanthrene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| Pyrene | 0.0718 | 0.0478 | 0.0957 | 0.0718 | U | mg/Kg-dry | 10 | 05/19/16 07:16 PM |
| IS: Acenaphthene-d10 | 104 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:16 PM |
| IS: Chrysene-d12 | 88.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:16 PM |
| IS: Naphthalene-d8 | 97.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:16 PM |
| IS: Perylene-d12 | 90.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:16 PM |
| IS: Phenanthrene-d10 | 86.0 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:16 PM |
| Surr: 2-Fluorobiphenyl | 90.9 | 0 | 46-115 | 0 | | %REC | 10 | 05/19/16 07:16 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(4-6)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-03 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:05 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 84.4 | 0 | 58-133 | 0 | | %REC | 10 | 05/19/16 07:16 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(6-8)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-04 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:06 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 4.55 | 0.0893 | 0.268 | 0.134 | | mg/Kg-dry | 5 | 05/23/16 05:22 PM |
| IS: Bismuth | 99.6 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:22 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Acenaphthylene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Anthracene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Benzo[a]anthracene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Benzo[a]pyrene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Benzo[b]fluoranthene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Benzo[e]pyrene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Benzo[g,h,i]perylene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Benzo[j]fluoranthene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | NU | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Benzo[k]fluoranthene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Chrysene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Dibenz[a,h]anthracene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Fluoranthene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Fluorene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Indeno[1,2,3-cd]pyrene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Phenanthrene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| Pyrene | 0.0731 | 0.0487 | 0.0975 | 0.0731 | U | mg/Kg-dry | 10 | 05/19/16 07:54 PM |
| IS: Acenaphthene-d10 | 107 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:54 PM |
| IS: Chrysene-d12 | 92.1 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:54 PM |
| IS: Naphthalene-d8 | 99.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:54 PM |
| IS: Perylene-d12 | 93.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:54 PM |
| IS: Phenanthrene-d10 | 86.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 07:54 PM |
| Surr: 2-Fluorobiphenyl | 88.1 | 0 | 46-115 | 0 | | %REC | 10 | 05/19/16 07:54 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(6-8)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-04 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:06 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 82.7 | 0 | 58-133 | 0 | | %REC | 10 | 05/19/16 07:54 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(8-10)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-05 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:09 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 7.28 | 0.0943 | 0.283 | 0.142 | | mg/Kg-dry | 5 | 05/23/16 05:24 PM |
| IS: Bismuth | 101 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:24 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Acenaphthylene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Anthracene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Benzo[a]anthracene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Benzo[a]pyrene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Benzo[b]fluoranthene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Benzo[e]pyrene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Benzo[g,h,i]perylene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Benzo[j]fluoranthene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | NU | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Benzo[k]fluoranthene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Chrysene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Dibenz[a,h]anthracene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Fluoranthene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Fluorene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Indeno[1,2,3-cd]pyrene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Phenanthrene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| Pyrene | 0.0749 | 0.0499 | 0.0998 | 0.0749 | U | mg/Kg-dry | 10 | 05/19/16 08:31 PM |
| IS: Acenaphthene-d10 | 107 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 08:31 PM |
| IS: Chrysene-d12 | 88.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 08:31 PM |
| IS: Naphthalene-d8 | 98.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 08:31 PM |
| IS: Perylene-d12 | 91.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 08:31 PM |
| IS: Phenanthrene-d10 | 85.7 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 08:31 PM |
| Surr: 2-Fluorobiphenyl | 85.2 | 0 | 46-115 | 0 | | %REC | 10 | 05/19/16 08:31 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(8-10)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-05 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:09 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 78.1 | 0 | 58-133 | 0 | | %REC | 10 | 05/19/16 08:31 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(0-2)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-06 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:13 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 144 | 0.0926 | 0.278 | 0.139 | | mg/Kg-dry | 5 | 05/23/16 05:26 PM |
| IS: Bismuth | 98.1 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:26 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 1.26 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Acenaphthylene | 0.0740 | 0.0494 | 0.0987 | 0.0740 | U | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Anthracene | 3.75 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Benzo[a]anthracene | 27.3 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Benzo[a]pyrene | 34.2 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Benzo[b]fluoranthene | 32.1 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Benzo[e]pyrene | 24.8 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Benzo[g,h,i]perylene | 25.2 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Benzo[j]fluoranthene | 16.1 | 0.0494 | 0.0987 | 0.0740 | N | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Benzo[k]fluoranthene | 16.2 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Chrysene | 34.8 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Dibenz[a,h]anthracene | 5.53 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Fluoranthene | 48.9 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Fluorene | 0.569 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Indeno[1,2,3-cd]pyrene | 21.2 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Phenanthrene | 18.0 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| Pyrene | 43.4 | 0.0494 | 0.0987 | 0.0740 | | mg/Kg-dry | 10 | 05/20/16 06:22 AM |
| IS: Acenaphthene-d10 | 92.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 06:22 AM |
| IS: Chrysene-d12 | 86.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 06:22 AM |
| IS: Naphthalene-d8 | 93.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 06:22 AM |
| IS: Perylene-d12 | 90.1 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 06:22 AM |
| IS: Phenanthrene-d10 | 77.8 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 06:22 AM |
| Surr: 2-Fluorobiphenyl | 85.0 | 0 | 46-115 | 0 | | %REC | 10 | 05/20/16 06:22 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(0-2)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-06 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:13 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 79.5 | 0 | 58-133 | 0 | | %REC | 10 | 05/20/16 06:22 AM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(2-4)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-07 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:14 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 13.1 | 0.0926 | 0.278 | 0.139 | | mg/Kg-dry | 5 | 05/23/16 05:28 PM |
| IS: Bismuth | 93.6 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:28 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.300 | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Acenaphthylene | 0.0691 | 0.0460 | 0.0921 | 0.0691 | U | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Anthracene | 1.43 | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Benzo[a]anthracene | 6.37 | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Benzo[a]pyrene | 7.04 | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Benzo[b]fluoranthene | 6.59 | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Benzo[e]pyrene | 4.95 | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Benzo[g,h,i]perylene | 4.72 | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Benzo[j]fluoranthene | 3.30 | 0.0460 | 0.0921 | 0.0691 | N | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Benzo[k]fluoranthene | 3.28 | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Chrysene | 7.63 | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Dibenz[a,h]anthracene | 1.08 | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Fluoranthene | 13.0 | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Fluorene | 0.265 | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Indeno[1,2,3-cd]pyrene | 4.02 | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Phenanthrene | 6.03 | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| Pyrene | 11.0 | 0.0460 | 0.0921 | 0.0691 | | mg/Kg-dry | 10 | 05/20/16 05:07 AM |
| IS: Acenaphthene-d10 | 98.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:07 AM |
| IS: Chrysene-d12 | 87.7 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:07 AM |
| IS: Naphthalene-d8 | 96.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:07 AM |
| IS: Perylene-d12 | 91.1 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:07 AM |
| IS: Phenanthrene-d10 | 79.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:07 AM |
| Surr: 2-Fluorobiphenyl | 84.3 | 0 | 46-115 | 0 | | %REC | 10 | 05/20/16 05:07 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(2-4)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-07 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:14 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 76.5 | 0 | 58-133 | 0 | | %REC | 10 | 05/20/16 05:07 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(4-6)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-08 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:15 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 3.59 | 0.0893 | 0.268 | 0.134 | | mg/Kg-dry | 5 | 05/23/16 05:44 PM |
| IS: Bismuth | 100 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:44 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Acenaphthylene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Anthracene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Benzo[a]anthracene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Benzo[a]pyrene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Benzo[b]fluoranthene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Benzo[e]pyrene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Benzo[g,h,i]perylene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Benzo[j]fluoranthene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | NU | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Benzo[k]fluoranthene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Chrysene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Dibenz[a,h]anthracene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Fluoranthene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Fluorene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Indeno[1,2,3-cd]pyrene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Phenanthrene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| Pyrene | 0.0727 | 0.0484 | 0.0969 | 0.0727 | U | mg/Kg-dry | 10 | 05/19/16 09:08 PM |
| IS: Acenaphthene-d10 | 105 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:08 PM |
| IS: Chrysene-d12 | 91.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:08 PM |
| IS: Naphthalene-d8 | 99.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:08 PM |
| IS: Perylene-d12 | 94.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:08 PM |
| IS: Phenanthrene-d10 | 85.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:08 PM |
| Surr: 2-Fluorobiphenyl | 85.1 | 0 | 46-115 | 0 | | %REC | 10 | 05/19/16 09:08 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(4-6)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-08 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:15 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 78.0 | 0 | 58-133 | 0 | | %REC | 10 | 05/19/16 09:08 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(6-8)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-09 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:16 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 4.99 | 0.0901 | 0.270 | 0.135 | | mg/Kg-dry | 5 | 05/23/16 05:46 PM |
| IS: Bismuth | 98.8 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:46 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Acenaphthylene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Anthracene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Benzo[a]anthracene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Benzo[a]pyrene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Benzo[b]fluoranthene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Benzo[e]pyrene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Benzo[g,h,i]perylene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Benzo[j]fluoranthene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | NU | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Benzo[k]fluoranthene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Chrysene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Dibenz[a,h]anthracene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Fluoranthene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Fluorene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Indeno[1,2,3-cd]pyrene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Phenanthrene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| Pyrene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/19/16 09:44 PM |
| IS: Acenaphthene-d10 | 99.8 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:44 PM |
| IS: Chrysene-d12 | 84.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:44 PM |
| IS: Naphthalene-d8 | 94.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:44 PM |
| IS: Perylene-d12 | 88.2 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:44 PM |
| IS: Phenanthrene-d10 | 81.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 09:44 PM |
| Surr: 2-Fluorobiphenyl | 87.1 | 0 | 46-115 | 0 | | %REC | 10 | 05/19/16 09:44 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(6-8)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-09 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:16 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 79.3 | 0 | 58-133 | 0 | | %REC | 10 | 05/19/16 09:44 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(8-10)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-10 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:17 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 6.25 | 0.0870 | 0.261 | 0.130 | | mg/Kg-dry | 5 | 05/23/16 05:48 PM |
| IS: Bismuth | 98.5 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:48 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Acenaphthylene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Anthracene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Benzo[a]anthracene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Benzo[a]pyrene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Benzo[b]fluoranthene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Benzo[e]pyrene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Benzo[g,h,i]perylene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Benzo[j]fluoranthene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | NU | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Benzo[k]fluoranthene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Chrysene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Dibenz[a,h]anthracene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Fluoranthene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Fluorene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Indeno[1,2,3-cd]pyrene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Phenanthrene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| Pyrene | 0.0737 | 0.0492 | 0.0983 | 0.0737 | U | mg/Kg-dry | 10 | 05/19/16 10:21 PM |
| IS: Acenaphthene-d10 | 107 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:21 PM |
| IS: Chrysene-d12 | 90.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:21 PM |
| IS: Naphthalene-d8 | 99.0 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:21 PM |
| IS: Perylene-d12 | 92.2 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:21 PM |
| IS: Phenanthrene-d10 | 86.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/19/16 10:21 PM |
| Surr: 2-Fluorobiphenyl | 86.0 | 0 | 46-115 | 0 | | %REC | 10 | 05/19/16 10:21 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(8-10)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-10 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:17 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 75.2 | 0 | 58-133 | 0 | | %REC | 10 | 05/19/16 10:21 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(0-2)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-11 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:24 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 63.1 | 0.0862 | 0.259 | 0.129 | | mg/Kg-dry | 5 | 05/23/16 05:50 PM |
| IS: Bismuth | 95.9 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:50 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.424 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Acenaphthylene | 0.0749 | 0.0500 | 0.0999 | 0.0749 | U | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Anthracene | 1.66 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Benzo[a]anthracene | 10.8 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Benzo[a]pyrene | 12.5 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Benzo[b]fluoranthene | 11.9 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Benzo[e]pyrene | 9.04 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Benzo[g,h,i]perylene | 9.00 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Benzo[j]fluoranthene | 5.99 | 0.0500 | 0.0999 | 0.0749 | N | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Benzo[k]fluoranthene | 5.90 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Chrysene | 13.3 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Dibenz[a,h]anthracene | 1.98 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Fluoranthene | 20.4 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Fluorene | 0.183 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Indeno[1,2,3-cd]pyrene | 7.68 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Phenanthrene | 8.42 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| Pyrene | 17.7 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/20/16 05:45 AM |
| IS: Acenaphthene-d10 | 91.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:45 AM |
| IS: Chrysene-d12 | 81.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:45 AM |
| IS: Naphthalene-d8 | 88.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:45 AM |
| IS: Perylene-d12 | 85.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:45 AM |
| IS: Phenanthrene-d10 | 77.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 05:45 AM |
| Surr: 2-Fluorobiphenyl | 84.7 | 0 | 46-115 | 0 | | %REC | 10 | 05/20/16 05:45 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(0-2)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-11 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:24 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 79.2 | 0 | 58-133 | 0 | | %REC | 10 | 05/20/16 05:45 AM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(2-4)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-12 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:25 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 7.71 | 0.0943 | 0.283 | 0.142 | | mg/Kg-dry | 5 | 05/23/16 05:52 PM |
| IS: Bismuth | 95.5 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:52 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Acenaphthylene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Anthracene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Benzo[a]anthracene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Benzo[a]pyrene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Benzo[b]fluoranthene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Benzo[e]pyrene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Benzo[g,h,i]perylene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Benzo[j]fluoranthene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | NU | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Benzo[k]fluoranthene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Chrysene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Dibenz[a,h]anthracene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Fluoranthene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Fluorene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Indeno[1,2,3-cd]pyrene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Phenanthrene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| Pyrene | 0.0721 | 0.0481 | 0.0962 | 0.0721 | U | mg/Kg-dry | 10 | 05/20/16 03:16 AM |
| IS: Acenaphthene-d10 | 97.0 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:16 AM |
| IS: Chrysene-d12 | 82.1 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:16 AM |
| IS: Naphthalene-d8 | 93.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:16 AM |
| IS: Perylene-d12 | 84.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:16 AM |
| IS: Phenanthrene-d10 | 76.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:16 AM |
| Surr: 2-Fluorobiphenyl | 86.9 | 0 | 46-115 | 0 | | %REC | 10 | 05/20/16 03:16 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(2-4)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-12 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:25 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 79.0 | 0 | 58-133 | 0 | | %REC | 10 | 05/20/16 03:16 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(4-6)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-13 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:26 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 2.87 | 0.0943 | 0.283 | 0.142 | | mg/Kg-dry | 5 | 05/23/16 05:54 PM |
| IS: Bismuth | 97.1 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:54 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Acenaphthylene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Anthracene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Benzo[a]anthracene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Benzo[a]pyrene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Benzo[b]fluoranthene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Benzo[e]pyrene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Benzo[g,h,i]perylene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Benzo[j]fluoranthene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | NU | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Benzo[k]fluoranthene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Chrysene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Dibenz[a,h]anthracene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Fluoranthene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Fluorene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Indeno[1,2,3-cd]pyrene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Phenanthrene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| Pyrene | 0.0745 | 0.0497 | 0.0993 | 0.0745 | U | mg/Kg-dry | 10 | 05/20/16 03:53 AM |
| IS: Acenaphthene-d10 | 98.7 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:53 AM |
| IS: Chrysene-d12 | 85.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:53 AM |
| IS: Naphthalene-d8 | 95.2 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:53 AM |
| IS: Perylene-d12 | 87.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:53 AM |
| IS: Phenanthrene-d10 | 77.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 03:53 AM |
| Surr: 2-Fluorobiphenyl | 88.5 | 0 | 46-115 | 0 | | %REC | 10 | 05/20/16 03:53 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(4-6)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-13 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:26 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 76.7 | 0 | 58-133 | 0 | | %REC | 10 | 05/20/16 03:53 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(6-8)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-14 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:27 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 3.87 | 0.0847 | 0.254 | 0.127 | | mg/Kg-dry | 5 | 05/23/16 05:56 PM |
| IS: Bismuth | 95.7 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:56 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Acenaphthylene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Anthracene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Benzo[a]anthracene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Benzo[a]pyrene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Benzo[b]fluoranthene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Benzo[e]pyrene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Benzo[g,h,i]perylene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Benzo[j]fluoranthene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | NU | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Benzo[k]fluoranthene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Chrysene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Dibenz[a,h]anthracene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Fluoranthene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Fluorene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Indeno[1,2,3-cd]pyrene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Phenanthrene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| Pyrene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/20/16 04:30 AM |
| IS: Acenaphthene-d10 | 101 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 04:30 AM |
| IS: Chrysene-d12 | 84.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 04:30 AM |
| IS: Naphthalene-d8 | 96.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 04:30 AM |
| IS: Perylene-d12 | 87.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 04:30 AM |
| IS: Phenanthrene-d10 | 78.8 | 0 | 50-200 | 0 | | %REC | 10 | 05/20/16 04:30 AM |
| Surr: 2-Fluorobiphenyl | 86.8 | 0 | 46-115 | 0 | | %REC | 10 | 05/20/16 04:30 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(6-8)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-14 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:27 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 79.2 | 0 | 58-133 | 0 | | %REC | 10 | 05/20/16 04:30 AM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(8-10)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-15 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:28 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 6.33 | 0.0847 | 0.254 | 0.127 | | mg/Kg-dry | 5 | 05/23/16 05:58 PM |
| IS: Bismuth | 95.6 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 05:58 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Acenaphthylene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Anthracene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Benzo[a]anthracene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Benzo[a]pyrene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Benzo[b]fluoranthene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Benzo[e]pyrene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Benzo[g,h,i]perylene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Benzo[j]fluoranthene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | NU | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Benzo[k]fluoranthene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Chrysene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Dibenz[a,h]anthracene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Fluoranthene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Fluorene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Indeno[1,2,3-cd]pyrene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Phenanthrene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| Pyrene | 0.0706 | 0.0471 | 0.0942 | 0.0706 | U | mg/Kg-dry | 10 | 05/23/16 03:40 PM |
| IS: Acenaphthene-d10 | 76.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 03:40 PM |
| IS: Chrysene-d12 | 77.7 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 03:40 PM |
| IS: Naphthalene-d8 | 91.7 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 03:40 PM |
| IS: Perylene-d12 | 75.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 03:40 PM |
| IS: Phenanthrene-d10 | 72.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 03:40 PM |
| Surr: 2-Fluorobiphenyl | 82.0 | 0 | 46-115 | 0 | | %REC | 10 | 05/23/16 03:40 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU050(8-10)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-15 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 10:28 AM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 74.4 | 0 | 58-133 | 0 | | %REC | 10 | 05/23/16 03:40 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(0-2)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-16 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:00 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 205 | 0.0870 | 0.261 | 0.130 | | mg/Kg-dry | 5 | 05/23/16 06:00 PM |
| IS: Bismuth | 98.5 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 06:00 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 1.72 | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Acenaphthylene | 0.148 | 0.0988 | 0.198 | 0.148 | U | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Anthracene | 7.12 | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Benzo[a]anthracene | 47.3 | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Benzo[a]pyrene | 55.1 | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Benzo[b]fluoranthene | 50.7 | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Benzo[e]pyrene | 39.9 | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Benzo[g,h,i]perylene | 36.7 | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Benzo[j]fluoranthene | 27.4 | 0.0988 | 0.198 | 0.148 | N | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Benzo[k]fluoranthene | 26.3 | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Chrysene | 53.0 | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Dibenz[a,h]anthracene | 8.64 | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Fluoranthene | 78.6 | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Fluorene | 1.10 | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Indeno[1,2,3-cd]pyrene | 30.6 | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Phenanthrene | 31.9 | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| Pyrene | 66.4 | 0.0988 | 0.198 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 02:53 AM |
| IS: Acenaphthene-d10 | 83.3 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 02:53 AM |
| IS: Chrysene-d12 | 77.7 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 02:53 AM |
| IS: Naphthalene-d8 | 99.0 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 02:53 AM |
| IS: Perylene-d12 | 76.6 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 02:53 AM |
| IS: Phenanthrene-d10 | 75.8 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 02:53 AM |
| Surr: 2-Fluorobiphenyl | 76.1 | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 02:53 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(0-2)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-16 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:00 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 69.2 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 02:53 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(2-4)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-17 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:01 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 26.1 | 0.0909 | 0.273 | 0.136 | | mg/Kg-dry | 5 | 05/23/16 06:02 PM |
| IS: Bismuth | 98.6 | 0 | 30-120 | 0 | | %REC | 5 | 05/23/16 06:02 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.407 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Acenaphthylene | 0.144 | 0.0958 | 0.192 | 0.144 | U | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Anthracene | 1.56 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Benzo[a]anthracene | 10.3 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Benzo[a]pyrene | 12.4 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Benzo[b]fluoranthene | 11.2 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Benzo[e]pyrene | 8.88 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Benzo[g,h,i]perylene | 7.71 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Benzo[j]fluoranthene | 6.08 | 0.0958 | 0.192 | 0.144 | N | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Benzo[k]fluoranthene | 5.91 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Chrysene | 11.5 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Dibenz[a,h]anthracene | 1.78 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Fluoranthene | 17.8 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Fluorene | 0.250 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Indeno[1,2,3-cd]pyrene | 6.49 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Phenanthrene | 6.76 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| Pyrene | 15.2 | 0.0958 | 0.192 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 09:40 PM |
| IS: Acenaphthene-d10 | 79.5 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:40 PM |
| IS: Chrysene-d12 | 76.6 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:40 PM |
| IS: Naphthalene-d8 | 94.3 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:40 PM |
| IS: Perylene-d12 | 75.7 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:40 PM |
| IS: Phenanthrene-d10 | 73.0 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:40 PM |
| Surr: 2-Fluorobiphenyl | 81.2 | 0 | 46-115 | 0 | | %REC | 20 | 05/23/16 09:40 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(2-4)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-17 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:01 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 71.4 | 0 | 58-133 | 0 | | %REC | 20 | 05/23/16 09:40 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(4-6)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-18 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:02 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 67.1 | 0.0971 | 0.291 | 0.146 | | mg/Kg-dry | 5 | 05/25/16 05:37 PM |
| IS: Bismuth | 96.3 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:37 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 1.74 | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Acenaphthylene | 0.138 | 0.0917 | 0.183 | 0.138 | U | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Anthracene | 6.12 | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Benzo[a]anthracene | 41.6 | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Benzo[a]pyrene | 48.7 | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Benzo[b]fluoranthene | 44.2 | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Benzo[e]pyrene | 35.0 | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Benzo[g,h,i]perylene | 33.0 | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Benzo[j]fluoranthene | 24.0 | 0.0917 | 0.183 | 0.138 | N | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Benzo[k]fluoranthene | 23.0 | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Chrysene | 47.0 | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Dibenz[a,h]anthracene | 7.65 | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Fluoranthene | 66.4 | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Fluorene | 1.12 | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Indeno[1,2,3-cd]pyrene | 26.9 | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Phenanthrene | 26.0 | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| Pyrene | 57.0 | 0.0917 | 0.183 | 0.138 | | mg/Kg-dry | 20 | 05/24/16 03:33 AM |
| IS: Acenaphthene-d10 | 82.5 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 03:33 AM |
| IS: Chrysene-d12 | 77.7 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 03:33 AM |
| IS: Naphthalene-d8 | 98.1 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 03:33 AM |
| IS: Perylene-d12 | 77.1 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 03:33 AM |
| IS: Phenanthrene-d10 | 75.8 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 03:33 AM |
| Surr: 2-Fluorobiphenyl | 69.4 | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 03:33 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(4-6)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-18 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:02 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 62.9 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 03:33 AM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(6-8)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-19 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:04 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 20.1 | 0.0943 | 0.283 | 0.142 | | mg/Kg-dry | 5 | 05/25/16 05:39 PM |
| IS: Bismuth | 93.1 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:39 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.222 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Acenaphthylene | 0.144 | 0.0957 | 0.191 | 0.144 | U | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Anthracene | 0.817 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Benzo[a]anthracene | 5.45 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Benzo[a]pyrene | 6.69 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Benzo[b]fluoranthene | 5.89 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Benzo[e]pyrene | 4.79 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Benzo[g,h,i]perylene | 4.16 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Benzo[j]fluoranthene | 3.21 | 0.0957 | 0.191 | 0.144 | N | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Benzo[k]fluoranthene | 3.13 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Chrysene | 6.08 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Dibenz[a,h]anthracene | 0.967 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Fluoranthene | 9.35 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Fluorene | 0.154 | 0.0957 | 0.191 | 0.144 | J | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Indeno[1,2,3-cd]pyrene | 3.52 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Phenanthrene | 3.48 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| Pyrene | 7.97 | 0.0957 | 0.191 | 0.144 | | mg/Kg-dry | 20 | 05/23/16 10:20 PM |
| IS: Acenaphthene-d10 | 81.1 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 10:20 PM |
| IS: Chrysene-d12 | 81.1 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 10:20 PM |
| IS: Naphthalene-d8 | 94.7 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 10:20 PM |
| IS: Perylene-d12 | 81.9 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 10:20 PM |
| IS: Phenanthrene-d10 | 75.7 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 10:20 PM |
| Surr: 2-Fluorobiphenyl | 70.6 | 0 | 46-115 | 0 | | %REC | 20 | 05/23/16 10:20 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(6-8)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-19 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:04 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 65.0 | 0 | 58-133 | 0 | | %REC | 20 | 05/23/16 10:20 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(8-10)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-20 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:05 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 48.3 | 0.0962 | 0.288 | 0.144 | | mg/Kg-dry | 5 | 05/25/16 05:41 PM |
| IS: Bismuth | 96.6 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:41 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 1.44 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Acenaphthylene | 0.149 | 0.0992 | 0.198 | 0.149 | U | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Anthracene | 5.06 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Benzo[a]anthracene | 34.1 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Benzo[a]pyrene | 40.6 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Benzo[b]fluoranthene | 36.7 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Benzo[e]pyrene | 29.4 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Benzo[g,h,i]perylene | 27.0 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Benzo[j]fluoranthene | 19.8 | 0.0992 | 0.198 | 0.149 | N | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Benzo[k]fluoranthene | 19.6 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Chrysene | 38.5 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Dibenz[a,h]anthracene | 6.34 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Fluoranthene | 54.8 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Fluorene | 0.895 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Indeno[1,2,3-cd]pyrene | 22.5 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Phenanthrene | 21.6 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| Pyrene | 46.4 | 0.0992 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:13 AM |
| IS: Acenaphthene-d10 | 81.3 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:13 AM |
| IS: Chrysene-d12 | 77.2 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:13 AM |
| IS: Naphthalene-d8 | 101 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:13 AM |
| IS: Perylene-d12 | 76.4 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:13 AM |
| IS: Phenanthrene-d10 | 76.1 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:13 AM |
| Surr: 2-Fluorobiphenyl | 72.2 | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 04:13 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(8-10)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-20 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:05 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 65.5 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 04:13 AM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(0-2)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-21 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:08 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 202 | 0.0962 | 0.288 | 0.144 | | mg/Kg-dry | 5 | 05/25/16 05:43 PM |
| IS: Bismuth | 95.8 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:43 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 1.30 | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Acenaphthylene | 0.149 | 0.0991 | 0.198 | 0.149 | U | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Anthracene | 4.92 | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Benzo[a]anthracene | 33.0 | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Benzo[a]pyrene | 38.1 | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Benzo[b]fluoranthene | 34.8 | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Benzo[e]pyrene | 27.5 | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Benzo[g,h,i]perylene | 25.0 | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Benzo[j]fluoranthene | 19.2 | 0.0991 | 0.198 | 0.149 | N | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Benzo[k]fluoranthene | 18.9 | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Chrysene | 37.5 | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Dibenz[a,h]anthracene | 6.02 | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Fluoranthene | 54.8 | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Fluorene | 0.763 | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Indeno[1,2,3-cd]pyrene | 21.1 | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Phenanthrene | 21.8 | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| Pyrene | 46.5 | 0.0991 | 0.198 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 04:53 AM |
| IS: Acenaphthene-d10 | 76.7 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:53 AM |
| IS: Chrysene-d12 | 71.5 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:53 AM |
| IS: Naphthalene-d8 | 95.2 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:53 AM |
| IS: Perylene-d12 | 70.5 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:53 AM |
| IS: Phenanthrene-d10 | 69.8 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 04:53 AM |
| Surr: 2-Fluorobiphenyl | 77.3 | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 04:53 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(0-2)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-21 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:08 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 68.8 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 04:53 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(2-4)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-22 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:09 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 17.3 | 0.0909 | 0.273 | 0.136 | | mg/Kg-dry | 5 | 05/25/16 05:33 PM |
| IS: Bismuth | 95.4 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:33 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.205 | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Acenaphthylene | 0.0712 | 0.0475 | 0.0950 | 0.0712 | U | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Anthracene | 0.656 | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Benzo[a]anthracene | 4.62 | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Benzo[a]pyrene | 5.78 | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Benzo[b]fluoranthene | 5.27 | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Benzo[e]pyrene | 4.19 | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Benzo[g,h,i]perylene | 3.73 | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Benzo[j]fluoranthene | 2.82 | 0.0475 | 0.0950 | 0.0712 | N | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Benzo[k]fluoranthene | 2.71 | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Chrysene | 5.26 | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Dibenz[a,h]anthracene | 0.816 | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Fluoranthene | 7.73 | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Fluorene | 0.130 | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Indeno[1,2,3-cd]pyrene | 3.03 | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Phenanthrene | 2.92 | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| Pyrene | 6.65 | 0.0475 | 0.0950 | 0.0712 | | mg/Kg-dry | 10 | 05/23/16 07:00 PM |
| IS: Acenaphthene-d10 | 78.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 07:00 PM |
| IS: Chrysene-d12 | 78.8 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 07:00 PM |
| IS: Naphthalene-d8 | 92.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 07:00 PM |
| IS: Perylene-d12 | 78.2 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 07:00 PM |
| IS: Phenanthrene-d10 | 75.2 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 07:00 PM |
| Surr: 2-Fluorobiphenyl | 78.7 | 0 | 46-115 | 0 | | %REC | 10 | 05/23/16 07:00 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(2-4)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-22 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:09 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 69.7 | 0 | 58-133 | 0 | | %REC | 10 | 05/23/16 07:00 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(4-6)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-23 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:10 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 116 | 0.0980 | 0.294 | 0.147 | | mg/Kg-dry | 5 | 05/25/16 05:45 PM |
| IS: Bismuth | 97.0 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:45 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 2.18 | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Acenaphthylene | 0.148 | 0.0986 | 0.197 | 0.148 | U | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Anthracene | 7.99 | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Benzo[a]anthracene | 52.5 | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Benzo[a]pyrene | 61.7 | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Benzo[b]fluoranthene | 56.9 | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Benzo[e]pyrene | 44.5 | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Benzo[g,h,i]perylene | 42.4 | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Benzo[j]fluoranthene | 30.7 | 0.0986 | 0.197 | 0.148 | N | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Benzo[k]fluoranthene | 29.1 | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Chrysene | 59.0 | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Dibenz[a,h]anthracene | 9.81 | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Fluoranthene | 85.3 | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Fluorene | 1.36 | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Indeno[1,2,3-cd]pyrene | 34.5 | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Phenanthrene | 34.2 | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| Pyrene | 72.6 | 0.0986 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 05:34 AM |
| IS: Acenaphthene-d10 | 80.7 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 05:34 AM |
| IS: Chrysene-d12 | 74.8 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 05:34 AM |
| IS: Naphthalene-d8 | 104 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 05:34 AM |
| IS: Perylene-d12 | 73.3 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 05:34 AM |
| IS: Phenanthrene-d10 | 74.9 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 05:34 AM |
| Surr: 2-Fluorobiphenyl | 77.9 | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 05:34 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(4-6)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-23 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:10 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 68.7 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 05:34 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(6-8)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-24 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:11 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 19.8 | 0.0980 | 0.294 | 0.147 | | mg/Kg-dry | 5 | 05/25/16 05:47 PM |
| IS: Bismuth | 96.3 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:47 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.512 | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Acenaphthylene | 0.139 | 0.0929 | 0.186 | 0.139 | U | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Anthracene | 1.42 | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Benzo[a]anthracene | 12.3 | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Benzo[a]pyrene | 15.9 | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Benzo[b]fluoranthene | 14.4 | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Benzo[e]pyrene | 11.6 | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Benzo[g,h,i]perylene | 10.6 | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Benzo[j]fluoranthene | 7.84 | 0.0929 | 0.186 | 0.139 | N | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Benzo[k]fluoranthene | 7.56 | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Chrysene | 14.4 | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Dibenz[a,h]anthracene | 2.42 | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Fluoranthene | 18.8 | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Fluorene | 0.292 | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Indeno[1,2,3-cd]pyrene | 8.66 | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Phenanthrene | 6.24 | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| Pyrene | 16.5 | 0.0929 | 0.186 | 0.139 | | mg/Kg-dry | 20 | 05/24/16 06:14 AM |
| IS: Acenaphthene-d10 | 75.9 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:14 AM |
| IS: Chrysene-d12 | 72.5 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:14 AM |
| IS: Naphthalene-d8 | 101 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:14 AM |
| IS: Perylene-d12 | 71.2 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:14 AM |
| IS: Phenanthrene-d10 | 69.0 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:14 AM |
| Surr: 2-Fluorobiphenyl | 80.0 | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 06:14 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(6-8)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-24 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:11 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 73.3 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 06:14 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(8-10)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-25 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:12 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 33.9 | 0.0971 | 0.291 | 0.146 | | mg/Kg-dry | 5 | 05/25/16 05:49 PM |
| IS: Bismuth | 95.3 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:49 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.598 | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Acenaphthylene | 0.148 | 0.0985 | 0.197 | 0.148 | U | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Anthracene | 1.65 | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Benzo[a]anthracene | 14.1 | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Benzo[a]pyrene | 17.4 | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Benzo[b]fluoranthene | 15.9 | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Benzo[e]pyrene | 12.8 | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Benzo[g,h,i]perylene | 11.3 | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Benzo[j]fluoranthene | 8.66 | 0.0985 | 0.197 | 0.148 | N | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Benzo[k]fluoranthene | 8.34 | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Chrysene | 16.5 | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Dibenz[a,h]anthracene | 2.66 | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Fluoranthene | 22.3 | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Fluorene | 0.329 | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Indeno[1,2,3-cd]pyrene | 9.42 | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Phenanthrene | 7.64 | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| Pyrene | 19.5 | 0.0985 | 0.197 | 0.148 | | mg/Kg-dry | 20 | 05/24/16 06:54 AM |
| IS: Acenaphthene-d10 | 81.8 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:54 AM |
| IS: Chrysene-d12 | 79.1 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:54 AM |
| IS: Naphthalene-d8 | 104 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:54 AM |
| IS: Perylene-d12 | 78.6 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:54 AM |
| IS: Phenanthrene-d10 | 74.3 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 06:54 AM |
| Surr: 2-Fluorobiphenyl | 74.6 | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 06:54 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(8-10)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-25 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:12 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 70.6 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 06:54 AM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(0-2)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-26 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:14 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 178 | 0.0943 | 0.283 | 0.142 | | mg/Kg-dry | 5 | 05/25/16 05:51 PM |
| IS: Bismuth | 95.7 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:51 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.590 | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Acenaphthylene | 0.147 | 0.0979 | 0.196 | 0.147 | U | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Anthracene | 2.33 | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Benzo[a]anthracene | 15.7 | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Benzo[a]pyrene | 18.7 | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Benzo[b]fluoranthene | 17.3 | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Benzo[e]pyrene | 13.7 | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Benzo[g,h,i]perylene | 12.2 | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Benzo[j]fluoranthene | 9.41 | 0.0979 | 0.196 | 0.147 | N | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Benzo[k]fluoranthene | 9.12 | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Chrysene | 18.0 | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Dibenz[a,h]anthracene | 2.86 | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Fluoranthene | 27.1 | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Fluorene | 0.362 | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Indeno[1,2,3-cd]pyrene | 10.3 | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Phenanthrene | 10.5 | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| Pyrene | 23.1 | 0.0979 | 0.196 | 0.147 | | mg/Kg-dry | 20 | 05/24/16 07:33 AM |
| IS: Acenaphthene-d10 | 80.4 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 07:33 AM |
| IS: Chrysene-d12 | 77.6 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 07:33 AM |
| IS: Naphthalene-d8 | 106 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 07:33 AM |
| IS: Perylene-d12 | 77.1 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 07:33 AM |
| IS: Phenanthrene-d10 | 73.2 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 07:33 AM |
| Surr: 2-Fluorobiphenyl | 80.6 | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 07:33 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(0-2)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-26 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:14 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 73.3 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 07:33 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(2-4)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-27 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:15 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 61.6 | 0.0990 | 0.297 | 0.149 | | mg/Kg-dry | 5 | 05/25/16 05:53 PM |
| IS: Bismuth | 93.5 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 05:53 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.693 | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Acenaphthylene | 0.149 | 0.0993 | 0.199 | 0.149 | U | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Anthracene | 2.40 | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Benzo[a]anthracene | 16.9 | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Benzo[a]pyrene | 20.8 | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Benzo[b]fluoranthene | 19.3 | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Benzo[e]pyrene | 15.2 | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Benzo[g,h,i]perylene | 13.6 | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Benzo[j]fluoranthene | 10.4 | 0.0993 | 0.199 | 0.149 | N | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Benzo[k]fluoranthene | 9.94 | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Chrysene | 19.6 | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Dibenz[a,h]anthracene | 3.18 | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Fluoranthene | 28.8 | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Fluorene | 0.394 | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Indeno[1,2,3-cd]pyrene | 11.4 | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Phenanthrene | 10.5 | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| Pyrene | 24.6 | 0.0993 | 0.199 | 0.149 | | mg/Kg-dry | 20 | 05/24/16 08:13 AM |
| IS: Acenaphthene-d10 | 79.2 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 08:13 AM |
| IS: Chrysene-d12 | 77.9 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 08:13 AM |
| IS: Naphthalene-d8 | 106 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 08:13 AM |
| IS: Perylene-d12 | 76.8 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 08:13 AM |
| IS: Phenanthrene-d10 | 73.2 | 0 | 50-200 | 0 | | %REC | 20 | 05/24/16 08:13 AM |
| Surr: 2-Fluorobiphenyl | 73.4 | 0 | 46-115 | 0 | | %REC | 20 | 05/24/16 08:13 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(2-4)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-27 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:15 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 65.6 | 0 | 58-133 | 0 | | %REC | 20 | 05/24/16 08:13 AM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(4-6)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-28 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:17 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 143 | 0.0990 | 0.297 | 0.149 | | mg/Kg-dry | 5 | 05/25/16 06:09 PM |
| IS: Bismuth | 96.7 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:09 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 2.66 | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Acenaphthylene | 0.360 | 0.240 | 0.480 | 0.360 | U | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Anthracene | 8.40 | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Benzo[a]anthracene | 61.6 | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Benzo[a]pyrene | 75.9 | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Benzo[b]fluoranthene | 68.9 | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Benzo[e]pyrene | 55.0 | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Benzo[g,h,i]perylene | 49.3 | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Benzo[j]fluoranthene | 37.1 | 0.240 | 0.480 | 0.360 | N | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Benzo[k]fluoranthene | 35.7 | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Chrysene | 70.7 | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Dibenz[a,h]anthracene | 11.2 | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Fluoranthene | 99.6 | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Fluorene | 1.48 | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Indeno[1,2,3-cd]pyrene | 40.7 | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Phenanthrene | 37.6 | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| Pyrene | 86.3 | 0.240 | 0.480 | 0.360 | | mg/Kg-dry | 50 | 05/23/16 07:40 PM |
| IS: Acenaphthene-d10 | 85.5 | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 07:40 PM |
| IS: Chrysene-d12 | 79.7 | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 07:40 PM |
| IS: Naphthalene-d8 | 100 | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 07:40 PM |
| IS: Perylene-d12 | 77.6 | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 07:40 PM |
| IS: Phenanthrene-d10 | 78.5 | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 07:40 PM |
| Surr: 2-Fluorobiphenyl | 67.6 | 0 | 46-115 | 0 | | %REC | 50 | 05/23/16 07:40 PM |

**Qualifiers:**

| | |
|---|---|
| * | Value exceeds TCLP Maximum Concentration Level |
| B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative |
| DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern |
| J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit |
| S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(4-6)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-28 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:17 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 60.9 | 0 | 58-133 | 0 | | %REC | 50 | 05/23/16 07:40 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(6-8)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-29 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:18 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 13.4 | 0.0917 | 0.275 | 0.138 | | mg/Kg-dry | 5 | 05/25/16 06:11 PM |
| IS: Bismuth | 93.1 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:11 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.134 | 0.0941 | 0.188 | 0.141 | J | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Acenaphthylene | 0.141 | 0.0941 | 0.188 | 0.141 | U | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Anthracene | 0.363 | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Benzo[a]anthracene | 3.15 | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Benzo[a]pyrene | 4.33 | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Benzo[b]fluoranthene | 3.96 | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Benzo[e]pyrene | 3.21 | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Benzo[g,h,i]perylene | 2.92 | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Benzo[j]fluoranthene | 2.12 | 0.0941 | 0.188 | 0.141 | N | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Benzo[k]fluoranthene | 2.03 | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Chrysene | 3.74 | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Dibenz[a,h]anthracene | 0.637 | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Fluoranthene | 4.85 | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Fluorene | 0.141 | 0.0941 | 0.188 | 0.141 | U | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Indeno[1,2,3-cd]pyrene | 2.37 | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Phenanthrene | 1.59 | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| Pyrene | 4.37 | 0.0941 | 0.188 | 0.141 | | mg/Kg-dry | 20 | 05/23/16 09:00 PM |
| IS: Acenaphthene-d10 | 80.6 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:00 PM |
| IS: Chrysene-d12 | 81.2 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:00 PM |
| IS: Naphthalene-d8 | 94.4 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:00 PM |
| IS: Perylene-d12 | 80.5 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:00 PM |
| IS: Phenanthrene-d10 | 75.4 | 0 | 50-200 | 0 | | %REC | 20 | 05/23/16 09:00 PM |
| Surr: 2-Fluorobiphenyl | 75.3 | 0 | 46-115 | 0 | | %REC | 20 | 05/23/16 09:00 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(6-8)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-29 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:18 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 68.2 | 0 | 58-133 | 0 | | %REC | 20 | 05/23/16 09:00 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(8-10)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-30 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:19 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 70.4 | 0.0971 | 0.291 | 0.146 | | mg/Kg-dry | 5 | 05/25/16 06:13 PM |
| IS: Bismuth | 94.6 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:13 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 4.05 | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Acenaphthylene | 0.361 | 0.241 | 0.481 | 0.361 | U | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Anthracene | 14.4 | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Benzo[a]anthracene | 91.6 | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Benzo[a]pyrene | 110 | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Benzo[b]fluoranthene | 100 | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Benzo[e]pyrene | 79.7 | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Benzo[g,h,i]perylene | 72.8 | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Benzo[j]fluoranthene | 54.1 | 0.241 | 0.481 | 0.361 | N | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Benzo[k]fluoranthene | 52.8 | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Chrysene | 105 | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Dibenz[a,h]anthracene | 16.7 | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Fluoranthene | 150 | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Fluorene | 2.76 | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Indeno[1,2,3-cd]pyrene | 59.4 | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Phenanthrene | 59.8 | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| Pyrene | 128 | 0.241 | 0.481 | 0.361 | | mg/Kg-dry | 50 | 05/23/16 08:20 PM |
| IS: Acenaphthene-d10 | 83.5 | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 08:20 PM |
| IS: Chrysene-d12 | 77.9 | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 08:20 PM |
| IS: Naphthalene-d8 | 98.8 | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 08:20 PM |
| IS: Perylene-d12 | 75.9 | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 08:20 PM |
| IS: Phenanthrene-d10 | 76.4 | 0 | 50-200 | 0 | | %REC | 50 | 05/23/16 08:20 PM |
| Surr: 2-Fluorobiphenyl | 97.2 | 0 | 46-115 | 0 | | %REC | 50 | 05/23/16 08:20 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU074(8-10)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-30 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 12:19 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 91.8 | 0 | 58-133 | 0 | | %REC | 50 | 05/23/16 08:20 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(0-2)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-31 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:28 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 19.5 | 0.0952 | 0.286 | 0.143 | | mg/Kg-dry | 5 | 05/25/16 06:15 PM |
| IS: Bismuth | 93.9 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:15 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.0749 | 0.0500 | 0.0999 | 0.0749 | U | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Acenaphthylene | 0.0749 | 0.0500 | 0.0999 | 0.0749 | U | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Anthracene | 0.0749 | 0.0500 | 0.0999 | 0.0749 | U | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Benzo[a]anthracene | 0.212 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Benzo[a]pyrene | 0.263 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Benzo[b]fluoranthene | 0.262 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Benzo[e]pyrene | 0.209 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Benzo[g,h,i]perylene | 0.194 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Benzo[j]fluoranthene | 0.138 | 0.0500 | 0.0999 | 0.0749 | N | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Benzo[k]fluoranthene | 0.137 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Chrysene | 0.253 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Dibenz[a,h]anthracene | 0.0749 | 0.0500 | 0.0999 | 0.0749 | U | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Fluoranthene | 0.358 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Fluorene | 0.0749 | 0.0500 | 0.0999 | 0.0749 | U | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Indeno[1,2,3-cd]pyrene | 0.153 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Phenanthrene | 0.138 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| Pyrene | 0.316 | 0.0500 | 0.0999 | 0.0749 | | mg/Kg-dry | 10 | 05/23/16 04:21 PM |
| IS: Acenaphthene-d10 | 78.1 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 04:21 PM |
| IS: Chrysene-d12 | 78.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 04:21 PM |
| IS: Naphthalene-d8 | 90.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 04:21 PM |
| IS: Perylene-d12 | 77.8 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 04:21 PM |
| IS: Phenanthrene-d10 | 75.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 04:21 PM |
| Surr: 2-Fluorobiphenyl | 75.7 | 0 | 46-115 | 0 | | %REC | 10 | 05/23/16 04:21 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(0-2)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-31 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:28 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 66.2 | 0 | 58-133 | 0 | | %REC | 10 | 05/23/16 04:21 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(2-4)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-32 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:29 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 8.53 | 0.0971 | 0.291 | 0.146 | | mg/Kg-dry | 5 | 05/25/16 06:17 PM |
| IS: Bismuth | 91.2 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:17 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Acenaphthylene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Anthracene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Benzo[a]anthracene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Benzo[a]pyrene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Benzo[b]fluoranthene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Benzo[e]pyrene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Benzo[g,h,i]perylene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Benzo[j]fluoranthene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | NU | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Benzo[k]fluoranthene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Chrysene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Dibenz[a,h]anthracene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Fluoranthene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Fluorene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Indeno[1,2,3-cd]pyrene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Phenanthrene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| Pyrene | 0.0695 | 0.0463 | 0.0927 | 0.0695 | U | mg/Kg-dry | 10 | 05/23/16 05:01 PM |
| IS: Acenaphthene-d10 | 81.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:01 PM |
| IS: Chrysene-d12 | 81.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:01 PM |
| IS: Naphthalene-d8 | 95.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:01 PM |
| IS: Perylene-d12 | 79.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:01 PM |
| IS: Phenanthrene-d10 | 76.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:01 PM |
| Surr: 2-Fluorobiphenyl | 73.2 | 0 | 46-115 | 0 | | %REC | 10 | 05/23/16 05:01 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(2-4)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-32 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:29 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 66.5 | 0 | 58-133 | 0 | | %REC | 10 | 05/23/16 05:01 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(4-6)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-33 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:30 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 8.14 | 0.0971 | 0.291 | 0.146 | | mg/Kg-dry | 5 | 05/25/16 06:19 PM |
| IS: Bismuth | 91.2 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:19 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.0724 | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Acenaphthylene | 0.0724 | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Anthracene | 0.0724 | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Benzo[a]anthracene | 0.0724 | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Benzo[a]pyrene | 0.0724 | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Benzo[b]fluoranthene | 0.0724 | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Benzo[e]pyrene | 0.0724 | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Benzo[g,h,i]perylene | 0.0724 | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Benzo[j]fluoranthene | 0.0724 | 0.0483 | 0.0965 | 0.0724 | NU | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Benzo[k]fluoranthene | 0.0724 | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Chrysene | 0.0724 | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Dibenz[a,h]anthracene | 0.0724 | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Fluoranthene | 0.0496 | 0.0483 | 0.0965 | 0.0724 | J | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Fluorene | 0.0724 | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Indeno[1,2,3-cd]pyrene | 0.0724 | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Phenanthrene | 0.0724 | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| Pyrene | 0.0724 | 0.0483 | 0.0965 | 0.0724 | U | mg/Kg-dry | 10 | 05/23/16 05:40 PM |
| IS: Acenaphthene-d10 | 77.7 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:40 PM |
| IS: Chrysene-d12 | 80.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:40 PM |
| IS: Naphthalene-d8 | 90.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:40 PM |
| IS: Perylene-d12 | 78.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:40 PM |
| IS: Phenanthrene-d10 | 75.7 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 05:40 PM |
| Surr: 2-Fluorobiphenyl | 73.2 | 0 | 46-115 | 0 | | %REC | 10 | 05/23/16 05:40 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(4-6)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-33 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:30 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 65.6 | 0 | 58-133 | 0 | | %REC | 10 | 05/23/16 05:40 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(6-8)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-34 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:31 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 15.7 | 0.0971 | 0.291 | 0.146 | | mg/Kg-dry | 5 | 05/25/16 06:21 PM |
| IS: Bismuth | 91.6 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:21 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Acenaphthene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Acenaphthylene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Anthracene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Benzo[a]anthracene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Benzo[a]pyrene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Benzo[b]fluoranthene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Benzo[e]pyrene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Benzo[g,h,i]perylene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Benzo[j]fluoranthene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | NU | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Benzo[k]fluoranthene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Chrysene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Dibenz[a,h]anthracene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Fluoranthene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Fluorene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Indeno[1,2,3-cd]pyrene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Phenanthrene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| Pyrene | 0.0692 | 0.0461 | 0.0923 | 0.0692 | U | mg/Kg-dry | 10 | 05/23/16 06:20 PM |
| IS: Acenaphthene-d10 | 78.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 06:20 PM |
| IS: Chrysene-d12 | 79.1 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 06:20 PM |
| IS: Naphthalene-d8 | 94.0 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 06:20 PM |
| IS: Perylene-d12 | 77.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 06:20 PM |
| IS: Phenanthrene-d10 | 74.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/23/16 06:20 PM |
| Surr: 2-Fluorobiphenyl | 77.8 | 0 | 46-115 | 0 | | %REC | 10 | 05/23/16 06:20 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(6-8)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-34 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:31 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **AR** |
| Surr: 4-Terphenyl-d14 | 70.9 | 0 | 58-133 | 0 | | %REC | 10 | 05/23/16 06:20 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(8-10)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-35 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:32 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 12.8 | 0.0962 | 0.288 | 0.144 | | mg/Kg-dry | 5 | 05/25/16 06:23 PM |
| IS: Bismuth | 91.1 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:23 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Acenaphthylene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Anthracene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Benzo[a]anthracene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Benzo[a]pyrene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Benzo[b]fluoranthene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Benzo[e]pyrene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Benzo[g,h,i]perylene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Benzo[j]fluoranthene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | NU | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Benzo[k]fluoranthene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Chrysene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Dibenz[a,h]anthracene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Fluoranthene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Fluorene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Indeno[1,2,3-cd]pyrene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Phenanthrene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| Pyrene | 0.0693 | 0.0462 | 0.0924 | 0.0693 | U | mg/Kg-dry | 10 | 05/24/16 11:41 AM |
| IS: Acenaphthene-d10 | 102 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 11:41 AM |
| IS: Chrysene-d12 | 83.0 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 11:41 AM |
| IS: Naphthalene-d8 | 97.1 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 11:41 AM |
| IS: Perylene-d12 | 86.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 11:41 AM |
| IS: Phenanthrene-d10 | 76.2 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 11:41 AM |
| Surr: 2-Fluorobiphenyl | 89.4 | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 11:41 AM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(8-10)-A |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-35 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:32 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 76.2 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 11:41 AM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(0-2)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-36 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:55 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 10.9 | 0.0943 | 0.283 | 0.142 | | mg/Kg-dry | 5 | 05/25/16 06:25 PM |
| IS: Bismuth | 92.0 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:25 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0732 | 0.0488 | 0.0977 | 0.0732 | U | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Acenaphthylene | 0.0732 | 0.0488 | 0.0977 | 0.0732 | U | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Anthracene | 0.0732 | 0.0488 | 0.0977 | 0.0732 | U | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Benzo[a]anthracene | 0.219 | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Benzo[a]pyrene | 0.299 | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Benzo[b]fluoranthene | 0.292 | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Benzo[e]pyrene | 0.235 | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Benzo[g,h,i]perylene | 0.230 | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Benzo[j]fluoranthene | 0.123 | 0.0488 | 0.0977 | 0.0732 | N | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Benzo[k]fluoranthene | 0.130 | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Chrysene | 0.295 | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Dibenz[a,h]anthracene | 0.0732 | 0.0488 | 0.0977 | 0.0732 | U | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Fluoranthene | 0.411 | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Fluorene | 0.0732 | 0.0488 | 0.0977 | 0.0732 | U | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Indeno[1,2,3-cd]pyrene | 0.179 | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Phenanthrene | 0.145 | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| Pyrene | 0.376 | 0.0488 | 0.0977 | 0.0732 | | mg/Kg-dry | 10 | 05/24/16 12:18 PM |
| IS: Acenaphthene-d10 | 104 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:18 PM |
| IS: Chrysene-d12 | 86.1 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:18 PM |
| IS: Naphthalene-d8 | 100 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:18 PM |
| IS: Perylene-d12 | 90.1 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:18 PM |
| IS: Phenanthrene-d10 | 78.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:18 PM |
| Surr: 2-Fluorobiphenyl | 90.9 | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 12:18 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(0-2)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-36 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:55 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 78.7 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 12:18 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(2-4)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-37 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:56 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 6.80 | 0.0926 | 0.278 | 0.139 | | mg/Kg-dry | 5 | 05/25/16 06:27 PM |
| IS: Bismuth | 89.2 | 0 | 30-120 | 0 | | %REC | 5 | 05/25/16 06:27 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Acenaphthylene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Anthracene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Benzo[a]anthracene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Benzo[a]pyrene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Benzo[b]fluoranthene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Benzo[e]pyrene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Benzo[g,h,i]perylene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Benzo[j]fluoranthene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | NU | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Benzo[k]fluoranthene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Chrysene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Dibenz[a,h]anthracene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Fluoranthene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Fluorene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Indeno[1,2,3-cd]pyrene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Phenanthrene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| Pyrene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 12:56 PM |
| IS: Acenaphthene-d10 | 98.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:56 PM |
| IS: Chrysene-d12 | 79.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:56 PM |
| IS: Naphthalene-d8 | 89.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:56 PM |
| IS: Perylene-d12 | 82.0 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:56 PM |
| IS: Phenanthrene-d10 | 74.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 12:56 PM |
| Surr: 2-Fluorobiphenyl | 91.5 | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 12:56 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(2-4)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-37 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:56 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 77.1 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 12:56 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(4-6)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-38 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:57 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **KL** |
| Lead | 8.72 | 0.0917 | 0.275 | 0.138 | | mg/Kg-dry | 5 | 05/26/16 01:54 PM |
| IS: Bismuth | 75.2 | 0 | 30-120 | 0 | | %REC | 5 | 05/26/16 01:54 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Acenaphthylene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Anthracene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Benzo[a]anthracene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Benzo[a]pyrene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Benzo[b]fluoranthene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Benzo[e]pyrene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Benzo[g,h,i]perylene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Benzo[j]fluoranthene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | NU | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Benzo[k]fluoranthene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Chrysene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Dibenz[a,h]anthracene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Fluoranthene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Fluorene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Indeno[1,2,3-cd]pyrene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Phenanthrene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| Pyrene | 0.0730 | 0.0487 | 0.0974 | 0.0730 | U | mg/Kg-dry | 10 | 05/24/16 01:32 PM |
| IS: Acenaphthene-d10 | 102 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 01:32 PM |
| IS: Chrysene-d12 | 81.3 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 01:32 PM |
| IS: Naphthalene-d8 | 98.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 01:32 PM |
| IS: Perylene-d12 | 85.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 01:32 PM |
| IS: Phenanthrene-d10 | 76.0 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 01:32 PM |
| Surr: 2-Fluorobiphenyl | 90.5 | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 01:32 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(4-6)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-38 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:57 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 77.8 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 01:32 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(6-8)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-39 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:58 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **KL** |
| Lead | 15.5 | 0.0885 | 0.265 | 0.133 | | mg/Kg-dry | 5 | 05/26/16 02:00 PM |
| IS: Bismuth | 76.9 | 0 | 30-120 | 0 | | %REC | 5 | 05/26/16 02:00 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Acenaphthylene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Anthracene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Benzo[a]anthracene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Benzo[a]pyrene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Benzo[b]fluoranthene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Benzo[e]pyrene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Benzo[g,h,i]perylene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Benzo[j]fluoranthene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | NU | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Benzo[k]fluoranthene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Chrysene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Dibenz[a,h]anthracene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Fluoranthene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Fluorene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Indeno[1,2,3-cd]pyrene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Phenanthrene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| Pyrene | 0.0728 | 0.0485 | 0.0971 | 0.0728 | U | mg/Kg-dry | 10 | 05/24/16 02:10 PM |
| IS: Acenaphthene-d10 | 103 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:10 PM |
| IS: Chrysene-d12 | 83.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:10 PM |
| IS: Naphthalene-d8 | 100 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:10 PM |
| IS: Perylene-d12 | 86.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:10 PM |
| IS: Phenanthrene-d10 | 77.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:10 PM |
| Surr: 2-Fluorobiphenyl | 85.8 | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 02:10 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(6-8)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-39 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 02:58 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 73.6 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 02:10 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(8-10)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-40 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:00 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **KL** |
| Lead | 13.7 | 0.100 | 0.300 | 0.150 | | mg/Kg-dry | 5 | 05/26/16 02:06 PM |
| IS: Bismuth | 78.4 | 0 | 30-120 | 0 | | %REC | 5 | 05/26/16 02:06 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0719 | 0.0479 | 0.0959 | 0.0719 | U | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Acenaphthylene | 0.0719 | 0.0479 | 0.0959 | 0.0719 | U | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Anthracene | 0.0719 | 0.0479 | 0.0959 | 0.0719 | U | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Benzo[a]anthracene | 0.281 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Benzo[a]pyrene | 0.571 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Benzo[b]fluoranthene | 0.507 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Benzo[e]pyrene | 0.414 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Benzo[g,h,i]perylene | 0.425 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Benzo[j]fluoranthene | 0.200 | 0.0479 | 0.0959 | 0.0719 | N | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Benzo[k]fluoranthene | 0.206 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Chrysene | 0.445 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Dibenz[a,h]anthracene | 0.0719 | 0.0479 | 0.0959 | 0.0719 | U | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Fluoranthene | 0.294 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Fluorene | 0.0719 | 0.0479 | 0.0959 | 0.0719 | U | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Indeno[1,2,3-cd]pyrene | 0.323 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Phenanthrene | 0.0542 | 0.0479 | 0.0959 | 0.0719 | J | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| Pyrene | 0.355 | 0.0479 | 0.0959 | 0.0719 | | mg/Kg-dry | 10 | 05/24/16 02:46 PM |
| IS: Acenaphthene-d10 | 104 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:46 PM |
| IS: Chrysene-d12 | 81.6 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:46 PM |
| IS: Naphthalene-d8 | 100 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:46 PM |
| IS: Perylene-d12 | 83.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:46 PM |
| IS: Phenanthrene-d10 | 78.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 02:46 PM |
| Surr: 2-Fluorobiphenyl | 88.1 | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 02:46 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(8-10)-B |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-40 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:00 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 78.5 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 02:46 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(0-2)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-41 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:02 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **KL** |
| Lead | 19.8 | 0.0971 | 0.291 | 0.146 | | mg/Kg-dry | 5 | 05/26/16 02:12 PM |
| IS: Bismuth | 80.9 | 0 | 30-120 | 0 | | %REC | 5 | 05/26/16 02:12 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.128 | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Acenaphthylene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Anthracene | 0.182 | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Benzo[a]anthracene | 1.64 | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Benzo[a]pyrene | 2.15 | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Benzo[b]fluoranthene | 1.94 | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Benzo[e]pyrene | 1.57 | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Benzo[g,h,i]perylene | 1.53 | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Benzo[j]fluoranthene | 0.986 | 0.0498 | 0.0995 | 0.0746 | N | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Benzo[k]fluoranthene | 0.956 | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Chrysene | 2.20 | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Dibenz[a,h]anthracene | 0.271 | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Fluoranthene | 2.77 | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Fluorene | 0.0746 | 0.0498 | 0.0995 | 0.0746 | U | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Indeno[1,2,3-cd]pyrene | 1.27 | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Phenanthrene | 0.995 | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| Pyrene | 2.66 | 0.0498 | 0.0995 | 0.0746 | | mg/Kg-dry | 10 | 05/24/16 03:24 PM |
| IS: Acenaphthene-d10 | 99.5 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 03:24 PM |
| IS: Chrysene-d12 | 80.7 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 03:24 PM |
| IS: Naphthalene-d8 | 91.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 03:24 PM |
| IS: Perylene-d12 | 84.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 03:24 PM |
| IS: Phenanthrene-d10 | 76.2 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 03:24 PM |
| Surr: 2-Fluorobiphenyl | 84.1 | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 03:24 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(0-2)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-41 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:02 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 70.6 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 03:24 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(2-4)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-42 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:03 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **KL** |
| Lead | 7.38 | 0.0909 | 0.273 | 0.136 | | mg/Kg-dry | 5 | 05/26/16 02:17 PM |
| IS: Bismuth | 69.8 | 0 | 30-120 | 0 | | %REC | 5 | 05/26/16 02:17 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Acenaphthylene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Anthracene | 0.0634 | 0.0493 | 0.0985 | 0.0739 | J | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Benzo[a]anthracene | 0.496 | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Benzo[a]pyrene | 0.614 | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Benzo[b]fluoranthene | 0.544 | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Benzo[e]pyrene | 0.433 | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Benzo[g,h,i]perylene | 0.416 | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Benzo[j]fluoranthene | 0.254 | 0.0493 | 0.0985 | 0.0739 | N | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Benzo[k]fluoranthene | 0.256 | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Chrysene | 0.635 | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Dibenz[a,h]anthracene | 0.0549 | 0.0493 | 0.0985 | 0.0739 | J | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Fluoranthene | 1.01 | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Fluorene | 0.0739 | 0.0493 | 0.0985 | 0.0739 | U | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Indeno[1,2,3-cd]pyrene | 0.327 | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Phenanthrene | 0.328 | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| Pyrene | 0.890 | 0.0493 | 0.0985 | 0.0739 | | mg/Kg-dry | 10 | 05/24/16 04:01 PM |
| IS: Acenaphthene-d10 | 103 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:01 PM |
| IS: Chrysene-d12 | 83.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:01 PM |
| IS: Naphthalene-d8 | 99.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:01 PM |
| IS: Perylene-d12 | 88.0 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:01 PM |
| IS: Phenanthrene-d10 | 76.1 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:01 PM |
| Surr: 2-Fluorobiphenyl | 88.2 | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 04:01 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(2-4)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-42 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:03 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 76.0 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 04:01 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(4-6)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-43 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:04 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **KL** |
| Lead | 7.96 | 0.0971 | 0.291 | 0.146 | | mg/Kg-dry | 5 | 05/26/16 01:42 PM |
| IS: Bismuth | 72.2 | 0 | 30-120 | 0 | | %REC | 5 | 05/26/16 01:42 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Acenaphthylene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Anthracene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Benzo[a]anthracene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Benzo[a]pyrene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Benzo[b]fluoranthene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Benzo[e]pyrene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Benzo[g,h,i]perylene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Benzo[j]fluoranthene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | NU | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Benzo[k]fluoranthene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Chrysene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Dibenz[a,h]anthracene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Fluoranthene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Fluorene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Indeno[1,2,3-cd]pyrene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Phenanthrene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| Pyrene | 0.0725 | 0.0483 | 0.0966 | 0.0725 | U | mg/Kg-dry | 10 | 05/24/16 04:38 PM |
| IS: Acenaphthene-d10 | 104 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:38 PM |
| IS: Chrysene-d12 | 81.7 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:38 PM |
| IS: Naphthalene-d8 | 98.7 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:38 PM |
| IS: Perylene-d12 | 85.8 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:38 PM |
| IS: Phenanthrene-d10 | 77.2 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 04:38 PM |
| Surr: 2-Fluorobiphenyl | 88.9 | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 04:38 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(4-6)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-43 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:04 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 73.7 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 04:38 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(6-8)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-44 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:05 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **KL** |
| Lead | 11.4 | 0.0855 | 0.256 | 0.128 | | mg/Kg-dry | 5 | 05/26/16 02:23 PM |
| IS: Bismuth | 66.7 | 0 | 30-120 | 0 | | %REC | 5 | 05/26/16 02:23 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Acenaphthylene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Anthracene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Benzo[a]anthracene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Benzo[a]pyrene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Benzo[b]fluoranthene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Benzo[e]pyrene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Benzo[g,h,i]perylene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Benzo[j]fluoranthene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | NU | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Benzo[k]fluoranthene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Chrysene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Dibenz[a,h]anthracene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Fluoranthene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Fluorene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Indeno[1,2,3-cd]pyrene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Phenanthrene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| Pyrene | 0.0743 | 0.0496 | 0.0991 | 0.0743 | U | mg/Kg-dry | 10 | 05/24/16 05:16 PM |
| IS: Acenaphthene-d10 | 105 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:16 PM |
| IS: Chrysene-d12 | 86.4 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:16 PM |
| IS: Naphthalene-d8 | 102 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:16 PM |
| IS: Perylene-d12 | 89.7 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:16 PM |
| IS: Phenanthrene-d10 | 79.1 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:16 PM |
| Surr: 2-Fluorobiphenyl | 83.6 | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 05:16 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(6-8)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-44 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:05 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 69.8 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 05:16 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(8-10)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-45 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:06 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - SOLID** | | | **SW6020A** | | | | | Analyst: **KL** |
| Lead | 16.1 | 0.0855 | 0.256 | 0.128 | | mg/Kg-dry | 5 | 05/26/16 02:29 PM |
| IS: Bismuth | 67.9 | 0 | 30-120 | 0 | | %REC | 5 | 05/26/16 02:29 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Acenaphthylene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Anthracene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Benzo[a]anthracene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Benzo[a]pyrene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Benzo[b]fluoranthene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Benzo[e]pyrene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Benzo[g,h,i]perylene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Benzo[j]fluoranthene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | NU | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Benzo[k]fluoranthene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Chrysene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Dibenz[a,h]anthracene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Fluoranthene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Fluorene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Indeno[1,2,3-cd]pyrene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Phenanthrene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| Pyrene | 0.0741 | 0.0494 | 0.0988 | 0.0741 | U | mg/Kg-dry | 10 | 05/24/16 05:54 PM |
| IS: Acenaphthene-d10 | 107 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:54 PM |
| IS: Chrysene-d12 | 86.9 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:54 PM |
| IS: Naphthalene-d8 | 105 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:54 PM |
| IS: Perylene-d12 | 91.2 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:54 PM |
| IS: Phenanthrene-d10 | 78.8 | 0 | 50-200 | 0 | | %REC | 10 | 05/24/16 05:54 PM |
| Surr: 2-Fluorobiphenyl | 82.6 | 0 | 46-115 | 0 | | %REC | 10 | 05/24/16 05:54 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | SGR-DU046(8-10)-C |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-45 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 03:06 PM |
| **Lab Order:** | 1605121 | **Matrix:** | SOIL |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 70.1 | 0 | 58-133 | 0 | | %REC | 10 | 05/24/16 05:54 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | EB15(20160510) |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-46 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 08:30 AM |
| **Lab Order:** | 1605121 | **Matrix:** | EQUIP BLANK |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - WATER** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 0.000900 | 0.000300 | 0.00100 | 0.000900 | U | mg/L | 1 | 05/20/16 02:16 PM |
| IS: Bismuth | 98.3 | 0 | 30-120 | 0 | | %REC | 1 | 05/20/16 02:16 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0000638 | 0.0000399 | 0.0000798 | 0.0000638 | U | mg/L | 1 | 05/18/16 11:17 PM |
| Acenaphthylene | 0.0000638 | 0.0000399 | 0.0000798 | 0.0000638 | U | mg/L | 1 | 05/18/16 11:17 PM |
| Anthracene | 0.0000638 | 0.0000399 | 0.0000798 | 0.0000638 | U | mg/L | 1 | 05/18/16 11:17 PM |
| Benzo[a]anthracene | 0.000218 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Benzo[a]pyrene | 0.000313 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Benzo[b]fluoranthene | 0.000332 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Benzo[e]pyrene | 0.000247 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Benzo[g,h,i]perylene | 0.000230 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Benzo[j]fluoranthene | 0.000161 | 0.0000399 | 0.0000798 | 0.0000638 | N | mg/L | 1 | 05/18/16 11:17 PM |
| Benzo[k]fluoranthene | 0.000169 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Chrysene | 0.000308 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Dibenz[a,h]anthracene | 0.0000493 | 0.0000399 | 0.0000798 | 0.0000638 | J | mg/L | 1 | 05/18/16 11:17 PM |
| Fluoranthene | 0.000210 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Fluorene | 0.0000638 | 0.0000399 | 0.0000798 | 0.0000638 | U | mg/L | 1 | 05/18/16 11:17 PM |
| Indeno[1,2,3-cd]pyrene | 0.000209 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| Phenanthrene | 0.0000638 | 0.0000399 | 0.0000798 | 0.0000638 | U | mg/L | 1 | 05/18/16 11:17 PM |
| Pyrene | 0.000196 | 0.0000399 | 0.0000798 | 0.0000638 | | mg/L | 1 | 05/18/16 11:17 PM |
| IS: Acenaphthene-d10 | 87.3 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:17 PM |
| IS: Chrysene-d12 | 86.8 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:17 PM |
| IS: Naphthalene-d8 | 85.9 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:17 PM |
| IS: Perylene-d12 | 86.1 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:17 PM |
| IS: Phenanthrene-d10 | 84.3 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:17 PM |
| Surr: 2-Fluorobiphenyl | 60.7 | 0 | 53-106 | 0 | | %REC | 1 | 05/18/16 11:17 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | EB15(20160510) |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-46 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 08:30 AM |
| **Lab Order:** | 1605121 | **Matrix:** | EQUIP BLANK |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 69.8 | 0 | 58-132 | 0 | | %REC | 1 | 05/18/16 11:17 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

# DHL Analytical, Inc.

**Date:** *02-Jun-16*

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | EB16(20160510) |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-47 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 04:00 PM |
| **Lab Order:** | 1605121 | **Matrix:** | EQUIP BLANK |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **TRACE METALS: ICP-MS - WATER** | | | **SW6020A** | | | | | Analyst: **RO** |
| Lead | 0.000900 | 0.000300 | 0.00100 | 0.000900 | U | mg/L | 1 | 05/20/16 02:18 PM |
| IS: Bismuth | 98.2 | 0 | 30-120 | 0 | | %REC | 1 | 05/20/16 02:18 PM |
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Acenaphthene | 0.0000632 | 0.0000395 | 0.0000790 | 0.0000632 | U | mg/L | 1 | 05/18/16 11:54 PM |
| Acenaphthylene | 0.0000632 | 0.0000395 | 0.0000790 | 0.0000632 | U | mg/L | 1 | 05/18/16 11:54 PM |
| Anthracene | 0.0000632 | 0.0000395 | 0.0000790 | 0.0000632 | U | mg/L | 1 | 05/18/16 11:54 PM |
| Benzo[a]anthracene | 0.000444 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Benzo[a]pyrene | 0.000727 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Benzo[b]fluoranthene | 0.000756 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Benzo[e]pyrene | 0.000553 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Benzo[g,h,i]perylene | 0.000526 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Benzo[j]fluoranthene | 0.000358 | 0.0000395 | 0.0000790 | 0.0000632 | N | mg/L | 1 | 05/18/16 11:54 PM |
| Benzo[k]fluoranthene | 0.000376 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Chrysene | 0.000630 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Dibenz[a,h]anthracene | 0.000129 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Fluoranthene | 0.000359 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Fluorene | 0.0000632 | 0.0000395 | 0.0000790 | 0.0000632 | U | mg/L | 1 | 05/18/16 11:54 PM |
| Indeno[1,2,3-cd]pyrene | 0.000486 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| Phenanthrene | 0.0000622 | 0.0000395 | 0.0000790 | 0.0000632 | J | mg/L | 1 | 05/18/16 11:54 PM |
| Pyrene | 0.000363 | 0.0000395 | 0.0000790 | 0.0000632 | | mg/L | 1 | 05/18/16 11:54 PM |
| IS: Acenaphthene-d10 | 92.6 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:54 PM |
| IS: Chrysene-d12 | 91.5 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:54 PM |
| IS: Naphthalene-d8 | 92.5 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:54 PM |
| IS: Perylene-d12 | 92.7 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:54 PM |
| IS: Phenanthrene-d10 | 89.2 | 0 | 50-200 | 0 | | %REC | 1 | 05/18/16 11:54 PM |
| Surr: 2-Fluorobiphenyl | 64.4 | 0 | 53-106 | 0 | | %REC | 1 | 05/18/16 11:54 PM |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified | | |

| | | | |
|---|---|---|---|
| **CLIENT:** | Arcadis | **Client Sample ID:** | EB16(20160510) |
| **Project:** | Laredo SGR | **Lab ID:** | 1605121-47 |
| **Project No:** | 04285081.0000.00044 | **Collection Date:** | 05/10/16 04:00 PM |
| **Lab Order:** | 1605121 | **Matrix:** | EQUIP BLANK |

| Analyses | Result | DL | RL | LOD | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **PAHS: GC/MS** | | | **SW8270D-LL** | | | | | Analyst: **KL** |
| Surr: 4-Terphenyl-d14 | 69.3 | 0 | 58-132 | 0 | | %REC | 1 | 05/18/16 11:54 PM |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | * | Value exceeds TCLP Maximum Concentration Level | B | Analyte detected in the associated Method Blank |
| | C | Sample Result or QC discussed in the Case Narrative | DF | Dilution Factor |
| | E | TPH pattern not Gas or Diesel Range Pattern | J | Analyte detected between MDL and RL |
| | MDL | Method Detection Limit | ND | Not Detected at the Method Detection Limit |
| | RL | Reporting Limit | S | Spike Recovery outside control limits |
| | N | Parameter not NELAC certified | | |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS3_160518B**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample ID **DCS1-74845** | Batch ID: **74845** | TestNo: **SW6020A** | Units: **mg/Kg** |
| SampType: **DCS** | Run ID: **ICP-MS3_160518B** | Analysis Date: **5/18/2016 2:52:00 PM** | Prep Date: **4/28/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.289 | 0.300 | 0.2500 | 0 | 116 | 80 | 120 | 0 | 0 | |

| | | | | | |
|---|---|---|---|---|---|
| **Qualifiers:** | B | Analyte detected in the associated Method Blank | DF | Dilution Factor | |
| | J | Analyte detected between MDL and RL | MDL | Method Detection Limit | Page 1 of 45 |
| | ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits | |
| | RL | Reporting Limit | S | Spike Recovery outside control limits | |
| | J | Analyte detected between SDL and RL | N | Parameter not NELAC certified | |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS3_160526A**

The QC data in batch 75258 applies to the following samples: 1605121-38A, 1605121-39A, 1605121-40A, 1605121-41A, 1605121-42A, 1605121-43A, 1605121-44A, 1605121-45A

| Sample ID | **MB-75258** | Batch ID: | **75258** | TestNo: | **SW6020A** | Units: | **mg/Kg-dry** |
|---|---|---|---|---|---|---|---|
| SampType: | **MBLK** | Run ID: | **ICP-MS3_160526A** | Analysis Date: | **5/26/2016 1:17:00 PM** | Prep Date: | **5/20/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.150 | 0.300 | | | | | | | | U |
| IS: Bismuth | 50.0 | | 200.0 | | 103 | 30 | 120 | | | |

| Sample ID | **LCS-75258** | Batch ID: | **75258** | TestNo: | **SW6020A** | Units: | **mg/Kg-dry** |
|---|---|---|---|---|---|---|---|
| SampType: | **LCS** | Run ID: | **ICP-MS3_160526A** | Analysis Date: | **5/26/2016 1:23:00 PM** | Prep Date: | **5/20/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 49.6 | 0.300 | 50.00 | 0 | 99.3 | 84 | 118 | | | |
| IS: Bismuth | 50.0 | | 200.0 | | 96.9 | 30 | 120 | | | |

| Sample ID | **LCSD-75258** | Batch ID: | **75258** | TestNo: | **SW6020A** | Units: | **mg/Kg-dry** |
|---|---|---|---|---|---|---|---|
| SampType: | **LCSD** | Run ID: | **ICP-MS3_160526A** | Analysis Date: | **5/26/2016 1:29:00 PM** | Prep Date: | **5/20/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 50.6 | 0.300 | 50.00 | 0 | 101 | 84 | 118 | 1.85 | 20 | |
| IS: Bismuth | 50.0 | | 200.0 | | 96.2 | 30 | 120 | 0 | 0 | |

| Sample ID | **1605121-43A SD** | Batch ID: | **75258** | TestNo: | **SW6020A** | Units: | **mg/Kg-dry** |
|---|---|---|---|---|---|---|---|
| SampType: | **SD** | Run ID: | **ICP-MS3_160526A** | Analysis Date: | **5/26/2016 1:48:00 PM** | Prep Date: | **5/20/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 7.84 | 1.46 | 0 | 7.964 | | | | 1.50 | 10 | |
| IS: Bismuth | 243 | | 194.2 | | 87.2 | 30 | 120 | 0 | 0 | |

| Sample ID | **1605121-43A PDS** | Batch ID: | **75258** | TestNo: | **SW6020A** | Units: | **mg/Kg-dry** |
|---|---|---|---|---|---|---|---|
| SampType: | **PDS** | Run ID: | **ICP-MS3_160526A** | Analysis Date: | **5/26/2016 2:47:00 PM** | Prep Date: | **5/20/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 55.1 | 0.291 | 48.54 | 7.964 | 97.0 | 80 | 120 | | | |
| IS: Bismuth | 48.5 | | 970.9 | | 72.6 | 30 | 120 | | | |

| Sample ID | **1605121-43A MS** | Batch ID: | **75258** | TestNo: | **SW6020A** | Units: | **mg/Kg-dry** |
|---|---|---|---|---|---|---|---|
| SampType: | **MS** | Run ID: | **ICP-MS3_160526A** | Analysis Date: | **5/26/2016 2:53:00 PM** | Prep Date: | **5/20/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 59.0 | 0.294 | 49.02 | 7.964 | 104 | 84 | 118 | | | |
| IS: Bismuth | 49.0 | | 196.1 | | 79.6 | 30 | 120 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS3_160526A**

| | | | | | |
|---|---|---|---|---|---|
| Sample ID **1605121-43A MSD** | Batch ID: **75258** | TestNo: **SW6020A** | Units: **mg/Kg-dry** | | |
| SampType: **MSD** | Run ID: **ICP-MS3_160526A** | Analysis Date: **5/26/2016 2:59:00 PM** | Prep Date: **5/20/2016** | | |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 55.0 | 0.283 | 47.17 | 7.964 | 99.6 | 84 | 118 | 7.09 | 20 | |
| IS: Bismuth | 47.2 | | 188.7 | | 80.6 | 30 | 120 | 0 | 0 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS3_160526A**

| Sample ID **ICV1-160526** | Batch ID: **R86047** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **ICP-MS3_160526A** | Analysis Date: **5/26/2016 12:59:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.0982 | 0.00100 | 0.100 | 0 | 98.2 | 90 | 110 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 97.6 | 30 | 120 | | | |

| Sample ID **ILCVL-160526** | Batch ID: **R86047** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS3_160526A** | Analysis Date: **5/26/2016 1:11:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.00101 | 0.00100 | 0.00100 | 0 | 101 | 80 | 120 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 101 | 30 | 120 | | | |

| Sample ID **CCV1-160526** | Batch ID: **R86047** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS3_160526A** | Analysis Date: **5/26/2016 3:05:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.192 | 0.00100 | 0.200 | 0 | 96.2 | 90 | 110 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 91.7 | 30 | 120 | | | |

| Sample ID **LCVL1-160526** | Batch ID: **R86047** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS3_160526A** | Analysis Date: **5/26/2016 3:17:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.00103 | 0.00100 | 0.00100 | 0 | 103 | 80 | 120 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 93.8 | 30 | 120 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_160427C**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample ID **DCS1-74736** | Batch ID: **74736** | TestNo: **SW6020A** | Units: **mg/L** |
| SampType: **DCS** | Run ID: **ICP-MS4_160427C** | Analysis Date: **4/27/2016 4:25:00 PM** | Prep Date: **4/21/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.000486 | 0.00100 | 0.000500 | 0 | 97.2 | 80 | 120 | 0 | 0 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_160429A**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample ID **DCS1-74845** | Batch ID: **74845** | TestNo: **SW6020A** | Units: **mg/Kg** |
| SampType: **DCS** | Run ID: **ICP-MS4_160429A** | Analysis Date: **4/29/2016 12:19:00 PM** | Prep Date: **4/28/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.310 | 0.300 | 0.2500 | 0 | 124 | 70 | 130 | 0 | 0 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID:** ICP-MS4_160520C

The QC data in batch 75180 applies to the following samples: 1605121-46A, 1605121-47A

| Sample ID | MB-75180 | Batch ID: | 75180 | TestNo: | SW6020A | Units: | mg/L |
|---|---|---|---|---|---|---|---|
| SampType: | MBLK | Run ID: | ICP-MS4_160520C | Analysis Date: | 5/20/2016 1:22:00 PM | Prep Date: | 5/19/2016 |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.000900 | 0.00100 | | | | | | | | U |
| IS: Bismuth | 0.200 | | 0.200 | | 100 | 30 | 120 | | | |

| Sample ID | LCS-75180 | Batch ID: | 75180 | TestNo: | SW6020A | Units: | mg/L |
|---|---|---|---|---|---|---|---|
| SampType: | LCS | Run ID: | ICP-MS4_160520C | Analysis Date: | 5/20/2016 1:24:00 PM | Prep Date: | 5/19/2016 |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.197 | 0.00100 | 0.200 | 0 | 98.4 | 88 | 115 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 95.8 | 30 | 120 | | | |

| Sample ID | LCSD-75180 | Batch ID: | 75180 | TestNo: | SW6020A | Units: | mg/L |
|---|---|---|---|---|---|---|---|
| SampType: | LCSD | Run ID: | ICP-MS4_160520C | Analysis Date: | 5/20/2016 1:26:00 PM | Prep Date: | 5/19/2016 |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.201 | 0.00100 | 0.200 | 0 | 100 | 88 | 115 | 1.93 | 20 | |
| IS: Bismuth | 0.200 | | 0.200 | | 94.8 | 30 | 120 | 0 | 0 | |

| Sample ID | 1605097-27A SD | Batch ID: | 75180 | TestNo: | SW6020A | Units: | mg/L |
|---|---|---|---|---|---|---|---|
| SampType: | SD | Run ID: | ICP-MS4_160520C | Analysis Date: | 5/20/2016 1:32:00 PM | Prep Date: | 5/19/2016 |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.00450 | 0.00500 | 0 | 0 | | | | 0 | 10 | U |
| IS: Bismuth | 1.00 | | 0.200 | | 96.7 | 30 | 120 | 0 | 0 | |

| Sample ID | 1605097-27A PDS | Batch ID: | 75180 | TestNo: | SW6020A | Units: | mg/L |
|---|---|---|---|---|---|---|---|
| SampType: | PDS | Run ID: | ICP-MS4_160520C | Analysis Date: | 5/20/2016 1:52:00 PM | Prep Date: | 5/19/2016 |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.200 | 0.00100 | 0.200 | 0 | 100 | 80 | 120 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 93.7 | 30 | 120 | | | |

| Sample ID | 1605097-27A MS | Batch ID: | 75180 | TestNo: | SW6020A | Units: | mg/L |
|---|---|---|---|---|---|---|---|
| SampType: | MS | Run ID: | ICP-MS4_160520C | Analysis Date: | 5/20/2016 1:54:00 PM | Prep Date: | 5/19/2016 |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.162 | 0.00100 | 0.200 | 0 | 80.9 | 88 | 115 | | | S |
| IS: Bismuth | 0.200 | | 0.200 | | 94.8 | 30 | 120 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_160520C**

| | | | | | |
|---|---|---|---|---|---|
| Sample ID **1605097-27A MSD** | Batch ID: **75180** | TestNo: **SW6020A** | Units: **mg/L** | | |
| SampType: **MSD** | Run ID: **ICP-MS4_160520C** | Analysis Date: **5/20/2016 1:56:00 PM** | Prep Date: **5/19/2016** | | |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.196 | 0.00100 | 0.200 | 0 | 97.9 | 88 | 115 | 19.1 | 20 | |
| IS: Bismuth | 0.200 | | 0.200 | | 96.4 | 30 | 120 | 0 | 0 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_160520C**

| Sample ID **ICV-160520** | Batch ID: **R85935** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **ICP-MS4_160520C** | Analysis Date: **5/20/2016 11:28:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.102 | 0.00100 | 0.100 | 0 | 102 | 90 | 110 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 98.5 | 30 | 120 | | | |

| Sample ID **LCVL-160520** | Batch ID: **R85935** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_160520C** | Analysis Date: **5/20/2016 11:40:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.000967 | 0.00100 | 0.00100 | 0 | 96.7 | 80 | 120 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 96.1 | 30 | 120 | | | |

| Sample ID **CCV2-160520** | Batch ID: **R85935** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_160520C** | Analysis Date: **5/20/2016 1:06:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.200 | 0.00100 | 0.200 | 0 | 99.9 | 90 | 110 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 93.7 | 30 | 120 | | | |

| Sample ID **LCVL2-160520** | Batch ID: **R85935** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_160520C** | Analysis Date: **5/20/2016 1:11:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.000963 | 0.00100 | 0.00100 | 0 | 96.3 | 80 | 120 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 96.0 | 30 | 120 | | | |

| Sample ID **CCV3-160520** | Batch ID: **R85935** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_160520C** | Analysis Date: **5/20/2016 1:58:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.198 | 0.00100 | 0.200 | 0 | 98.9 | 90 | 110 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 96.1 | 30 | 120 | | | |

| Sample ID **LCVL3-160520** | Batch ID: **R85935** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_160520C** | Analysis Date: **5/20/2016 2:04:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.000977 | 0.00100 | 0.00100 | 0 | 97.7 | 80 | 120 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 96.8 | 30 | 120 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_160520C**

| Sample ID **CCV4-160520** | Batch ID: **R85935** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_160520C** | Analysis Date: **5/20/2016 2:24:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.197 | 0.00100 | 0.200 | 0 | 98.4 | 90 | 110 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 96.0 | 30 | 120 | | | |

| Sample ID **LCVL4-160520** | Batch ID: **R85935** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_160520C** | Analysis Date: **5/20/2016 2:41:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.000974 | 0.00100 | 0.00100 | 0 | 97.4 | 80 | 120 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 95.3 | 30 | 120 | | | |

**Qualifiers:**

| | |
|---|---|
| B | Analyte detected in the associated Method Blank |
| J | Analyte detected between MDL and RL |
| ND | Not Detected at the Method Detection Limit |
| RL | Reporting Limit |
| J | Analyte detected between SDL and RL |
| DF | Dilution Factor |
| MDL | Method Detection Limit |
| R | RPD outside accepted control limits |
| S | Spike Recovery outside control limits |
| N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID:** ICP-MS4_160523F

The QC data in batch 75237 applies to the following samples: 1605121-01A, 1605121-02A, 1605121-03A, 1605121-04A, 1605121-05A, 1605121-06A, 1605121-07A, 1605121-08A, 1605121-09A, 1605121-10A, 1605121-11A, 1605121-12A, 1605121-13A, 1605121-14A, 1605121-15A, 1605121-16A, 1605121-17A

Sample ID **MB-75237** Batch ID: **75237** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **ICP-MS4_160523F** Analysis Date: **5/23/2016 5:00:00 PM** Prep Date: **5/19/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.150 | 0.300 | | | | | | | | U |
| IS: Bismuth | 50.0 | | 200.0 | | 105 | 30 | 120 | | | |

Sample ID **LCS-75237** Batch ID: **75237** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **ICP-MS4_160523F** Analysis Date: **5/23/2016 5:02:00 PM** Prep Date: **5/19/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 47.7 | 0.300 | 50.00 | 0 | 95.3 | 84 | 118 | | | |
| IS: Bismuth | 50.0 | | 200.0 | | 101 | 30 | 120 | | | |

Sample ID **LCSD-75237** Batch ID: **75237** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **LCSD** Run ID: **ICP-MS4_160523F** Analysis Date: **5/23/2016 5:04:00 PM** Prep Date: **5/19/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 48.3 | 0.300 | 50.00 | 0 | 96.5 | 84 | 118 | 1.26 | 20 | |
| IS: Bismuth | 50.0 | | 200.0 | | 100 | 30 | 120 | 0 | 0 | |

Sample ID **1605121-01A SD** Batch ID: **75237** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **SD** Run ID: **ICP-MS4_160523F** Analysis Date: **5/23/2016 5:10:00 PM** Prep Date: **5/19/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 128 | 1.36 | 0 | 130.6 | | | | 1.95 | 10 | |
| IS: Bismuth | 227 | | 181.8 | | 98.7 | 30 | 120 | 0 | 0 | |

Sample ID **1605121-01A PDS** Batch ID: **75237** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **PDS** Run ID: **ICP-MS4_160523F** Analysis Date: **5/23/2016 5:30:00 PM** Prep Date: **5/19/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 176 | 0.273 | 45.45 | 130.6 | 101 | 80 | 120 | | | |
| IS: Bismuth | 45.5 | | 909.1 | | 95.5 | 30 | 120 | | | |

Sample ID **1605121-01A MS** Batch ID: **75237** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **ICP-MS4_160523F** Analysis Date: **5/23/2016 5:32:00 PM** Prep Date: **5/19/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 165 | 0.278 | 46.30 | 130.6 | 75.3 | 84 | 118 | | | S |
| IS: Bismuth | 46.3 | | 185.2 | | 93.1 | 30 | 120 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_160523F**

| | | | | | |
|---|---|---|---|---|---|
| Sample ID **1605121-01A MSD** | Batch ID: **75237** | TestNo: **SW6020A** | Units: **mg/Kg-dry** | | |
| SampType: **MSD** | Run ID: **ICP-MS4_160523F** | Analysis Date: **5/23/2016 5:34:00 PM** | Prep Date: **5/19/2016** | | |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 204 | 0.297 | 49.50 | 130.6 | 149 | 84 | 118 | 21.1 | 20 | SR |
| IS: Bismuth | 49.5 | | 198.0 | | 95.5 | 30 | 120 | 0 | 0 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_160523F**

| Sample ID **ICV-160523** | Batch ID: **R85956** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **ICP-MS4_160523F** | Analysis Date: **5/23/2016 11:13:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.0990 | 0.00100 | 0.100 | 0 | 99.0 | 90 | 110 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 102 | 30 | 120 | | | |

| Sample ID **LCVL-160523** | Batch ID: **R85956** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_160523F** | Analysis Date: **5/23/2016 11:22:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.000970 | 0.00100 | 0.00100 | 0 | 97.0 | 80 | 120 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 99.6 | 30 | 120 | | | |

| Sample ID **CCV6-160523** | Batch ID: **R85956** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_160523F** | Analysis Date: **5/23/2016 4:51:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.190 | 0.00100 | 0.200 | 0 | 94.8 | 90 | 110 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 96.8 | 30 | 120 | | | |

| Sample ID **LCVL6-160523** | Batch ID: **R85956** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_160523F** | Analysis Date: **5/23/2016 4:55:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.000979 | 0.00100 | 0.00100 | 0 | 97.9 | 80 | 120 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 101 | 30 | 120 | | | |

| Sample ID **CCV7-160523** | Batch ID: **R85956** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_160523F** | Analysis Date: **5/23/2016 5:36:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.191 | 0.00100 | 0.200 | 0 | 95.6 | 90 | 110 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 96.1 | 30 | 120 | | | |

| Sample ID **LCVL7-160523** | Batch ID: **R85956** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_160523F** | Analysis Date: **5/23/2016 5:40:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.00104 | 0.00100 | 0.00100 | 0 | 104 | 80 | 120 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 99.4 | 30 | 120 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_160523F**

| Sample ID **CCV8-160523** | Batch ID: **R85956** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_160523F** | Analysis Date: **5/23/2016 6:04:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.189 | 0.00100 | 0.200 | 0 | 94.3 | 90 | 110 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 99.5 | 30 | 120 | | | |

| Sample ID **LCVL8-160523** | Batch ID: **R85956** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_160523F** | Analysis Date: **5/23/2016 6:08:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.000997 | 0.00100 | 0.00100 | 0 | 99.7 | 80 | 120 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 97.1 | 30 | 120 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_160525D**

The QC data in batch 75238 applies to the following samples: 1605121-18A, 1605121-19A, 1605121-20A, 1605121-21A, 1605121-22A, 1605121-23A, 1605121-24A, 1605121-25A, 1605121-26A, 1605121-27A, 1605121-28A, 1605121-29A, 1605121-30A, 1605121-31A, 1605121-32A, 1605121-33A, 1605121-34A, 1605121-35A, 1605121-36A, 1605121-37A

Sample ID **MB-75238** Batch ID: **75238** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **ICP-MS4_160525D** Analysis Date: **5/25/2016 5:25:00 PM** Prep Date: **5/19/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.150 | 0.300 | | | | | | | | U |
| IS: Bismuth | 50.0 | | 200.0 | | 104 | 30 | 120 | | | |

Sample ID **LCS-75238** Batch ID: **75238** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **ICP-MS4_160525D** Analysis Date: **5/25/2016 5:27:00 PM** Prep Date: **5/19/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 51.3 | 0.300 | 50.00 | 0 | 103 | 84 | 118 | | | |
| IS: Bismuth | 50.0 | | 200.0 | | 100 | 30 | 120 | | | |

Sample ID **LCSD-75238** Batch ID: **75238** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **LCSD** Run ID: **ICP-MS4_160525D** Analysis Date: **5/25/2016 5:29:00 PM** Prep Date: **5/19/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 51.3 | 0.300 | 50.00 | 0 | 103 | 84 | 118 | 0.034 | 20 | |
| IS: Bismuth | 50.0 | | 200.0 | | 101 | 30 | 120 | 0 | 0 | |

Sample ID **1605121-22A SD** Batch ID: **75238** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **SD** Run ID: **ICP-MS4_160525D** Analysis Date: **5/25/2016 5:35:00 PM** Prep Date: **5/19/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 17.5 | 1.36 | 0 | 17.30 | | | | 1.02 | 10 | |
| IS: Bismuth | 227 | | 181.8 | | 99.1 | 30 | 120 | 0 | 0 | |

Sample ID **1605121-22A PDS** Batch ID: **75238** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **PDS** Run ID: **ICP-MS4_160525D** Analysis Date: **5/25/2016 5:55:00 PM** Prep Date: **5/19/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 62.2 | 0.273 | 45.45 | 17.30 | 98.8 | 80 | 120 | | | |
| IS: Bismuth | 45.5 | | 909.1 | | 92.4 | 30 | 120 | | | |

Sample ID **1605121-22A MS** Batch ID: **75238** TestNo: **SW6020A** Units: **mg/Kg-dry**
SampType: **MS** Run ID: **ICP-MS4_160525D** Analysis Date: **5/25/2016 5:57:00 PM** Prep Date: **5/19/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 61.3 | 0.283 | 47.17 | 17.30 | 93.2 | 84 | 118 | | | |
| IS: Bismuth | 47.2 | | 188.7 | | 92.3 | 30 | 120 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_160525D**

| | | | | | |
|---|---|---|---|---|---|
| Sample ID **1605121-22A MSD** | Batch ID: **75238** | TestNo: **SW6020A** | Units: **mg/Kg-dry** | | |
| SampType: **MSD** | Run ID: **ICP-MS4_160525D** | Analysis Date: **5/25/2016 5:59:00 PM** | Prep Date: **5/19/2016** | | |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 64.4 | 0.280 | 46.73 | 17.30 | 101 | 84 | 118 | 4.90 | 20 | |
| IS: Bismuth | 46.7 | | 186.9 | | 92.1 | 30 | 120 | 0 | 0 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_160525D**

| Sample ID **ICV-160525** | Batch ID: **R86016** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **ICP-MS4_160525D** | Analysis Date: **5/25/2016 2:34:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.0977 | 0.00100 | 0.100 | 0 | 97.7 | 90 | 110 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 95.2 | 30 | 120 | | | |

| Sample ID **LCVL-160525** | Batch ID: **R86016** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_160525D** | Analysis Date: **5/25/2016 2:40:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.000969 | 0.00100 | 0.00100 | 0 | 96.9 | 80 | 120 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 96.5 | 30 | 120 | | | |

| Sample ID **CCV5-160525** | Batch ID: **R86016** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_160525D** | Analysis Date: **5/25/2016 5:17:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.198 | 0.00100 | 0.200 | 0 | 98.9 | 90 | 110 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 96.3 | 30 | 120 | | | |

| Sample ID **LCVL5-160525** | Batch ID: **R86016** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_160525D** | Analysis Date: **5/25/2016 5:21:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.000969 | 0.00100 | 0.00100 | 0 | 96.9 | 80 | 120 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 101 | 30 | 120 | | | |

| Sample ID **CCV6-160525** | Batch ID: **R86016** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_160525D** | Analysis Date: **5/25/2016 6:01:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.195 | 0.00100 | 0.200 | 0 | 97.4 | 90 | 110 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 95.6 | 30 | 120 | | | |

| Sample ID **LCVL6-160525** | Batch ID: **R86016** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_160525D** | Analysis Date: **5/25/2016 6:05:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.000979 | 0.00100 | 0.00100 | 0 | 97.9 | 80 | 120 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 98.7 | 30 | 120 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_160525D**

| Sample ID **CCV7-160525** | Batch ID: **R86016** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_160525D** | Analysis Date: **5/25/2016 6:29:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.197 | 0.00100 | 0.200 | 0 | 98.3 | 90 | 110 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 93.2 | 30 | 120 | | | |

| Sample ID **LCVL7-160525** | Batch ID: **R86016** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_160525D** | Analysis Date: **5/25/2016 6:33:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Lead | 0.000976 | 0.00100 | 0.00100 | 0 | 97.6 | 80 | 120 | | | |
| IS: Bismuth | 0.200 | | 0.200 | | 96.2 | 30 | 120 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS6_160502D**

| Sample ID **DCS-74876** | Batch ID: **74876** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **DCS** | Run ID: **GCMS6_160502D** | Analysis Date: **5/2/2016 1:24:00 PM** | Prep Date: **4/29/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.00921 | 0.0100 | 0.01000 | 0 | 92.1 | 20 | 200 | 0 | 0 | |
| Acenaphthylene | 0.00964 | 0.0100 | 0.01000 | 0 | 96.4 | 20 | 200 | 0 | 0 | |
| Anthracene | 0.00923 | 0.0100 | 0.01000 | 0 | 92.3 | 20 | 200 | 0 | 0 | |
| Benzo[a]anthracene | 0.00934 | 0.0100 | 0.01000 | 0 | 93.4 | 20 | 200 | 0 | 0 | |
| Benzo[a]pyrene | 0.00897 | 0.0100 | 0.01000 | 0 | 89.7 | 20 | 200 | 0 | 0 | |
| Benzo[b]fluoranthene | 0.00923 | 0.0100 | 0.01000 | 0 | 92.3 | 20 | 200 | 0 | 0 | |
| Benzo[e]pyrene | 0.00939 | 0.0100 | 0.01000 | 0 | 93.9 | 20 | 200 | 0 | 0 | |
| Benzo[g,h,i]perylene | 0.0109 | 0.0100 | 0.01000 | 0 | 109 | 20 | 200 | 0 | 0 | |
| Benzo[j]fluoranthene | 0.00874 | 0.0100 | 0.01000 | 0 | 87.4 | 20 | 200 | 0 | 0 | N |
| Benzo[k]fluoranthene | 0.00895 | 0.0100 | 0.01000 | 0 | 89.5 | 20 | 200 | 0 | 0 | |
| Chrysene | 0.00935 | 0.0100 | 0.01000 | 0 | 93.5 | 20 | 200 | 0 | 0 | |
| Dibenz[a,h]anthracene | 0.0102 | 0.0100 | 0.01000 | 0 | 102 | 20 | 200 | 0 | 0 | |
| Fluoranthene | 0.0109 | 0.0100 | 0.01000 | 0 | 109 | 20 | 200 | 0 | 0 | |
| Fluorene | 0.00957 | 0.0100 | 0.01000 | 0 | 95.7 | 20 | 200 | 0 | 0 | |
| Indeno[1,2,3-cd]pyrene | 0.0102 | 0.0100 | 0.01000 | 0 | 102 | 20 | 200 | 0 | 0 | |
| Phenanthrene | 0.0100 | 0.0100 | 0.01000 | 0 | 100 | 20 | 200 | 0 | 0 | |
| Pyrene | 0.0107 | 0.0100 | 0.01000 | 0 | 107 | 20 | 200 | 0 | 0 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS6_160523A**

The QC data in batch 75225 applies to the following samples: 1605121-15A, 1605121-16A, 1605121-17A, 1605121-18A, 1605121-19A, 1605121-20A, 1605121-21A, 1605121-22A, 1605121-23A, 1605121-24A, 1605121-25A, 1605121-26A, 1605121-27A, 1605121-28A, 1605121-29A, 1605121-30A, 1605121-31A, 1605121-32A, 1605121-33A, 1605121-34A

Sample ID **LCS-75225** Batch ID: **75225** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS6_160523A** Analysis Date: **5/23/2016 2:21:00 PM** Prep Date: **5/18/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.701 | 0.0100 | 1.000 | 0 | 70.1 | 44 | 111 | | | |
| Acenaphthylene | 0.739 | 0.0100 | 1.000 | 0 | 73.9 | 39 | 116 | | | |
| Anthracene | 0.736 | 0.0100 | 1.000 | 0 | 73.6 | 50 | 114 | | | |
| Benzo[a]anthracene | 0.761 | 0.0100 | 1.000 | 0 | 76.1 | 54 | 122 | | | |
| Benzo[a]pyrene | 0.712 | 0.0100 | 1.000 | 0 | 71.2 | 50 | 125 | | | |
| Benzo[b]fluoranthene | 0.757 | 0.0100 | 1.000 | 0 | 75.7 | 53 | 128 | | | |
| Benzo[e]pyrene | 0.837 | 0.0100 | 1.000 | 0 | 83.7 | 43 | 140 | | | |
| Benzo[g,h,i]perylene | 0.688 | 0.0100 | 1.000 | 0 | 68.8 | 49 | 127 | | | |
| Benzo[j]fluoranthene | 0.794 | 0.0100 | 1.000 | 0 | 79.4 | 45 | 125 | | | N |
| Benzo[k]fluoranthene | 0.769 | 0.0100 | 1.000 | 0 | 76.9 | 56 | 123 | | | |
| Chrysene | 0.715 | 0.0100 | 1.000 | 0 | 71.5 | 57 | 118 | | | |
| Dibenz[a,h]anthracene | 0.666 | 0.0100 | 1.000 | 0 | 66.6 | 50 | 129 | | | |
| Fluoranthene | 0.764 | 0.0100 | 1.000 | 0 | 76.4 | 55 | 119 | | | |
| Fluorene | 0.759 | 0.0100 | 1.000 | 0 | 75.9 | 47 | 114 | | | |
| Indeno[1,2,3-cd]pyrene | 0.649 | 0.0100 | 1.000 | 0 | 64.9 | 49 | 130 | | | |
| Phenanthrene | 0.702 | 0.0100 | 1.000 | 0 | 70.2 | 49 | 113 | | | |
| Pyrene | 0.731 | 0.0100 | 1.000 | 0 | 73.1 | 55 | 117 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 66.3 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 74.2 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 99.4 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 72.5 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 74.2 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 0.815 | | 1.000 | | 81.5 | 46 | 115 | | | |
| Surr: 4-Terphenyl-d14 | 0.745 | | 1.000 | | 74.5 | 58 | 133 | | | |

Sample ID **MB-75225** Batch ID: **75225** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS6_160523A** Analysis Date: **5/23/2016 3:01:00 PM** Prep Date: **5/18/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.00750 | 0.0100 | | | | | | | | U |
| Acenaphthylene | 0.00750 | 0.0100 | | | | | | | | U |
| Anthracene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[a]anthracene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[a]pyrene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[b]fluoranthene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[e]pyrene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[g,h,i]perylene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[j]fluoranthene | 0.00750 | 0.0100 | | | | | | | | NU |
| Benzo[k]fluoranthene | 0.00750 | 0.0100 | | | | | | | | U |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS6_160523A**

| Sample ID **MB-75225** | Batch ID: **75225** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **MBLK** | Run ID: **GCMS6_160523A** | Analysis Date: **5/23/2016 3:01:00 PM** | Prep Date: **5/18/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chrysene | 0.00750 | 0.0100 | | | | | | | | U |
| Dibenz[a,h]anthracene | 0.00750 | 0.0100 | | | | | | | | U |
| Fluoranthene | 0.00750 | 0.0100 | | | | | | | | U |
| Fluorene | 0.00750 | 0.0100 | | | | | | | | U |
| Indeno[1,2,3-cd]pyrene | 0.00750 | 0.0100 | | | | | | | | U |
| Phenanthrene | 0.00750 | 0.0100 | | | | | | | | U |
| Pyrene | 0.00750 | 0.0100 | | | | | | | | U |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 70.3 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 82.3 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 106 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 79.0 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 75.8 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 0.794 | | 1.000 | | 79.4 | 46 | 115 | | | |
| Surr: 4-Terphenyl-d14 | 0.730 | | 1.000 | | 73.0 | 58 | 133 | | | |

| Sample ID **1605121-22AMS** | Batch ID: **75225** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **MS** | Run ID: **GCMS6_160523A** | Analysis Date: **5/23/2016 10:59:00 PM** | Prep Date: **5/18/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.808 | 0.0971 | 0.9709 | 0.2054 | 62.0 | 44 | 111 | | | |
| Acenaphthylene | 0.652 | 0.0971 | 0.9709 | 0 | 67.1 | 39 | 116 | | | |
| Anthracene | 1.34 | 0.0971 | 0.9709 | 0.6559 | 70.4 | 50 | 114 | | | |
| Benzo[a]anthracene | 5.13 | 0.0971 | 0.9709 | 4.617 | 52.7 | 54 | 122 | | | S |
| Benzo[a]pyrene | 6.16 | 0.0971 | 0.9709 | 5.779 | 38.8 | 50 | 125 | | | S |
| Benzo[b]fluoranthene | 5.69 | 0.0971 | 0.9709 | 5.272 | 43.1 | 53 | 128 | | | S |
| Benzo[e]pyrene | 4.72 | 0.0971 | 0.9709 | 4.190 | 54.8 | 43 | 140 | | | |
| Benzo[g,h,i]perylene | 4.14 | 0.0971 | 0.9709 | 3.733 | 42.3 | 49 | 127 | | | S |
| Benzo[j]fluoranthene | 3.42 | 0.0971 | 0.9709 | 2.817 | 61.7 | 45 | 125 | | | N |
| Benzo[k]fluoranthene | 3.29 | 0.0971 | 0.9709 | 2.715 | 59.5 | 56 | 123 | | | |
| Chrysene | 5.72 | 0.0971 | 0.9709 | 5.265 | 47.0 | 57 | 118 | | | S |
| Dibenz[a,h]anthracene | 1.42 | 0.0971 | 0.9709 | 0.8163 | 62.7 | 50 | 129 | | | |
| Fluoranthene | 8.15 | 0.0971 | 0.9709 | 7.732 | 43.2 | 55 | 119 | | | S |
| Fluorene | 0.780 | 0.0971 | 0.9709 | 0.1302 | 66.9 | 47 | 114 | | | |
| Indeno[1,2,3-cd]pyrene | 3.56 | 0.0971 | 0.9709 | 3.028 | 54.9 | 49 | 130 | | | |
| Phenanthrene | 3.61 | 0.0971 | 0.9709 | 2.920 | 71.2 | 49 | 113 | | | |
| Pyrene | 7.07 | 0.0971 | 0.9709 | 6.651 | 43.4 | 55 | 117 | | | S |
| IS: Acenaphthene-d10 | 38.8 | | 3.883 | | 79.9 | 50 | 200 | | | |
| IS: Chrysene-d12 | 38.8 | | 3.883 | | 77.9 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 38.8 | | 3.883 | | 92.4 | 50 | 200 | | | |
| IS: Perylene-d12 | 38.8 | | 3.883 | | 78.0 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 38.8 | | 3.883 | | 76.6 | 50 | 200 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS6_160523A**

| Sample ID **1605121-22AMS** | Batch ID: **75225** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **MS** | Run ID: **GCMS6_160523A** | Analysis Date: **5/23/2016 10:59:00 PM** | Prep Date: **5/18/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 2-Fluorobiphenyl | 0.744 | | 0.9709 | | 76.6 | 46 | 115 | | | |
| Surr: 4-Terphenyl-d14 | 0.668 | | 0.9709 | | 68.8 | 58 | 133 | | | |

| Sample ID **1605121-22AMSD** | Batch ID: **75225** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **MSD** | Run ID: **GCMS6_160523A** | Analysis Date: **5/23/2016 11:39:00 PM** | Prep Date: **5/18/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.786 | 0.0935 | 0.9355 | 0.2054 | 62.1 | 44 | 111 | 2.69 | 20 | |
| Acenaphthylene | 0.629 | 0.0935 | 0.9355 | 0 | 67.2 | 39 | 116 | 3.54 | 20 | |
| Anthracene | 1.18 | 0.0935 | 0.9355 | 0.6559 | 56.5 | 50 | 114 | 12.3 | 20 | |
| Benzo[a]anthracene | 4.67 | 0.0935 | 0.9355 | 4.617 | 5.74 | 54 | 122 | 9.35 | 20 | S |
| Benzo[a]pyrene | 5.64 | 0.0935 | 0.9355 | 5.779 | -14.8 | 50 | 125 | 8.73 | 20 | S |
| Benzo[b]fluoranthene | 5.20 | 0.0935 | 0.9355 | 5.272 | -7.20 | 53 | 128 | 8.92 | 20 | S |
| Benzo[e]pyrene | 4.38 | 0.0935 | 0.9355 | 4.190 | 20.6 | 43 | 140 | 7.45 | 20 | S |
| Benzo[g,h,i]perylene | 3.81 | 0.0935 | 0.9355 | 3.733 | 7.99 | 49 | 127 | 8.44 | 20 | S |
| Benzo[j]fluoranthene | 3.15 | 0.0935 | 0.9355 | 2.817 | 35.3 | 45 | 125 | 8.19 | 20 | SN |
| Benzo[k]fluoranthene | 3.01 | 0.0935 | 0.9355 | 2.715 | 32.1 | 56 | 123 | 8.82 | 20 | S |
| Chrysene | 5.32 | 0.0935 | 0.9355 | 5.265 | 6.43 | 57 | 118 | 7.18 | 20 | S |
| Dibenz[a,h]anthracene | 1.31 | 0.0935 | 0.9355 | 0.8163 | 53.2 | 50 | 129 | 8.11 | 20 | |
| Fluoranthene | 7.22 | 0.0935 | 0.9355 | 7.732 | -55.1 | 55 | 119 | 12.2 | 20 | S |
| Fluorene | 0.730 | 0.0935 | 0.9355 | 0.1302 | 64.1 | 47 | 114 | 6.66 | 20 | |
| Indeno[1,2,3-cd]pyrene | 3.29 | 0.0935 | 0.9355 | 3.028 | 27.7 | 49 | 130 | 7.98 | 20 | S |
| Phenanthrene | 3.09 | 0.0935 | 0.9355 | 2.920 | 17.8 | 49 | 113 | 15.7 | 20 | S |
| Pyrene | 6.31 | 0.0935 | 0.9355 | 6.651 | -36.1 | 55 | 117 | 11.3 | 20 | S |
| IS: Acenaphthene-d10 | 37.4 | | 3.742 | | 80.0 | 50 | 200 | 0 | 0 | |
| IS: Chrysene-d12 | 37.4 | | 3.742 | | 79.5 | 50 | 200 | 0 | 0 | |
| IS: Naphthalene-d8 | 37.4 | | 3.742 | | 91.7 | 50 | 200 | 0 | 0 | |
| IS: Perylene-d12 | 37.4 | | 3.742 | | 79.2 | 50 | 200 | 0 | 0 | |
| IS: Phenanthrene-d10 | 37.4 | | 3.742 | | 77.1 | 50 | 200 | 0 | 0 | |
| Surr: 2-Fluorobiphenyl | 0.692 | | 0.9355 | | 74.0 | 46 | 115 | 0 | 0 | |
| Surr: 4-Terphenyl-d14 | 0.624 | | 0.9355 | | 66.7 | 58 | 133 | 0 | 0 | |

| Sample ID **SB-160523** | Batch ID: **75225** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **SBLK** | Run ID: **GCMS6_160523A** | Analysis Date: **5/24/2016 2:13:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Acenaphthylene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Anthracene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[a]anthracene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[a]pyrene | 0.00750 | 0.0100 | 0 | | | | | | | U |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS6_160523A**

| Sample ID **SB-160523** | Batch ID: **75225** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **SBLK** | Run ID: **GCMS6_160523A** | Analysis Date: **5/24/2016 2:13:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzo[b]fluoranthene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[e]pyrene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[g,h,i]perylene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[j]fluoranthene | 0.00750 | 0.0100 | 0 | | | | | | | NU |
| Benzo[k]fluoranthene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Chrysene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Dibenz[a,h]anthracene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Fluoranthene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Fluorene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Indeno[1,2,3-cd]pyrene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Phenanthrene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Pyrene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| IS: Acenaphthene-d10 | 4.00 | | 0 | | | | | | | |
| IS: Chrysene-d12 | 4.00 | | 0 | | | | | | | |
| IS: Naphthalene-d8 | 4.00 | | 0 | | | | | | | |
| IS: Perylene-d12 | 4.00 | | 0 | | | | | | | |
| IS: Phenanthrene-d10 | 4.00 | | 0 | | | | | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS6_160523A**

| Sample ID **ICV-160523** | Batch ID: **R85960** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **GCMS6_160523A** | Analysis Date: **5/23/2016 1:41:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.92 | 0.0100 | 2.000 | 0 | 96.2 | 80 | 120 | | | |
| Acenaphthylene | 1.97 | 0.0100 | 2.000 | 0 | 98.6 | 80 | 120 | | | |
| Anthracene | 1.79 | 0.0100 | 2.000 | 0 | 89.6 | 80 | 120 | | | |
| Benzo[a]anthracene | 1.94 | 0.0100 | 2.000 | 0 | 96.8 | 80 | 120 | | | |
| Benzo[a]pyrene | 1.84 | 0.0100 | 2.000 | 0 | 91.9 | 80 | 120 | | | |
| Benzo[b]fluoranthene | 1.93 | 0.0100 | 2.000 | 0 | 96.4 | 80 | 120 | | | |
| Benzo[e]pyrene | 1.87 | 0.0100 | 2.000 | 0 | 93.3 | 80 | 120 | | | |
| Benzo[g,h,i]perylene | 1.76 | 0.0100 | 2.000 | 0 | 88.1 | 80 | 120 | | | |
| Benzo[j]fluoranthene | 1.89 | 0.0100 | 2.000 | 0 | 94.7 | 80 | 120 | | | N |
| Benzo[k]fluoranthene | 1.85 | 0.0100 | 2.000 | 0 | 92.3 | 80 | 120 | | | |
| Chrysene | 1.80 | 0.0100 | 2.000 | 0 | 90.2 | 80 | 120 | | | |
| Dibenz[a,h]anthracene | 1.73 | 0.0100 | 2.000 | 0 | 86.7 | 80 | 120 | | | |
| Fluoranthene | 1.86 | 0.0100 | 2.000 | 0 | 92.9 | 80 | 120 | | | |
| Fluorene | 1.97 | 0.0100 | 2.000 | 0 | 98.5 | 80 | 120 | | | |
| Indeno[1,2,3-cd]pyrene | 1.68 | 0.0100 | 2.000 | 0 | 84.2 | 80 | 120 | | | |
| Phenanthrene | 1.81 | 0.0100 | 2.000 | 0 | 90.6 | 80 | 120 | | | |
| Pyrene | 1.79 | 0.0100 | 2.000 | 0 | 89.5 | 80 | 120 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 114 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 112 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 124 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 109 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 113 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 1.91 | | 2.000 | | 95.7 | 65 | 120 | | | |
| Surr: 4-Terphenyl-d14 | 1.79 | | 2.000 | | 89.7 | 65 | 120 | | | |

| Sample ID **ICV2-160523** | Batch ID: **R85960** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **GCMS6_160523A** | Analysis Date: **5/24/2016 12:54:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.88 | 0.0100 | 2.000 | 0 | 94.0 | 80 | 120 | | | |
| Acenaphthylene | 1.95 | 0.0100 | 2.000 | 0 | 97.5 | 80 | 120 | | | |
| Anthracene | 1.78 | 0.0100 | 2.000 | 0 | 88.8 | 80 | 120 | | | |
| Benzo[a]anthracene | 1.92 | 0.0100 | 2.000 | 0 | 96.2 | 80 | 120 | | | |
| Benzo[a]pyrene | 1.85 | 0.0100 | 2.000 | 0 | 92.4 | 80 | 120 | | | |
| Benzo[b]fluoranthene | 1.92 | 0.0100 | 2.000 | 0 | 96.1 | 80 | 120 | | | |
| Benzo[e]pyrene | 1.88 | 0.0100 | 2.000 | 0 | 94.2 | 80 | 120 | | | |
| Benzo[g,h,i]perylene | 1.75 | 0.0100 | 2.000 | 0 | 87.7 | 80 | 120 | | | |
| Benzo[j]fluoranthene | 1.91 | 0.0100 | 2.000 | 0 | 95.5 | 80 | 120 | | | N |
| Benzo[k]fluoranthene | 1.87 | 0.0100 | 2.000 | 0 | 93.7 | 80 | 120 | | | |
| Chrysene | 1.79 | 0.0100 | 2.000 | 0 | 89.5 | 80 | 120 | | | |
| Dibenz[a,h]anthracene | 1.76 | 0.0100 | 2.000 | 0 | 87.9 | 80 | 120 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS6_160523A**

| Sample ID **ICV2-160523** | Batch ID: **R85960** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **GCMS6_160523A** | Analysis Date: **5/24/2016 12:54:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoranthene | 1.86 | 0.0100 | 2.000 | 0 | 92.8 | 80 | 120 | | | |
| Fluorene | 1.98 | 0.0100 | 2.000 | 0 | 99.1 | 80 | 120 | | | |
| Indeno[1,2,3-cd]pyrene | 1.70 | 0.0100 | 2.000 | 0 | 85.2 | 80 | 120 | | | |
| Phenanthrene | 1.79 | 0.0100 | 2.000 | 0 | 89.3 | 80 | 120 | | | |
| Pyrene | 1.80 | 0.0100 | 2.000 | 0 | 90.0 | 80 | 120 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 114 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 115 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 121 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 112 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 113 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 1.88 | | 2.000 | | 94.1 | 65 | 120 | | | |
| Surr: 4-Terphenyl-d14 | 1.79 | | 2.000 | | 89.3 | 65 | 120 | | | |

| Sample ID **CCV1-160523** | Batch ID: **R85960** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **GCMS6_160523A** | Analysis Date: **5/24/2016 8:53:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.849 | 0.0100 | 1.000 | 0 | 84.9 | 50 | 150 | | | |
| Acenaphthylene | 0.912 | 0.0100 | 1.000 | 0 | 91.2 | 50 | 150 | | | |
| Anthracene | 0.887 | 0.0100 | 1.000 | 0 | 88.7 | 50 | 150 | | | |
| Benzo[a]anthracene | 0.909 | 0.0100 | 1.000 | 0 | 90.9 | 50 | 150 | | | |
| Benzo[a]pyrene | 0.885 | 0.0100 | 1.000 | 0 | 88.5 | 50 | 150 | | | |
| Benzo[b]fluoranthene | 0.913 | 0.0100 | 1.000 | 0 | 91.3 | 50 | 150 | | | |
| Benzo[e]pyrene | 0.919 | 0.0100 | 1.000 | 0 | 91.9 | 50 | 150 | | | |
| Benzo[g,h,i]perylene | 0.810 | 0.0100 | 1.000 | 0 | 81.0 | 50 | 150 | | | |
| Benzo[j]fluoranthene | 0.936 | 0.0100 | 1.000 | 0 | 93.6 | 50 | 150 | | | N |
| Benzo[k]fluoranthene | 0.905 | 0.0100 | 1.000 | 0 | 90.5 | 50 | 150 | | | |
| Chrysene | 0.858 | 0.0100 | 1.000 | 0 | 85.8 | 50 | 150 | | | |
| Dibenz[a,h]anthracene | 0.821 | 0.0100 | 1.000 | 0 | 82.1 | 50 | 150 | | | |
| Fluoranthene | 0.907 | 0.0100 | 1.000 | 0 | 90.7 | 50 | 150 | | | |
| Fluorene | 0.834 | 0.0100 | 1.000 | 0 | 83.4 | 50 | 150 | | | |
| Indeno[1,2,3-cd]pyrene | 0.798 | 0.0100 | 1.000 | 0 | 79.8 | 50 | 150 | | | |
| Phenanthrene | 0.843 | 0.0100 | 1.000 | 0 | 84.3 | 50 | 150 | | | |
| Pyrene | 0.874 | 0.0100 | 1.000 | 0 | 87.4 | 50 | 150 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 88.7 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 85.6 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 116 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 83.7 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 83.9 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 0.997 | | 1.000 | | 99.7 | 50 | 150 | | | |
| Surr: 4-Terphenyl-d14 | 0.887 | | 1.000 | | 88.7 | 50 | 150 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160510B**

| Sample ID **DCS-74876** | Batch ID: **74876** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **DCS** | Run ID: **GCMS8_160510B** | Analysis Date: **5/11/2016 4:29:00 AM** | Prep Date: **4/29/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.0113 | 0.0100 | 0.01000 | 0 | 113 | 20 | 200 | 0 | 0 | |
| Acenaphthylene | 0.0116 | 0.0100 | 0.01000 | 0 | 116 | 20 | 200 | 0 | 0 | |
| Anthracene | 0.0104 | 0.0100 | 0.01000 | 0 | 104 | 20 | 200 | 0 | 0 | |
| Benzo[a]anthracene | 0.0111 | 0.0100 | 0.01000 | 0 | 111 | 20 | 200 | 0 | 0 | |
| Benzo[a]pyrene | 0.0100 | 0.0100 | 0.01000 | 0 | 100 | 20 | 200 | 0 | 0 | |
| Benzo[b]fluoranthene | 0.0105 | 0.0100 | 0.01000 | 0 | 105 | 20 | 200 | 0 | 0 | |
| Benzo[e]pyrene | 0.0110 | 0.0100 | 0.01000 | 0 | 110 | 20 | 200 | 0 | 0 | |
| Benzo[g,h,i]perylene | 0.0110 | 0.0100 | 0.01000 | 0 | 110 | 20 | 200 | 0 | 0 | |
| Benzo[j]fluoranthene | 0.0106 | 0.0100 | 0.01000 | 0 | 106 | 20 | 200 | 0 | 0 | N |
| Benzo[k]fluoranthene | 0.0104 | 0.0100 | 0.01000 | 0 | 104 | 20 | 200 | 0 | 0 | |
| Chrysene | 0.0118 | 0.0100 | 0.01000 | 0 | 118 | 20 | 200 | 0 | 0 | |
| Dibenz[a,h]anthracene | 0.0119 | 0.0100 | 0.01000 | 0 | 119 | 20 | 200 | 0 | 0 | |
| Fluoranthene | 0.0133 | 0.0100 | 0.01000 | 0 | 133 | 20 | 200 | 0 | 0 | |
| Fluorene | 0.0102 | 0.0100 | 0.01000 | 0 | 102 | 20 | 200 | 0 | 0 | |
| Indeno[1,2,3-cd]pyrene | 0.0107 | 0.0100 | 0.01000 | 0 | 107 | 20 | 200 | 0 | 0 | |
| Phenanthrene | 0.0127 | 0.0100 | 0.01000 | 0 | 127 | 20 | 200 | 0 | 0 | |
| Pyrene | 0.0133 | 0.0100 | 0.01000 | 0 | 133 | 20 | 200 | 0 | 0 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160518A**

| Sample ID **DCS-75209** | Batch ID: **75209** | TestNo: **SW8270D-LL** | Units: **mg/L** |
|---|---|---|---|
| SampType: **DCS** | Run ID: **GCMS8_160518A** | Analysis Date: **5/18/2016 10:22:00 AM** | Prep Date: **5/17/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.0000307 | 0.0000500 | 0.0000400 | 0 | 76.8 | 20 | 170 | 0 | 0 | |
| Acenaphthylene | 0.0000308 | 0.0000500 | 0.0000400 | 0 | 77.0 | 20 | 170 | 0 | 0 | |
| Anthracene | 0.0000322 | 0.0000500 | 0.0000400 | 0 | 80.5 | 20 | 170 | 0 | 0 | |
| Benzo[a]anthracene | 0.0000306 | 0.0000500 | 0.0000400 | 0 | 76.4 | 20 | 170 | 0 | 0 | |
| Benzo[a]pyrene | 0.0000288 | 0.0000500 | 0.0000400 | 0 | 72.0 | 20 | 170 | 0 | 0 | |
| Benzo[b]fluoranthene | 0.0000304 | 0.0000500 | 0.0000400 | 0 | 76.0 | 20 | 170 | 0 | 0 | |
| Benzo[e]pyrene | 0.0000308 | 0.0000500 | 0.0000400 | 0 | 76.9 | 20 | 170 | 0 | 0 | |
| Benzo[g,h,i]perylene | 0.0000282 | 0.0000500 | 0.0000400 | 0 | 70.4 | 20 | 170 | 0 | 0 | |
| Benzo[j]fluoranthene | 0.0000254 | 0.0000500 | 0.0000400 | 0 | 63.6 | 20 | 170 | 0 | 0 | N |
| Benzo[k]fluoranthene | 0.0000283 | 0.0000500 | 0.0000400 | 0 | 70.8 | 20 | 170 | 0 | 0 | |
| Chrysene | 0.0000293 | 0.0000500 | 0.0000400 | 0 | 73.4 | 20 | 170 | 0 | 0 | |
| Dibenz[a,h]anthracene | 0.0000221 | 0.0000500 | 0.0000400 | 0 | 55.2 | 20 | 170 | 0 | 0 | |
| Fluoranthene | 0.0000331 | 0.0000500 | 0.0000400 | 0 | 82.7 | 20 | 170 | 0 | 0 | |
| Fluorene | 0.0000302 | 0.0000500 | 0.0000400 | 0 | 75.4 | 20 | 170 | 0 | 0 | |
| Indeno[1,2,3-cd]pyrene | 0.0000275 | 0.0000500 | 0.0000400 | 0 | 68.8 | 20 | 170 | 0 | 0 | |
| Phenanthrene | 0.0000339 | 0.0000500 | 0.0000400 | 0 | 84.6 | 20 | 170 | 0 | 0 | |
| Pyrene | 0.0000328 | 0.0000500 | 0.0000400 | 0 | 81.9 | 20 | 170 | 0 | 0 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160518B**

The QC data in batch 75146 applies to the following samples: 1605121-46B, 1605121-47B

Sample ID **LCS-75146** Batch ID: **75146** TestNo: **SW8270D-LL** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS8_160518B** Analysis Date: **5/18/2016 2:03:00 PM** Prep Date: **5/13/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.00262 | 0.0000500 | 0.00400 | 0 | 65.5 | 48 | 114 | | | |
| Acenaphthylene | 0.00261 | 0.0000500 | 0.00400 | 0 | 65.4 | 35 | 121 | | | |
| Anthracene | 0.00247 | 0.0000500 | 0.00400 | 0 | 61.7 | 53 | 119 | | | |
| Benzo[a]anthracene | 0.00297 | 0.0000500 | 0.00400 | 0 | 74.3 | 59 | 120 | | | |
| Benzo[a]pyrene | 0.00301 | 0.0000500 | 0.00400 | 0 | 75.2 | 53 | 120 | | | |
| Benzo[b]fluoranthene | 0.00309 | 0.0000500 | 0.00400 | 0 | 77.3 | 53 | 126 | | | |
| Benzo[e]pyrene | 0.00295 | 0.0000500 | 0.00400 | 0 | 73.6 | 40 | 140 | | | |
| Benzo[g,h,i]perylene | 0.00300 | 0.0000500 | 0.00400 | 0 | 74.9 | 44 | 128 | | | |
| Benzo[j]fluoranthene | 0.00295 | 0.0000500 | 0.00400 | 0 | 73.8 | 45 | 124 | | | N |
| Benzo[k]fluoranthene | 0.00309 | 0.0000500 | 0.00400 | 0 | 77.1 | 54 | 125 | | | |
| Chrysene | 0.00298 | 0.0000500 | 0.00400 | 0 | 74.6 | 57 | 120 | | | |
| Dibenz[a,h]anthracene | 0.00302 | 0.0000500 | 0.00400 | 0 | 75.4 | 44 | 131 | | | |
| Fluoranthene | 0.00291 | 0.0000500 | 0.00400 | 0 | 72.7 | 58 | 120 | | | |
| Fluorene | 0.00272 | 0.0000500 | 0.00400 | 0 | 68.0 | 50 | 118 | | | |
| Indeno[1,2,3-cd]pyrene | 0.00300 | 0.0000500 | 0.00400 | 0 | 75.0 | 48 | 130 | | | |
| Phenanthrene | 0.00259 | 0.0000500 | 0.00400 | 0 | 64.8 | 53 | 115 | | | |
| Pyrene | 0.00292 | 0.0000500 | 0.00400 | 0 | 73.0 | 53 | 121 | | | |
| IS: Acenaphthene-d10 | 0.00800 | | 0.00800 | | 78.1 | 50 | 200 | | | |
| IS: Chrysene-d12 | 0.00800 | | 0.00800 | | 77.8 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 0.00800 | | 0.00800 | | 81.0 | 50 | 200 | | | |
| IS: Perylene-d12 | 0.00800 | | 0.00800 | | 76.7 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 0.00800 | | 0.00800 | | 78.1 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 4.48 | | 8.000 | | 56.0 | 53 | 106 | | | |
| Surr: 4-Terphenyl-d14 | 5.28 | | 8.000 | | 65.9 | 58 | 132 | | | |

Sample ID **MB-75146** Batch ID: **75146** TestNo: **SW8270D-LL** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS8_160518B** Analysis Date: **5/18/2016 2:40:00 PM** Prep Date: **5/13/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.0000400 | 0.0000500 | | | | | | | | U |
| Acenaphthylene | 0.0000400 | 0.0000500 | | | | | | | | U |
| Anthracene | 0.0000400 | 0.0000500 | | | | | | | | U |
| Benzo[a]anthracene | 0.0000400 | 0.0000500 | | | | | | | | U |
| Benzo[a]pyrene | 0.0000400 | 0.0000500 | | | | | | | | U |
| Benzo[b]fluoranthene | 0.0000400 | 0.0000500 | | | | | | | | U |
| Benzo[e]pyrene | 0.0000400 | 0.0000500 | | | | | | | | U |
| Benzo[g,h,i]perylene | 0.0000400 | 0.0000500 | | | | | | | | U |
| Benzo[j]fluoranthene | 0.0000400 | 0.0000500 | | | | | | | | NU |
| Benzo[k]fluoranthene | 0.0000400 | 0.0000500 | | | | | | | | U |
| Chrysene | 0.0000400 | 0.0000500 | | | | | | | | U |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160518B**

| Sample ID **MB-75146** | Batch ID: **75146** | TestNo: **SW8270D-LL** | Units: **mg/L** |
|---|---|---|---|
| SampType: **MBLK** | Run ID: **GCMS8_160518B** | Analysis Date: **5/18/2016 2:40:00 PM** | Prep Date: **5/13/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Dibenz[a,h]anthracene | 0.0000400 | 0.0000500 | | | | | | | | U |
| Fluoranthene | 0.0000400 | 0.0000500 | | | | | | | | U |
| Fluorene | 0.0000400 | 0.0000500 | | | | | | | | U |
| Indeno[1,2,3-cd]pyrene | 0.0000400 | 0.0000500 | | | | | | | | U |
| Phenanthrene | 0.0000400 | 0.0000500 | | | | | | | | U |
| Pyrene | 0.0000400 | 0.0000500 | | | | | | | | U |
| IS: Acenaphthene-d10 | 0.00800 | | 0.00800 | | 82.7 | 50 | 200 | | | |
| IS: Chrysene-d12 | 0.00800 | | 0.00800 | | 85.3 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 0.00800 | | 0.00800 | | 85.3 | 50 | 200 | | | |
| IS: Perylene-d12 | 0.00800 | | 0.00800 | | 85.3 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 0.00800 | | 0.00800 | | 84.3 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 4.61 | | 8.000 | | 57.6 | 53 | 106 | | | |
| Surr: 4-Terphenyl-d14 | 5.33 | | 8.000 | | 66.7 | 58 | 132 | | | |

| Sample ID **SBLK-160518** | Batch ID: **75146** | TestNo: **SW8270D-LL** | Units: **mg/L** |
|---|---|---|---|
| SampType: **SBLK** | Run ID: **GCMS8_160518B** | Analysis Date: **5/18/2016 10:03:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.0000400 | 0.0000500 | 0 | | | | | | | U |
| Acenaphthylene | 0.0000400 | 0.0000500 | 0 | | | | | | | U |
| Anthracene | 0.0000400 | 0.0000500 | 0 | | | | | | | U |
| Benzo[a]anthracene | 0.0000400 | 0.0000500 | 0 | | | | | | | U |
| Benzo[a]pyrene | 0.0000400 | 0.0000500 | 0 | | | | | | | U |
| Benzo[b]fluoranthene | 0.0000400 | 0.0000500 | 0 | | | | | | | U |
| Benzo[e]pyrene | 0.0000400 | 0.0000500 | 0 | | | | | | | U |
| Benzo[g,h,i]perylene | 0.0000400 | 0.0000500 | 0 | | | | | | | U |
| Benzo[j]fluoranthene | 0.0000400 | 0.0000500 | 0 | | | | | | | NU |
| Benzo[k]fluoranthene | 0.0000400 | 0.0000500 | 0 | | | | | | | U |
| Chrysene | 0.0000400 | 0.0000500 | 0 | | | | | | | U |
| Dibenz[a,h]anthracene | 0.0000400 | 0.0000500 | 0 | | | | | | | U |
| Fluoranthene | 0.0000400 | 0.0000500 | 0 | | | | | | | U |
| Fluorene | 0.0000400 | 0.0000500 | 0 | | | | | | | U |
| Indeno[1,2,3-cd]pyrene | 0.0000400 | 0.0000500 | 0 | | | | | | | U |
| Phenanthrene | 0.0000400 | 0.0000500 | 0 | | | | | | | U |
| Pyrene | 0.0000400 | 0.0000500 | 0 | | | | | | | U |
| IS: Acenaphthene-d10 | 4.00 | | 0 | | | | | | | |
| IS: Chrysene-d12 | 4.00 | | 0 | | | | | | | |
| IS: Naphthalene-d8 | 4.00 | | 0 | | | | | | | |
| IS: Perylene-d12 | 4.00 | | 0 | | | | | | | |
| IS: Phenanthrene-d10 | 4.00 | | 0 | | | | | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160518B**

| Sample ID **ICV-160518** | Batch ID: **R85875** | TestNo: **SW8270D-LL** | Units: **mg/L** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **GCMS8_160518B** | Analysis Date: **5/18/2016 9:35:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 2.01 | 0.0000500 | 2.00 | 0 | 101 | 80 | 120 | | | |
| Acenaphthylene | 2.01 | 0.0000500 | 2.00 | 0 | 101 | 80 | 120 | | | |
| Anthracene | 1.88 | 0.0000500 | 2.00 | 0 | 93.9 | 80 | 120 | | | |
| Benzo[a]anthracene | 2.12 | 0.0000500 | 2.00 | 0 | 106 | 80 | 120 | | | |
| Benzo[a]pyrene | 2.11 | 0.0000500 | 2.00 | 0 | 106 | 80 | 120 | | | |
| Benzo[b]fluoranthene | 2.13 | 0.0000500 | 2.00 | 0 | 106 | 80 | 120 | | | |
| Benzo[e]pyrene | 2.12 | 0.0000500 | 2.00 | 0 | 106 | 80 | 120 | | | |
| Benzo[g,h,i]perylene | 2.11 | 0.0000500 | 2.00 | 0 | 105 | 80 | 120 | | | |
| Benzo[j]fluoranthene | 2.12 | 0.0000500 | 2.00 | 0 | 106 | 80 | 120 | | | N |
| Benzo[k]fluoranthene | 2.12 | 0.0000500 | 2.00 | 0 | 106 | 80 | 120 | | | |
| Chrysene | 2.11 | 0.0000500 | 2.00 | 0 | 106 | 80 | 120 | | | |
| Dibenz[a,h]anthracene | 2.11 | 0.0000500 | 2.00 | 0 | 105 | 80 | 120 | | | |
| Fluoranthene | 2.14 | 0.0000500 | 2.00 | 0 | 107 | 80 | 120 | | | |
| Fluorene | 2.02 | 0.0000500 | 2.00 | 0 | 101 | 80 | 120 | | | |
| Indeno[1,2,3-cd]pyrene | 2.10 | 0.0000500 | 2.00 | 0 | 105 | 80 | 120 | | | |
| Phenanthrene | 1.88 | 0.0000500 | 2.00 | 0 | 94.0 | 80 | 120 | | | |
| Pyrene | 2.14 | 0.0000500 | 2.00 | 0 | 107 | 80 | 120 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.00 | | 87.5 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.00 | | 88.7 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.00 | | 88.3 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.00 | | 87.9 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.00 | | 86.7 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 1910 | | 2000 | | 95.7 | 65 | 120 | | | |
| Surr: 4-Terphenyl-d14 | 2040 | | 2000 | | 102 | 65 | 120 | | | |

| Sample ID **ICV2-160518** | Batch ID: **R85875** | TestNo: **SW8270D-LL** | Units: **mg/L** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **GCMS8_160518B** | Analysis Date: **5/18/2016 8:49:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 2.01 | 0.0000500 | 2.00 | 0 | 100 | 80 | 120 | | | |
| Acenaphthylene | 1.99 | 0.0000500 | 2.00 | 0 | 99.7 | 80 | 120 | | | |
| Anthracene | 1.86 | 0.0000500 | 2.00 | 0 | 93.0 | 80 | 120 | | | |
| Benzo[a]anthracene | 2.11 | 0.0000500 | 2.00 | 0 | 106 | 80 | 120 | | | |
| Benzo[a]pyrene | 2.13 | 0.0000500 | 2.00 | 0 | 107 | 80 | 120 | | | |
| Benzo[b]fluoranthene | 2.12 | 0.0000500 | 2.00 | 0 | 106 | 80 | 120 | | | |
| Benzo[e]pyrene | 2.11 | 0.0000500 | 2.00 | 0 | 106 | 80 | 120 | | | |
| Benzo[g,h,i]perylene | 2.14 | 0.0000500 | 2.00 | 0 | 107 | 80 | 120 | | | |
| Benzo[j]fluoranthene | 2.13 | 0.0000500 | 2.00 | 0 | 106 | 80 | 120 | | | N |
| Benzo[k]fluoranthene | 2.19 | 0.0000500 | 2.00 | 0 | 109 | 80 | 120 | | | |
| Chrysene | 2.10 | 0.0000500 | 2.00 | 0 | 105 | 80 | 120 | | | |
| Dibenz[a,h]anthracene | 2.13 | 0.0000500 | 2.00 | 0 | 107 | 80 | 120 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160518B**

| Sample ID **ICV2-160518** | Batch ID: **R85875** | TestNo: **SW8270D-LL** | Units: **mg/L** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **GCMS8_160518B** | Analysis Date: **5/18/2016 8:49:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoranthene | 2.07 | 0.0000500 | 2.00 | 0 | 104 | 80 | 120 | | | |
| Fluorene | 2.01 | 0.0000500 | 2.00 | 0 | 101 | 80 | 120 | | | |
| Indeno[1,2,3-cd]pyrene | 2.11 | 0.0000500 | 2.00 | 0 | 105 | 80 | 120 | | | |
| Phenanthrene | 1.86 | 0.0000500 | 2.00 | 0 | 93.1 | 80 | 120 | | | |
| Pyrene | 2.07 | 0.0000500 | 2.00 | 0 | 104 | 80 | 120 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.00 | | 96.3 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.00 | | 93.5 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.00 | | 94.6 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.00 | | 93.4 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.00 | | 93.3 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 1920 | | 2000 | | 96.2 | 65 | 120 | | | |
| Surr: 4-Terphenyl-d14 | 2030 | | 2000 | | 102 | 65 | 120 | | | |

| Sample ID **CCV-160520** | Batch ID: **R85875** | TestNo: **SW8270D-LL** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **GCMS8_160518B** | Analysis Date: **5/19/2016 2:59:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.989 | 0.0000500 | 1.00 | 0 | 98.9 | 50 | 150 | | | |
| Acenaphthylene | 0.998 | 0.0000500 | 1.00 | 0 | 99.8 | 50 | 150 | | | |
| Anthracene | 0.938 | 0.0000500 | 1.00 | 0 | 93.8 | 50 | 150 | | | |
| Benzo[a]anthracene | 1.00 | 0.0000500 | 1.00 | 0 | 100 | 50 | 150 | | | |
| Benzo[a]pyrene | 1.01 | 0.0000500 | 1.00 | 0 | 101 | 50 | 150 | | | |
| Benzo[b]fluoranthene | 1.01 | 0.0000500 | 1.00 | 0 | 101 | 50 | 150 | | | |
| Benzo[e]pyrene | 1.01 | 0.0000500 | 1.00 | 0 | 101 | 50 | 150 | | | |
| Benzo[g,h,i]perylene | 1.02 | 0.0000500 | 1.00 | 0 | 102 | 50 | 150 | | | |
| Benzo[j]fluoranthene | 1.01 | 0.0000500 | 1.00 | 0 | 101 | 50 | 150 | | | N |
| Benzo[k]fluoranthene | 1.04 | 0.0000500 | 1.00 | 0 | 104 | 50 | 150 | | | |
| Chrysene | 1.00 | 0.0000500 | 1.00 | 0 | 100 | 50 | 150 | | | |
| Dibenz[a,h]anthracene | 1.02 | 0.0000500 | 1.00 | 0 | 102 | 50 | 150 | | | |
| Fluoranthene | 0.983 | 0.0000500 | 1.00 | 0 | 98.3 | 50 | 150 | | | |
| Fluorene | 0.978 | 0.0000500 | 1.00 | 0 | 97.8 | 50 | 150 | | | |
| Indeno[1,2,3-cd]pyrene | 1.02 | 0.0000500 | 1.00 | 0 | 102 | 50 | 150 | | | |
| Phenanthrene | 0.940 | 0.0000500 | 1.00 | 0 | 94.0 | 50 | 150 | | | |
| Pyrene | 0.984 | 0.0000500 | 1.00 | 0 | 98.4 | 50 | 150 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.00 | | 105 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.00 | | 94.9 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.00 | | 100 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.00 | | 96.4 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.00 | | 95.2 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 1000 | | 1000 | | 100 | 50 | 150 | | | |
| Surr: 4-Terphenyl-d14 | 999 | | 1000 | | 99.9 | 50 | 150 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160519B**

The QC data in batch 75218 applies to the following samples: 1605121-01A, 1605121-02A, 1605121-03A, 1605121-04A, 1605121-05A, 1605121-06A, 1605121-07A, 1605121-08A, 1605121-09A, 1605121-10A, 1605121-11A, 1605121-12A, 1605121-13A, 1605121-14A

Sample ID **LCS-75218** Batch ID: **75218** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS8_160519B** Analysis Date: **5/19/2016 2:57:00 PM** Prep Date: **5/18/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.771 | 0.0100 | 1.000 | 0 | 77.1 | 44 | 111 | | | |
| Acenaphthylene | 0.780 | 0.0100 | 1.000 | 0 | 78.0 | 39 | 116 | | | |
| Anthracene | 0.764 | 0.0100 | 1.000 | 0 | 76.4 | 50 | 114 | | | |
| Benzo[a]anthracene | 0.838 | 0.0100 | 1.000 | 0 | 83.8 | 54 | 122 | | | |
| Benzo[a]pyrene | 0.823 | 0.0100 | 1.000 | 0 | 82.3 | 50 | 125 | | | |
| Benzo[b]fluoranthene | 0.843 | 0.0100 | 1.000 | 0 | 84.3 | 53 | 128 | | | |
| Benzo[e]pyrene | 0.907 | 0.0100 | 1.000 | 0 | 90.7 | 43 | 140 | | | |
| Benzo[g,h,i]perylene | 0.836 | 0.0100 | 1.000 | 0 | 83.6 | 49 | 127 | | | |
| Benzo[j]fluoranthene | 0.859 | 0.0100 | 1.000 | 0 | 85.9 | 45 | 125 | | | N |
| Benzo[k]fluoranthene | 0.865 | 0.0100 | 1.000 | 0 | 86.5 | 56 | 123 | | | |
| Chrysene | 0.838 | 0.0100 | 1.000 | 0 | 83.8 | 57 | 118 | | | |
| Dibenz[a,h]anthracene | 0.843 | 0.0100 | 1.000 | 0 | 84.3 | 50 | 129 | | | |
| Fluoranthene | 0.890 | 0.0100 | 1.000 | 0 | 89.0 | 55 | 119 | | | |
| Fluorene | 0.774 | 0.0100 | 1.000 | 0 | 77.4 | 47 | 114 | | | |
| Indeno[1,2,3-cd]pyrene | 0.838 | 0.0100 | 1.000 | 0 | 83.8 | 49 | 130 | | | |
| Phenanthrene | 0.776 | 0.0100 | 1.000 | 0 | 77.6 | 49 | 113 | | | |
| Pyrene | 0.897 | 0.0100 | 1.000 | 0 | 89.7 | 55 | 117 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 88.1 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 94.8 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 93.2 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 97.0 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 82.6 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 0.739 | | 1.000 | | 73.9 | 46 | 115 | | | |
| Surr: 4-Terphenyl-d14 | 0.794 | | 1.000 | | 79.4 | 58 | 133 | | | |

Sample ID **MB-75218** Batch ID: **75218** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS8_160519B** Analysis Date: **5/19/2016 3:34:00 PM** Prep Date: **5/18/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.00750 | 0.0100 | | | | | | | | U |
| Acenaphthylene | 0.00750 | 0.0100 | | | | | | | | U |
| Anthracene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[a]anthracene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[a]pyrene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[b]fluoranthene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[e]pyrene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[g,h,i]perylene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[j]fluoranthene | 0.00750 | 0.0100 | | | | | | | | NU |
| Benzo[k]fluoranthene | 0.00750 | 0.0100 | | | | | | | | U |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160519B**

| Sample ID **MB-75218** | Batch ID: **75218** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **MBLK** | Run ID: **GCMS8_160519B** | Analysis Date: **5/19/2016 3:34:00 PM** | Prep Date: **5/18/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chrysene | 0.00750 | 0.0100 | | | | | | | | U |
| Dibenz[a,h]anthracene | 0.00750 | 0.0100 | | | | | | | | U |
| Fluoranthene | 0.00750 | 0.0100 | | | | | | | | U |
| Fluorene | 0.00750 | 0.0100 | | | | | | | | U |
| Indeno[1,2,3-cd]pyrene | 0.00750 | 0.0100 | | | | | | | | U |
| Phenanthrene | 0.00750 | 0.0100 | | | | | | | | U |
| Pyrene | 0.00750 | 0.0100 | | | | | | | | U |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 86.7 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 93.1 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 88.7 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 95.2 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 80.7 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 0.745 | | 1.000 | | 74.5 | 46 | 115 | | | |
| Surr: 4-Terphenyl-d14 | 0.785 | | 1.000 | | 78.5 | 58 | 133 | | | |

| Sample ID **1605121-01AMS** | Batch ID: **75218** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **MS** | Run ID: **GCMS8_160519B** | Analysis Date: **5/19/2016 11:35:00 PM** | Prep Date: **5/18/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 2.10 | 0.0971 | 0.9709 | 1.450 | 67.2 | 44 | 111 | | | |
| Acenaphthylene | 0.844 | 0.0971 | 0.9709 | 0 | 87.0 | 39 | 116 | | | |
| Anthracene | 5.46 | 0.0971 | 0.9709 | 4.279 | 121 | 50 | 114 | | | S |
| Benzo[a]anthracene | 34.8 | 0.0971 | 0.9709 | 35.53 | -74.1 | 54 | 122 | | | S |
| Benzo[b]fluoranthene | 40.1 | 0.0971 | 0.9709 | 42.18 | -209 | 53 | 128 | | | S |
| Benzo[e]pyrene | 31.5 | 0.0971 | 0.9709 | 32.78 | -128 | 43 | 140 | | | S |
| Benzo[g,h,i]perylene | 32.9 | 0.0971 | 0.9709 | 33.71 | -82.9 | 49 | 127 | | | S |
| Benzo[j]fluoranthene | 20.9 | 0.0971 | 0.9709 | 21.39 | -52.9 | 45 | 125 | | | SN |
| Benzo[k]fluoranthene | 21.5 | 0.0971 | 0.9709 | 21.21 | 27.8 | 56 | 123 | | | S |
| Dibenz[a,h]anthracene | 8.00 | 0.0971 | 0.9709 | 7.566 | 44.8 | 50 | 129 | | | S |
| Fluorene | 1.50 | 0.0971 | 0.9709 | 0.7011 | 81.8 | 47 | 114 | | | |
| Indeno[1,2,3-cd]pyrene | 27.8 | 0.0971 | 0.9709 | 28.46 | -72.4 | 49 | 130 | | | S |
| Phenanthrene | 22.8 | 0.0971 | 0.9709 | 20.19 | 269 | 49 | 113 | | | S |
| IS: Acenaphthene-d10 | 38.8 | | 3.883 | | 97.0 | 50 | 200 | | | |
| IS: Chrysene-d12 | 38.8 | | 3.883 | | 87.0 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 38.8 | | 3.883 | | 95.2 | 50 | 200 | | | |
| IS: Perylene-d12 | 38.8 | | 3.883 | | 93.1 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 38.8 | | 3.883 | | 83.5 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 0.830 | | 0.9709 | | 85.4 | 46 | 115 | | | |
| Surr: 4-Terphenyl-d14 | 0.812 | | 0.9709 | | 83.6 | 58 | 133 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160519B**

| Sample ID **1605121-01AMSD** | Batch ID: **75218** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **MSD** | Run ID: **GCMS8_160519B** | Analysis Date: **5/20/2016 12:11:00 AM** | Prep Date: **5/18/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 2.41 | 0.0962 | 0.9625 | 1.450 | 100 | 44 | 111 | 13.7 | 20 | |
| Acenaphthylene | 0.818 | 0.0962 | 0.9625 | 0 | 84.9 | 39 | 116 | 3.23 | 20 | |
| Anthracene | 6.03 | 0.0962 | 0.9625 | 4.279 | 182 | 50 | 114 | 9.96 | 20 | S |
| Benzo[a]anthracene | 39.0 | 0.0962 | 0.9625 | 35.53 | 364 | 54 | 122 | 11.4 | 20 | S |
| Benzo[b]fluoranthene | 44.8 | 0.0962 | 0.9625 | 42.18 | 271 | 53 | 128 | 10.9 | 20 | S |
| Benzo[e]pyrene | 35.3 | 0.0962 | 0.9625 | 32.78 | 259 | 43 | 140 | 11.2 | 20 | S |
| Benzo[g,h,i]perylene | 36.9 | 0.0962 | 0.9625 | 33.71 | 332 | 49 | 127 | 11.5 | 20 | S |
| Benzo[j]fluoranthene | 23.3 | 0.0962 | 0.9625 | 21.39 | 194 | 45 | 125 | 10.8 | 20 | SN |
| Benzo[k]fluoranthene | 23.7 | 0.0962 | 0.9625 | 21.21 | 262 | 56 | 123 | 9.98 | 20 | S |
| Dibenz[a,h]anthracene | 8.76 | 0.0962 | 0.9625 | 7.566 | 125 | 50 | 129 | 9.11 | 20 | |
| Fluorene | 1.69 | 0.0962 | 0.9625 | 0.7011 | 103 | 47 | 114 | 12.5 | 20 | |
| Indeno[1,2,3-cd]pyrene | 30.7 | 0.0962 | 0.9625 | 28.46 | 234 | 49 | 130 | 10.1 | 20 | S |
| Phenanthrene | 24.8 | 0.0962 | 0.9625 | 20.19 | 480 | 49 | 113 | 8.43 | 20 | S |
| IS: Acenaphthene-d10 | 38.5 | | 3.850 | | 98.3 | 50 | 200 | 0 | 0 | |
| IS: Chrysene-d12 | 38.5 | | 3.850 | | 88.3 | 50 | 200 | 0 | 0 | |
| IS: Naphthalene-d8 | 38.5 | | 3.850 | | 97.4 | 50 | 200 | 0 | 0 | |
| IS: Perylene-d12 | 38.5 | | 3.850 | | 94.5 | 50 | 200 | 0 | 0 | |
| IS: Phenanthrene-d10 | 38.5 | | 3.850 | | 84.7 | 50 | 200 | 0 | 0 | |
| Surr: 2-Fluorobiphenyl | 0.797 | | 0.9625 | | 82.8 | 46 | 115 | 0 | 0 | |
| Surr: 4-Terphenyl-d14 | 0.791 | | 0.9625 | | 82.2 | 58 | 133 | 0 | 0 | |

| Sample ID **SBLK-160519** | Batch ID: **75218** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **SBLK** | Run ID: **GCMS8_160519B** | Analysis Date: **5/20/2016 2:40:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Acenaphthylene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Anthracene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[a]anthracene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[a]pyrene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[b]fluoranthene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[e]pyrene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[g,h,i]perylene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[j]fluoranthene | 0.00750 | 0.0100 | 0 | | | | | | | NU |
| Benzo[k]fluoranthene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Chrysene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Dibenz[a,h]anthracene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Fluoranthene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Fluorene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Indeno[1,2,3-cd]pyrene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Phenanthrene | 0.00750 | 0.0100 | 0 | | | | | | | U |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160519B**

| Sample ID **SBLK-160519** | Batch ID: **75218** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **SBLK** | Run ID: **GCMS8_160519B** | Analysis Date: **5/20/2016 2:40:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Pyrene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| IS: Acenaphthene-d10 | 4.00 | | 0 | | | | | | | |
| IS: Chrysene-d12 | 4.00 | | 0 | | | | | | | |
| IS: Naphthalene-d8 | 4.00 | | 0 | | | | | | | |
| IS: Perylene-d12 | 4.00 | | 0 | | | | | | | |
| IS: Phenanthrene-d10 | 4.00 | | 0 | | | | | | | |

| Sample ID **SBLK-160520** | Batch ID: **75218** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **SBLK** | Run ID: **GCMS8_160519B** | Analysis Date: **5/20/2016 10:28:00 AM** | Prep Date: **5/17/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzo[a]pyrene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Chrysene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Fluoranthene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Pyrene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| IS: Acenaphthene-d10 | 4.00 | | 0 | | | | | | | |
| IS: Chrysene-d12 | 4.00 | | 0 | | | | | | | |
| IS: Naphthalene-d8 | 4.00 | | 0 | | | | | | | |
| IS: Perylene-d12 | 4.00 | | 0 | | | | | | | |
| IS: Phenanthrene-d10 | 4.00 | | 0 | | | | | | | |

| Sample ID **1605121-01AMS** | Batch ID: **75218** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **MS** | Run ID: **GCMS8_160519B** | Analysis Date: **5/20/2016 11:42:00 AM** | Prep Date: **5/18/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzo[a]pyrene | 41.3 | 0.485 | 0.9709 | 45.20 | -405 | 50 | 125 | | | S |
| Chrysene | 40.6 | 0.485 | 0.9709 | 43.97 | -344 | 57 | 118 | | | S |
| Fluoranthene | 57.1 | 0.485 | 0.9709 | 58.17 | -115 | 55 | 119 | | | S |
| Pyrene | 50.9 | 0.485 | 0.9709 | 52.68 | -180 | 55 | 117 | | | S |
| IS: Acenaphthene-d10 | 194 | | 3.883 | | 102 | 50 | 200 | | | |
| IS: Chrysene-d12 | 194 | | 3.883 | | 87.4 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 194 | | 3.883 | | 95.6 | 50 | 200 | | | |
| IS: Perylene-d12 | 194 | | 3.883 | | 88.7 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 194 | | 3.883 | | 81.4 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 0.865 | | 0.9709 | | 89.0 | 46 | 115 | | | |
| Surr: 4-Terphenyl-d14 | 0.805 | | 0.9709 | | 83.0 | 58 | 133 | | | |

| Sample ID **1605121-01AMSD** | Batch ID: **75218** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **MSD** | Run ID: **GCMS8_160519B** | Analysis Date: **5/20/2016 12:19:00 PM** | Prep Date: **5/18/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160519B**

Sample ID **1605121-01AMSD** Batch ID: **75218** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MSD** Run ID: **GCMS8_160519B** Analysis Date: **5/20/2016 12:19:00 PM** Prep Date: **5/18/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzo[a]pyrene | 48.9 | 0.481 | 0.9625 | 45.20 | 385 | 50 | 125 | 16.9 | 20 | S |
| Chrysene | 48.5 | 0.481 | 0.9625 | 43.97 | 471 | 57 | 118 | 17.7 | 20 | S |
| Fluoranthene | 66.5 | 0.481 | 0.9625 | 58.17 | 865 | 55 | 119 | 15.3 | 20 | S |
| Pyrene | 59.7 | 0.481 | 0.9625 | 52.68 | 730 | 55 | 117 | 15.9 | 20 | S |
| IS: Acenaphthene-d10 | 192 | | 3.850 | | 98.4 | 50 | 200 | 0 | 0 | |
| IS: Chrysene-d12 | 192 | | 3.850 | | 85.3 | 50 | 200 | 0 | 0 | |
| IS: Naphthalene-d8 | 192 | | 3.850 | | 93.6 | 50 | 200 | 0 | 0 | |
| IS: Perylene-d12 | 192 | | 3.850 | | 88.3 | 50 | 200 | 0 | 0 | |
| IS: Phenanthrene-d10 | 192 | | 3.850 | | 78.6 | 50 | 200 | 0 | 0 | |
| Surr: 2-Fluorobiphenyl | 0.875 | | 0.9625 | | 91.0 | 46 | 115 | 0 | 0 | |
| Surr: 4-Terphenyl-d14 | 0.804 | | 0.9625 | | 83.6 | 58 | 133 | 0 | 0 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160519B**

| Sample ID **ICV2-160519** | Batch ID: **R85895** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **GCMS8_160519B** | Analysis Date: **5/19/2016 2:20:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.99 | 0.0100 | 2.000 | 0 | 99.4 | 80 | 120 | | | |
| Acenaphthylene | 1.99 | 0.0100 | 2.000 | 0 | 99.4 | 80 | 120 | | | |
| Anthracene | 1.83 | 0.0100 | 2.000 | 0 | 91.6 | 80 | 120 | | | |
| Benzo[a]anthracene | 2.10 | 0.0100 | 2.000 | 0 | 105 | 80 | 120 | | | |
| Benzo[a]pyrene | 2.11 | 0.0100 | 2.000 | 0 | 105 | 80 | 120 | | | |
| Benzo[b]fluoranthene | 2.11 | 0.0100 | 2.000 | 0 | 105 | 80 | 120 | | | |
| Benzo[e]pyrene | 2.10 | 0.0100 | 2.000 | 0 | 105 | 80 | 120 | | | |
| Benzo[g,h,i]perylene | 2.14 | 0.0100 | 2.000 | 0 | 107 | 80 | 120 | | | |
| Benzo[j]fluoranthene | 2.13 | 0.0100 | 2.000 | 0 | 106 | 80 | 120 | | | N |
| Benzo[k]fluoranthene | 2.16 | 0.0100 | 2.000 | 0 | 108 | 80 | 120 | | | |
| Chrysene | 2.09 | 0.0100 | 2.000 | 0 | 104 | 80 | 120 | | | |
| Dibenz[a,h]anthracene | 2.15 | 0.0100 | 2.000 | 0 | 108 | 80 | 120 | | | |
| Fluoranthene | 1.99 | 0.0100 | 2.000 | 0 | 99.6 | 80 | 120 | | | |
| Fluorene | 1.96 | 0.0100 | 2.000 | 0 | 98.1 | 80 | 120 | | | |
| Indeno[1,2,3-cd]pyrene | 2.13 | 0.0100 | 2.000 | 0 | 107 | 80 | 120 | | | |
| Phenanthrene | 1.87 | 0.0100 | 2.000 | 0 | 93.3 | 80 | 120 | | | |
| Pyrene | 1.99 | 0.0100 | 2.000 | 0 | 99.5 | 80 | 120 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 102 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 92.0 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 97.3 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 94.6 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 92.8 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 1.98 | | 2.000 | | 99.1 | 65 | 120 | | | |
| Surr: 4-Terphenyl-d14 | 2.00 | | 2.000 | | 100 | 65 | 120 | | | |

| Sample ID **ICV3-160519** | Batch ID: **R85895** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **GCMS8_160519B** | Analysis Date: **5/20/2016 1:26:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 2.01 | 0.0100 | 2.000 | 0 | 101 | 80 | 120 | | | |
| Acenaphthylene | 2.03 | 0.0100 | 2.000 | 0 | 102 | 80 | 120 | | | |
| Anthracene | 1.86 | 0.0100 | 2.000 | 0 | 92.8 | 80 | 120 | | | |
| Benzo[a]anthracene | 2.11 | 0.0100 | 2.000 | 0 | 106 | 80 | 120 | | | |
| Benzo[a]pyrene | 2.12 | 0.0100 | 2.000 | 0 | 106 | 80 | 120 | | | |
| Benzo[b]fluoranthene | 2.14 | 0.0100 | 2.000 | 0 | 107 | 80 | 120 | | | |
| Benzo[e]pyrene | 2.11 | 0.0100 | 2.000 | 0 | 105 | 80 | 120 | | | |
| Benzo[g,h,i]perylene | 2.15 | 0.0100 | 2.000 | 0 | 107 | 80 | 120 | | | |
| Benzo[j]fluoranthene | 2.10 | 0.0100 | 2.000 | 0 | 105 | 80 | 120 | | | N |
| Benzo[k]fluoranthene | 2.12 | 0.0100 | 2.000 | 0 | 106 | 80 | 120 | | | |
| Chrysene | 2.11 | 0.0100 | 2.000 | 0 | 105 | 80 | 120 | | | |
| Dibenz[a,h]anthracene | 2.19 | 0.0100 | 2.000 | 0 | 109 | 80 | 120 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160519B**

| Sample ID **ICV3-160519** | Batch ID: **R85895** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **GCMS8_160519B** | Analysis Date: **5/20/2016 1:26:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoranthene | 2.04 | 0.0100 | 2.000 | 0 | 102 | 80 | 120 | | | |
| Fluorene | 1.90 | 0.0100 | 2.000 | 0 | 95.1 | 80 | 120 | | | |
| Indeno[1,2,3-cd]pyrene | 2.16 | 0.0100 | 2.000 | 0 | 108 | 80 | 120 | | | |
| Phenanthrene | 1.86 | 0.0100 | 2.000 | 0 | 93.0 | 80 | 120 | | | |
| Pyrene | 2.05 | 0.0100 | 2.000 | 0 | 103 | 80 | 120 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 96.9 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 84.6 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 95.2 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 90.2 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 81.7 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 2.01 | | 2.000 | | 101 | 65 | 120 | | | |
| Surr: 4-Terphenyl-d14 | 1.95 | | 2.000 | | 97.6 | 65 | 120 | | | |

| Sample ID **CCV-160519** | Batch ID: **R85895** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **GCMS8_160519B** | Analysis Date: **5/20/2016 6:59:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.986 | 0.0100 | 1.000 | 0 | 98.6 | 50 | 150 | | | |
| Acenaphthylene | 1.01 | 0.0100 | 1.000 | 0 | 101 | 50 | 150 | | | |
| Anthracene | 0.925 | 0.0100 | 1.000 | 0 | 92.5 | 50 | 150 | | | |
| Benzo[a]anthracene | 1.01 | 0.0100 | 1.000 | 0 | 101 | 50 | 150 | | | |
| Benzo[a]pyrene | 1.02 | 0.0100 | 1.000 | 0 | 102 | 50 | 150 | | | |
| Benzo[b]fluoranthene | 1.01 | 0.0100 | 1.000 | 0 | 101 | 50 | 150 | | | |
| Benzo[e]pyrene | 1.01 | 0.0100 | 1.000 | 0 | 101 | 50 | 150 | | | |
| Benzo[g,h,i]perylene | 1.03 | 0.0100 | 1.000 | 0 | 103 | 50 | 150 | | | |
| Benzo[j]fluoranthene | 1.02 | 0.0100 | 1.000 | 0 | 102 | 50 | 150 | | | N |
| Benzo[k]fluoranthene | 1.04 | 0.0100 | 1.000 | 0 | 104 | 50 | 150 | | | |
| Chrysene | 1.01 | 0.0100 | 1.000 | 0 | 101 | 50 | 150 | | | |
| Dibenz[a,h]anthracene | 1.04 | 0.0100 | 1.000 | 0 | 104 | 50 | 150 | | | |
| Fluoranthene | 1.00 | 0.0100 | 1.000 | 0 | 100 | 50 | 150 | | | |
| Fluorene | 0.925 | 0.0100 | 1.000 | 0 | 92.5 | 50 | 150 | | | |
| Indeno[1,2,3-cd]pyrene | 1.03 | 0.0100 | 1.000 | 0 | 103 | 50 | 150 | | | |
| Phenanthrene | 0.937 | 0.0100 | 1.000 | 0 | 93.7 | 50 | 150 | | | |
| Pyrene | 1.01 | 0.0100 | 1.000 | 0 | 101 | 50 | 150 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 102 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 86.4 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 97.9 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 87.5 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 84.0 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 1.03 | | 1.000 | | 103 | 50 | 150 | | | |
| Surr: 4-Terphenyl-d14 | 0.987 | | 1.000 | | 98.7 | 50 | 150 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160519B**

| Sample ID **ICV-160520** | Batch ID: **R85895** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **GCMS8_160519B** | Analysis Date: **5/20/2016 9:14:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzo[a]pyrene | 2.12 | 0.0100 | 2.000 | 0 | 106 | 80 | 120 | | | |
| Chrysene | 2.13 | 0.0100 | 2.000 | 0 | 107 | 80 | 120 | | | |
| Fluoranthene | 2.08 | 0.0100 | 2.000 | 0 | 104 | 80 | 120 | | | |
| Pyrene | 2.10 | 0.0100 | 2.000 | 0 | 105 | 80 | 120 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 99.4 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 88.2 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 94.9 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 89.9 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 85.8 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 2.06 | | 2.000 | | 103 | 65 | 120 | | | |
| Surr: 4-Terphenyl-d14 | 2.01 | | 2.000 | | 100 | 65 | 120 | | | |

| Sample ID **ICV2-160520** | Batch ID: **R85895** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **GCMS8_160519B** | Analysis Date: **5/20/2016 7:07:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzo[a]pyrene | 2.11 | 0.0100 | 2.000 | 0 | 105 | 50 | 150 | | | |
| Chrysene | 2.13 | 0.0100 | 2.000 | 0 | 107 | 50 | 150 | | | |
| Fluoranthene | 2.08 | 0.0100 | 2.000 | 0 | 104 | 50 | 150 | | | |
| Pyrene | 2.07 | 0.0100 | 2.000 | 0 | 104 | 50 | 150 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 96.0 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 83.7 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 94.0 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 84.8 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 84.7 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 2.02 | | 2.000 | | 101 | 50 | 150 | | | |
| Surr: 4-Terphenyl-d14 | 2.06 | | 2.000 | | 103 | 50 | 150 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160524A**

The QC data in batch 75227 applies to the following samples: 1605121-35A, 1605121-36A, 1605121-37A, 1605121-38A, 1605121-39A, 1605121-40A, 1605121-41A, 1605121-42A, 1605121-43A, 1605121-44A, 1605121-45A

Sample ID **LCS-75227** Batch ID: **75227** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **LCS** Run ID: **GCMS8_160524A** Analysis Date: **5/24/2016 10:23:00 AM** Prep Date: **5/19/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.732 | 0.0100 | 1.000 | 0 | 73.2 | 44 | 111 | | | |
| Acenaphthylene | 0.742 | 0.0100 | 1.000 | 0 | 74.2 | 39 | 116 | | | |
| Anthracene | 0.727 | 0.0100 | 1.000 | 0 | 72.7 | 50 | 114 | | | |
| Benzo[a]anthracene | 0.752 | 0.0100 | 1.000 | 0 | 75.2 | 54 | 122 | | | |
| Benzo[a]pyrene | 0.752 | 0.0100 | 1.000 | 0 | 75.2 | 50 | 125 | | | |
| Benzo[b]fluoranthene | 0.761 | 0.0100 | 1.000 | 0 | 76.1 | 53 | 128 | | | |
| Benzo[e]pyrene | 0.829 | 0.0100 | 1.000 | 0 | 82.9 | 43 | 140 | | | |
| Benzo[g,h,i]perylene | 0.747 | 0.0100 | 1.000 | 0 | 74.7 | 49 | 127 | | | |
| Benzo[j]fluoranthene | 0.769 | 0.0100 | 1.000 | 0 | 76.9 | 45 | 125 | | | N |
| Benzo[k]fluoranthene | 0.748 | 0.0100 | 1.000 | 0 | 74.8 | 56 | 123 | | | |
| Chrysene | 0.758 | 0.0100 | 1.000 | 0 | 75.8 | 57 | 118 | | | |
| Dibenz[a,h]anthracene | 0.746 | 0.0100 | 1.000 | 0 | 74.6 | 50 | 129 | | | |
| Fluoranthene | 0.805 | 0.0100 | 1.000 | 0 | 80.5 | 55 | 119 | | | |
| Fluorene | 0.718 | 0.0100 | 1.000 | 0 | 71.8 | 47 | 114 | | | |
| Indeno[1,2,3-cd]pyrene | 0.753 | 0.0100 | 1.000 | 0 | 75.3 | 49 | 130 | | | |
| Phenanthrene | 0.723 | 0.0100 | 1.000 | 0 | 72.3 | 49 | 113 | | | |
| Pyrene | 0.811 | 0.0100 | 1.000 | 0 | 81.1 | 55 | 117 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 82.2 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 81.9 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 81.6 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 84.7 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 71.9 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 0.727 | | 1.000 | | 72.7 | 46 | 115 | | | |
| Surr: 4-Terphenyl-d14 | 0.689 | | 1.000 | | 68.9 | 58 | 133 | | | |

Sample ID **MB-75227** Batch ID: **75227** TestNo: **SW8270D-LL** Units: **mg/Kg-dry**
SampType: **MBLK** Run ID: **GCMS8_160524A** Analysis Date: **5/24/2016 11:04:00 AM** Prep Date: **5/19/2016**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.00750 | 0.0100 | | | | | | | | U |
| Acenaphthylene | 0.00750 | 0.0100 | | | | | | | | U |
| Anthracene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[a]anthracene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[a]pyrene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[b]fluoranthene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[e]pyrene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[g,h,i]perylene | 0.00750 | 0.0100 | | | | | | | | U |
| Benzo[j]fluoranthene | 0.00750 | 0.0100 | | | | | | | | NU |
| Benzo[k]fluoranthene | 0.00750 | 0.0100 | | | | | | | | U |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160524A**

| Sample ID **MB-75227** | Batch ID: **75227** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **MBLK** | Run ID: **GCMS8_160524A** | Analysis Date: **5/24/2016 11:04:00 AM** | Prep Date: **5/19/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chrysene | 0.00750 | 0.0100 | | | | | | | | U |
| Dibenz[a,h]anthracene | 0.00750 | 0.0100 | | | | | | | | U |
| Fluoranthene | 0.00750 | 0.0100 | | | | | | | | U |
| Fluorene | 0.00750 | 0.0100 | | | | | | | | U |
| Indeno[1,2,3-cd]pyrene | 0.00750 | 0.0100 | | | | | | | | U |
| Phenanthrene | 0.00750 | 0.0100 | | | | | | | | U |
| Pyrene | 0.00750 | 0.0100 | | | | | | | | U |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 92.1 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 81.3 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 93.9 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 86.0 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 71.6 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 0.715 | | 1.000 | | 71.5 | 46 | 115 | | | |
| Surr: 4-Terphenyl-d14 | 0.701 | | 1.000 | | 70.1 | 58 | 133 | | | |

| Sample ID **SBLK-160524** | Batch ID: **75227** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **SBLK** | Run ID: **GCMS8_160524A** | Analysis Date: **5/24/2016 10:15:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Acenaphthylene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Anthracene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[a]anthracene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[a]pyrene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[b]fluoranthene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[e]pyrene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[g,h,i]perylene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Benzo[j]fluoranthene | 0.00750 | 0.0100 | 0 | | | | | | | NU |
| Benzo[k]fluoranthene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Chrysene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Dibenz[a,h]anthracene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Fluoranthene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Fluorene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Indeno[1,2,3-cd]pyrene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Phenanthrene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| Pyrene | 0.00750 | 0.0100 | 0 | | | | | | | U |
| IS: Acenaphthene-d10 | 4.00 | | 0 | | | | | | | |
| IS: Chrysene-d12 | 4.00 | | 0 | | | | | | | |
| IS: Naphthalene-d8 | 4.00 | | 0 | | | | | | | |
| IS: Perylene-d12 | 4.00 | | 0 | | | | | | | |
| IS: Phenanthrene-d10 | 4.00 | | 0 | | | | | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160524A**

| Sample ID **1605121-43AMS** | Batch ID: **75227** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **MS** | Run ID: **GCMS8_160524A** | Analysis Date: **5/25/2016 2:34:00 AM** | Prep Date: **5/19/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.739 | 0.0977 | 0.9766 | 0 | 75.6 | 44 | 111 | | | |
| Acenaphthylene | 0.740 | 0.0977 | 0.9766 | 0 | 75.8 | 39 | 116 | | | |
| Anthracene | 0.710 | 0.0977 | 0.9766 | 0 | 72.7 | 50 | 114 | | | |
| Benzo[a]anthracene | 0.681 | 0.0977 | 0.9766 | 0 | 69.8 | 54 | 122 | | | |
| Benzo[a]pyrene | 0.679 | 0.0977 | 0.9766 | 0 | 69.5 | 50 | 125 | | | |
| Benzo[b]fluoranthene | 0.648 | 0.0977 | 0.9766 | 0 | 66.3 | 53 | 128 | | | |
| Benzo[e]pyrene | 0.755 | 0.0977 | 0.9766 | 0 | 77.4 | 43 | 140 | | | |
| Benzo[g,h,i]perylene | 0.683 | 0.0977 | 0.9766 | 0 | 70.0 | 49 | 127 | | | |
| Benzo[j]fluoranthene | 0.651 | 0.0977 | 0.9766 | 0 | 66.7 | 45 | 125 | | | N |
| Benzo[k]fluoranthene | 0.606 | 0.0977 | 0.9766 | 0 | 62.0 | 56 | 123 | | | |
| Chrysene | 0.703 | 0.0977 | 0.9766 | 0 | 72.0 | 57 | 118 | | | |
| Dibenz[a,h]anthracene | 0.592 | 0.0977 | 0.9766 | 0 | 60.6 | 50 | 129 | | | |
| Fluoranthene | 0.757 | 0.0977 | 0.9766 | 0 | 77.5 | 55 | 119 | | | |
| Fluorene | 0.664 | 0.0977 | 0.9766 | 0 | 68.0 | 47 | 114 | | | |
| Indeno[1,2,3-cd]pyrene | 0.666 | 0.0977 | 0.9766 | 0 | 68.2 | 49 | 130 | | | |
| Phenanthrene | 0.726 | 0.0977 | 0.9766 | 0 | 74.3 | 49 | 113 | | | |
| Pyrene | 0.754 | 0.0977 | 0.9766 | 0 | 77.2 | 55 | 117 | | | |
| IS: Acenaphthene-d10 | 39.1 | | 3.906 | | 103 | 50 | 200 | | | |
| IS: Chrysene-d12 | 39.1 | | 3.906 | | 79.3 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 39.1 | | 3.906 | | 98.1 | 50 | 200 | | | |
| IS: Perylene-d12 | 39.1 | | 3.906 | | 83.8 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 39.1 | | 3.906 | | 76.4 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 0.807 | | 0.9766 | | 82.7 | 46 | 115 | | | |
| Surr: 4-Terphenyl-d14 | 0.676 | | 0.9766 | | 69.2 | 58 | 133 | | | |

| Sample ID **1605121-43AMSD** | Batch ID: **75227** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **MSD** | Run ID: **GCMS8_160524A** | Analysis Date: **5/25/2016 3:11:00 AM** | Prep Date: **5/19/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 0.746 | 0.0988 | 0.9881 | 0 | 75.5 | 44 | 111 | 0.954 | 20 | |
| Acenaphthylene | 0.752 | 0.0988 | 0.9881 | 0 | 76.1 | 39 | 116 | 1.59 | 20 | |
| Anthracene | 0.730 | 0.0988 | 0.9881 | 0 | 73.9 | 50 | 114 | 2.87 | 20 | |
| Benzo[a]anthracene | 0.705 | 0.0988 | 0.9881 | 0 | 71.4 | 54 | 122 | 3.47 | 20 | |
| Benzo[a]pyrene | 0.693 | 0.0988 | 0.9881 | 0 | 70.1 | 50 | 125 | 2.04 | 20 | |
| Benzo[b]fluoranthene | 0.661 | 0.0988 | 0.9881 | 0 | 66.9 | 53 | 128 | 1.99 | 20 | |
| Benzo[e]pyrene | 0.774 | 0.0988 | 0.9881 | 0 | 78.3 | 43 | 140 | 2.41 | 20 | |
| Benzo[g,h,i]perylene | 0.693 | 0.0988 | 0.9881 | 0 | 70.1 | 49 | 127 | 1.38 | 20 | |
| Benzo[j]fluoranthene | 0.666 | 0.0988 | 0.9881 | 0 | 67.4 | 45 | 125 | 2.25 | 20 | N |
| Benzo[k]fluoranthene | 0.621 | 0.0988 | 0.9881 | 0 | 62.8 | 56 | 123 | 2.46 | 20 | |
| Chrysene | 0.719 | 0.0988 | 0.9881 | 0 | 72.8 | 57 | 118 | 2.26 | 20 | |
| Dibenz[a,h]anthracene | 0.607 | 0.0988 | 0.9881 | 0 | 61.4 | 50 | 129 | 2.46 | 20 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160524A**

| Sample ID **1605121-43AMSD** | Batch ID: **75227** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **MSD** | Run ID: **GCMS8_160524A** | Analysis Date: **5/25/2016 3:11:00 AM** | Prep Date: **5/19/2016** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoranthene | 0.770 | 0.0988 | 0.9881 | 0 | 77.9 | 55 | 119 | 1.71 | 20 | |
| Fluorene | 0.678 | 0.0988 | 0.9881 | 0 | 68.6 | 47 | 114 | 2.07 | 20 | |
| Indeno[1,2,3-cd]pyrene | 0.676 | 0.0988 | 0.9881 | 0 | 68.4 | 49 | 130 | 1.54 | 20 | |
| Phenanthrene | 0.749 | 0.0988 | 0.9881 | 0 | 75.8 | 49 | 113 | 3.08 | 20 | |
| Pyrene | 0.768 | 0.0988 | 0.9881 | 0 | 77.7 | 55 | 117 | 1.81 | 20 | |
| IS: Acenaphthene-d10 | 39.5 | | 3.953 | | 104 | 50 | 200 | 0 | 0 | |
| IS: Chrysene-d12 | 39.5 | | 3.953 | | 80.4 | 50 | 200 | 0 | 0 | |
| IS: Naphthalene-d8 | 39.5 | | 3.953 | | 101 | 50 | 200 | 0 | 0 | |
| IS: Perylene-d12 | 39.5 | | 3.953 | | 84.9 | 50 | 200 | 0 | 0 | |
| IS: Phenanthrene-d10 | 39.5 | | 3.953 | | 77.6 | 50 | 200 | 0 | 0 | |
| Surr: 2-Fluorobiphenyl | 0.801 | | 0.9881 | | 81.1 | 46 | 115 | 0 | 0 | |
| Surr: 4-Terphenyl-d14 | 0.708 | | 0.9881 | | 71.6 | 58 | 133 | 0 | 0 | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160524A**

| Sample ID **ICV-160524** | Batch ID: **R85980** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **GCMS8_160524A** | Analysis Date: **5/24/2016 9:47:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 2.04 | 0.0100 | 2.000 | 0 | 102 | 80 | 120 | | | |
| Acenaphthylene | 2.07 | 0.0100 | 2.000 | 0 | 103 | 80 | 120 | | | |
| Anthracene | 1.86 | 0.0100 | 2.000 | 0 | 93.0 | 80 | 120 | | | |
| Benzo[a]anthracene | 2.10 | 0.0100 | 2.000 | 0 | 105 | 80 | 120 | | | |
| Benzo[a]pyrene | 2.09 | 0.0100 | 2.000 | 0 | 104 | 80 | 120 | | | |
| Benzo[b]fluoranthene | 2.12 | 0.0100 | 2.000 | 0 | 106 | 80 | 120 | | | |
| Benzo[e]pyrene | 2.11 | 0.0100 | 2.000 | 0 | 105 | 80 | 120 | | | |
| Benzo[g,h,i]perylene | 2.11 | 0.0100 | 2.000 | 0 | 106 | 80 | 120 | | | |
| Benzo[j]fluoranthene | 2.07 | 0.0100 | 2.000 | 0 | 103 | 80 | 120 | | | N |
| Benzo[k]fluoranthene | 2.06 | 0.0100 | 2.000 | 0 | 103 | 80 | 120 | | | |
| Chrysene | 2.10 | 0.0100 | 2.000 | 0 | 105 | 80 | 120 | | | |
| Dibenz[a,h]anthracene | 2.12 | 0.0100 | 2.000 | 0 | 106 | 80 | 120 | | | |
| Fluoranthene | 2.04 | 0.0100 | 2.000 | 0 | 102 | 80 | 120 | | | |
| Fluorene | 1.91 | 0.0100 | 2.000 | 0 | 95.5 | 80 | 120 | | | |
| Indeno[1,2,3-cd]pyrene | 2.12 | 0.0100 | 2.000 | 0 | 106 | 80 | 120 | | | |
| Phenanthrene | 1.87 | 0.0100 | 2.000 | 0 | 93.6 | 80 | 120 | | | |
| Pyrene | 2.02 | 0.0100 | 2.000 | 0 | 101 | 80 | 120 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 96.0 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 80.5 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 89.4 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 84.0 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 80.1 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 2.17 | | 2.000 | | 108 | 65 | 120 | | | |
| Surr: 4-Terphenyl-d14 | 1.97 | | 2.000 | | 98.3 | 65 | 120 | | | |

| Sample ID **ICV2-160524** | Batch ID: **R85980** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **GCMS8_160524A** | Analysis Date: **5/24/2016 9:00:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 2.03 | 0.0100 | 2.000 | 0 | 102 | 80 | 120 | | | |
| Acenaphthylene | 2.06 | 0.0100 | 2.000 | 0 | 103 | 80 | 120 | | | |
| Anthracene | 1.83 | 0.0100 | 2.000 | 0 | 91.7 | 80 | 120 | | | |
| Benzo[a]anthracene | 2.10 | 0.0100 | 2.000 | 0 | 105 | 80 | 120 | | | |
| Benzo[a]pyrene | 2.10 | 0.0100 | 2.000 | 0 | 105 | 80 | 120 | | | |
| Benzo[b]fluoranthene | 2.08 | 0.0100 | 2.000 | 0 | 104 | 80 | 120 | | | |
| Benzo[e]pyrene | 2.12 | 0.0100 | 2.000 | 0 | 106 | 80 | 120 | | | |
| Benzo[g,h,i]perylene | 2.13 | 0.0100 | 2.000 | 0 | 107 | 80 | 120 | | | |
| Benzo[j]fluoranthene | 2.07 | 0.0100 | 2.000 | 0 | 104 | 80 | 120 | | | N |
| Benzo[k]fluoranthene | 2.09 | 0.0100 | 2.000 | 0 | 105 | 80 | 120 | | | |
| Chrysene | 2.10 | 0.0100 | 2.000 | 0 | 105 | 80 | 120 | | | |
| Dibenz[a,h]anthracene | 2.15 | 0.0100 | 2.000 | 0 | 107 | 80 | 120 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# ANALYTICAL QC SUMMARY REPORT

**RunID: GCMS8_160524A**

| Sample ID **ICV2-160524** | Batch ID: **R85980** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **GCMS8_160524A** | Analysis Date: **5/24/2016 9:00:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Fluoranthene | 2.00 | 0.0100 | 2.000 | 0 | 99.8 | 80 | 120 | | | |
| Fluorene | 1.89 | 0.0100 | 2.000 | 0 | 94.5 | 80 | 120 | | | |
| Indeno[1,2,3-cd]pyrene | 2.15 | 0.0100 | 2.000 | 0 | 107 | 80 | 120 | | | |
| Phenanthrene | 1.87 | 0.0100 | 2.000 | 0 | 93.7 | 80 | 120 | | | |
| Pyrene | 1.98 | 0.0100 | 2.000 | 0 | 98.8 | 80 | 120 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 99.8 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 79.2 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 91.7 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 82.6 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 80.9 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 2.21 | | 2.000 | | 111 | 65 | 120 | | | |
| Surr: 4-Terphenyl-d14 | 2.00 | | 2.000 | | 99.8 | 65 | 120 | | | |

| Sample ID **CCV-160524** | Batch ID: **R85980** | TestNo: **SW8270D-LL** | Units: **mg/Kg-dry** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **GCMS8_160524A** | Analysis Date: **5/25/2016 3:48:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.01 | 0.0100 | 1.000 | 0 | 101 | 50 | 150 | | | |
| Acenaphthylene | 1.03 | 0.0100 | 1.000 | 0 | 103 | 50 | 150 | | | |
| Anthracene | 0.920 | 0.0100 | 1.000 | 0 | 92.0 | 50 | 150 | | | |
| Benzo[a]anthracene | 1.01 | 0.0100 | 1.000 | 0 | 101 | 50 | 150 | | | |
| Benzo[a]pyrene | 1.00 | 0.0100 | 1.000 | 0 | 100 | 50 | 150 | | | |
| Benzo[b]fluoranthene | 0.999 | 0.0100 | 1.000 | 0 | 99.9 | 50 | 150 | | | |
| Benzo[e]pyrene | 1.00 | 0.0100 | 1.000 | 0 | 100 | 50 | 150 | | | |
| Benzo[g,h,i]perylene | 0.997 | 0.0100 | 1.000 | 0 | 99.7 | 50 | 150 | | | |
| Benzo[j]fluoranthene | 1.00 | 0.0100 | 1.000 | 0 | 100 | 50 | 150 | | | N |
| Benzo[k]fluoranthene | 0.973 | 0.0100 | 1.000 | 0 | 97.3 | 50 | 150 | | | |
| Chrysene | 1.02 | 0.0100 | 1.000 | 0 | 102 | 50 | 150 | | | |
| Dibenz[a,h]anthracene | 1.00 | 0.0100 | 1.000 | 0 | 100 | 50 | 150 | | | |
| Fluoranthene | 0.982 | 0.0100 | 1.000 | 0 | 98.2 | 50 | 150 | | | |
| Fluorene | 0.930 | 0.0100 | 1.000 | 0 | 93.0 | 50 | 150 | | | |
| Indeno[1,2,3-cd]pyrene | 1.01 | 0.0100 | 1.000 | 0 | 101 | 50 | 150 | | | |
| Phenanthrene | 0.943 | 0.0100 | 1.000 | 0 | 94.3 | 50 | 150 | | | |
| Pyrene | 0.986 | 0.0100 | 1.000 | 0 | 98.6 | 50 | 150 | | | |
| IS: Acenaphthene-d10 | 4.00 | | 4.000 | | 119 | 50 | 200 | | | |
| IS: Chrysene-d12 | 4.00 | | 4.000 | | 93.4 | 50 | 200 | | | |
| IS: Naphthalene-d8 | 4.00 | | 4.000 | | 112 | 50 | 200 | | | |
| IS: Perylene-d12 | 4.00 | | 4.000 | | 97.8 | 50 | 200 | | | |
| IS: Phenanthrene-d10 | 4.00 | | 4.000 | | 92.8 | 50 | 200 | | | |
| Surr: 2-Fluorobiphenyl | 1.10 | | 1.000 | | 110 | 50 | 150 | | | |
| Surr: 4-Terphenyl-d14 | 0.982 | | 1.000 | | 98.2 | 50 | 150 | | | |

**Qualifiers:**

| | | | |
|---|---|---|---|
| B | Analyte detected in the associated Method Blank | DF | Dilution Factor |
| J | Analyte detected between MDL and RL | MDL | Method Detection Limit |
| ND | Not Detected at the Method Detection Limit | R | RPD outside accepted control limits |
| RL | Reporting Limit | S | Spike Recovery outside control limits |
| J | Analyte detected between SDL and RL | N | Parameter not NELAC certified |

**CLIENT:** Arcadis
**Work Order:** 1605121
**Project:** Laredo SGR

# MQL SUMMARY REPORT

| TestNo: SW6020A | MDL | MQL |
|---|---|---|
| **Analyte** | **mg/Kg-dry** | **mg/Kg-dry** |
| Lead | 0.100 | 0.300 |

| TestNo: SW6020A | MDL | MQL |
|---|---|---|
| **Analyte** | **mg/L** | **mg/L** |
| Lead | 0.000300 | 0.00100 |

| TestNo: SW8270D-LL | MDL | MQL |
|---|---|---|
| **Analyte** | **mg/Kg-dry** | **mg/Kg-dry** |
| Acenaphthene | 0.00500 | 0.0100 |
| Acenaphthylene | 0.00500 | 0.0100 |
| Anthracene | 0.00500 | 0.0100 |
| Benzo[a]anthracene | 0.00500 | 0.0100 |
| Benzo[a]pyrene | 0.00500 | 0.0100 |
| Benzo[b]fluoranthene | 0.00500 | 0.0100 |
| Benzo[e]pyrene | 0.00500 | 0.0100 |
| Benzo[g,h,i]perylene | 0.00500 | 0.0100 |
| Benzo[j]fluoranthene | 0.00500 | 0.0100 |
| Benzo[k]fluoranthene | 0.00500 | 0.0100 |
| Chrysene | 0.00500 | 0.0100 |
| Dibenz[a,h]anthracene | 0.00500 | 0.0100 |
| Fluoranthene | 0.00500 | 0.0100 |
| Fluorene | 0.00500 | 0.0100 |
| Indeno[1,2,3-cd]pyrene | 0.00500 | 0.0100 |
| Phenanthrene | 0.00500 | 0.0100 |
| Pyrene | 0.00500 | 0.0100 |

| TestNo: SW8270D-LL | MDL | MQL |
|---|---|---|
| **Analyte** | **mg/L** | **mg/L** |
| Acenaphthene | 0.0000250 | 0.0000500 |
| Acenaphthylene | 0.0000250 | 0.0000500 |
| Anthracene | 0.0000250 | 0.0000500 |
| Benzo[a]anthracene | 0.0000250 | 0.0000500 |
| Benzo[a]pyrene | 0.0000250 | 0.0000500 |
| Benzo[b]fluoranthene | 0.0000250 | 0.0000500 |
| Benzo[e]pyrene | 0.0000250 | 0.0000500 |
| Benzo[g,h,i]perylene | 0.0000250 | 0.0000500 |
| Benzo[j]fluoranthene | 0.0000250 | 0.0000500 |
| Benzo[k]fluoranthene | 0.0000250 | 0.0000500 |
| Chrysene | 0.0000250 | 0.0000500 |
| Dibenz[a,h]anthracene | 0.0000250 | 0.0000500 |
| Fluoranthene | 0.0000250 | 0.0000500 |
| Fluorene | 0.0000250 | 0.0000500 |
| Indeno[1,2,3-cd]pyrene | 0.0000250 | 0.0000500 |
| Phenanthrene | 0.0000250 | 0.0000500 |
| Pyrene | 0.0000250 | 0.0000500 |

**Qualifiers:** MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

# GCMS6
# For

# DHL Work Order
# 1605121

# GCMS6_160523A
# For

# DHL Work Order
# 1605121

# Lab Data Review Check List
## EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

| *SEE RUN LOG FOR ALL PROJECT AND BATCH NUMBERS AND MATRICES* | Run ID: GCMS6_160523A |
|---|---|
| Batch Number(s): See Run Log.<br>Matrix: See Run Log. | SOP: ORGANICS-PAH-01 |

| Review Item | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|
| **Data Folder Contents**<br>1. Is the Prep Batch Report included? Check and record the following:<br>***Prep Start/End Dates, Sample Amounts, Bottle #s*** | X | | | x |
| 2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date?<br>***All standard/QC sample preparations shall be documented in LIMS*** | X | | | |
| 3. Is the Run Log and instrument sequence included?<br>***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time*** | X | | | |
| 4. Is the System Verification - Tune Report included?<br>***Date/Tme of Tune starts 12-hour analysis window*** | X | | | |
| 5. Is the Evaluate Continuing Calibration Report included? | X | | | |

## Daily Demonstration of Performance

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.**

| Review Item | Frequency | Limits | Pass | Fail (List Batch/Sample) **See Run Log** | 2nd Level Review |
|---|---|---|---|---|---|
| Tune | Before ICAL<br>Every 12 hours | See Tune Eval Report | X | | x |
| Resolution Check - Benzo(b) and Benzo(k)phenanthrene | Before ICAL<br>Every 12 hours | Benzo(b) and Benzo(k) Valley > 50% | X | | |
| Initial Calibration Curve (ICAL) (minimum: 5 Standards) | Prior to samples and when ICV fails | Avg. RF - %RSD ≤ 15%<br>Curve (COD) - $R^2$ ≥ 0.990 | X | | |
| SSCV - (Second Source) | After calibration (ICAL) | 80-120% | X | | |
| ICV - (Daily Initial Cal Verification) | Every 12 hours | ISTDs Area% (50-200%)<br>Surrogates %R (See LIMS)<br>Analytes %R (80-120%) | X | | |

| Review Item | Frequency | Limits | Pass | Fail | N/A | Review |
|---|---|---|---|---|---|---|
| Method Blank (MB)<br>System Blank (SYS Blank) | Every Batch (MB) Daily (SYS BL) | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | X | | | x |
| Lab Control Sample (LCS) | Every Batch | See LIMS | X | | | |
| Lab Control Sample Dup (LCSD) | Insufficient sample Sample Matrix | See LIMS | | | X | |
| LCSD - RPD | Every LCS/LCSD | ≤ 30 (Aq/Soil/DoD) | | | X | |
| Field Samples | Up to 20 per prep batch | ISTDs Area% (50-200%)<br>Surrogates %R (See LIMS)<br>RRT ± 0.06 RRT Standard<br>Q value > 70 - check for # | X | | | |
| Matrix Spike (MS) | Every Batch/20 samples | See LIMS | | X | | |
| Matrix Spike Duplicate (MSD) (MSD is N/A for Method 625) | Every Prep Batch except Method 625 | See LIMS | | X | | |
| MSD - RPD<br>(MSD is N/A for Method 625) | Every MS/MSD except Method 625 | ≤ 30 (Aq/Soil/DoD) | X | | | |

# Lab Data Review Check List
## EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

| Review Item | Criteria | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|---|
| **Sample Analysis** | 7 days (Aq) - extraction | | | X | |
| 1. Are all sample hold times met? | 14 days (Soil) - extraction | X | | | |
| | 40 days analysis | X | | | |
| 2. Are all manual integrations signed (Before & After) and printouts included ? Put in LIMS Comment Section ***Include MI form for DoD work*** | Before & After - signed Comment Section in LIMS MI Form - DoD only | | | X | x |
| 3. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed? | > highest standard | | | X | |
| **Review Item #3 is N/A ONLY if all sample results are within Calibration range or NO if dilution is in different folder** | | | | | |
| 4. Is mass spectra reviewed/verified if Q value is <70 and/or # flag for results >MDL? | Q value <70 - All hits | X | | | x |
| **5. Are ALL reported analytes > MDL (+ J flags) circled by the analyst?** | | X | **Return to analyst if NO** | | |
| **VARIANCE REPORT** | | | | | |
| **QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.** | | | | | |
| **NON-CONFORMANCES / VARIANCE** | All deviations from the method and SOP that affect data quality | X | | | x |
| 1. Are all non-conformances included and noted? | | | | | |
| 2. Are all corrective actions included? | | | | X | |
| 3. Does the variance require approval by the Technical Director/General Manager/QA Manager? | | | | X | |

Approved by: Date:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

| VARIANCE ITEM | REASON | CORRECTIVE ACTION |
|---|---|---|
| ___ Hold Time exceeded (7D/14D-Ext/40D-Analysis) | ___ Sample Received out of HT | ___ Reanalyze QC to confirm |
| ___ ICV out of control (±20%) | ___ Carryover from previous run | ___ Recalibrate |
| ___ MB/SYS BL out of control (> MDL / >½ RL) | ___ Cross contamination | ___ Reprep/Reanalyze sample |
| ___ LCS ___LCSD out of control (See LIMS) | ___ Lab Artifact | ___ Reprep/Reanalyze Batch |
| ___ RPD out of control for LCS/LCSD (>30) | ___ Prep Spike error (describe) | ___ Reanalyze Batch/Sample/QC |
| _X__ MS ___ MSD out of control (See LIMS) | _X__ High Levels of target analytes | ___ Verify H2O/reagents are clean |
| ___ RPD out of control for MS/MSD (>30) | ___ High Levels of non-targets | ___ Reanalyze sample to confirm |
| ___ Internal Standard(s) out of control | ___ Insufficient sample for QC | ___ Sample results ND w/ dilution |
| ___ Multiple Surrogates out of control | ___ Prep Error | ___ Client notified and approved |
| ___ No MS/MSD prepared - LCS/LCSD used instead | ___ Analytical Error | ___ Flag data / Case narrative |
| ___ Missing QC (other than MS/MSD) | ___ Client Request | ___ Instrument Maintenance |
| ___ QC sample(s) was mis-spiked | ___ Other (describe below) | ___ Accept data |
| ___ Other (describe below) | | ___ Cannot reanalyze (HT out/Lack of Sample) |

General Comments and Impact on Data: **See Run Log.**

Alex Robbins reviewed folder.

Analyst: Karyn Lane Date: 5/24/2016

Second-Level Review: Janice Whitt Date: 5/31/2016

REVIEWED BY
By Janice Whitt at 12:15:12 PM, 5/31/2016

**DHL Analytical, Inc.**

**Run ID:** GCMS6_160523A **Run No.:** 85960

**Analytical Run Date:** 5/23/2016 **InstrumentID:** GCMS6

**Analyst:** Alex Robbins **Column:** Agilent (J&W) DB-EUPAH (20m x 0.18mmI

**Calibration ID:** 651 **Column ID:** 0.18mm

**Column Length:** 20m

| SampID | DF | TestCode | SampType | Batch ID | Analysis Date/Time | Q | Comments |
|---|---|---|---|---|---|---|---|
| DFTPP-160523 | 1 | PAH_LL_SDOD1 | TUNE | R85960 | 5/23/2016 1:04:00 PM | | |
| ICV-160523 | 1 | PAH_LL_SDOD1 | ICV | R85960 | 5/23/2016 1:41:00 PM | | |
| LCS-75225 | 1 | PAH_LL_SDOD1 | LCS | 75225 | 5/23/2016 2:21:00 PM | | |
| MB-75225 | 1 | PAH_LL_SDOD1 | MBLK | 75225 | 5/23/2016 3:01:00 PM | | |
| 1605121-15A | 10 | PAH_LL_SDOD1 | SAMP | 75225 | 5/23/2016 3:40:00 PM | | All samples in this batch run at 10x - detection limit is sufficient and is approved by project managers. Some samples in this batch are run at larger dilutions due to extract color and concentration of requested analytes. |
| 1605121-31A | 10 | PAH_LL_SDOD1 | SAMP | 75225 | 5/23/2016 4:21:00 PM | | |
| 1605121-32A | 10 | PAH_LL_SDOD1 | SAMP | 75225 | 5/23/2016 5:01:00 PM | | |
| 1605121-33A | 10 | PAH_LL_SDOD1 | SAMP | 75225 | 5/23/2016 5:40:00 PM | | |
| 1605121-34A | 10 | PAH_LL_SDOD1 | SAMP | 75225 | 5/23/2016 6:20:00 PM | | |
| 1605121-22A | 10 | PAH_LL_SDOD1 | SAMP | 75225 | 5/23/2016 7:00:00 PM | | |
| 1605121-28A | 50 | PAH_LL_SDOD1 | SAMP | 75225 | 5/23/2016 7:40:00 PM | | |
| 1605121-30A | 50 | PAH_LL_SDOD1 | SAMP | 75225 | 5/23/2016 8:20:00 PM | | |
| 1605121-29A | 20 | PAH_LL_SDOD1 | SAMP | 75225 | 5/23/2016 9:00:00 PM | | |
| 1605121-17A | 20 | PAH_LL_SDOD1 | SAMP | 75225 | 5/23/2016 9:40:00 PM | | |
| 1605121-19A | 20 | PAH_LL_SDOD1 | SAMP | 75225 | 5/23/2016 10:20:00 PM | | |
| 1605121-22AMS | 10 | PAH_LL_SDOD1 | MS | 75225 | 5/23/2016 10:59:00 PM | | 7 Analytes Low. |
| 1605121-22AMSD | 10 | PAH_LL_SDOD1 | MSD | 75225 | 5/23/2016 11:39:00 PM | | 12 Analytes Low. This sample contains very high concentration of target analytes. |
| DFTPP2-160523 | 1 | PAH_LL_SDOD1 | TUNE | R85960 | 5/24/2016 12:18:00 AM | | |
| ICV2-160523 | 1 | PAH_LL_SDOD1 | ICV | R85960 | 5/24/2016 12:54:00 AM | | |
| SB-160523 | 1 | PAH_LL_SDOD1 | SBLK | 75225 | 5/24/2016 2:13:00 AM | | |
| 1605121-16A | 20 | PAH_LL_SDOD1 | SAMP | 75225 | 5/24/2016 2:53:00 AM | | |
| 1605121-18A | 20 | PAH_LL_SDOD1 | SAMP | 75225 | 5/24/2016 3:33:00 AM | | |
| 1605121-20A | 20 | PAH_LL_SDOD1 | SAMP | 75225 | 5/24/2016 4:13:00 AM | | |
| 1605121-21A | 20 | PAH_LL_SDOD1 | SAMP | 75225 | 5/24/2016 4:53:00 AM | | |
| 1605121-23A | 20 | PAH_LL_SDOD1 | SAMP | 75225 | 5/24/2016 5:34:00 AM | | |
| 1605121-24A | 20 | PAH_LL_SDOD1 | SAMP | 75225 | 5/24/2016 6:14:00 AM | | |
| 1605121-25A | 20 | PAH_LL_SDOD1 | SAMP | 75225 | 5/24/2016 6:54:00 AM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| DFTPP160509 | 2.5 PPM 525 TUNE STD. | TUNE | 05/07/2017 |
| PAHCCV-160509 | 1 PPM PAH CCV STANDARD | CCV | 08/07/2016 |
| PAHICV160509 | 2 PPM PAH ICV | ICV | 08/07/2016 |
| SVI150810-09 | 4000 PPM INTERNAL STANDAR | ALL | 05/13/2017 |

**DHL Analytical, Inc.**

**Run ID: GCMS6_160523A** **Run No.:** 85960

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1605121-26A | 20 | PAH_LL_SDOD1 | SAMP | 75225 | 5/24/2016 7:33:00 AM | | |
| 1605121-27A | 20 | PAH_LL_SDOD1 | SAMP | 75225 | 5/24/2016 8:13:00 AM | | |
| CCV1-160523 | 1 | PAH_LL_SDOD1 | CCV | R85960 | 5/24/2016 8:53:00 AM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| DFTPP160509 | 2.5 PPM 525 TUNE STD. | TUNE | 05/07/2017 |
| PAHCCV-160509 | 1 PPM PAH CCV STANDARD | CCV | 08/07/2016 |
| PAHICV160509 | 2 PPM PAH ICV | ICV | 08/07/2016 |
| SVI150810-09 | 4000 PPM INTERNAL STANDAR | ALL | 05/13/2017 |

Sequence Name: C:\HPCHEM\1\SEQUENCE\160523.S
Comment:
Operator:
Data Path: C:\HPCHEM\1\DATA\160523\
Pre-Seq Cmd:
Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

| Line | Type | Vial | DataFile | Method | Sample Name |
|---|---|---|---|---|---|
| 1 | Sample | 1 | 16052301 | DFTPPPAH | DFTPP-160523 |
| 2 | Sample | 2 | 16052302 | PP160421 | ICV-160523 |
| 3 | Sample | 1 | 16052303 | PP160421 | SBLK |
| 4 | Sample | 2 | 16052304 | DFTPPPAH | DFTPP-160523 |
| 5 | Sample | 3 | 16052305 | PP160421 | ICV-160523 |
| 6 | Sample | 4 | 16052306 | PP160421 | ICV-160523 |
| 7 | Sample | 5 | 16052307 | PP160421 | ICV-160523 |
| 8 | Sample | 1 | 16052308 | DFTPPPAH | DFTPP-160523 |
| 9 | Sample | 2 | 16052309 | PP160421 | ICV-160523 |
| 10 | Sample | 3 | 16052310 | PP160421 | LCS-75225 |
| 11 | Sample | 4 | 16052311 | PP160421 | MB-75225 |
| 12 | Sample | 5 | 16052312 | PP160421 | 1605121-15A |
| 13 | Sample | 6 | 16052313 | PP160421 | 1605121-31A |
| 14 | Sample | 7 | 16052314 | PP160421 | 1605121-32A |
| 15 | Sample | 8 | 16052315 | PP160421 | 1605121-33A |
| 16 | Sample | 9 | 16052316 | PP160421 | 1605121-34A |
| 17 | Sample | 10 | 16052317 | PP160421 | 1605121-22A |
| 18 | Sample | 11 | 16052318 | PP160421 | 1605121-28A |
| 19 | Sample | 12 | 16052319 | PP160421 | 1605121-30A |
| 20 | Sample | 13 | 16052320 | PP160421 | 1605121-29A |
| 21 | Sample | 14 | 16052321 | PP160421 | 1605121-17A |
| 22 | Sample | 15 | 16052322 | PP160421 | 1605121-19A |
| 23 | Sample | 16 | 16052323 | PP160421 | 1605121-22AMS |
| 24 | Sample | 17 | 16052324 | PP160421 | 1605121-22AMSD |
| 25 | Sample | 18 | 16052325 | DFTPPPAH | DFTPP2-160523 |
| 26 | Sample | 19 | 16052326 | PP160421 | ~~ICV~~-160523 ICV2 |
| 27 | Sample | 20 | 16052327 | PP160421 | SBLK |
| 28 | Sample | 21 | 16052328 | PP160421 | SB-160523 |
| 29 | Sample | 22 | 16052329 | PP160421 | 1605121-16A |
| 30 | Sample | 23 | 16052330 | PP160421 | 1605121-18A |
| 31 | Sample | 24 | 16052331 | PP160421 | 1605121-20A |
| 32 | Sample | 25 | 16052332 | PP160421 | 1605121-21A |
| 33 | Sample | 26 | 16052333 | PP160421 | 1605121-23A |
| 34 | Sample | 27 | 16052334 | PP160421 | 1605121-24A |
| 35 | Sample | 28 | 16052335 | PP160421 | 1605121-25A |
| 36 | Sample | 29 | 16052336 | PP160421 | 1605121-26A |
| 37 | Sample | 30 | 16052337 | PP160421 | 1605121-27A |
| 38 | Sample | 31 | 16052338 | PP160421 | CCV1-160523 |

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/18/2016 1:25:09 PM**
Digestion:
Prep End Date: **5/18/2016 4:03:00 PM**

Prep Batch **75225** Prep Code: **3550_PAHDOD** Technician: **Alex Robbins**

Prep Factor Units: **mL/g**

**Equipment List**

Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-15A | Soil | | 10.62 | 10 | 0.942 | 1 of 1 | |
| 1605121-16A | Soil | | 10.12 | 10 | 0.988 | 1 of 1 | |
| 1605121-17A | Soil | | 10.44 | 10 | 0.958 | 1 of 1 | |
| 1605121-18A | Soil | | 10.9 | 10 | 0.917 | 1 of 1 | |
| 1605121-19A | Soil | | 10.45 | 10 | 0.957 | 1 of 1 | |
| 1605121-20A | Soil | | 10.08 | 10 | 0.992 | 1 of 1 | |
| 1605121-21A | Soil | | 10.09 | 10 | 0.991 | 1 of 1 | |
| 1605121-22A | Soil | | 10.53 | 10 | 0.950 | 1 of 1 | |
| 1605121-22AMS | Soil | | 10.3 | 10 | 0.971 | of | |
| 1605121-22AMSD | Soil | | 10.69 | 10 | 0.935 | of | |
| 1605121-23A | Soil | | 10.14 | 10 | 0.986 | 1 of 1 | |
| 1605121-24A | Soil | | 10.76 | 10 | 0.929 | 1 of 1 | |
| 1605121-25A | Soil | | 10.15 | 10 | 0.985 | 1 of 1 | |
| 1605121-26A | Soil | | 10.21 | 10 | 0.979 | 1 of 1 | |
| 1605121-27A | Soil | | 10.07 | 10 | 0.993 | 1 of 1 | |
| 1605121-28A | Soil | | 10.42 | 10 | 0.960 | 1 of 1 | |
| 1605121-29A | Soil | | 10.63 | 10 | 0.941 | 1 of 1 | |
| 1605121-30A | Soil | | 10.39 | 10 | 0.962 | 1 of 1 | |
| 1605121-31A | Soil | | 10.01 | 10 | 0.999 | 1 of 1 | |
| 1605121-32A | Soil | | 10.79 | 10 | 0.927 | 1 of 1 | |
| 1605121-33A | Soil | | 10.36 | 10 | 0.965 | 1 of 1 | |
| 1605121-34A | Soil | | 10.84 | 10 | 0.923 | 1 of 1 | |
| LCS-75225 | Soil | | 10 | 10 | 1.000 | of | |
| MB-75225 | Soil | | 10 | 10 | 1.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 10215 | Whatman 41 Filter | 1 | filter | 03/20/2026 |
| 10216 | Purified Sodium Sulfate | 10 | g | 03/30/2026 |
| 10340 | Methylene Chloride | 8 | ml | 05/05/2026 |
| 10343 | 1:1 MeCl2/Acetone | 120 | ml | 05/09/2026 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| PAHPREP160516 | 200 PPM PAH Spike Mix | LCS/MS/MSD | 0.05 | 08/16/2016 |
| SVPREP160517 | 40 PPM Surrogate Standard | ALL | 0.25 | 08/15/2016 |

**REVIEWED BY**
*By Janice Whitt at 11:18:55 AM, 5/31/2016*

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/18/2016 1:25:09 PM**
Digestion:
Prep End Date: 5/18/16 4:03 PM

Prep Batch **75225** Prep Code: **3550_PAHDOD** Technician: **Alex Robbins**

Prep Factor Units: **mL/g**

| Equipment List |
|---|
| Turbo-Vap # 1,2,3 |
| Balance # 25 |
| Sonicators # 1,2,3,4 |

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-15A | Soil | | 10.62 | 10 | 1.000 | 1 of 1 | |
| 1605121-16A | Soil | | 10.12 | 10 | 1.000 | 1 of 1 | |
| 1605121-17A | Soil | | 10.44 | 10 | 1.000 | 1 of 1 | |
| 1605121-18A | Soil | | 10.90 | 10 | 1.000 | 1 of 1 | |
| 1605121-19A | Soil | | 10.45 | 10 | 1.000 | 1 of 1 | |
| 1605121-20A | Soil | | 10.08 | 10 | 1.000 | 1 of 1 | |
| 1605121-21A | Soil | | 10.19 | 10 | 1.000 | 1 of 1 | |
| 1605121-22A | Soil | | 10.53 | 10 | 1.000 | 1 of 1 | |
| 1605121-22AMS | Soil | | 10.30 | 10 | 1.000 | of | |
| 1605121-22AMSD | Soil | | 10.69 | 10 | 1.000 | of | |
| 1605121-23A | Soil | | 10.14 | 10 | 1.000 | 1 of 1 | |
| 1605121-24A | Soil | | 10.76 | 10 | 1.000 | 1 of 1 | |
| 1605121-25A | Soil | | 10.15 | 10 | 1.000 | 1 of 1 | |
| 1605121-26A | Soil | | 10.21 | 10 | 1.000 | 1 of 1 | |
| 1605121-27A | Soil | | 10.07 | 10 | 1.000 | 1 of 1 | |
| 1605121-28A | Soil | | 10.42 | 10 | 1.000 | 1 of 1 | |
| 1605121-29A | Soil | | 10.63 | 10 | 1.000 | 1 of 1 | |
| 1605121-30A | Soil | | 10.39 | 10 | 1.000 | 1 of 1 | |
| 1605121-31A | Soil | | 10.01 | 10 | 1.000 | 1 of 1 | |
| 1605121-32A | Soil | | 10.79 | 10 | 1.000 | 1 of 1 | |
| 1605121-33A | Soil | | 10.36 | 10 | 1.000 | 1 of 1 | |
| 1605121-34A | Soil | | 10.84 | 10 | 1.000 | 1 of 1 | |
| LCS-75225 | Soil | | 10 | 10 | 1.000 | of | |
| MB-75225 | Soil | | 10 | 10 | 1.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 10215 | Whatman 41 Filter | 1 | filter | 03/20/2026 |
| 10216 | Purified Sodium Sulfate | 10 | g | 03/30/2026 |
| 10340 | Methylene Chloride | 8 | ml | 05/05/2026 |
| 10343 | 1:1 MeCl2/Acetone | 120 | ml | 05/09/2026 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| PAHPREP160516 | 200 PPM PAH Spike Mix | LCS/MS/MSD | 0.05 | 08/16/2016 |
| SVPREP160517 | 40 PPM Surrogate Standard | ALL | 0.25 | 08/15/2016 |

REVIEWED BY
By Janice Whitt at 11:18:53 AM, 5/31/2016

5/18/16 5/18/16 5/18/16 5/18/16 AR 5/18/16

# DHL Analytical, Inc.

# PREP BATCH REPORT

Prep Start Date: **5/13/2016 1:00:00 PM**
Digestion: **Start: 5/13/2016 2:00:00 PM / Stop: 5/17/2016 9:00:00 AM**
Prep End Date: **5/17/2016 12:00:00 PM**

Prep Batch **75155** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-01A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling - MS/MSD | | | | | | |
| 1605121-02A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-03A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-04A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-05A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-06A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-07A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-08A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-09A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-10A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-11A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-12A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-13A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-14A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-15A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-16A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-17A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-18A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-19A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |

REVIEWED BY
By Janice Whitt at 11:17:05 AM, 5/31/2016

# DHL Analytical, Inc.

# PREP BATCH REPORT

Prep Start Date: **5/13/2016 1:00:00 PM**
Digestion: **Start: 5/13/2016 2:00:00 PM / Stop: 5/17/2016 9:00:00 AM**
Prep End Date: **5/17/2016 12:00:00 PM**

Prep Batch **75155** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: mL/

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-20A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |

REVIEWED BY
By Janice Whitt at 11:17:08 AM, 5/31/2016

# DHL Analytical, Inc.

# PREP BATCH REPORT

Prep Start Date: **5/13/2016 3:00:00 PM**
Digestion: **Start: 5/13/2016 4:00:00 PM / Stop: 5/17/2016 1:30:00 PM**
Prep End Date: **5/18/2016 9:30:00 AM**

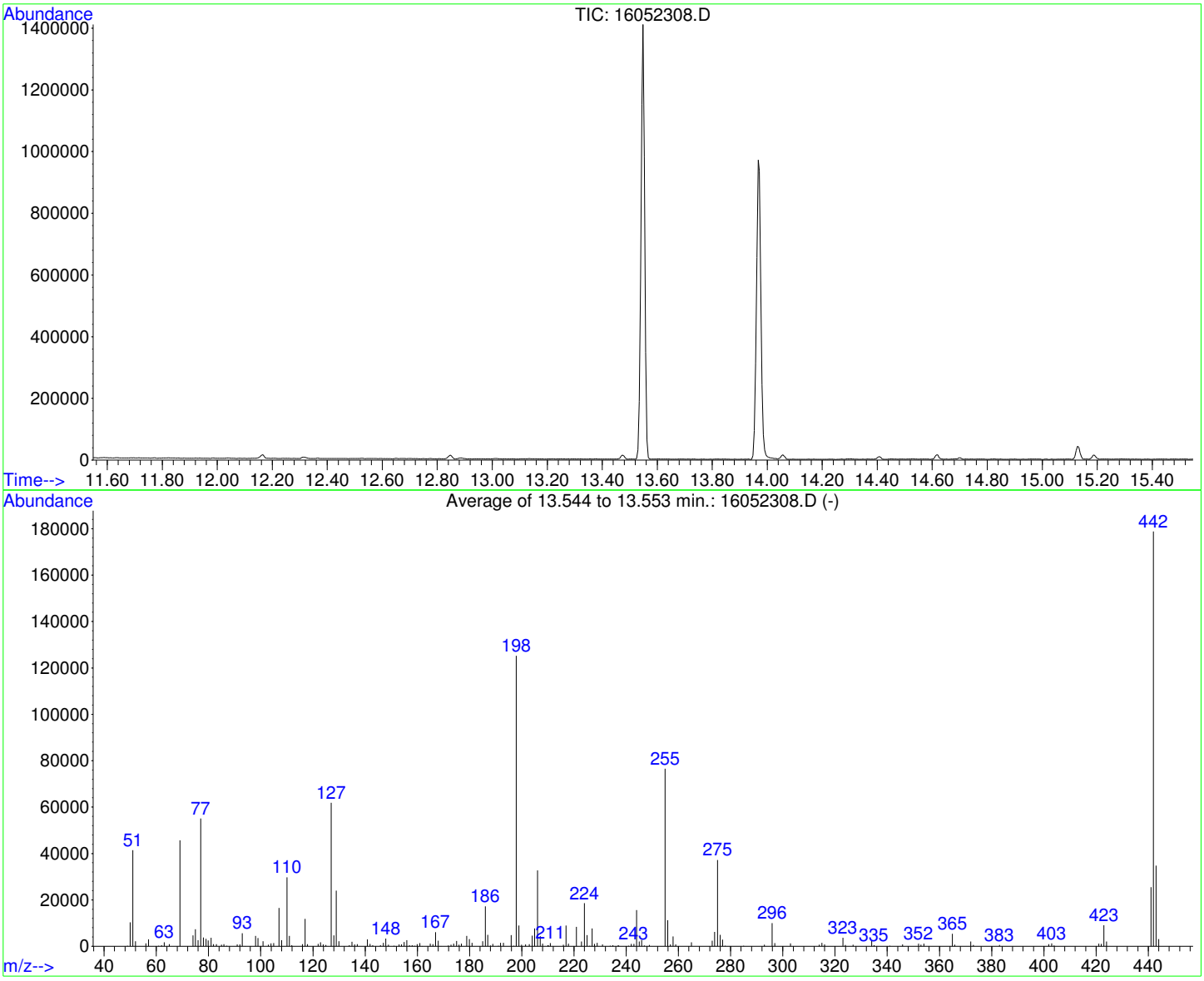
Prep Batch **75159** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: mL/

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-21A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-22A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay MS/MSD | | | | | | |
| 1605121-23A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-24A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-25A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-26A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-27A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-28A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-29A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-30A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-31A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-32A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-33A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-34A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-35A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-36A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-37A | Soil | | 0 | 0 | #Num! | 1 of 1 | |

REVIEWED BY
By Janice Whitt at 11:17:16 AM, 5/31/2016

Data File : C:\HPCHEM\1\DATA\160523\16052308.D Vial: 1
Acq On : 23 May 2016 1:04 pm Operator:
Sample : DFTPP-160523 Inst : GC/MS #6
Misc : TUNE Multiplr: 1.00
MS Integration Params: RTEINT.P
Method : C:\HPCHEM\1\METHODS\DFTPPPAH.M (RTE Integrator)
Title : PAH Calibration

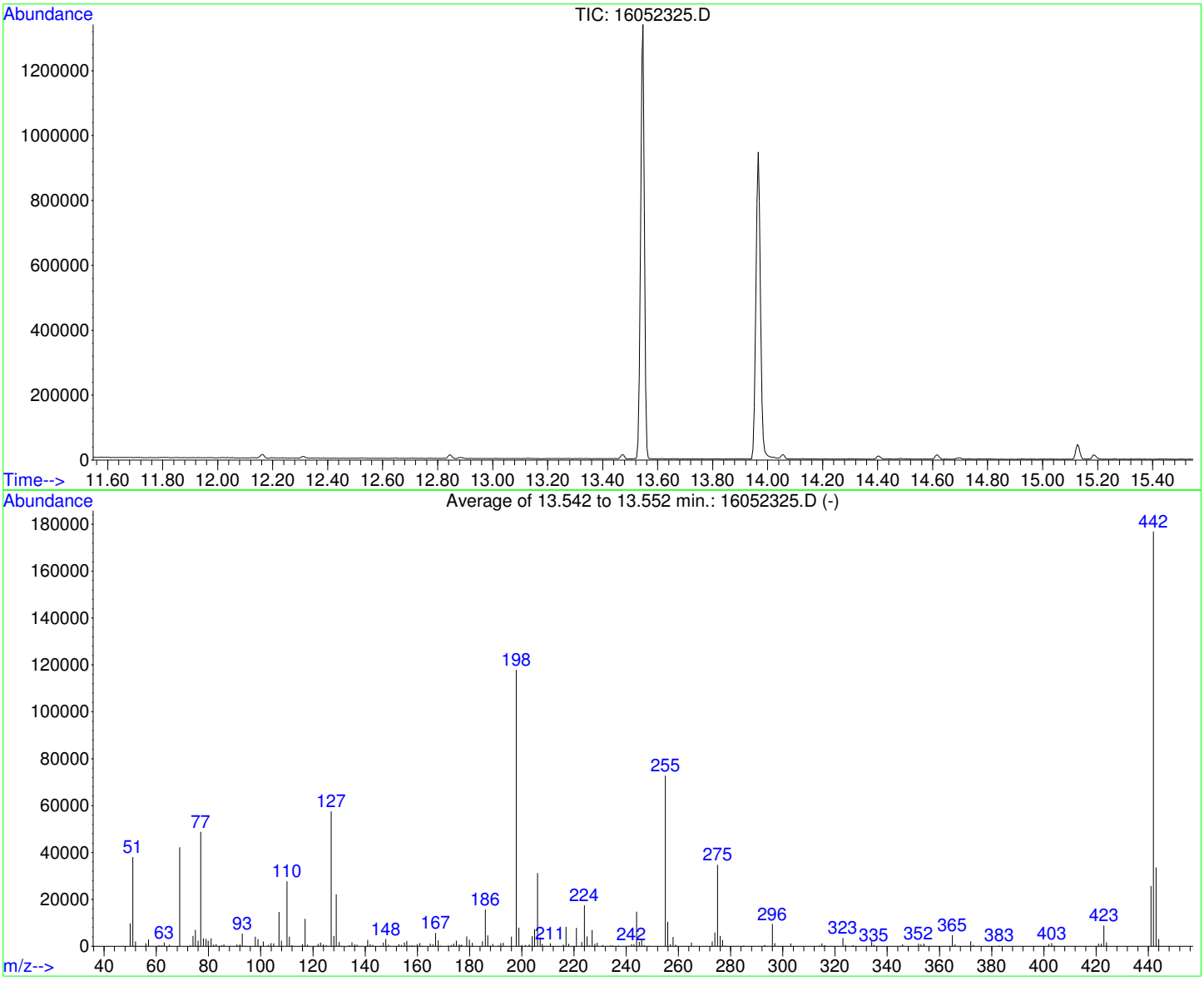



AutoFind: Scans 1585, 1586, 1587; Background Corrected with Scan 1578

| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 51 | 198 | 10 | 80 | 33.1 | 41435 | PASS |
| 68 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 69 | 198 | 0.00 | 100 | 36.5 | 45677 | PASS |
| 70 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 127 | 198 | 10 | 80 | 49.4 | 61821 | PASS |
| 197 | 198 | 0.00 | 2 | 0.1 | 180 | PASS |
| 198 | 198 | 100 | 100 | 100.0 | 125269 | PASS |
| 199 | 198 | 5 | 9 | 7.1 | 8913 | PASS |
| 275 | 198 | 10 | 60 | 29.7 | 37221 | PASS |
| 365 | 198 | 1 | 200 | 4.3 | 5359 | PASS |
| 441 | 442 | 0.01 | 24 | 14.3 | 25515 | PASS |
| 442 | 198 | 50 | 400 | 142.8 | 178837 | PASS |
| 443 | 442 | 15 | 24 | 19.5 | 34803 | PASS |

REVIEWED BY
By Janice Whitt at 11:17:18 AM, 5/31/2016

Data File : C:\HPCHEM\1\DATA\160523\16052325.D Vial: 18
Acq On : 24 May 2016 12:18 am Operator:
Sample : DFTPP2-160523 Inst : GC/MS #6
Misc : TUNE Multiplr: 1.00
MS Integration Params: RTEINT.P
Method : C:\HPCHEM\1\METHODS\DFTPPPAH.M (RTE Integrator)
Title : PAH Calibration




AutoFind: Scans 1585, 1586, 1587; Background Corrected with Scan 1578

| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 51 | 198 | 10 | 80 | 32.3 | 38066 | PASS |
| 68 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 69 | 198 | 0.00 | 100 | 35.9 | 42275 | PASS |
| 70 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 127 | 198 | 10 | 80 | 48.8 | 57544 | PASS |
| 197 | 198 | 0.00 | 2 | 0.0 | 0 | PASS |
| 198 | 198 | 100 | 100 | 100.0 | 117853 | PASS |
| 199 | 198 | 5 | 9 | 6.8 | 7986 | PASS |
| 275 | 198 | 10 | 60 | 29.5 | 34752 | PASS |
| 365 | 198 | 1 | 200 | 4.1 | 4792 | PASS |
| 441 | 442 | 0.01 | 24 | 14.5 | 25696 | PASS |
| 442 | 198 | 50 | 400 | 150.1 | 176939 | PASS |
| 443 | 442 | 15 | 24 | 19.0 | 33613 | PASS |

REVIEWED BY
By Janice Whitt at 11:17:23 AM, 5/31/2016

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052309.D Vial: 2
Acq On : 23 May 2016 1:41 pm Operator:
Sample : ICV-160523 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:02 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

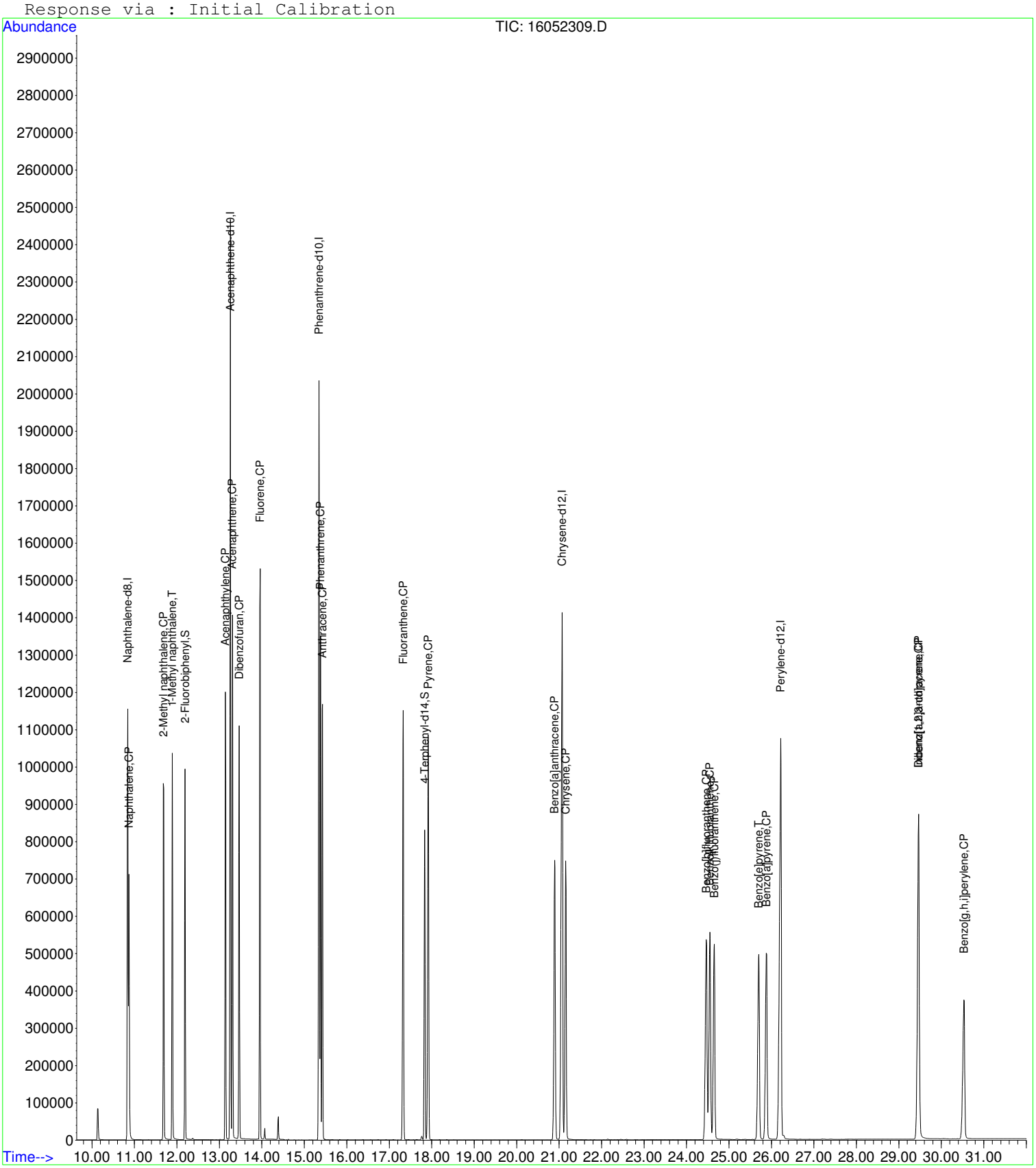
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1437351 | 4000.00 | ug/kg | 124 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 1313356 | 4000.00 | ug/kg | 114 |
| 11) Phenanthrene-d10 | 15.35 | 188 | 2298800 | 4000.00 | ug/kg | 113 |
| 17) Chrysene-d12 | 21.07 | 240 | 2538469 | 4000.00 | ug/kg | 112 |
| 20) Perylene-d12 | 26.22 | 264 | 2246695 | 4000.00 | ug/kg | 109 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 733614 | 1914.86 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 47.87% | | | |
| 16) 4-Terphenyl-d14 | 17.84 | 244 | 1067492 | 1794.89 | ug/kg | -0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 44.87% | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 675178 | 1877.92 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.69 | 142 | 571523 | 1799.59 | ug/kg | 96 |
| 4) 1-Methyl naphthalene | 11.89 | 142 | 516118 | 1774.42 | ug/kg | 95 |
| 6) Dibenzofuran | 13.47 | 168 | 965848 | 1962.18 | ug/kg | 98 |
| 8) Acenaphthylene | 13.14 | 152 | 1115817 | 1972.77 | ug/kg | 100 |
| 9) Acenaphthene | 13.31 | 154 | 675263 | 1923.46 | ug/kg | 96 |
| 10) Fluorene | 13.96 | 166 | 840141 | 1970.52 | ug/kg | 97 |
| 12) Phenanthrene | 15.38 | 178 | 1095148 | 1811.52 | ug/kg | 99 |
| 13) Anthracene | 15.43 | 178 | 1025081 | 1791.44 | ug/kg | 99 |
| 14) Fluoranthene | 17.33 | 202 | 1162632 | 1858.42 | ug/kg | 99 |
| 15) Pyrene | 17.92 | 202 | 1163870 | 1790.94 | ug/kg | 100 |
| 18) Benzo[a]anthracene | 20.89 | 228 | 1151232 | 1935.82 | ug/kg | 99 |
| 19) Chrysene | 21.16 | 228 | 1036822 | 1804.42 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.46 | 252 | 1142115 | 1928.76 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.55 | 252 | 1025759 | 1846.57 | ug/kg | 100 |
| 23) Benzo(j)fluoranthene | 24.65 | 252 | 937132 | 1893.85 | ug/kg | 99 |
| 24) Benzo[e]pyrene | 25.70 | 252 | 989497 | 1865.90 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.89 | 252 | 996478 | 1838.83 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.46 | 278 | 855616 | 1733.66 | ug/kg | 100 |
| 27) Indeno[1,2,3-cd]pyrene | 29.46 | 276 | 990939 | 1683.08 | ug/kg | 97 |
| 28) Benzo[g,h,i]perylene | 30.54 | 276 | 808916 | 1761.95 | ug/kg | 97 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052309.D Vial: 2
Acq On : 23 May 2016 1:41 pm Operator:
Sample : ICV-160523 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:02 2016 Quant Results File: PP160421.RES

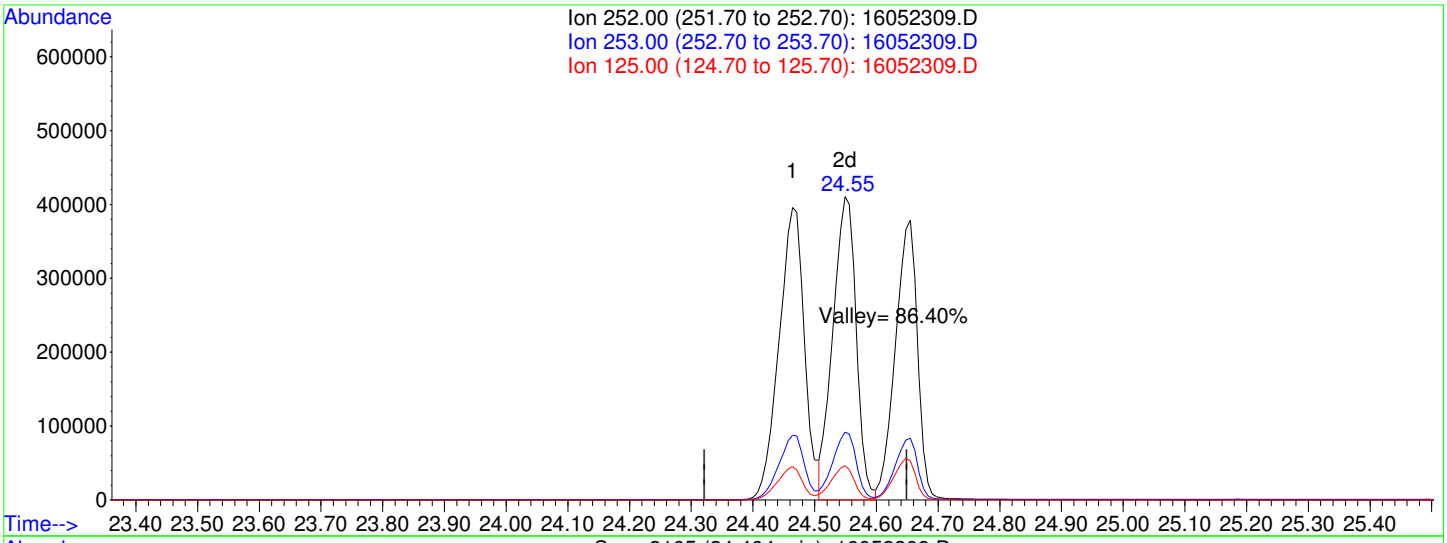
Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

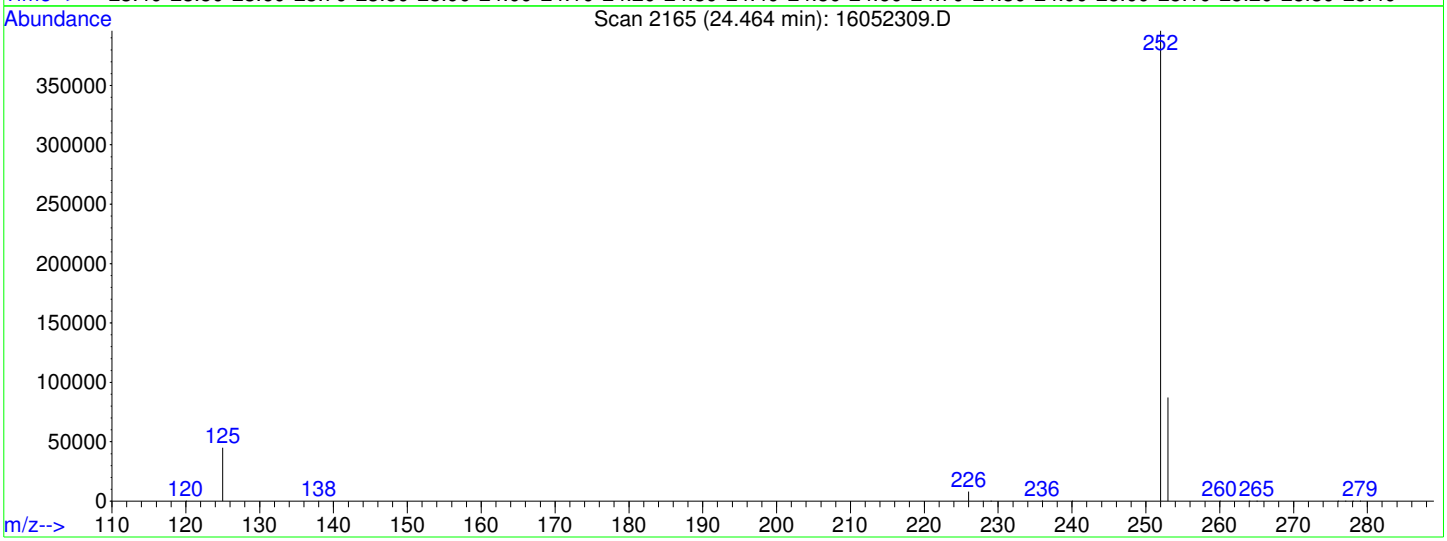


Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\160523\16052309.D Vial: 2
Acq On : 23 May 2016 1:41 pm Operator:
Sample : ICV-160523 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 23 14:13 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Multiple Level Calibration




TIC: 16052309.D

(21) Benzo[b]fluoranthene (CP)

24.46min 1928.76ug/kg

response 1142115

| Ion | Exp% | Act% |
|---|---|---|
| 252.00 | 100 | 100 |
| 253.00 | 22.20 | 21.91 |
| 125.00 | 11.00 | 11.32 |
| 0.00 | 0.00 | 0.00 |

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052310.D Vial: 3
Acq On : 23 May 2016 2:21 pm Operator:
Sample : LCS-75225 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:02 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

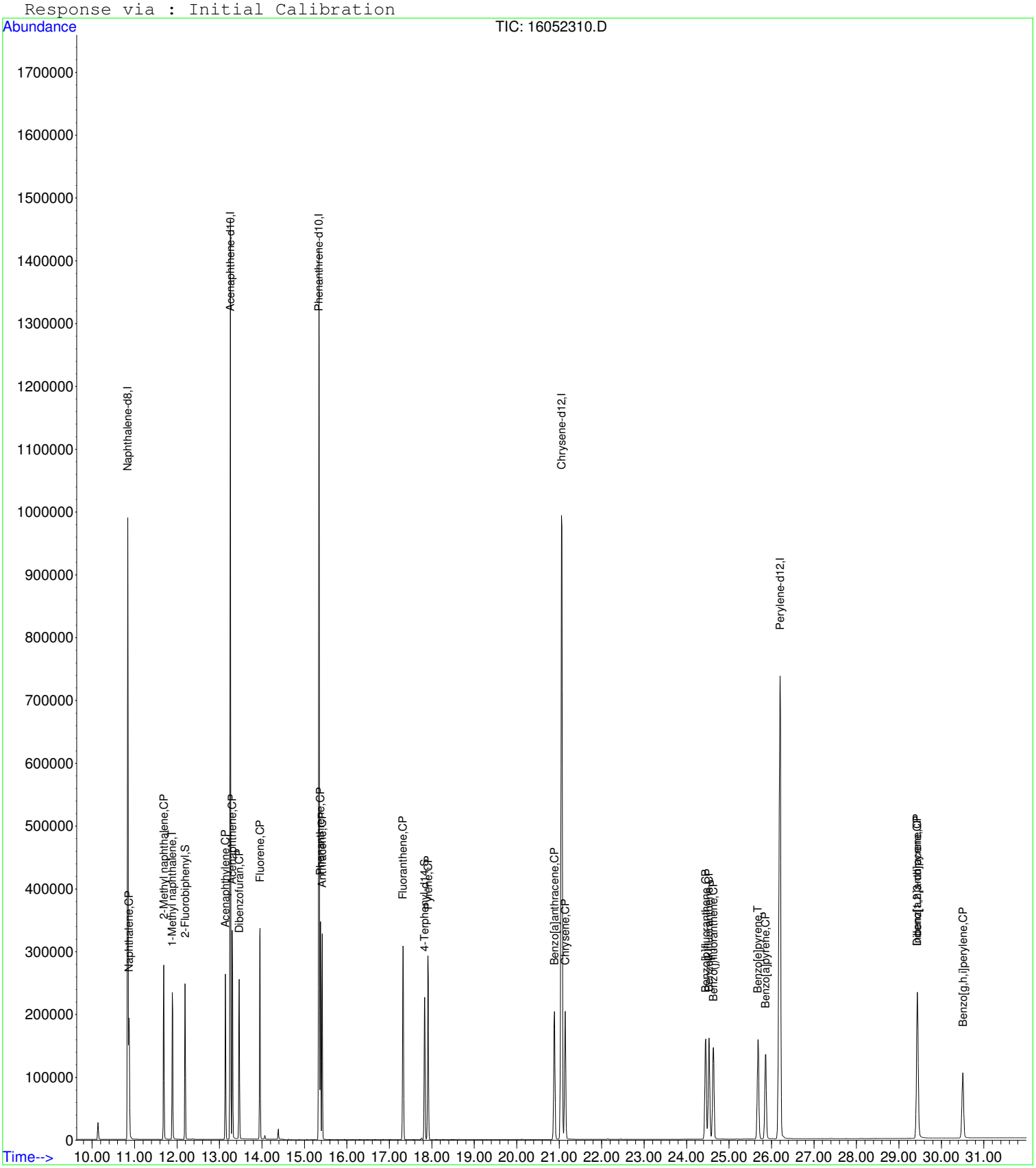
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1152529 | 4000.00 | ug/kg | 99 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 762980 | 4000.00 | ug/kg | 66 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1514920 | 4000.00 | ug/kg | 74 |
| 17) Chrysene-d12 | 21.06 | 240 | 1685288 | 4000.00 | ug/kg | 74 |
| 20) Perylene-d12 | 26.20 | 264 | 1493045 | 4000.00 | ug/kg | 72 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 181297 | 814.57 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 20.36%# | | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 292168 | 745.45 | ug/kg | -0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 18.64%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 191164 | 663.10 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.69 | 142 | 144163 | 566.11 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.89 | 142 | 131163 | 562.38 | ug/kg | 92 |
| 6) Dibenzofuran | 13.46 | 168 | 223926 | 783.08 | ug/kg | 99 |
| 8) Acenaphthylene | 13.14 | 152 | 242690 | 738.59 | ug/kg | 99 |
| 9) Acenaphthene | 13.30 | 154 | 143057 | 701.44 | ug/kg | 96 |
| 10) Fluorene | 13.96 | 166 | 187992 | 758.99 | ug/kg | 97 |
| 12) Phenanthrene | 15.38 | 178 | 279576 | 701.75 | ug/kg | 100 |
| 13) Anthracene | 15.42 | 178 | 277716 | 736.47 | ug/kg | 99 |
| 14) Fluoranthene | 17.32 | 202 | 315106 | 764.31 | ug/kg | 99 |
| 15) Pyrene | 17.91 | 202 | 313202 | 731.33 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.89 | 228 | 300623 | 761.41 | ug/kg | 99 |
| 19) Chrysene | 21.14 | 228 | 272727 | 714.92 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.45 | 252 | 297810 | 756.79 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.53 | 252 | 283815 | 768.83 | ug/kg | 100 |
| 23) Benzo(j)fluoranthene | 24.63 | 252 | 261112 | 794.04 | ug/kg | 99 |
| 24) Benzo[e]pyrene | 25.69 | 252 | 295014 | 837.12 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.86 | 252 | 256457 | 712.13 | ug/kg | 100 |
| 26) Dibenz[a,h]anthracene | 29.43 | 278 | 218363 | 665.79 | ug/kg | 99 |
| 27) Indeno[1,2,3-cd]pyrene | 29.44 | 276 | 253989 | 649.15 | ug/kg | 92 |
| 28) Benzo[g,h,i]perylene | 30.51 | 276 | 209832 | 687.75 | ug/kg | 97 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052310.D Vial: 3
Acq On : 23 May 2016 2:21 pm Operator:
Sample : LCS-75225 Inst : GC/MS #6
Misc : LCS Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:02 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052311.D Vial: 4
Acq On : 23 May 2016 3:01 pm Operator:
Sample : MB-75225 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:02 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

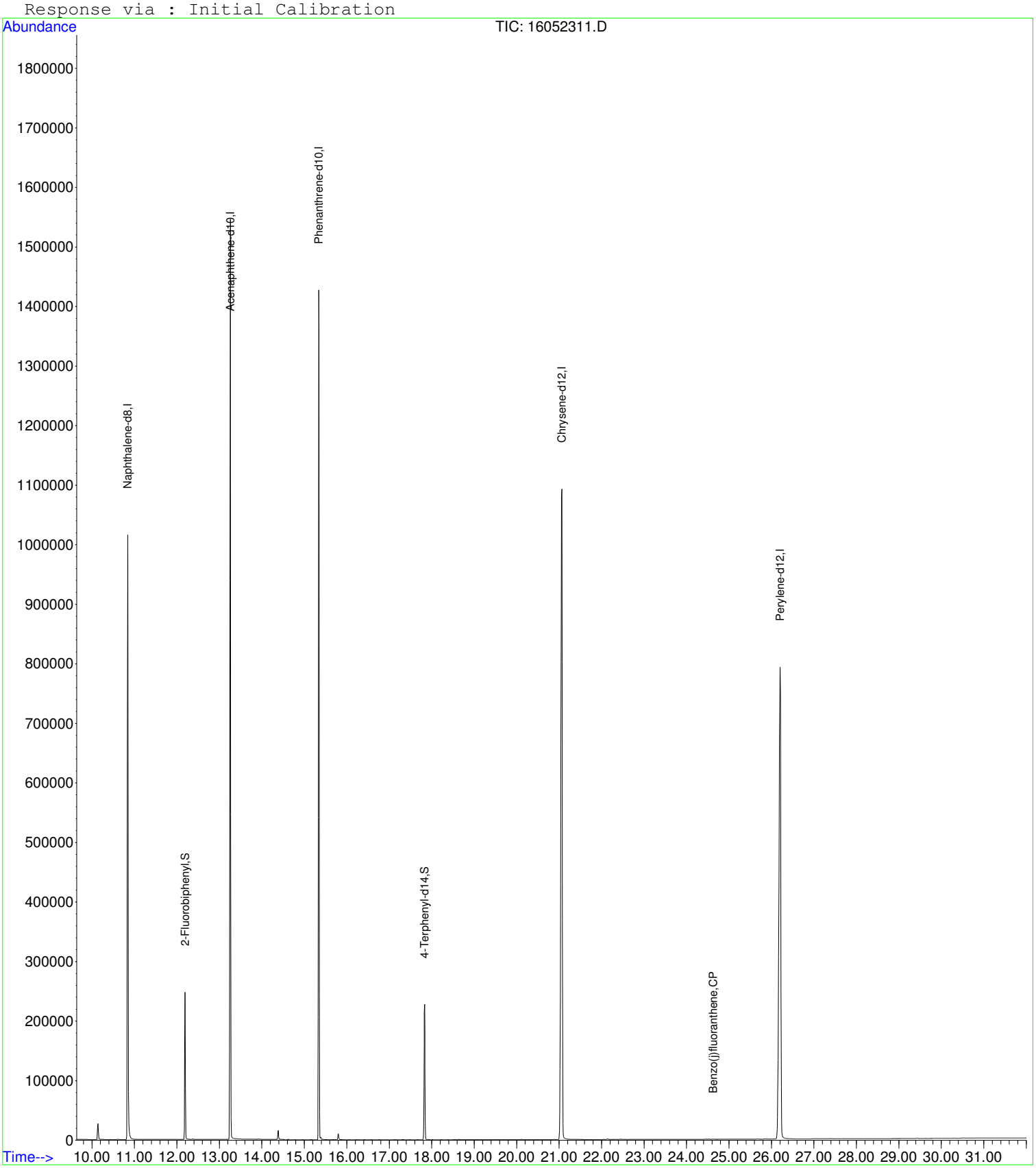
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1224390 | 4000.00 | ug/kg | 106 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 809024 | 4000.00 | ug/kg | 70 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1548510 | 4000.00 | ug/kg | 76 |
| 17) Chrysene-d12 | 21.06 | 240 | 1869719 | 4000.00 | ug/kg | 82 |
| 20) Perylene-d12 | 26.20 | 264 | 1627542 | 4000.00 | ug/kg | 79 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 187405 | 794.09 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 19.85%# | | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 292259 | 729.50 | ug/kg | -0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 18.24%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 23) Benzo(j)fluoranthene | 24.63 | 252 | 427 | 1.19 | ug/kg# | 72 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052311.D Vial: 4
Acq On : 23 May 2016 3:01 pm Operator:
Sample : MB-75225 Inst : GC/MS #6
Misc : MBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:02 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052312.D Vial: 5
Acq On : 23 May 2016 3:40 pm Operator:
Sample : 1605121-15A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:03 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

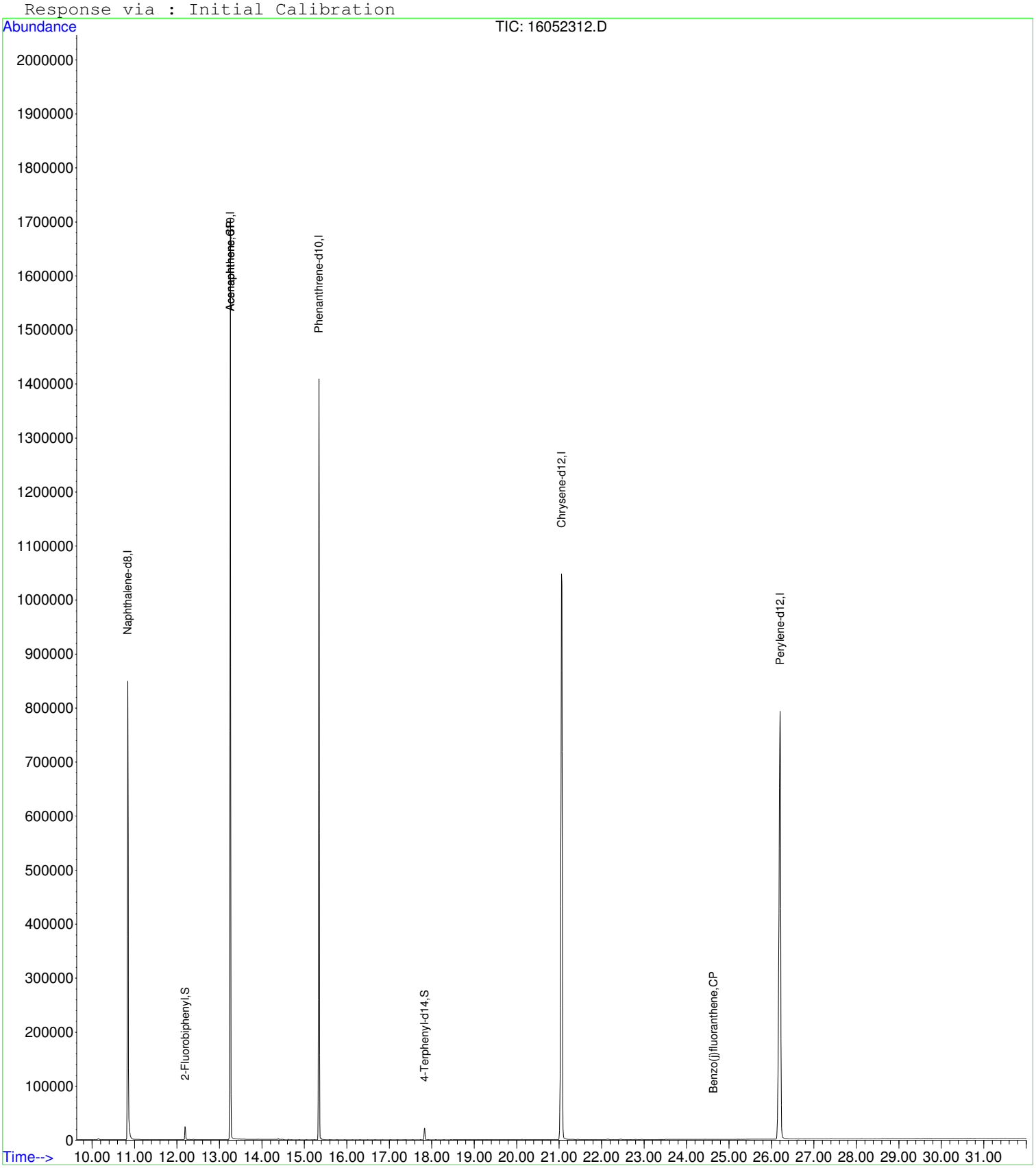
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1062897 | 4000.00 | ug/kg | 92 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 882113 | 4000.00 | ug/kg | 77 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1481082 | 4000.00 | ug/kg | 73 |
| 17) Chrysene-d12 | 21.06 | 240 | 1764752 | 4000.00 | ug/kg | 78 |
| 20) Perylene-d12 | 26.20 | 264 | 1555564 | 4000.00 | ug/kg | 76 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 21108 | 82.03 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 2.05%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 28510 | 74.40 | ug/kg | -0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.86%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 9) Acenaphthene | 13.26 | 154 | 2726 | 11.56 | ug/kg# | 9 |
| 23) Benzo(j)fluoranthene | 24.63 | 252 | 119 | 0.35 | ug/kg# | 18 |

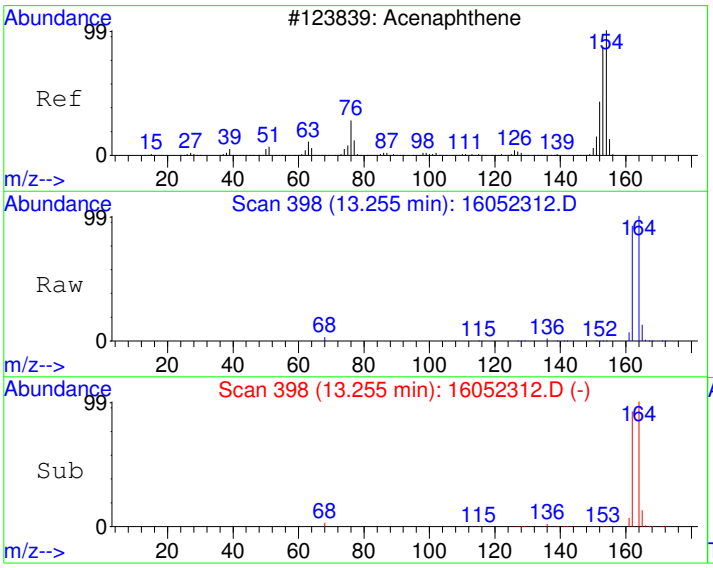
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052312.D Vial: 5
Acq On : 23 May 2016 3:40 pm Operator:
Sample : 1605121-15A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:03 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

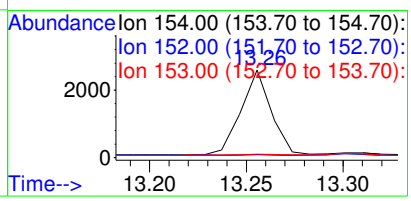


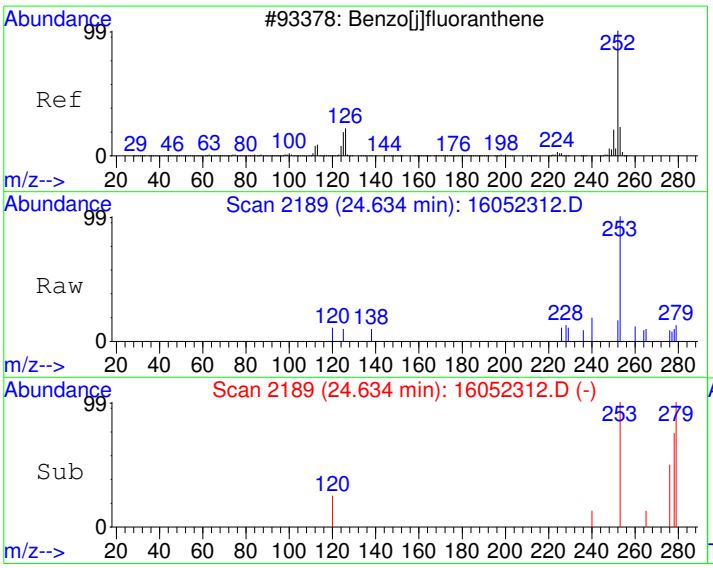



#9
Acenaphthene
Concen: 11.56 ug/kg
RT: 13.26 min Scan# 398
Delta R.T. -0.07 min
Lab File: 16052312.D
Acq: 23 May 2016 3:40 pm

Tgt Ion:154 Resp: 2726

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 1.0 | 18.9 | 78.9# |
| 153 | 1.8 | 75.2 | 135.2# |

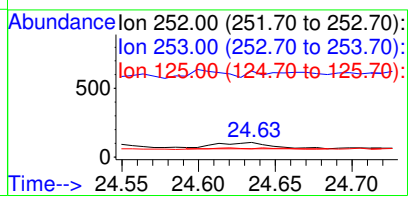



#23
Benzo(j)fluoranthene
Concen: 0.35 ug/kg
RT: 24.63 min Scan# 2189
Delta R.T. -0.03 min
Lab File: 16052312.D
Acq: 23 May 2016 3:40 pm

Tgt Ion:252 Resp: 119

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 80.9 | 2.1 | 42.1# |
| 125 | 6.4 | 0.0 | 34.4 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052313.D Vial: 6
Acq On : 23 May 2016 4:21 pm Operator:
Sample : 1605121-31A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:03 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

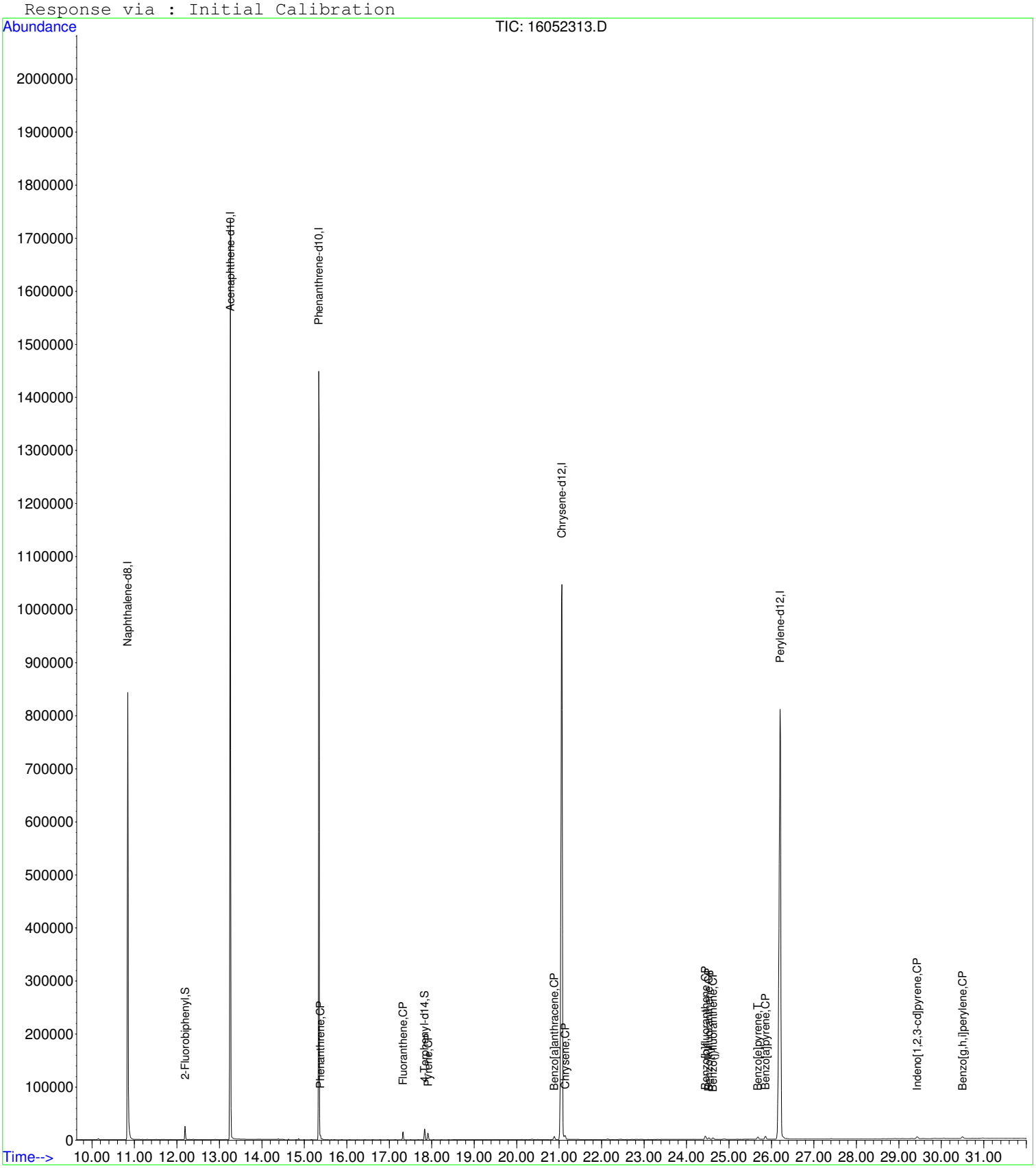
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1047587 | 4000.00 | ug/kg | 90 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 899361 | 4000.00 | ug/kg | 78 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1550373 | 4000.00 | ug/kg | 76 |
| 17) Chrysene-d12 | 21.06 | 240 | 1784606 | 4000.00 | ug/kg | 79 |
| 20) Perylene-d12 | 26.20 | 264 | 1602053 | 4000.00 | ug/kg | 78 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 19861 | 75.70 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 1.89%# | | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 26537 | 66.16 | ug/kg | -0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 1.65%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 12) Phenanthrene | 15.38 | 178 | 5623 | 13.79 | ug/kg | 99 |
| 14) Fluoranthene | 17.32 | 202 | 15139 | 35.88 | ug/kg | 98 |
| 15) Pyrene | 17.91 | 202 | 13876 | 31.66 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.88 | 228 | 8856 | 21.18 | ug/kg | 99 |
| 19) Chrysene | 21.14 | 228 | 10211 | 25.28 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.44 | 252 | 11076 | 26.23 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.52 | 252 | 5418 | 13.68 | ug/kg | 97 |
| 23) Benzo(j)fluoranthene | 24.63 | 252 | 4890 | 13.86 | ug/kg | 94 |
| 24) Benzo[e]pyrene | 25.68 | 252 | 7911 | 20.92 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.86 | 252 | 10175 | 26.33 | ug/kg | 99 |
| 27) Indeno[1,2,3-cd]pyrene | 29.44 | 276 | 6416 | 15.28 | ug/kg | 91 |
| 28) Benzo[g,h,i]perylene | 30.50 | 276 | 6361 | 19.43 | ug/kg | 95 |

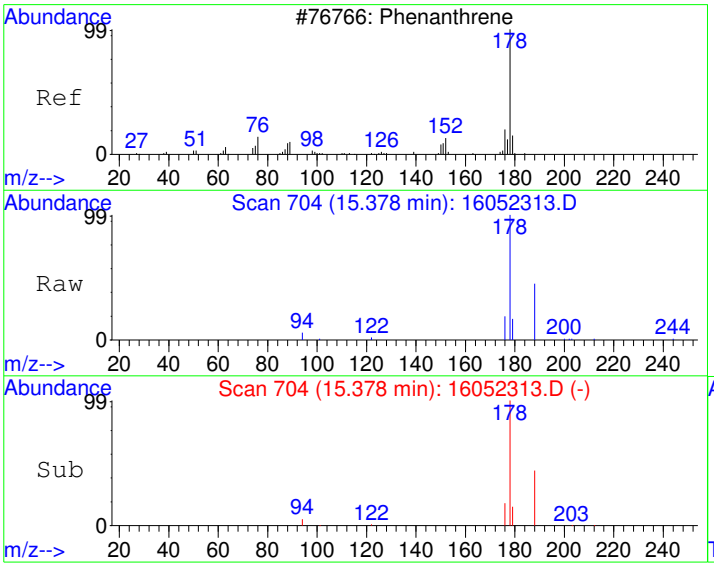
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052313.D Vial: 6
Acq On : 23 May 2016 4:21 pm Operator:
Sample : 1605121-31A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:03 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

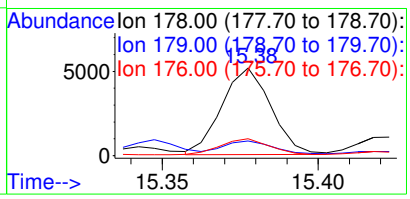


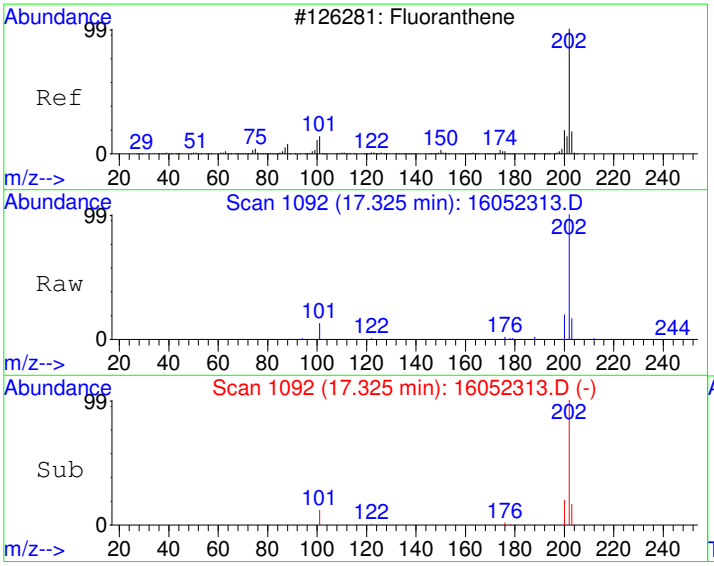



#12
Phenanthrene
Concen: 13.79 ug/kg
RT: 15.38 min Scan# 704
Delta R.T. -0.02 min
Lab File: 16052313.D
Acq: 23 May 2016 4:21 pm

Tgt Ion:178 Resp: 5623

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.1 | 0.0 | 45.9 |
| 176 | 18.4 | 0.0 | 48.5 |

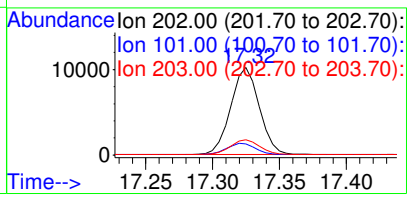


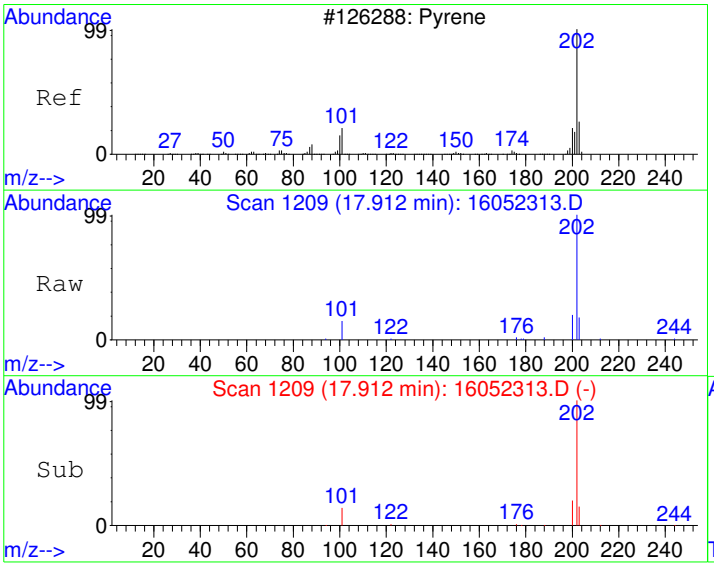




#14
Fluoranthene
Concen: 35.88 ug/kg
RT: 17.32 min Scan# 1092
Delta R.T. -0.02 min
Lab File: 16052313.D
Acq: 23 May 2016 4:21 pm

Tgt Ion:202 Resp: 15139

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 12.1 | 0.0 | 43.0 |
| 203 | 16.9 | 0.0 | 47.9 |

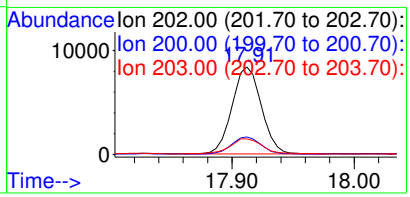


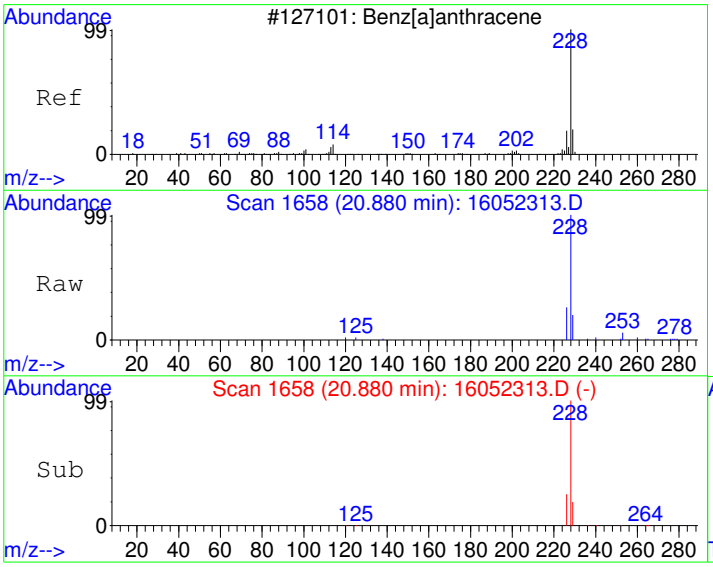




#15
Pyrene
Concen: 31.66 ug/kg
RT: 17.91 min Scan# 1209
Delta R.T. -0.02 min
Lab File: 16052313.D
Acq: 23 May 2016 4:21 pm

Tgt Ion:202 Resp: 13876

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 200 | 19.8 | 0.0 | 50.0 |
| 203 | 17.2 | 0.0 | 48.0 |

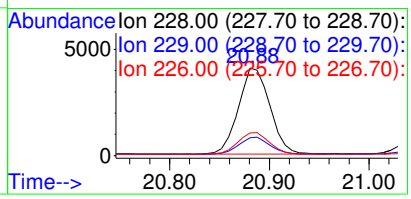


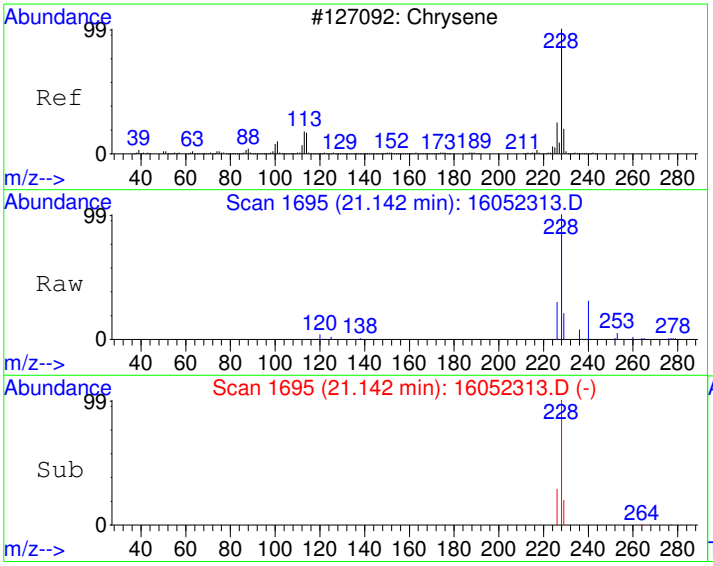



#18
Benzo[a]anthracene
Concen: 21.18 ug/kg
RT: 20.88 min Scan# 1658
Delta R.T. -0.03 min
Lab File: 16052313.D
Acq: 23 May 2016 4:21 pm

Tgt Ion:228 Resp: 8856

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.1 | 0.0 | 50.1 |
| 226 | 24.9 | 0.0 | 55.2 |

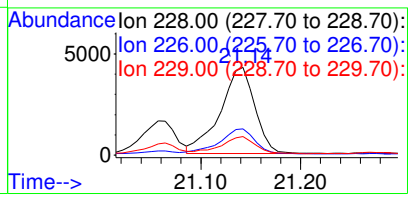


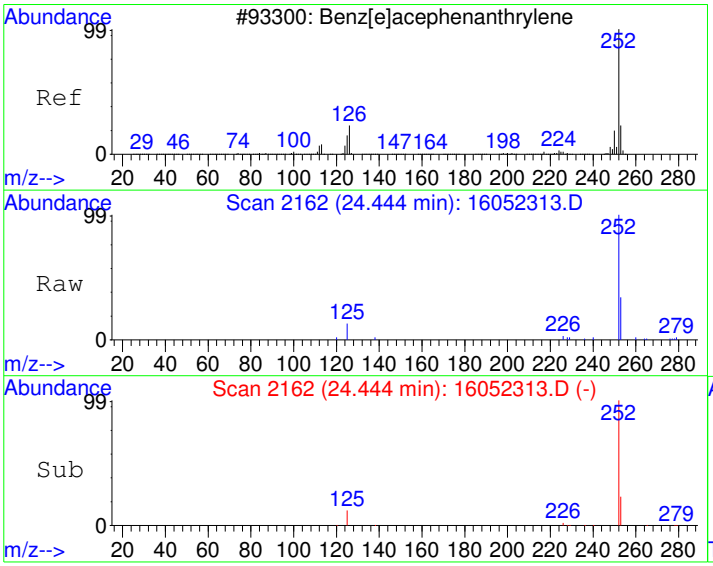




#19
Chrysene
Concen: 25.28 ug/kg
RT: 21.14 min Scan# 1695
Delta R.T. -0.03 min
Lab File: 16052313.D
Acq: 23 May 2016 4:21 pm

Tgt Ion:228 Resp: 10211

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.8 | 0.0 | 58.1 |
| 229 | 19.8 | 0.0 | 50.1 |

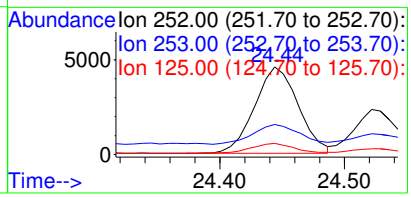


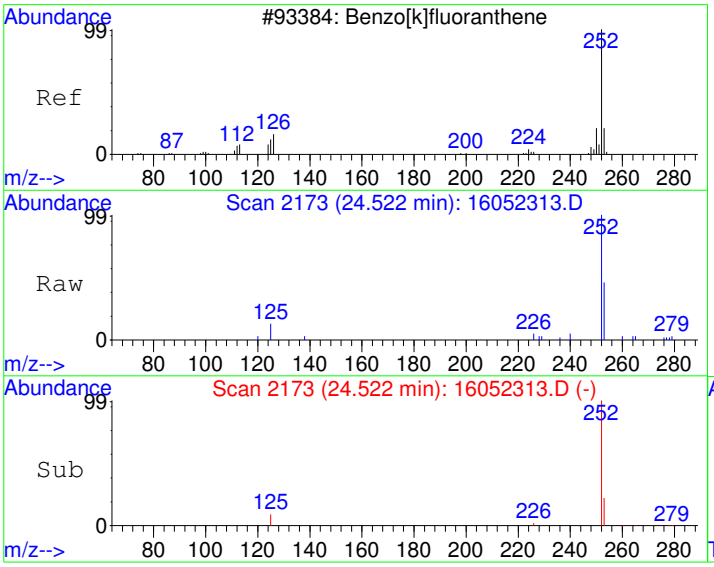




#21
Benzo[b]fluoranthene
Concen: 26.23 ug/kg
RT: 24.44 min Scan# 2162
Delta R.T. -0.04 min
Lab File: 16052313.D
Acq: 23 May 2016 4:21 pm

Tgt Ion:252 Resp: 11076

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.3 | 0.0 | 52.2 |
| 125 | 11.6 | 0.0 | 41.0 |

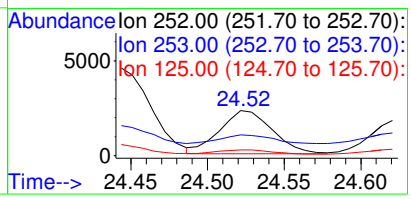


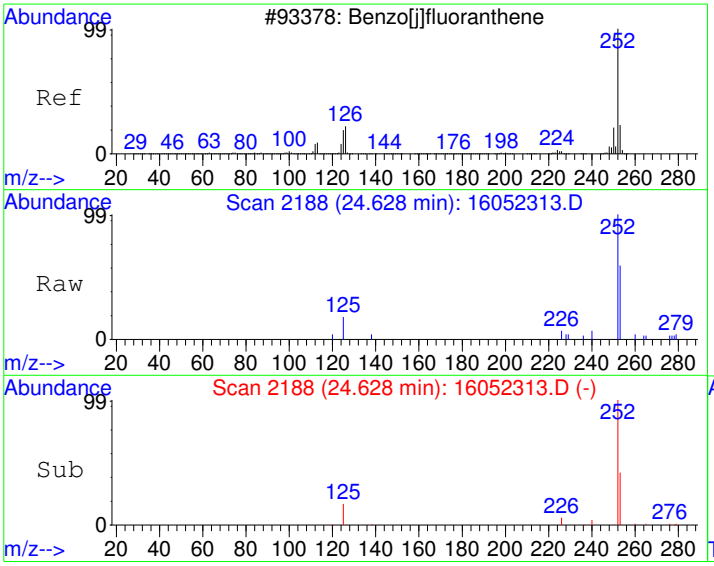



#22
Benzo[k]fluoranthene
Concen: 13.68 ug/kg
RT: 24.52 min Scan# 2173
Delta R.T. -0.05 min
Lab File: 16052313.D
Acq: 23 May 2016 4:21 pm

Tgt Ion:252 Resp: 5418

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.0 | 2.1 | 42.1 |
| 125 | 10.0 | 0.0 | 31.3 |

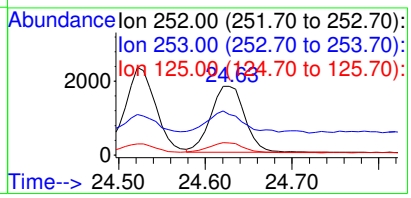


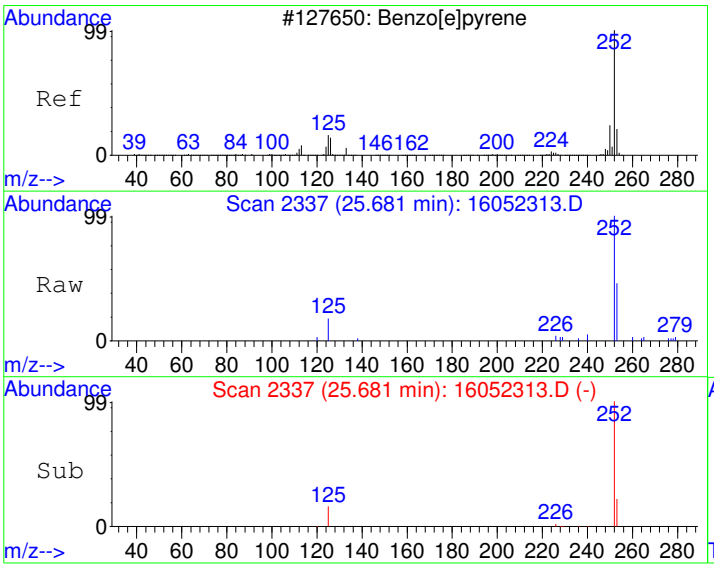




#23
Benzo(j)fluoranthene
Concen: 13.86 ug/kg
RT: 24.63 min Scan# 2188
Delta R.T. -0.04 min
Lab File: 16052313.D
Acq: 23 May 2016 4:21 pm

Tgt Ion:252 Resp: 4890

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 26.4 | 2.1 | 42.1 |
| 125 | 14.6 | 0.0 | 34.4 |

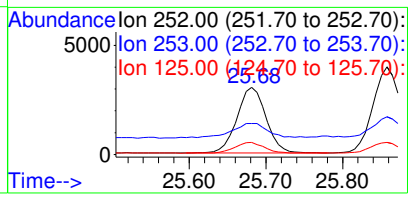


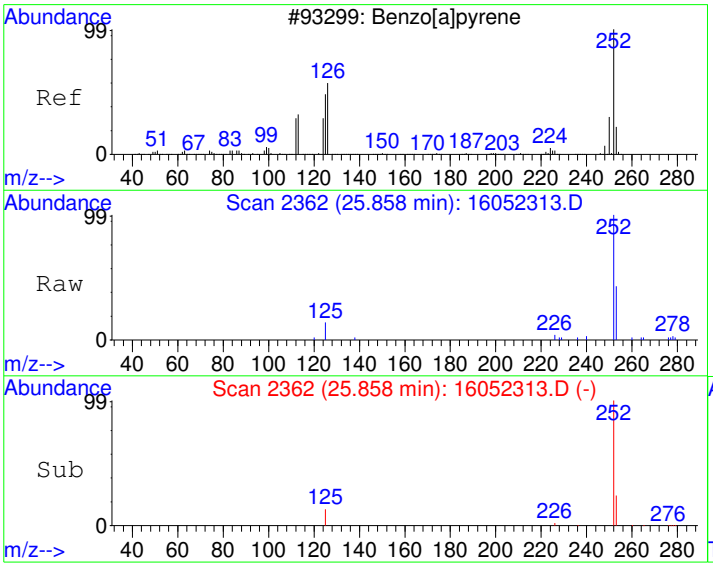




#24
Benzo[e]pyrene
Concen: 20.92 ug/kg
RT: 25.68 min Scan# 2337
Delta R.T. -0.04 min
Lab File: 16052313.D
Acq: 23 May 2016 4:21 pm

Tgt Ion:252 Resp: 7911

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.5 | 2.2 | 42.2 |
| 125 | 16.3 | 0.0 | 36.1 |

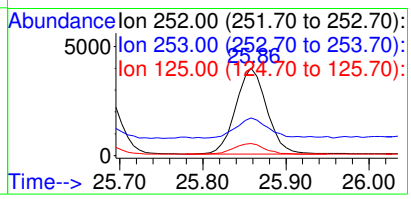


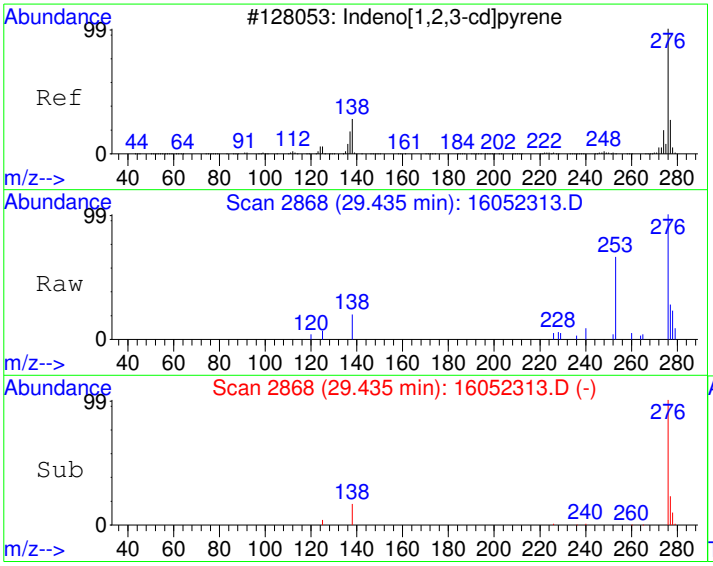



#25
Benzo[a]pyrene
Concen: 26.33 ug/kg
RT: 25.86 min Scan# 2362
Delta R.T. -0.04 min
Lab File: 16052313.D
Acq: 23 May 2016 4:21 pm

Tgt Ion:252 Resp: 10175

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.5 | 1.9 | 41.9 |
| 125 | 12.5 | 0.0 | 31.7 |

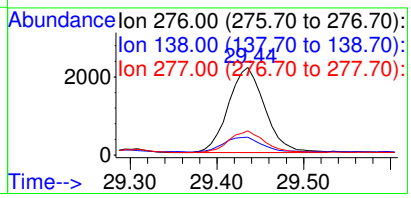


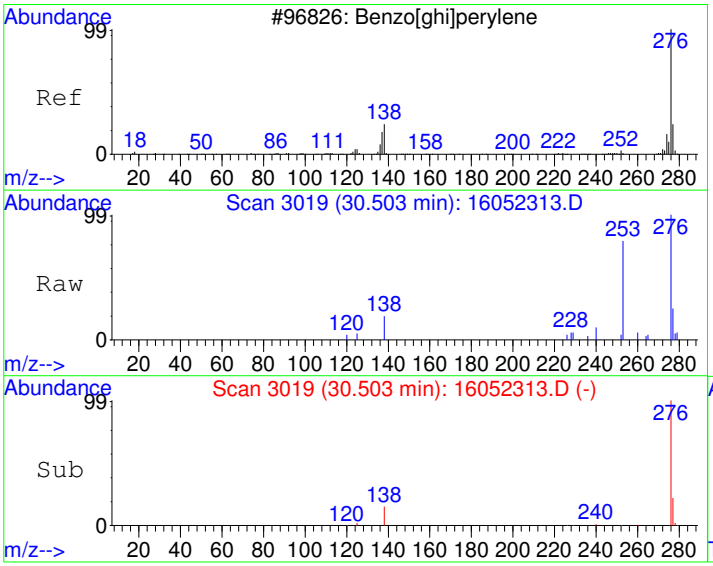




#27
Indeno[1,2,3-cd]pyrene
Concen: 15.28 ug/kg
RT: 29.44 min Scan# 2868
Delta R.T. -0.04 min
Lab File: 16052313.D
Acq: 23 May 2016 4:21 pm

Tgt Ion:276 Resp: 6416

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 17.5 | 6.7 | 46.7 |
| 277 | 25.6 | 5.8 | 45.8 |

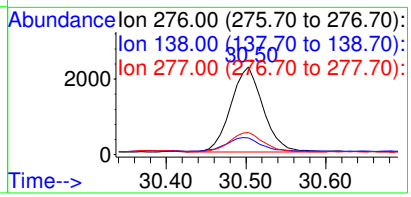



#28
Benzo[g,h,i]perylene
Concen: 19.43 ug/kg
RT: 30.50 min Scan# 3019
Delta R.T. -0.05 min
Lab File: 16052313.D
Acq: 23 May 2016 4:21 pm

Tgt Ion:276 Resp: 6361

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 15.6 | 0.0 | 39.1 |
| 277 | 22.9 | 4.0 | 44.0 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052314.D Vial: 7
Acq On : 23 May 2016 5:01 pm Operator:
Sample : 1605121-32A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:04 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

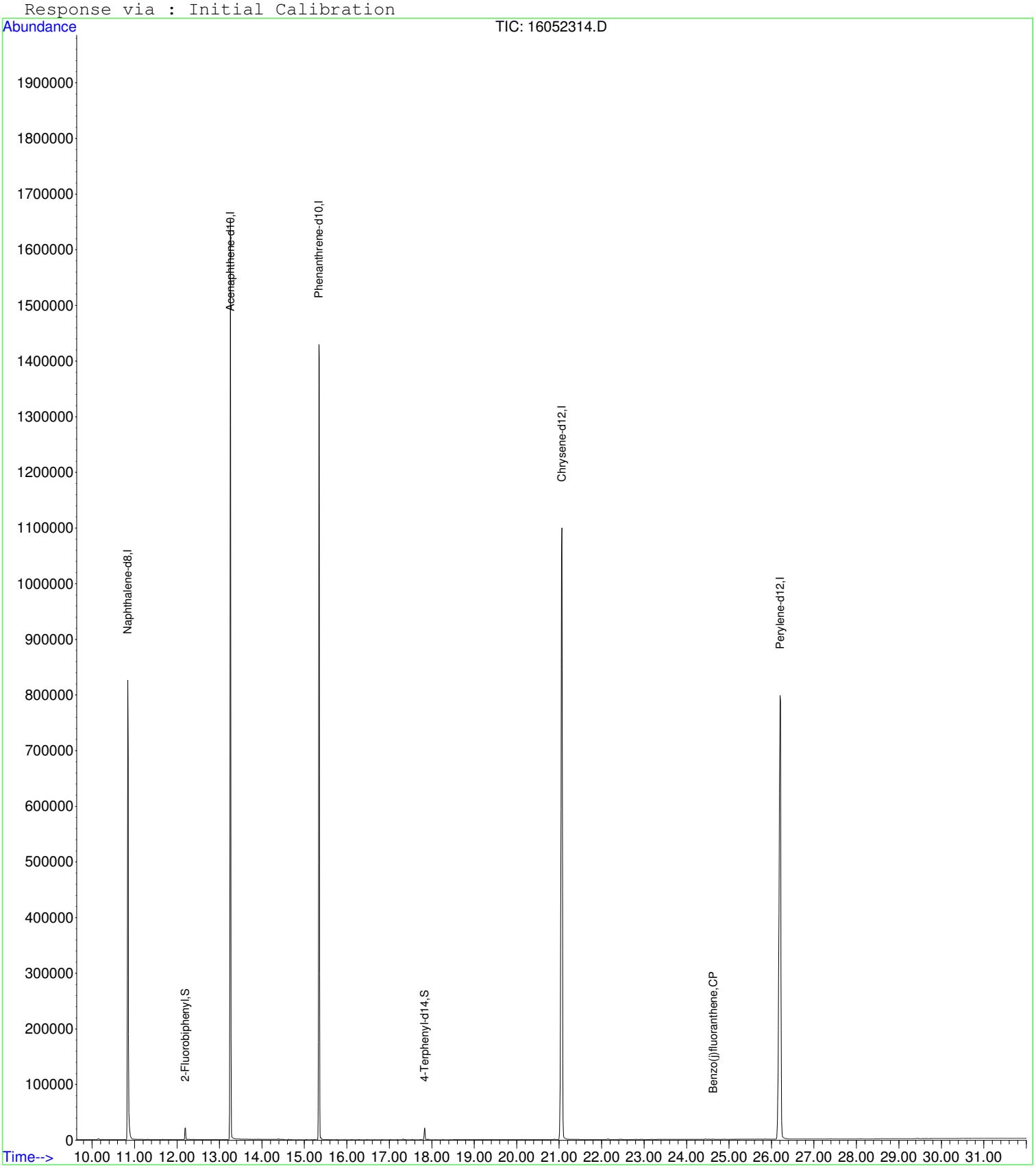
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1105776 | 4000.00 | ug/kg | 95 |
| 5) Acenaphthene-d10 | 13.25 | 164 | 935822 | 4000.00 | ug/kg | 81 |
| 11) Phenanthrene-d10 | 15.35 | 188 | 1569647 | 4000.00 | ug/kg | 77 |
| 17) Chrysene-d12 | 21.06 | 240 | 1852185 | 4000.00 | ug/kg | 82 |
| 20) Perylene-d12 | 26.20 | 264 | 1632412 | 4000.00 | ug/kg | 79 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.20 | 172 | 19968 | 73.15 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.83%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 26994 | 66.47 | ug/kg | -0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.66%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 23) Benzo(j)fluoranthene | 24.63 | 252 | 562 | 1.56 | ug/kg | 87 |

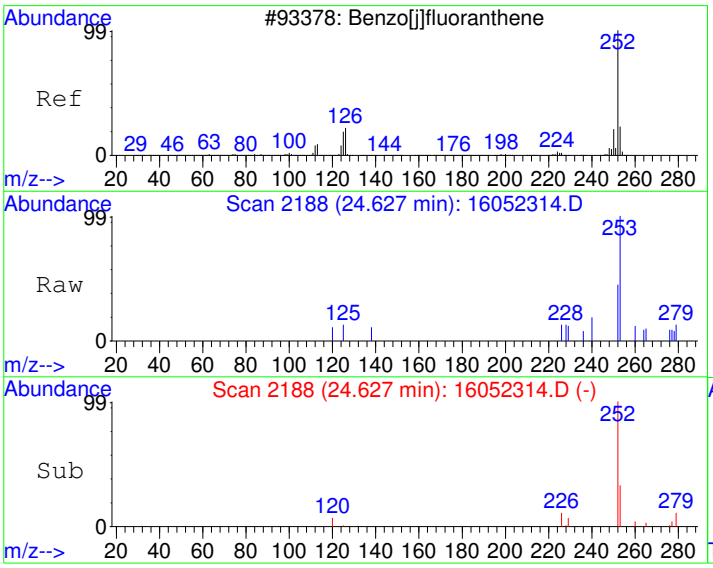
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052314.D Vial: 7
Acq On : 23 May 2016 5:01 pm Operator:
Sample : 1605121-32A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:04 2016 Quant Results File: PP160421.RES

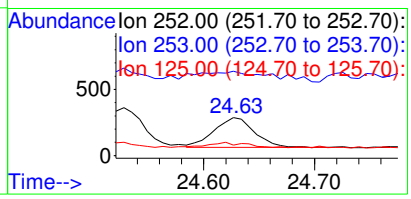
Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration






#23
Benzo(j)fluoranthene
Concen: 1.56 ug/kg
RT: 24.63 min Scan# 2188
Delta R.T. -0.04 min
Lab File: 16052314.D
Acq: 23 May 2016 5:01 pm

| Tgt Ion:252 | Resp: | 562 | |
|---|---|---|---|
| Ion | Ratio | Lower | Upper |
| 252 | 100 | | |
| 253 | 15.7 | 2.1 | 42.1 |
| 125 | 9.0 | 0.0 | 34.4 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052315.D Vial: 8
Acq On : 23 May 2016 5:40 pm Operator:
Sample : 1605121-33A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:04 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

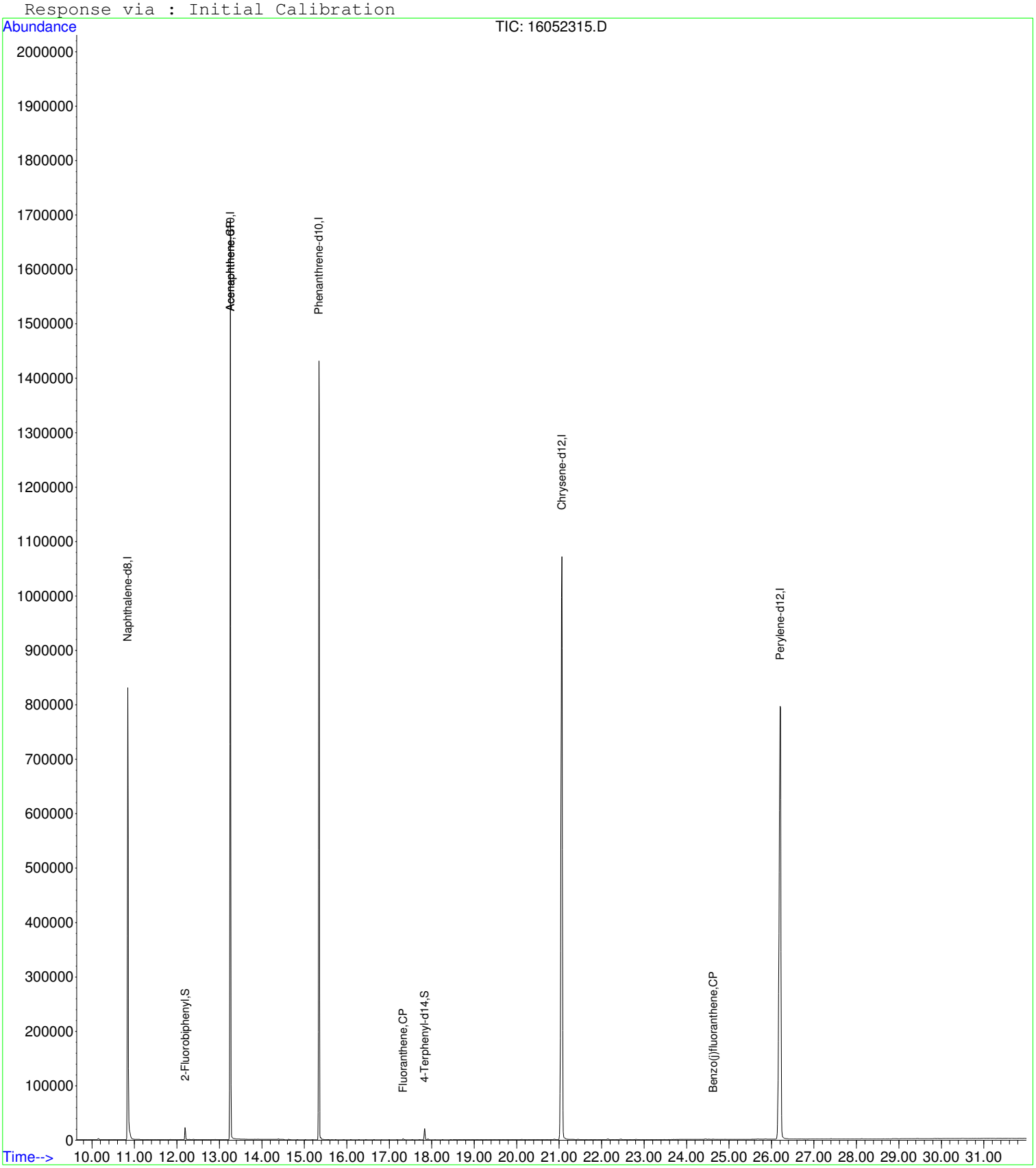
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1053149 | 4000.00 | ug/kg | 91 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 894705 | 4000.00 | ug/kg | 78 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1546827 | 4000.00 | ug/kg | 76 |
| 17) Chrysene-d12 | 21.06 | 240 | 1827832 | 4000.00 | ug/kg | 80 |
| 20) Perylene-d12 | 26.20 | 264 | 1625866 | 4000.00 | ug/kg | 79 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 19104 | 73.20 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.83%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 26247 | 65.59 | ug/kg | -0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.64%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 9) Acenaphthene | 13.26 | 154 | 2733 | 11.43 | ug/kg# | 9 |
| 14) Fluoranthene | 17.33 | 202 | 2162 | 5.14 | ug/kg | 96 |
| 23) Benzo(j)fluoranthene | 24.63 | 252 | 663 | 1.85 | ug/kg | 96 |

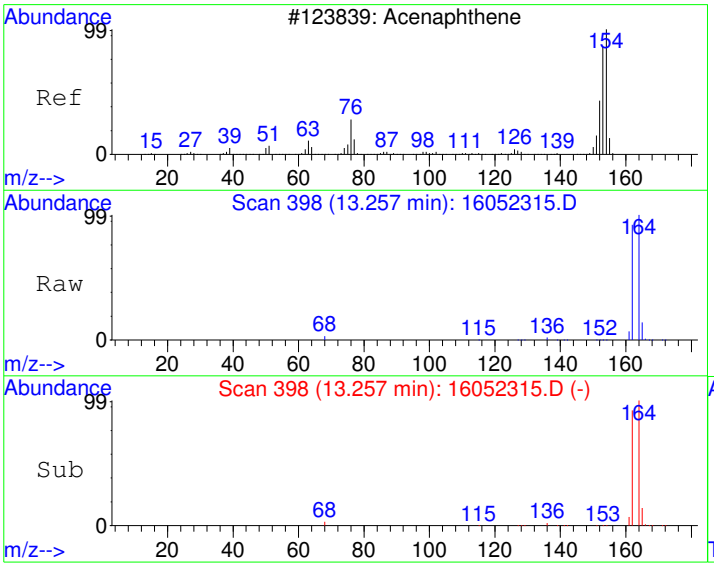
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052315.D Vial: 8
Acq On : 23 May 2016 5:40 pm Operator:
Sample : 1605121-33A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:04 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

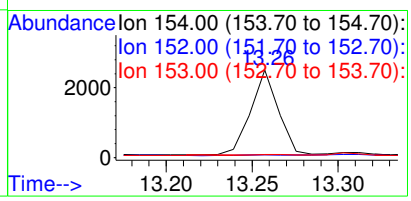


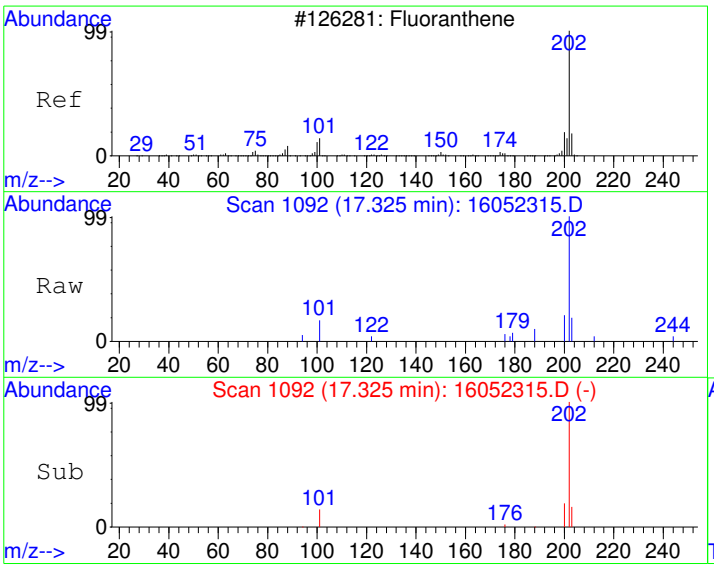



#9
Acenaphthene
Concen: 11.43 ug/kg
RT: 13.26 min Scan# 398
Delta R.T. -0.06 min
Lab File: 16052315.D
Acq: 23 May 2016 5:40 pm

Tgt Ion:154 Resp: 2733

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 0.8 | 18.9 | 78.9# |
| 153 | 1.3 | 75.2 | 135.2# |

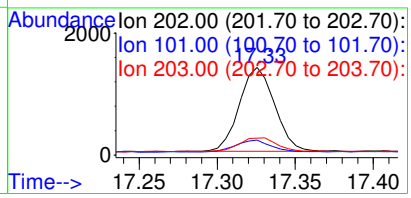


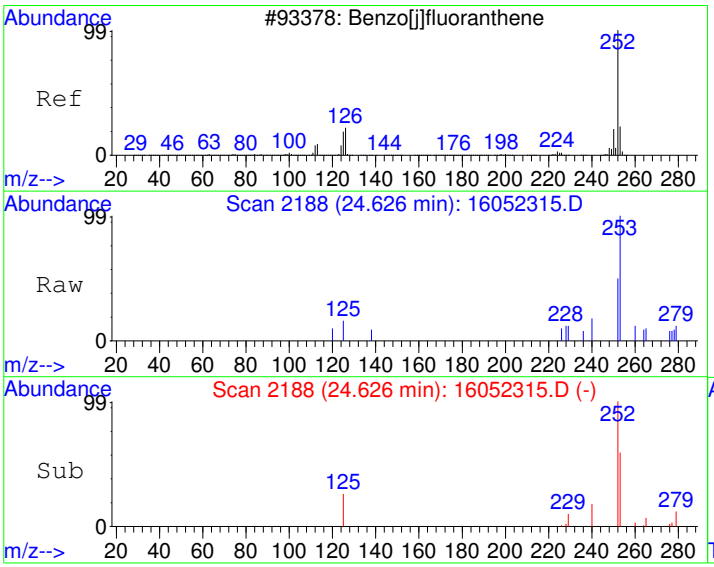




#14
Fluoranthene
Concen: 5.14 ug/kg
RT: 17.33 min Scan# 1092
Delta R.T. -0.02 min
Lab File: 16052315.D
Acq: 23 May 2016 5:40 pm

Tgt Ion:202 Resp: 2162

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 14.0 | 0.0 | 43.0 |
| 203 | 15.8 | 0.0 | 47.9 |

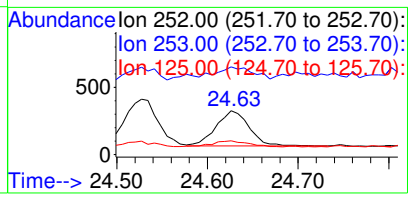



#23
Benzo(j)fluoranthene
Concen: 1.85 ug/kg
RT: 24.63 min Scan# 2188
Delta R.T. -0.04 min
Lab File: 16052315.D
Acq: 23 May 2016 5:40 pm

Tgt Ion:252 Resp: 663

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 23.6 | 2.1 | 42.1 |
| 125 | 17.1 | 0.0 | 34.4 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052316.D Vial: 9
Acq On : 23 May 2016 6:20 pm Operator:
Sample : 1605121-34A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:04 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

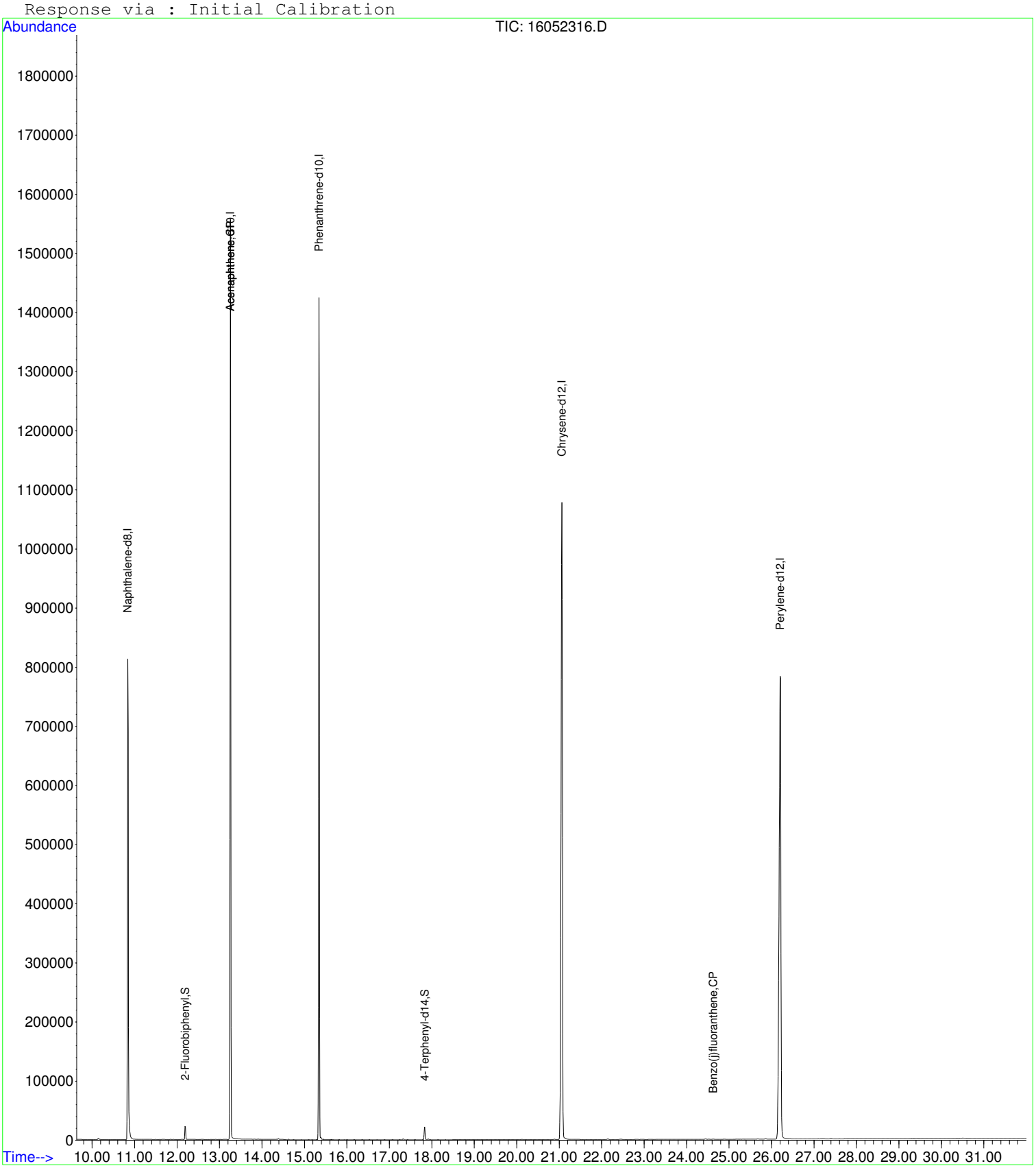
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1089769 | 4000.00 | ug/kg | 94 |
| 5) Acenaphthene-d10 | 13.25 | 164 | 904923 | 4000.00 | ug/kg | 79 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1518289 | 4000.00 | ug/kg | 74 |
| 17) Chrysene-d12 | 21.06 | 240 | 1797294 | 4000.00 | ug/kg | 79 |
| 20) Perylene-d12 | 26.20 | 264 | 1593242 | 4000.00 | ug/kg | 77 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 20526 | 77.76 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.94%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 27842 | 70.88 | ug/kg | -0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.77%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 9) Acenaphthene | 13.25 | 154 | 2788 | 11.53 | ug/kg# | 9 |
| 23) Benzo(j)fluoranthene | 24.63 | 252 | 489 | 1.39 | ug/kg | 91 |

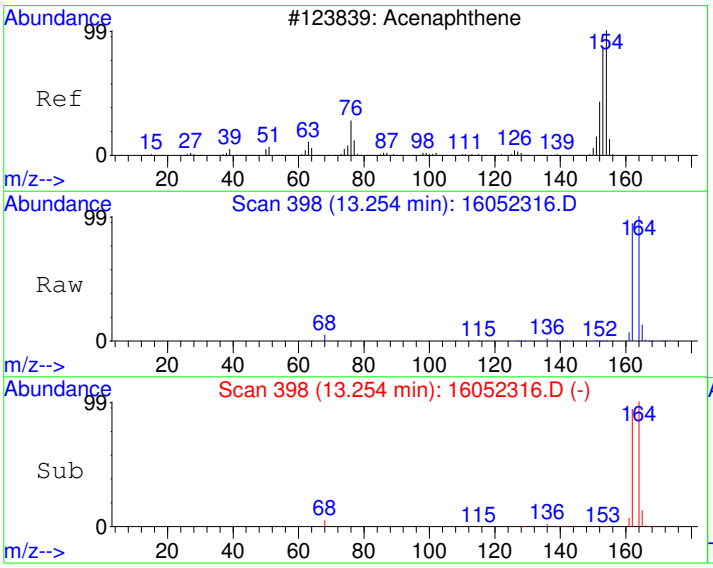
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052316.D Vial: 9
Acq On : 23 May 2016 6:20 pm Operator:
Sample : 1605121-34A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:04 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

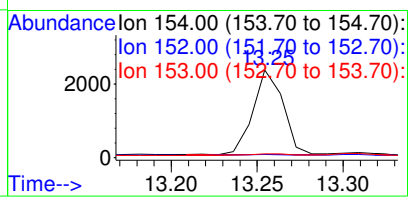


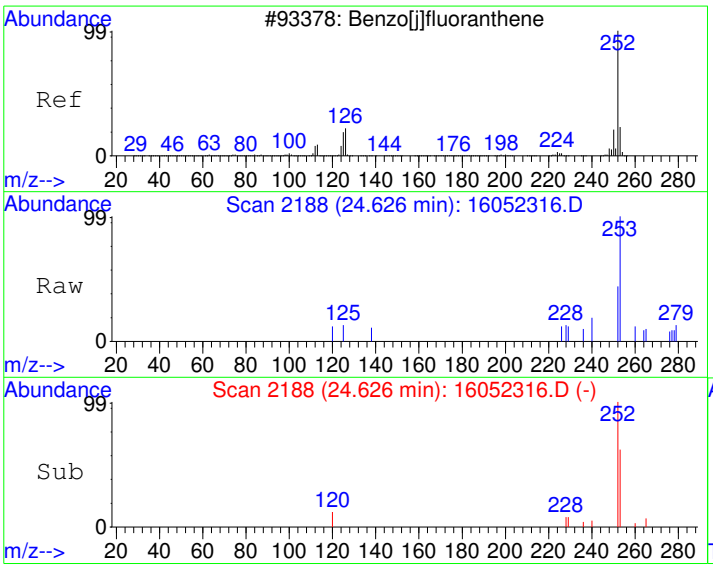



#9
Acenaphthene
Concen: 11.53 ug/kg
RT: 13.25 min Scan# 398
Delta R.T. -0.07 min
Lab File: 16052316.D
Acq: 23 May 2016 6:20 pm

Tgt Ion:154 Resp: 2788

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 1.0 | 18.9 | 78.9# |
| 153 | 1.7 | 75.2 | 135.2# |

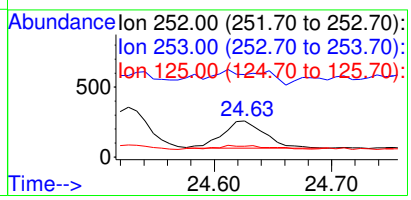



#23
Benzo(j)fluoranthene
Concen: 1.39 ug/kg
RT: 24.63 min Scan# 2188
Delta R.T. -0.04 min
Lab File: 16052316.D
Acq: 23 May 2016 6:20 pm

Tgt Ion:252 Resp: 489

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 19.5 | 2.1 | 42.1 |
| 125 | 8.7 | 0.0 | 34.4 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052317.D Vial: 10
Acq On : 23 May 2016 7:00 pm Operator:
Sample : 1605121-22A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:04 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

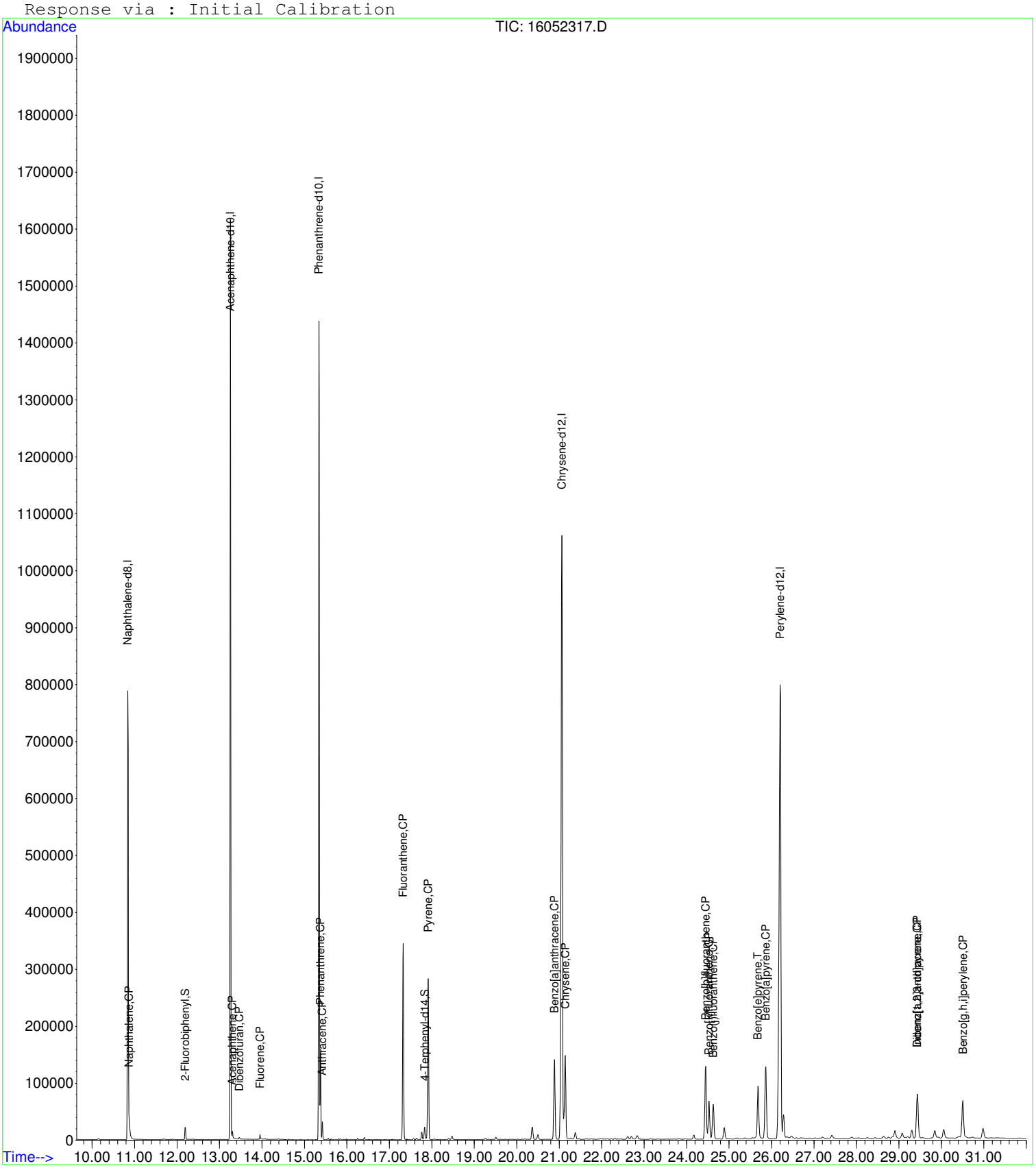
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1076761 | 4000.00 | ug/kg | 93 |
| 5) Acenaphthene-d10 | 13.25 | 164 | 902795 | 4000.00 | ug/kg | 78 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1535356 | 4000.00 | ug/kg | 75 |
| 17) Chrysene-d12 | 21.06 | 240 | 1790337 | 4000.00 | ug/kg | 79 |
| 20) Perylene-d12 | 26.20 | 264 | 1610927 | 4000.00 | ug/kg | 78 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.20 | 172 | 20729 | 78.71 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.97%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 27698 | 69.73 | ug/kg | -0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.74%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.88 | 128 | 4208 | 15.62 | ug/kg | 100 |
| 6) Dibenzofuran | 13.46 | 168 | 2699 | 7.98 | ug/kg | 97 |
| 9) Acenaphthene | 13.31 | 154 | 5219 | 21.63 | ug/kg | 97 |
| 10) Fluorene | 13.96 | 166 | 4018 | 13.71 | ug/kg | 99 |
| 12) Phenanthrene | 15.38 | 178 | 124136 | 307.44 | ug/kg | 99 |
| 13) Anthracene | 15.42 | 178 | 26398 | 69.07 | ug/kg | 99 |
| 14) Fluoranthene | 17.33 | 202 | 340195 | 814.18 | ug/kg | 99 |
| 15) Pyrene | 17.91 | 202 | 304002 | 700.40 | ug/kg | 100 |
| 18) Benzo[a]anthracene | 20.89 | 228 | 203935 | 486.22 | ug/kg | 99 |
| 19) Chrysene | 21.14 | 228 | 224657 | 554.36 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.45 | 252 | 235706 | 555.14 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.53 | 252 | 113864 | 285.87 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.63 | 252 | 105235 | 296.60 | ug/kg | 91 |
| 24) Benzo[e]pyrene | 25.68 | 252 | 167756 | 441.19 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.86 | 252 | 236446 | 608.52 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.43 | 278 | 30418 | 85.96 | ug/kg | 96 |
| 27) Indeno[1,2,3-cd]pyrene | 29.43 | 276 | 134582 | 318.80 | ug/kg | 90 |
| 28) Benzo[g,h,i]perylene | 30.51 | 276 | 129403 | 393.10 | ug/kg | 97 |

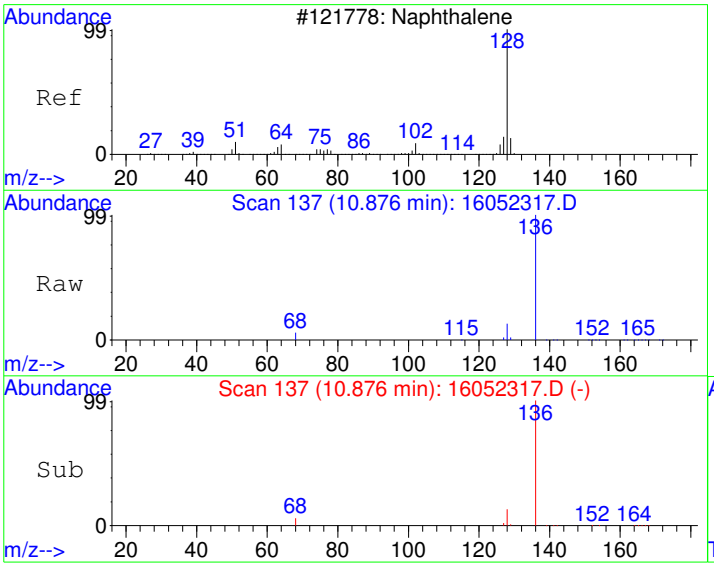
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052317.D Vial: 10
Acq On : 23 May 2016 7:00 pm Operator:
Sample : 1605121-22A Inst : GC/MS #6
Misc : SAMP Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:04 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

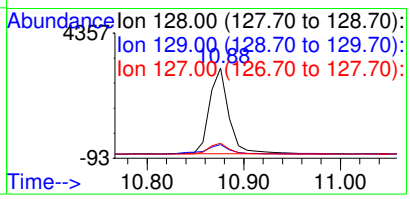


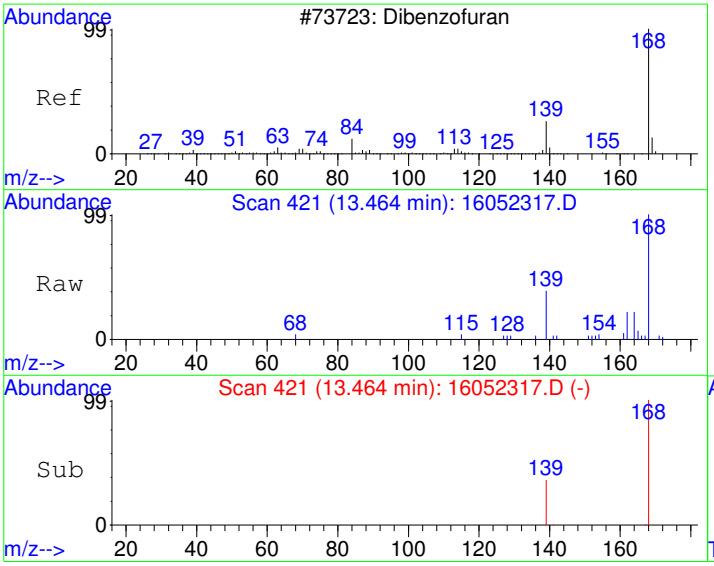



#2
Naphthalene
Concen: 15.62 ug/kg
RT: 10.88 min Scan# 137
Delta R.T. -0.00 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:128 Resp: 4208

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 11.1 | 0.0 | 41.1 |
| 127 | 12.4 | 0.0 | 42.4 |

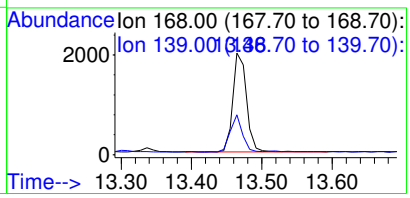


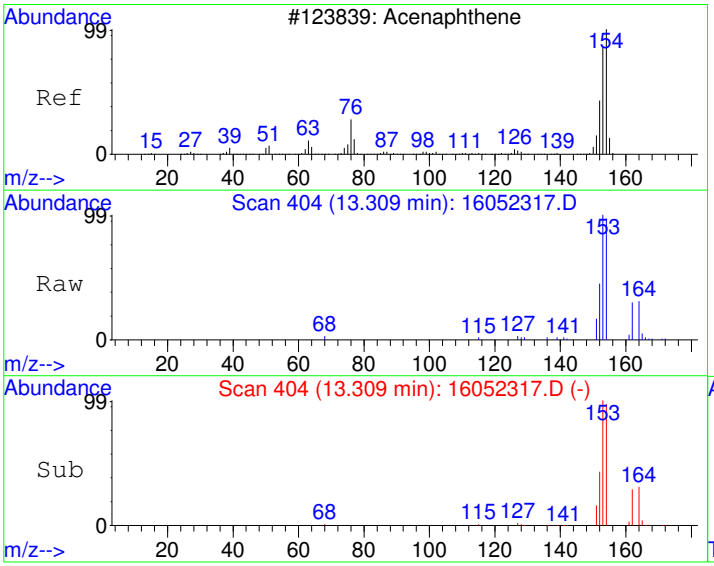




#6
Dibenzofuran
Concen: 7.98 ug/kg
RT: 13.46 min Scan# 421
Delta R.T. -0.01 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:168 Resp: 2699

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 35.2 | 27.0 | 40.4 |

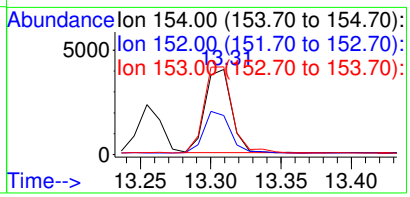


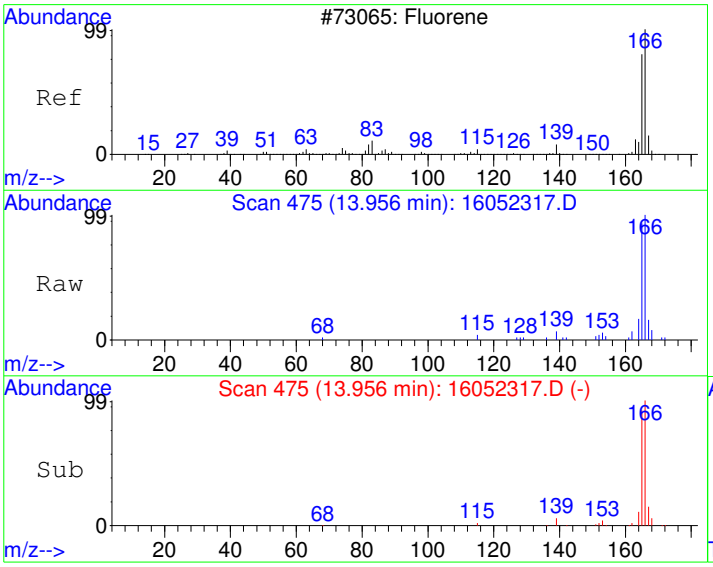




#9
Acenaphthene
Concen: 21.63 ug/kg
RT: 13.31 min Scan# 404
Delta R.T. -0.01 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:154 Resp: 5219

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 45.1 | 18.9 | 78.9 |
| 153 | 103.5 | 75.2 | 135.2 |

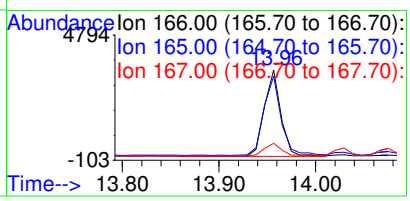


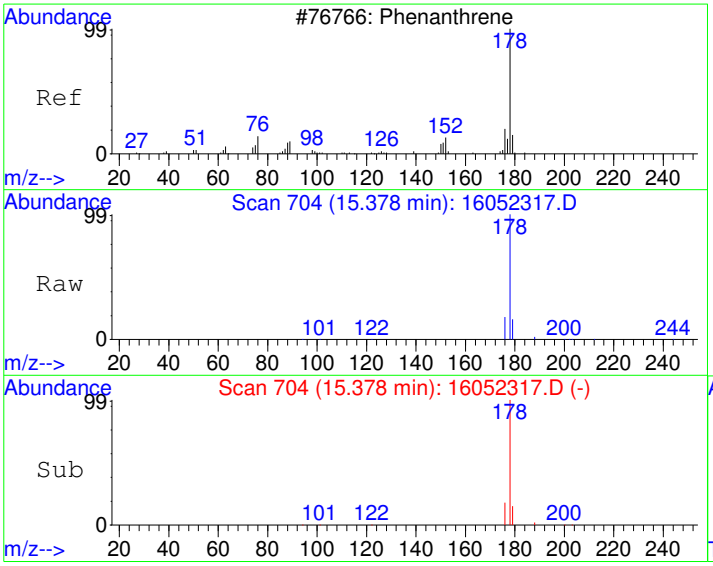



#10
Fluorene
Concen: 13.71 ug/kg
RT: 13.96 min Scan# 475
Delta R.T. -0.01 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:166 Resp: 4018

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 91.8 | 61.8 | 121.8 |
| 167 | 15.0 | 0.0 | 43.6 |

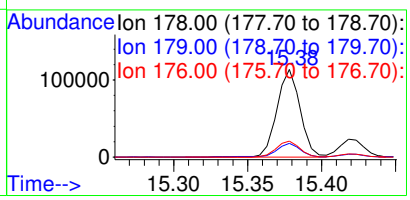


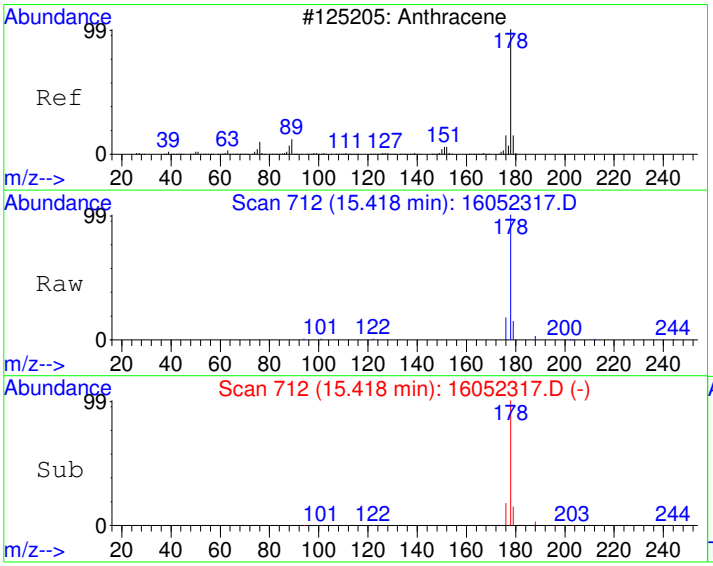




#12
Phenanthrene
Concen: 307.44 ug/kg
RT: 15.38 min Scan# 704
Delta R.T. -0.02 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:178 Resp: 124136

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.5 | 0.0 | 45.9 |
| 176 | 18.3 | 0.0 | 48.5 |

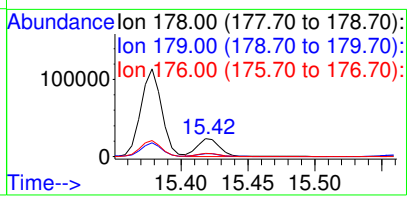


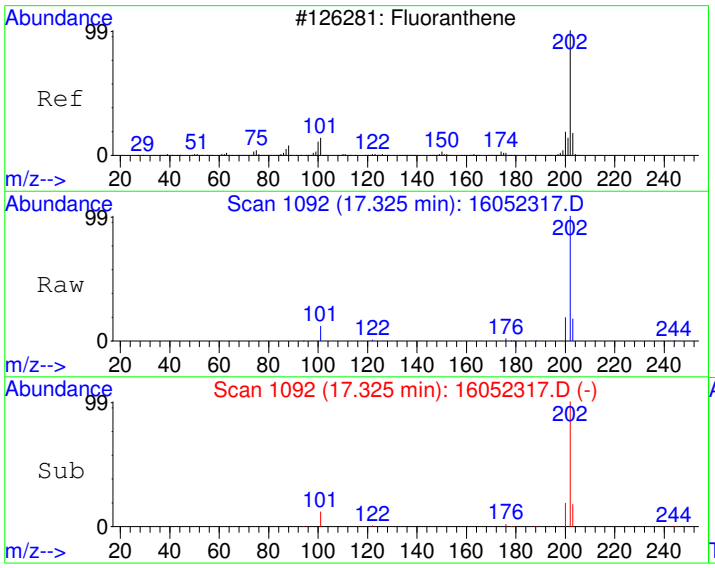




#13
Anthracene
Concen: 69.07 ug/kg
RT: 15.42 min Scan# 712
Delta R.T. -0.02 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:178 Resp: 26398

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.0 | 0.0 | 45.9 |
| 176 | 18.2 | 0.0 | 48.2 |

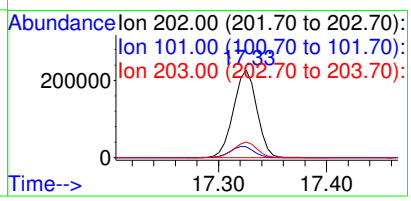


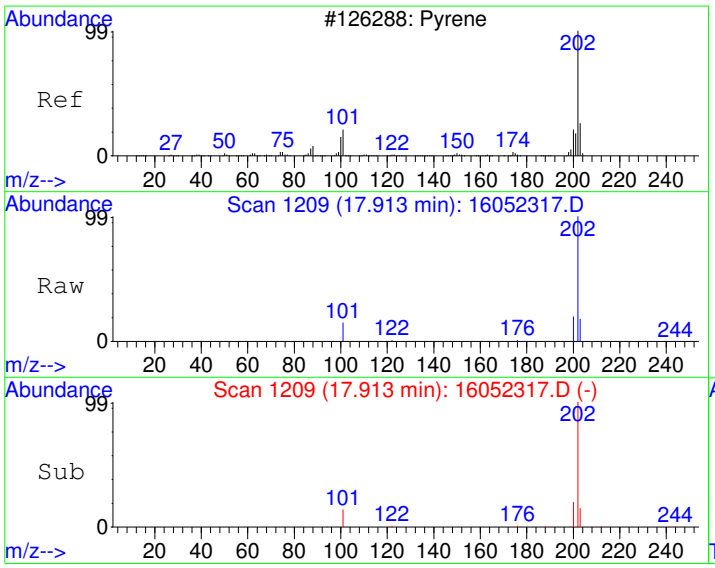



#14
Fluoranthene
Concen: 814.18 ug/kg
RT: 17.33 min Scan# 1092
Delta R.T. -0.02 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:202 Resp: 340195

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 12.2 | 0.0 | 43.0 |
| 203 | 17.7 | 0.0 | 47.9 |

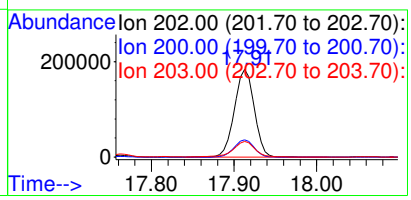


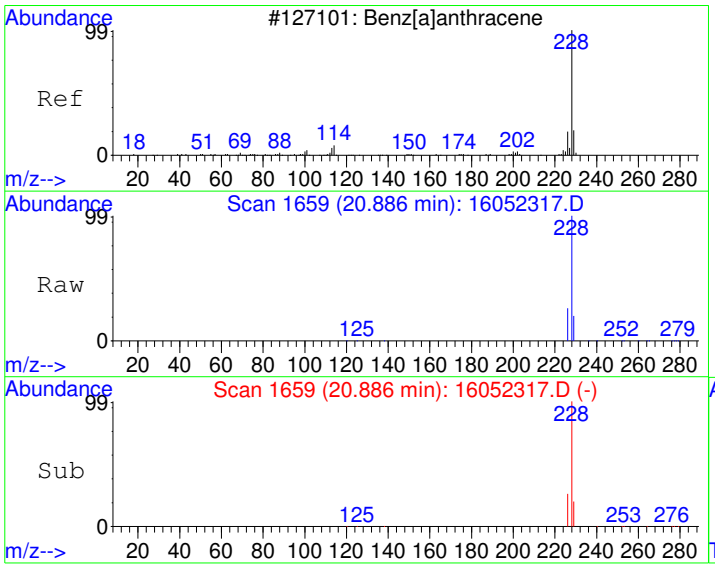




#15
Pyrene
Concen: 700.40 ug/kg
RT: 17.91 min Scan# 1209
Delta R.T. -0.02 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:202 Resp: 304002

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 200 | 19.6 | 0.0 | 50.0 |
| 203 | 18.0 | 0.0 | 48.0 |

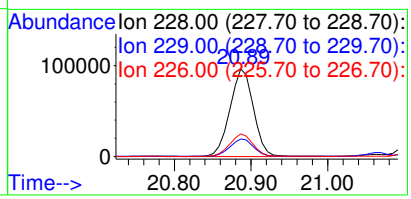


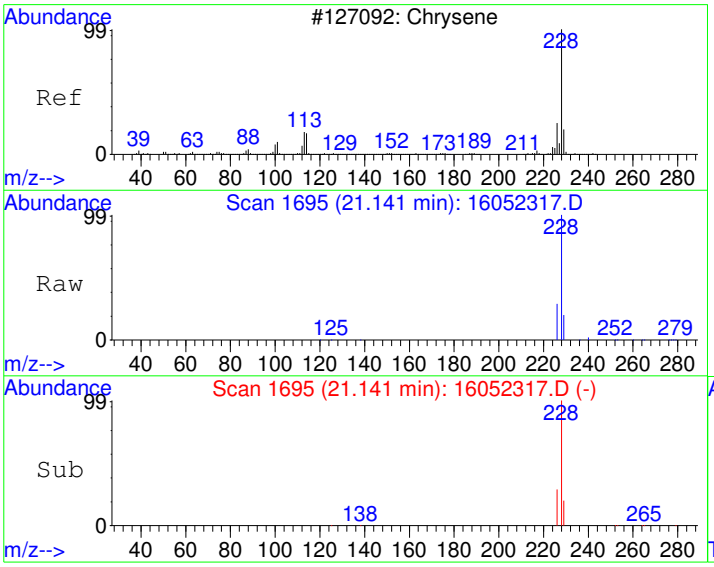




#18
Benzo[a]anthracene
Concen: 486.22 ug/kg
RT: 20.89 min Scan# 1659
Delta R.T. -0.03 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:228 Resp: 203935

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.9 | 0.0 | 50.1 |
| 226 | 25.7 | 0.0 | 55.2 |

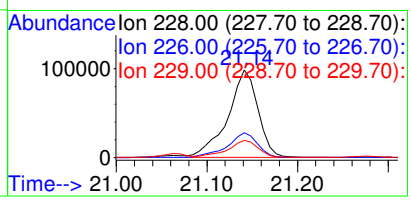


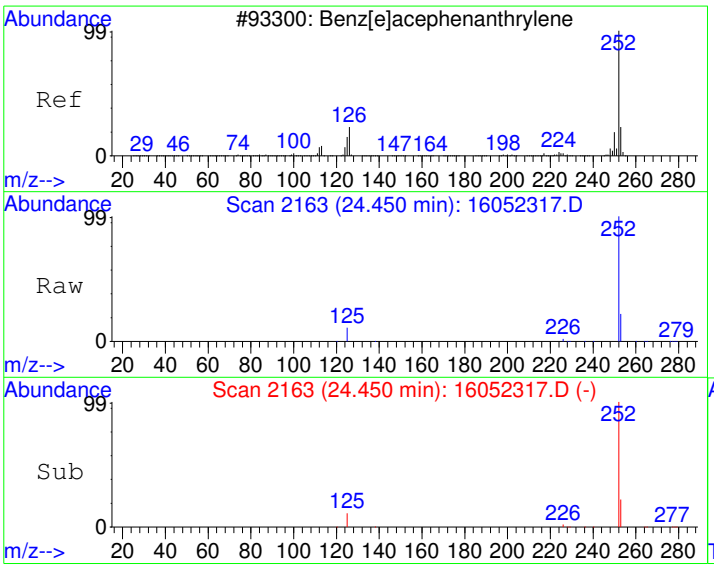



#19
Chrysene
Concen: 554.36 ug/kg
RT: 21.14 min Scan# 1695
Delta R.T. -0.03 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:228 Resp: 224657

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.6 | 0.0 | 58.1 |
| 229 | 19.6 | 0.0 | 50.1 |

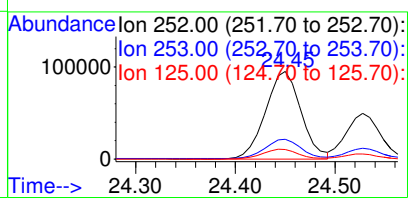


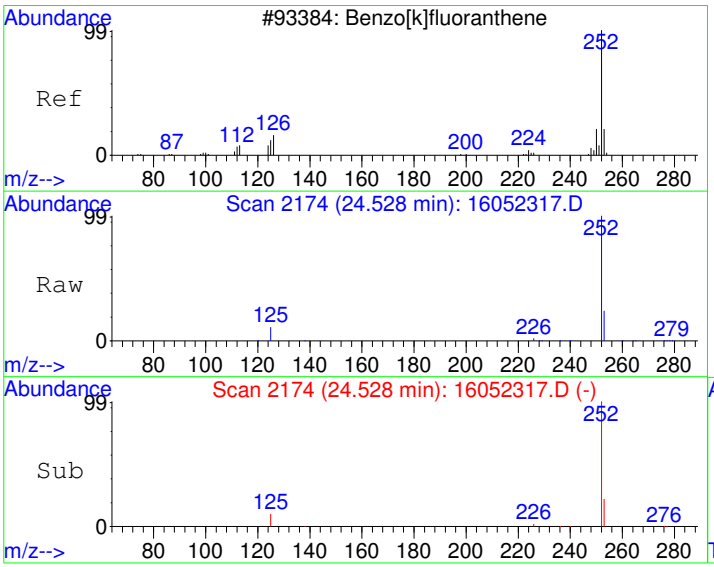




#21
Benzo[b]fluoranthene
Concen: 555.14 ug/kg
RT: 24.45 min Scan# 2163
Delta R.T. -0.04 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:252 Resp: 235706

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.8 | 0.0 | 52.2 |
| 125 | 10.7 | 0.0 | 41.0 |

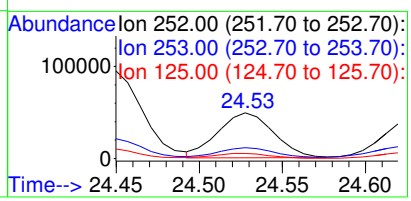


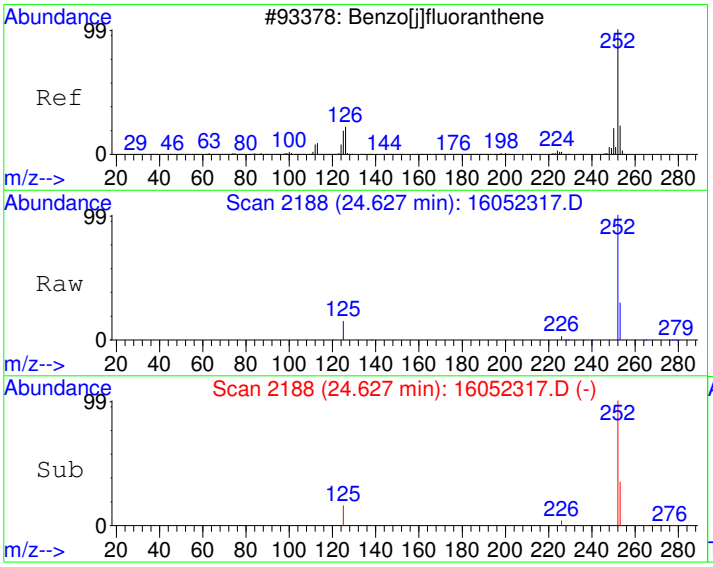




#22
Benzo[k]fluoranthene
Concen: 285.87 ug/kg
RT: 24.53 min Scan# 2174
Delta R.T. -0.04 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:252 Resp: 113864

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.3 | 2.1 | 42.1 |
| 125 | 10.9 | 0.0 | 31.3 |

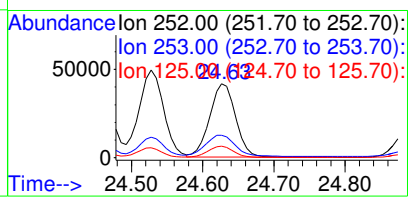


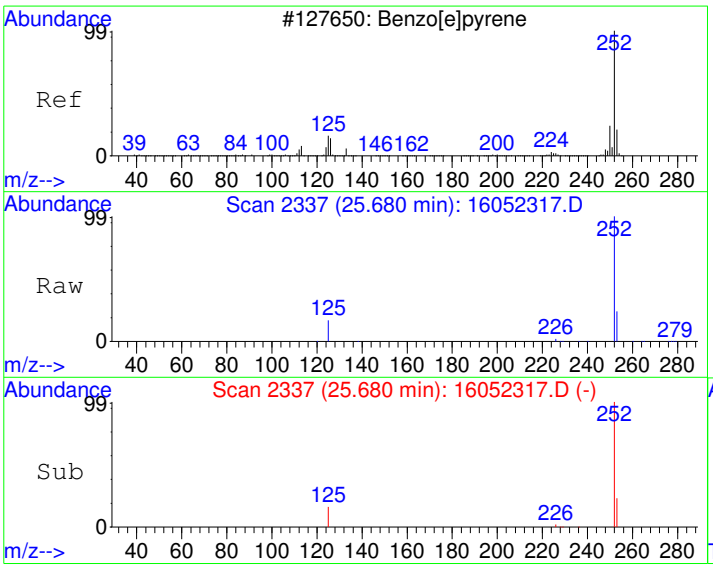



#23
Benzo(j)fluoranthene
Concen: 296.60 ug/kg
RT: 24.63 min Scan# 2188
Delta R.T. -0.04 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:252 Resp: 105235

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 28.8 | 2.1 | 42.1 |
| 125 | 15.3 | 0.0 | 34.4 |

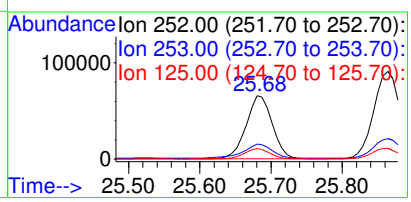


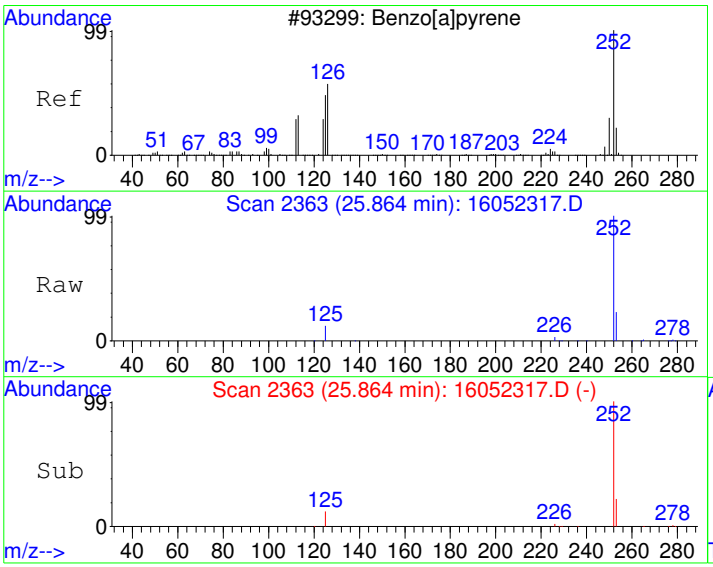




#24
Benzo[e]pyrene
Concen: 441.19 ug/kg
RT: 25.68 min Scan# 2337
Delta R.T. -0.04 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:252 Resp: 167756

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.7 | 2.2 | 42.2 |
| 125 | 16.4 | 0.0 | 36.1 |

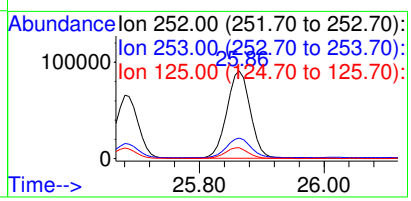


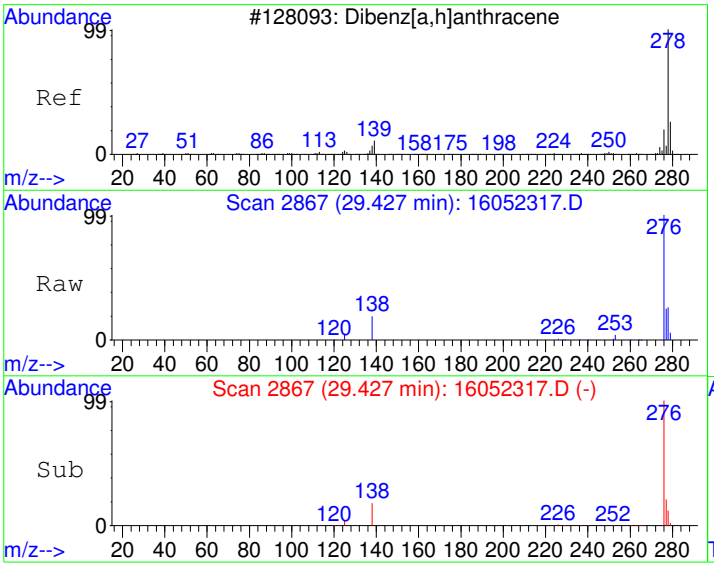




#25
Benzo[a]pyrene
Concen: 608.52 ug/kg
RT: 25.86 min Scan# 2363
Delta R.T. -0.04 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:252 Resp: 236446

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.3 | 1.9 | 41.9 |
| 125 | 12.1 | 0.0 | 31.7 |

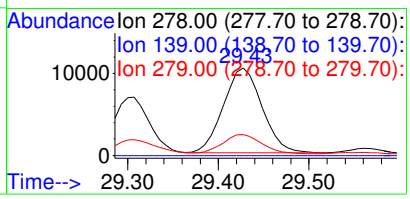


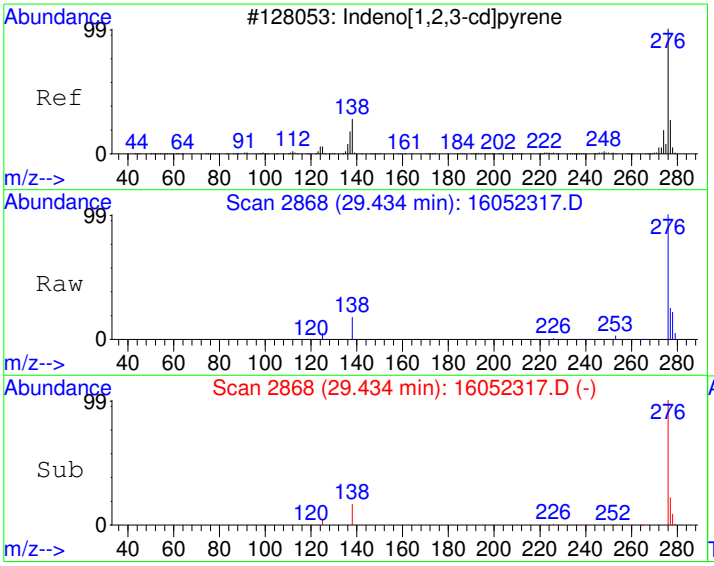



#26
Dibenz[a,h]anthracene
Concen: 85.96 ug/kg
RT: 29.43 min Scan# 2867
Delta R.T. -0.05 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:278 Resp: 30418

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 0.0 | 0.0 | 20.0 |
| 279 | 22.2 | 4.2 | 44.2 |

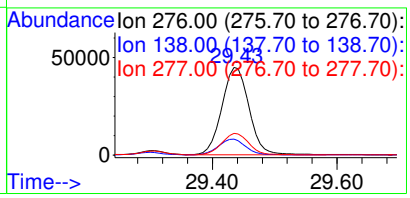


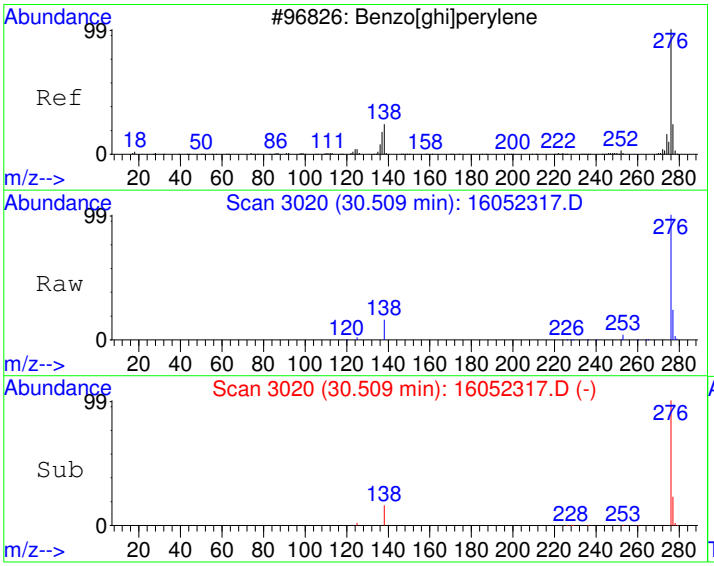




#27
Indeno[1,2,3-cd]pyrene
Concen: 318.80 ug/kg
RT: 29.43 min Scan# 2868
Delta R.T. -0.04 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:276 Resp: 134582

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 18.0 | 6.7 | 46.7 |
| 277 | 24.4 | 5.8 | 45.8 |

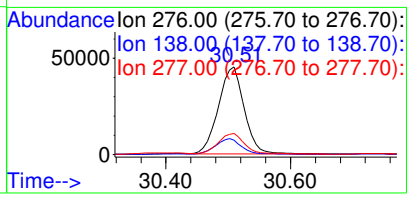



#28
Benzo[g,h,i]perylene
Concen: 393.10 ug/kg
RT: 30.51 min Scan# 3020
Delta R.T. -0.04 min
Lab File: 16052317.D
Acq: 23 May 2016 7:00 pm

Tgt Ion:276 Resp: 129403

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 16.1 | 0.0 | 39.1 |
| 277 | 24.0 | 4.0 | 44.0 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052318.D Vial: 11
Acq On : 23 May 2016 7:40 pm Operator:
Sample : 1605121-28A Inst : GC/MS #6
Misc : SAMP Multiplr: 50.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:04 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

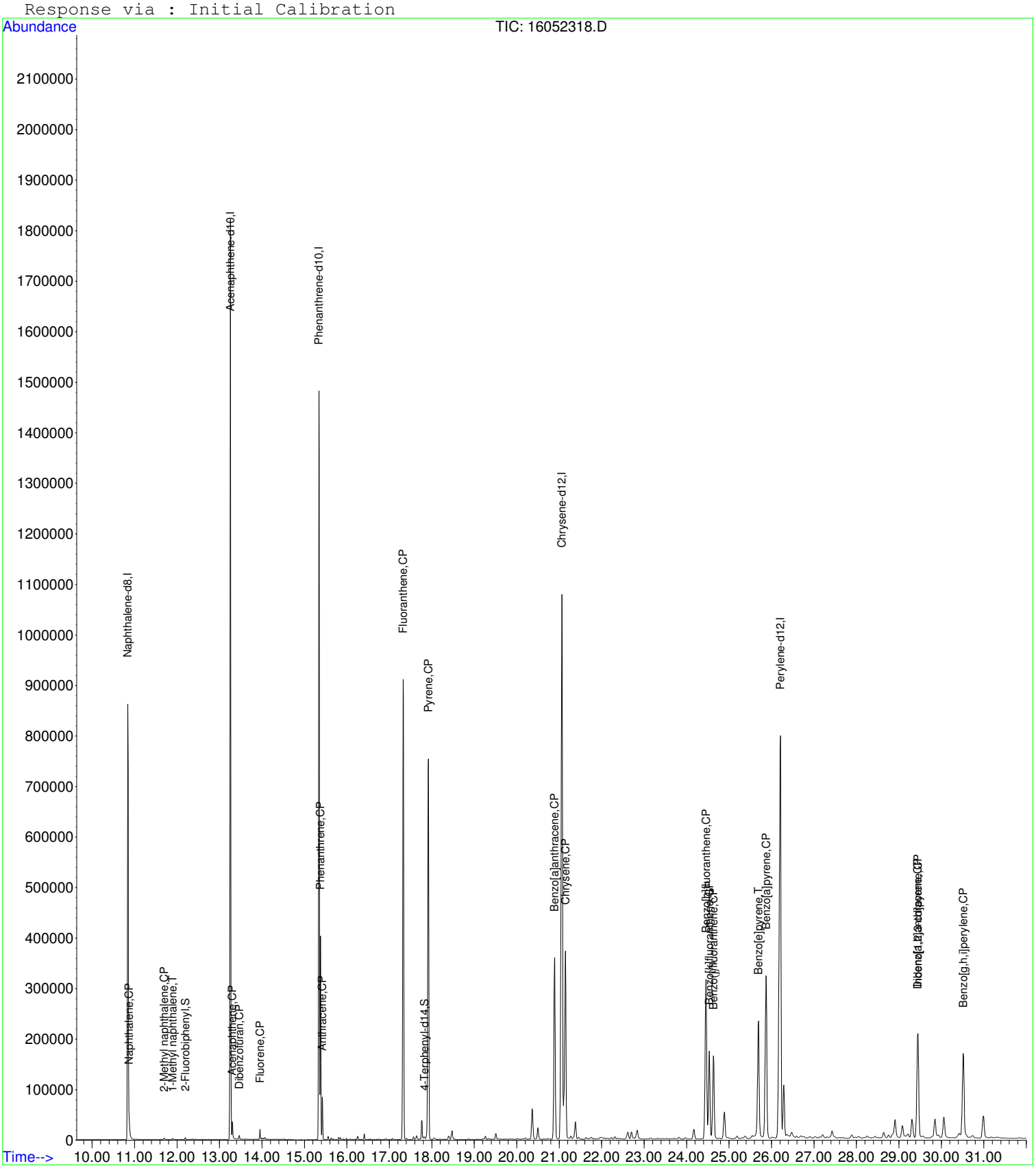
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1164422 | 4000.00 | ug/kg | 100 |
| 5) Acenaphthene-d10 | 13.25 | 164 | 984309 | 4000.00 | ug/kg | 86 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1603369 | 4000.00 | ug/kg | 79 |
| 17) Chrysene-d12 | 21.06 | 240 | 1809505 | 4000.00 | ug/kg | 80 |
| 20) Perylene-d12 | 26.21 | 264 | 1597683 | 4000.00 | ug/kg | 78 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.20 | 172 | 3879 | 13.51 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.34%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 5053 | 12.18 | ug/kg | -0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.30%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.88 | 128 | 10945 | 37.58 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.70 | 142 | 2452 | 9.53 | ug/kg | 97 |
| 4) 1-Methyl naphthalene | 11.90 | 142 | 1658 | 7.04 | ug/kg | 97 |
| 6) Dibenzofuran | 13.46 | 168 | 6799 | 18.43 | ug/kg | 99 |
| 9) Acenaphthene | 13.30 | 154 | 14607 | 55.52 | ug/kg | 95 |
| 10) Fluorene | 13.96 | 166 | 9869 | 30.89 | ug/kg | 98 |
| 12) Phenanthrene | 15.38 | 178 | 330409 | 783.59 | ug/kg | 99 |
| 13) Anthracene | 15.42 | 178 | 69858 | 175.04 | ug/kg | 99 |
| 14) Fluoranthene | 17.33 | 202 | 905388 | 2074.93 | ug/kg | 99 |
| 15) Pyrene | 17.92 | 202 | 815084 | 1798.23 | ug/kg | 100 |
| 18) Benzo[a]anthracene | 20.89 | 228 | 543886 | 1282.98 | ug/kg | 99 |
| 19) Chrysene | 21.15 | 228 | 603269 | 1472.85 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.46 | 252 | 604317 | 1435.11 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.53 | 252 | 293629 | 743.32 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.63 | 252 | 272047 | 773.11 | ug/kg | 92 |
| 24) Benzo[e]pyrene | 25.69 | 252 | 432052 | 1145.68 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.87 | 252 | 609236 | 1580.93 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.43 | 278 | 82177 | 234.15 | ug/kg | 97 |
| 27) Indeno[1,2,3-cd]pyrene | 29.45 | 276 | 355039 | 847.98 | ug/kg | 89 |
| 28) Benzo[g,h,i]perylene | 30.52 | 276 | 335367 | 1027.22 | ug/kg | 99 |

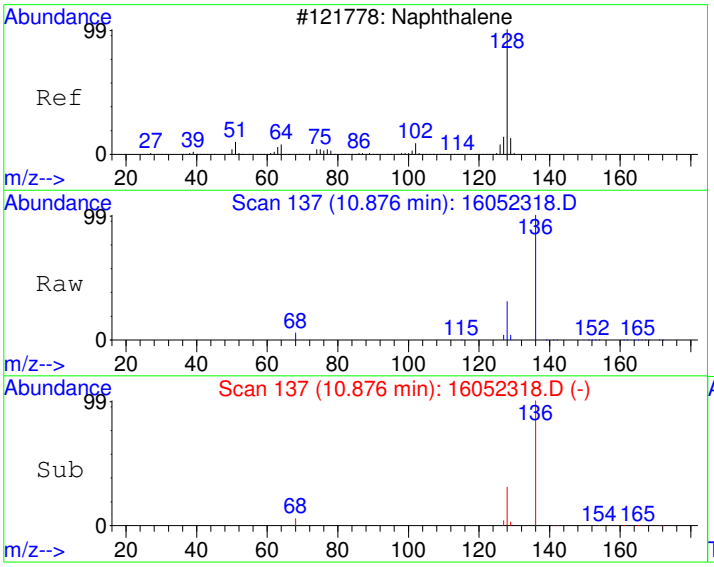
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052318.D Vial: 11
Acq On : 23 May 2016 7:40 pm Operator:
Sample : 1605121-28A Inst : GC/MS #6
Misc : SAMP Multiplr: 50.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:04 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

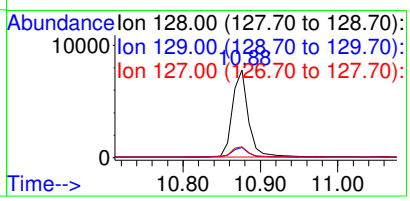


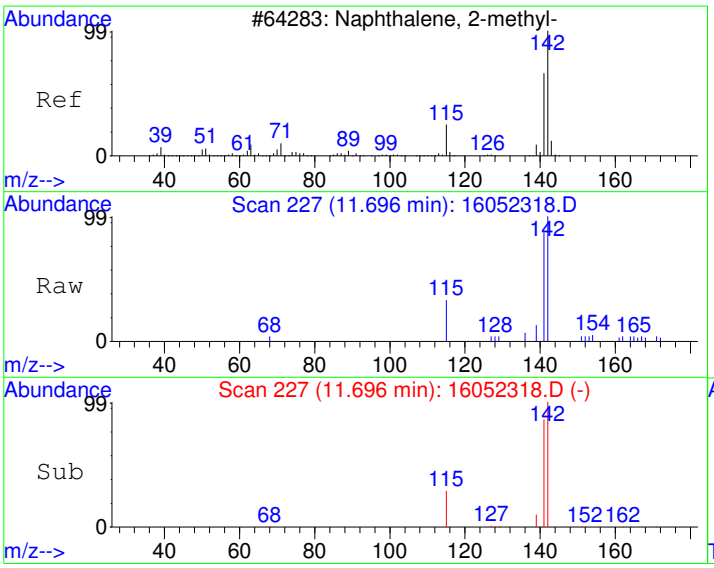



#2
Naphthalene
Concen: 37.58 ug/kg
RT: 10.88 min Scan# 137
Delta R.T. -0.00 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:128 Resp: 10945

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 11.1 | 0.0 | 41.1 |
| 127 | 11.9 | 0.0 | 42.4 |

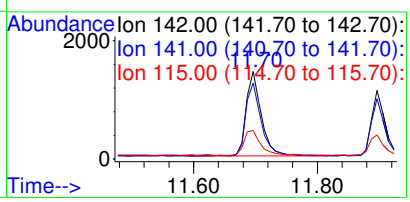


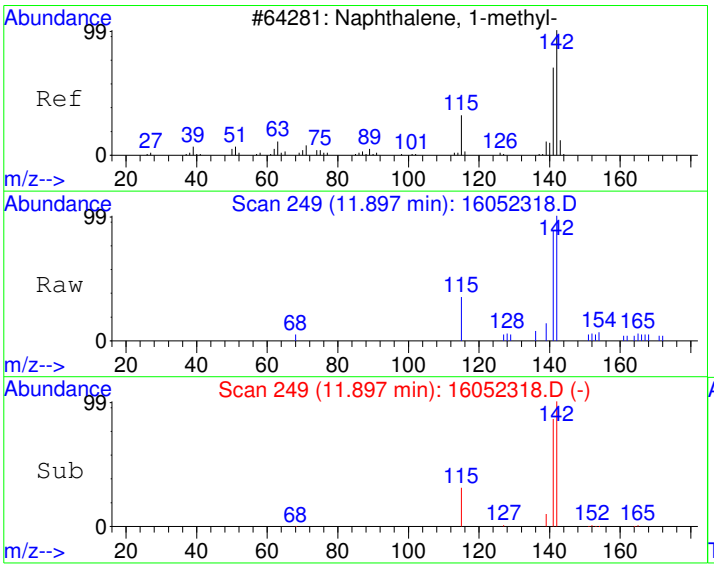




#3
2-Methyl naphthalene
Concen: 9.53 ug/kg
RT: 11.70 min Scan# 227
Delta R.T. -0.00 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:142 Resp: 2452

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 85.6 | 54.4 | 114.4 |
| 115 | 29.5 | 0.0 | 56.0 |

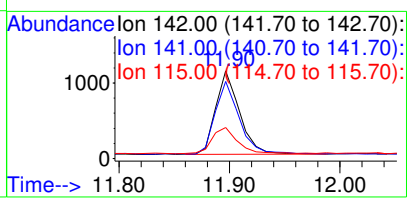


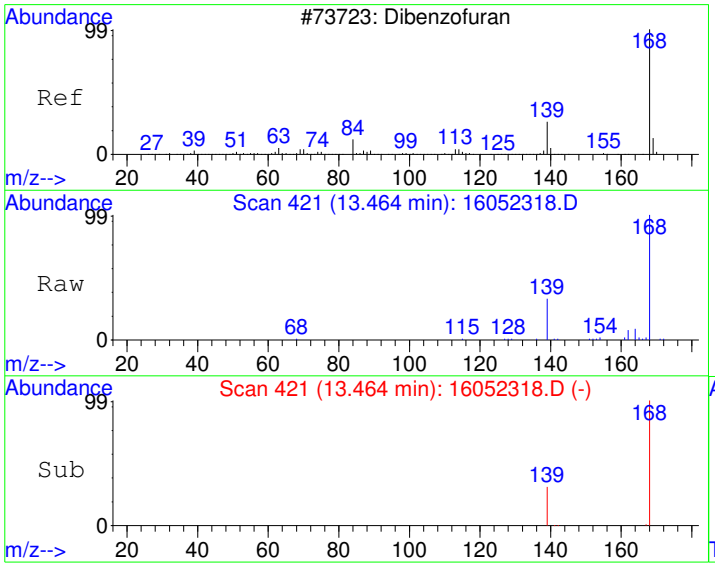




#4
1-Methyl naphthalene
Concen: 7.04 ug/kg
RT: 11.90 min Scan# 249
Delta R.T. -0.00 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:142 Resp: 1658

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 87.0 | 56.5 | 116.5 |
| 115 | 31.0 | 0.0 | 55.0 |

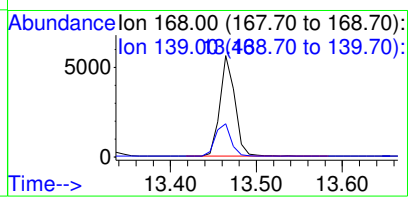


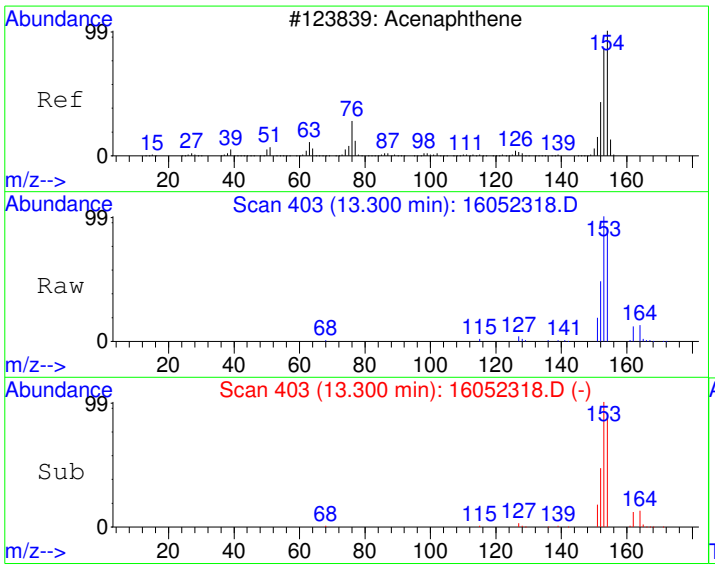



#6
Dibenzofuran
Concen: 18.43 ug/kg
RT: 13.46 min Scan# 421
Delta R.T. -0.01 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:168 Resp: 6799

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 34.4 | 27.0 | 40.4 |

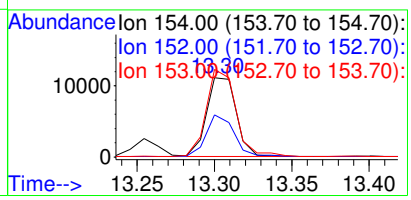


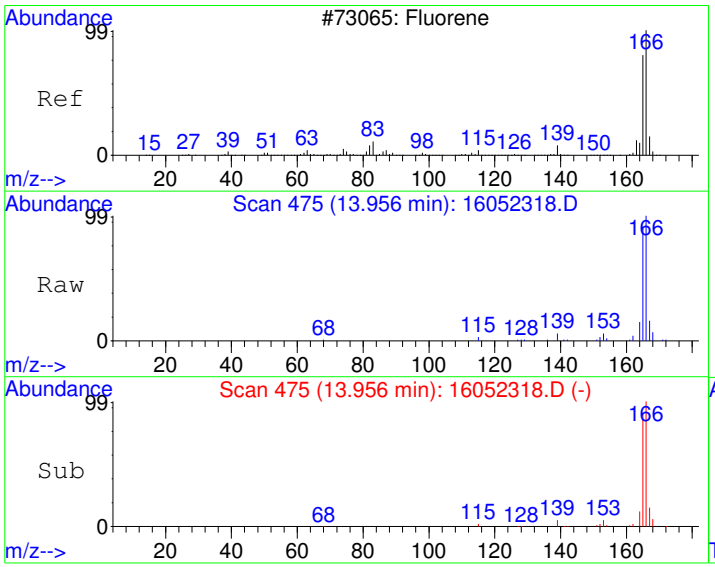




#9
Acenaphthene
Concen: 55.52 ug/kg
RT: 13.30 min Scan# 403
Delta R.T. -0.02 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:154 Resp: 14607

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 52.8 | 18.9 | 78.9 |
| 153 | 110.3 | 75.2 | 135.2 |

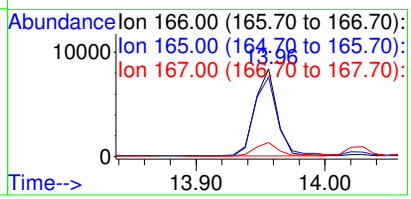


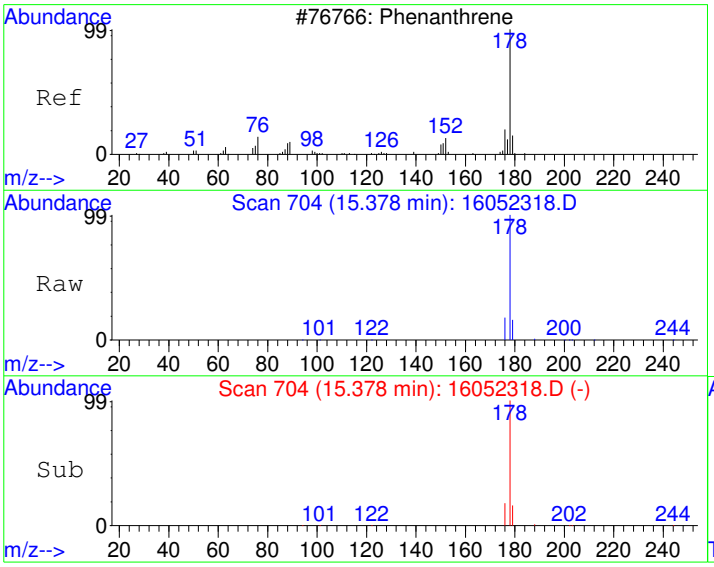




#10
Fluorene
Concen: 30.89 ug/kg
RT: 13.96 min Scan# 475
Delta R.T. -0.01 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:166 Resp: 9869

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 90.4 | 61.8 | 121.8 |
| 167 | 15.3 | 0.0 | 43.6 |

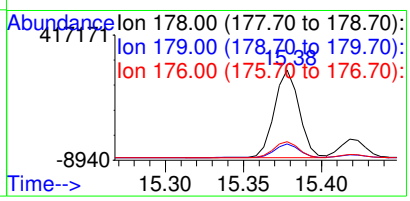


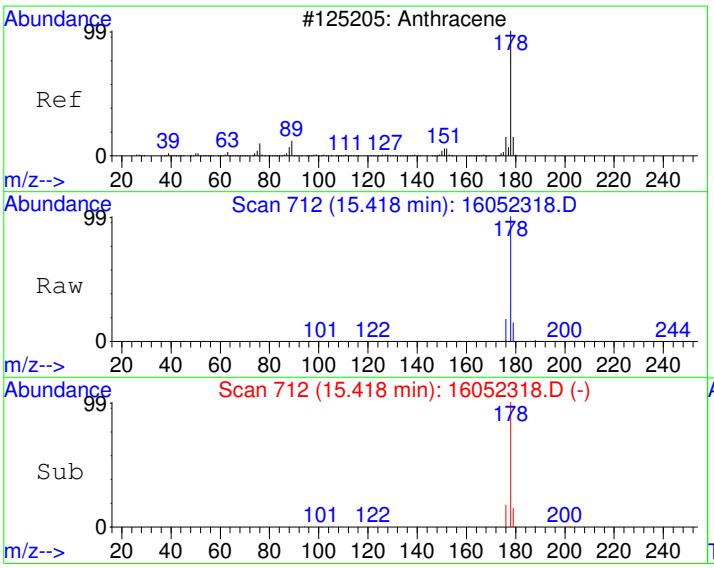



#12
Phenanthrene
Concen: 783.59 ug/kg
RT: 15.38 min Scan# 704
Delta R.T. -0.02 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:178 Resp: 330409

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.6 | 0.0 | 45.9 |
| 176 | 18.2 | 0.0 | 48.5 |

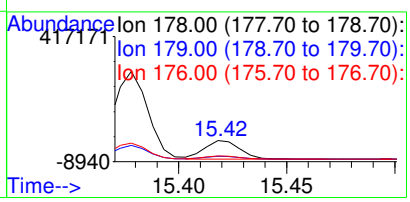


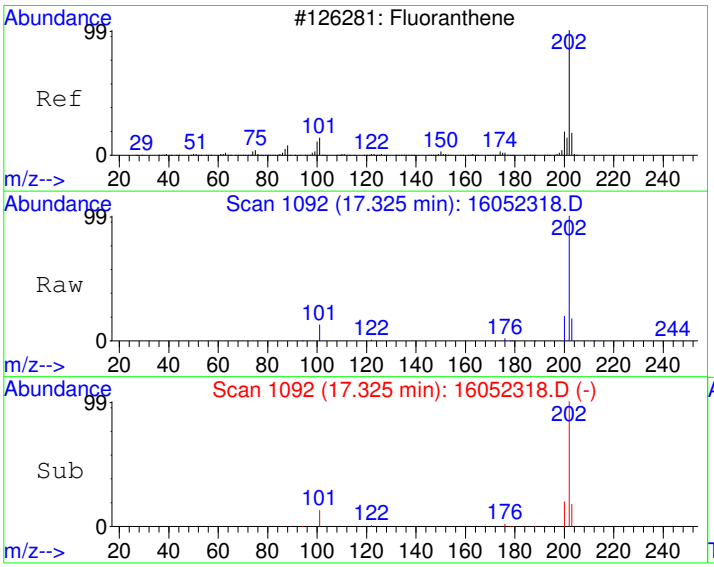




#13
Anthracene
Concen: 175.04 ug/kg
RT: 15.42 min Scan# 712
Delta R.T. -0.02 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:178 Resp: 69858

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.1 | 0.0 | 45.9 |
| 176 | 17.8 | 0.0 | 48.2 |

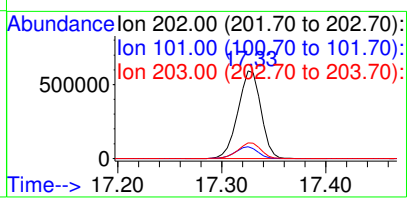


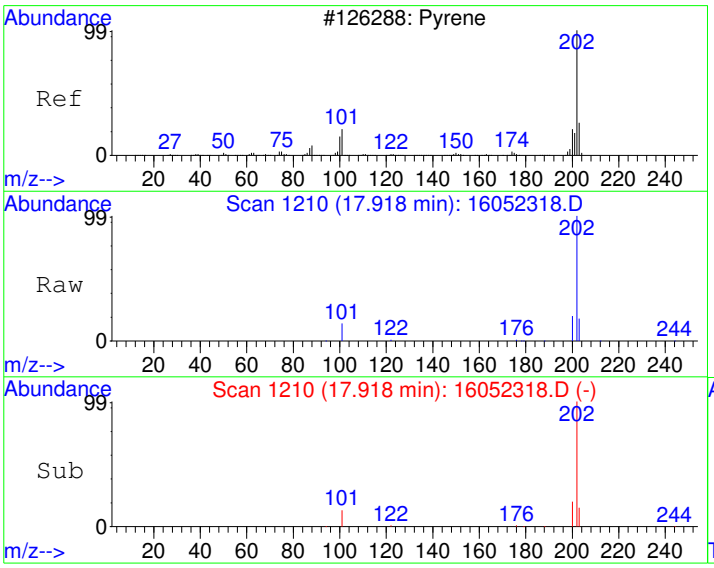




#14
Fluoranthene
Concen: 2074.93 ug/kg
RT: 17.33 min Scan# 1092
Delta R.T. -0.02 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:202 Resp: 905388

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 13.5 | 0.0 | 43.0 |
| 203 | 17.7 | 0.0 | 47.9 |

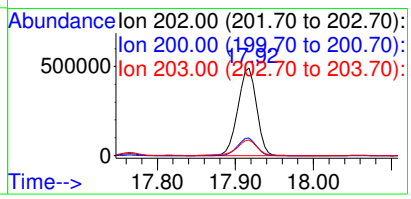


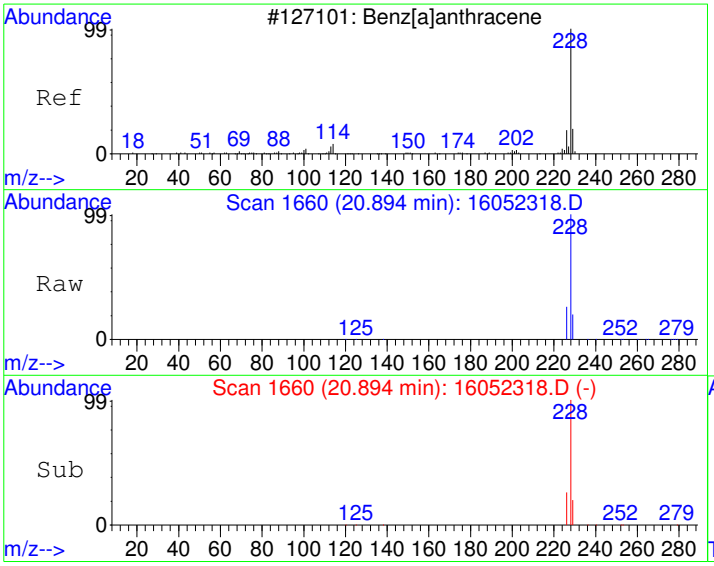



#15
Pyrene
Concen: 1798.23 ug/kg
RT: 17.92 min  Scan# 1210
Delta R.T.  -0.02 min
Lab File:  16052318.D
Acq: 23 May 2016  7:40 pm

Tgt Ion:202 Resp:  815084

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 200 | 20.0 | 0.0 | 50.0 |
| 203 | 17.9 | 0.0 | 48.0 |

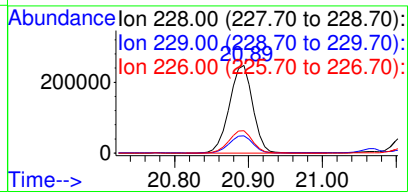


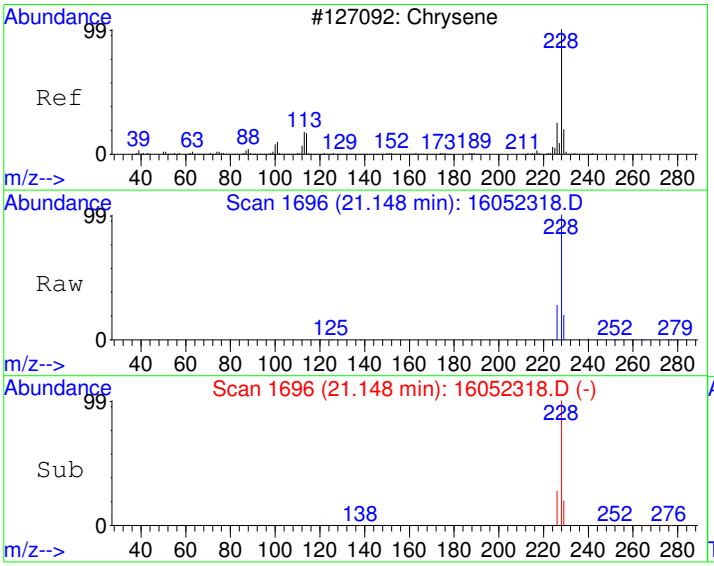




#18
Benzo[a]anthracene
Concen: 1282.98 ug/kg
RT: 20.89 min  Scan# 1660
Delta R.T.  -0.02 min
Lab File:  16052318.D
Acq: 23 May 2016  7:40 pm

Tgt Ion:228 Resp:  543886

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.7 | 0.0 | 50.1 |
| 226 | 25.6 | 0.0 | 55.2 |

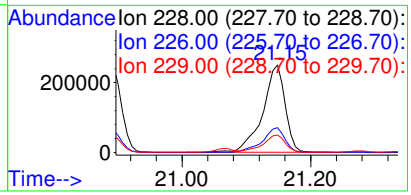


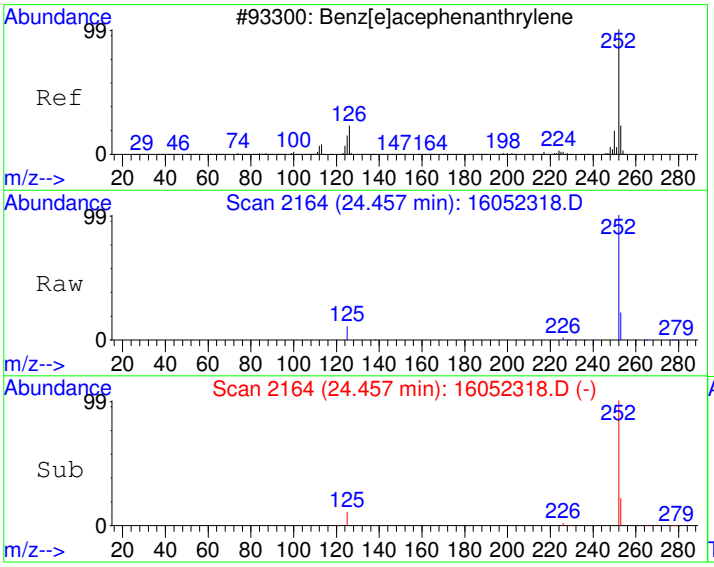




#19
Chrysene
Concen: 1472.85 ug/kg
RT: 21.15 min  Scan# 1696
Delta R.T.  -0.02 min
Lab File:  16052318.D
Acq: 23 May 2016  7:40 pm

Tgt Ion:228 Resp:  603269

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.3 | 0.0 | 58.1 |
| 229 | 19.9 | 0.0 | 50.1 |

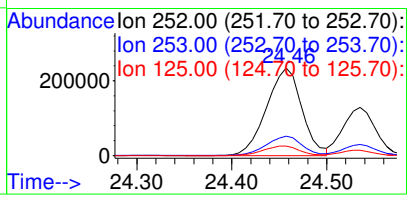


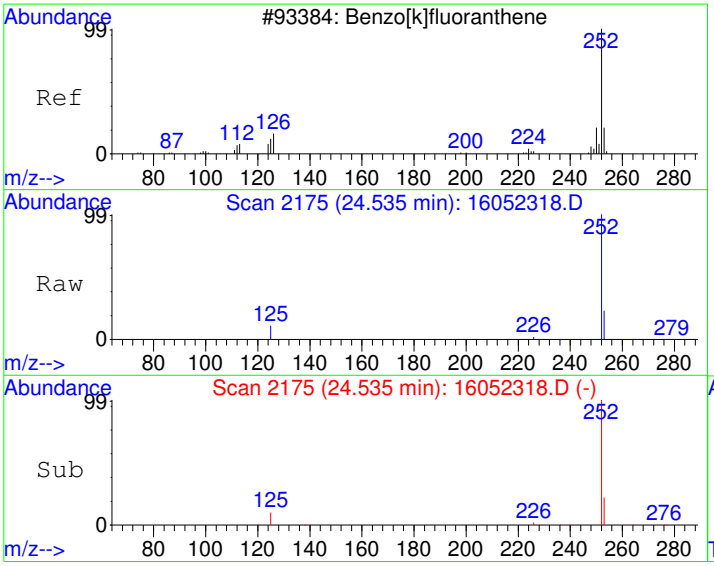



#21
Benzo[b]fluoranthene
Concen: 1435.11 ug/kg
RT: 24.46 min Scan# 2164
Delta R.T. -0.03 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:252 Resp: 604317

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.9 | 0.0 | 52.2 |
| 125 | 11.0 | 0.0 | 41.0 |

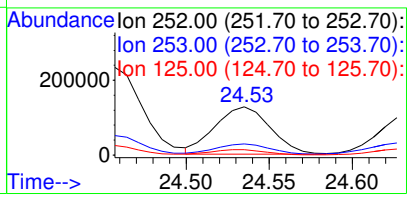


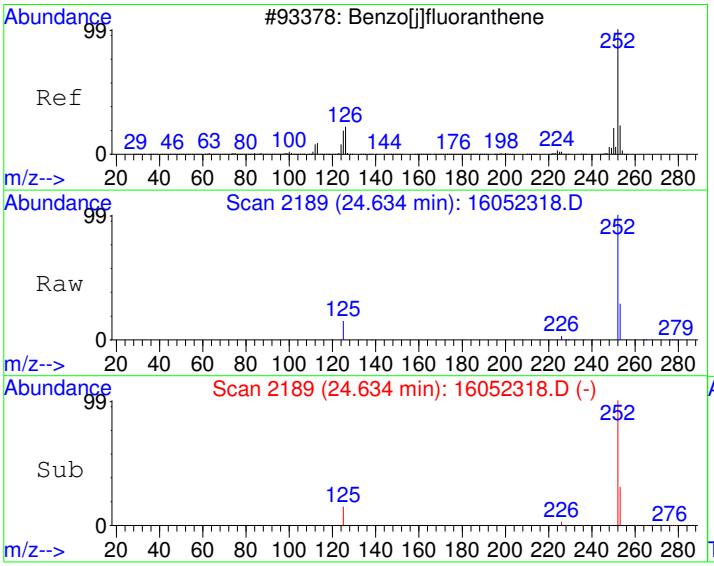




#22
Benzo[k]fluoranthene
Concen: 743.32 ug/kg
RT: 24.53 min Scan# 2175
Delta R.T. -0.04 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:252 Resp: 293629

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.0 | 2.1 | 42.1 |
| 125 | 10.7 | 0.0 | 31.3 |

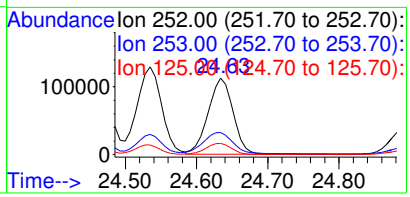


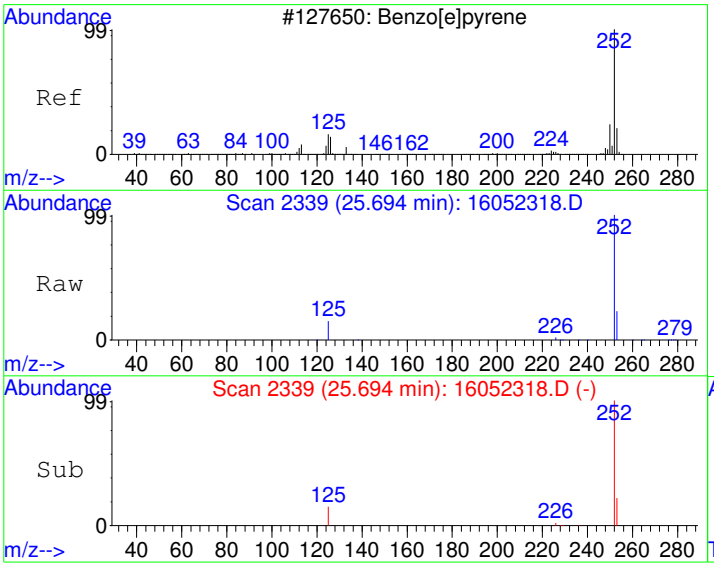




#23
Benzo(j)fluoranthene
Concen: 773.11 ug/kg
RT: 24.63 min Scan# 2189
Delta R.T. -0.04 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:252 Resp: 272047

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 28.4 | 2.1 | 42.1 |
| 125 | 14.6 | 0.0 | 34.4 |

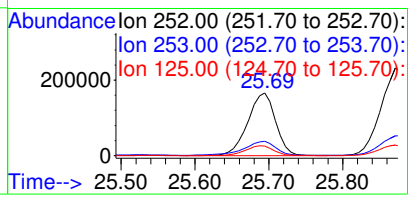


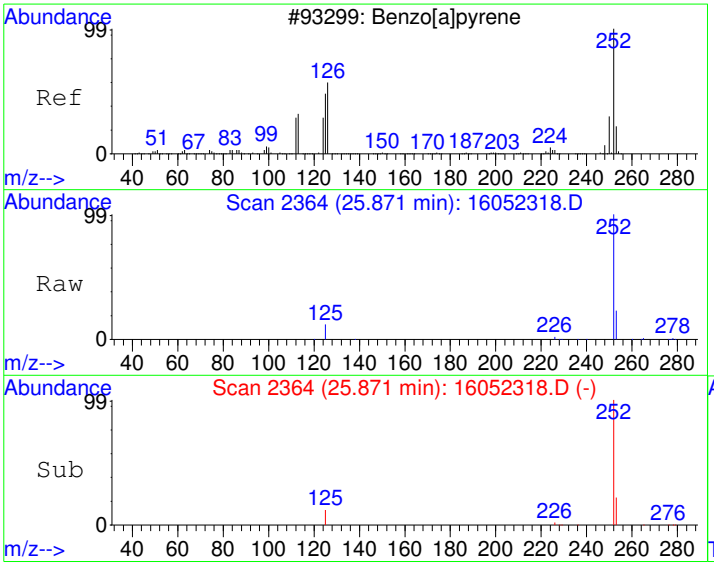



#24
Benzo[e]pyrene
Concen: 1145.68 ug/kg
RT: 25.69 min Scan# 2339
Delta R.T. -0.03 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:252 Resp: 432052

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.1 | 2.2 | 42.2 |
| 125 | 15.3 | 0.0 | 36.1 |

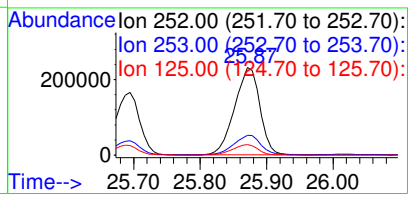


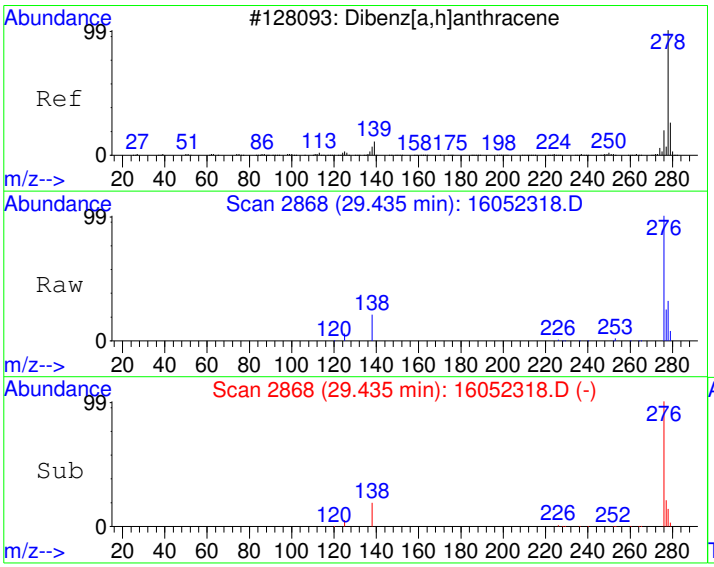




#25
Benzo[a]pyrene
Concen: 1580.93 ug/kg
RT: 25.87 min Scan# 2364
Delta R.T. -0.03 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:252 Resp: 609236

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.4 | 1.9 | 41.9 |
| 125 | 11.9 | 0.0 | 31.7 |

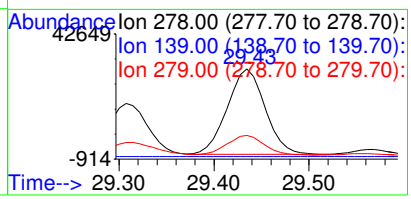


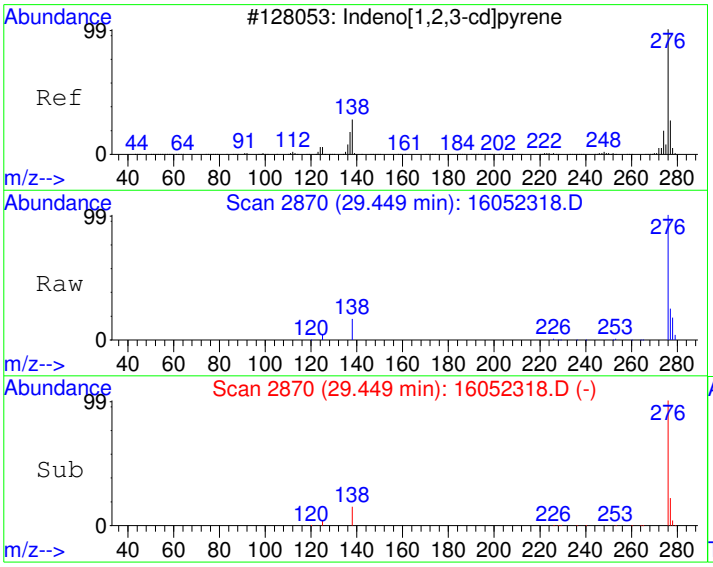




#26
Dibenz[a,h]anthracene
Concen: 234.15 ug/kg
RT: 29.43 min Scan# 2868
Delta R.T. -0.04 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:278 Resp: 82177

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 0.0 | 0.0 | 20.0 |
| 279 | 22.9 | 4.2 | 44.2 |

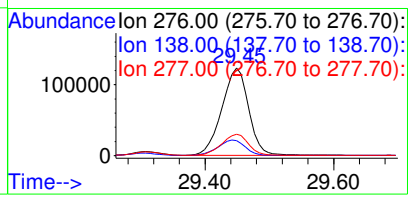


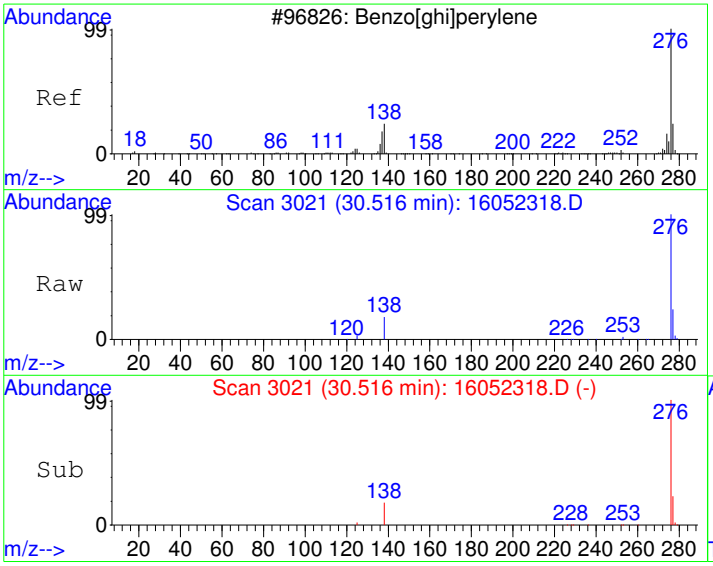



#27
Indeno[1,2,3-cd]pyrene
Concen: 847.98 ug/kg
RT: 29.45 min Scan# 2870
Delta R.T. -0.03 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:276 Resp: 355039

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 17.0 | 6.7 | 46.7 |
| 277 | 24.4 | 5.8 | 45.8 |

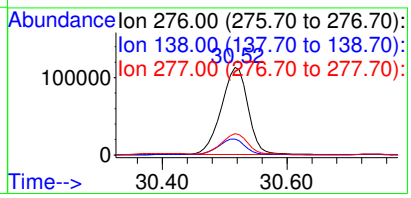



#28
Benzo[g,h,i]perylene
Concen: 1027.22 ug/kg
RT: 30.52 min Scan# 3021
Delta R.T. -0.04 min
Lab File: 16052318.D
Acq: 23 May 2016 7:40 pm

Tgt Ion:276 Resp: 335367

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 18.1 | 0.0 | 39.1 |
| 277 | 24.2 | 4.0 | 44.0 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052319.D Vial: 12
Acq On : 23 May 2016 8:20 pm Operator:
Sample : 1605121-30A Inst : GC/MS #6
Misc : SAMP Multiplr: 50.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:05 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

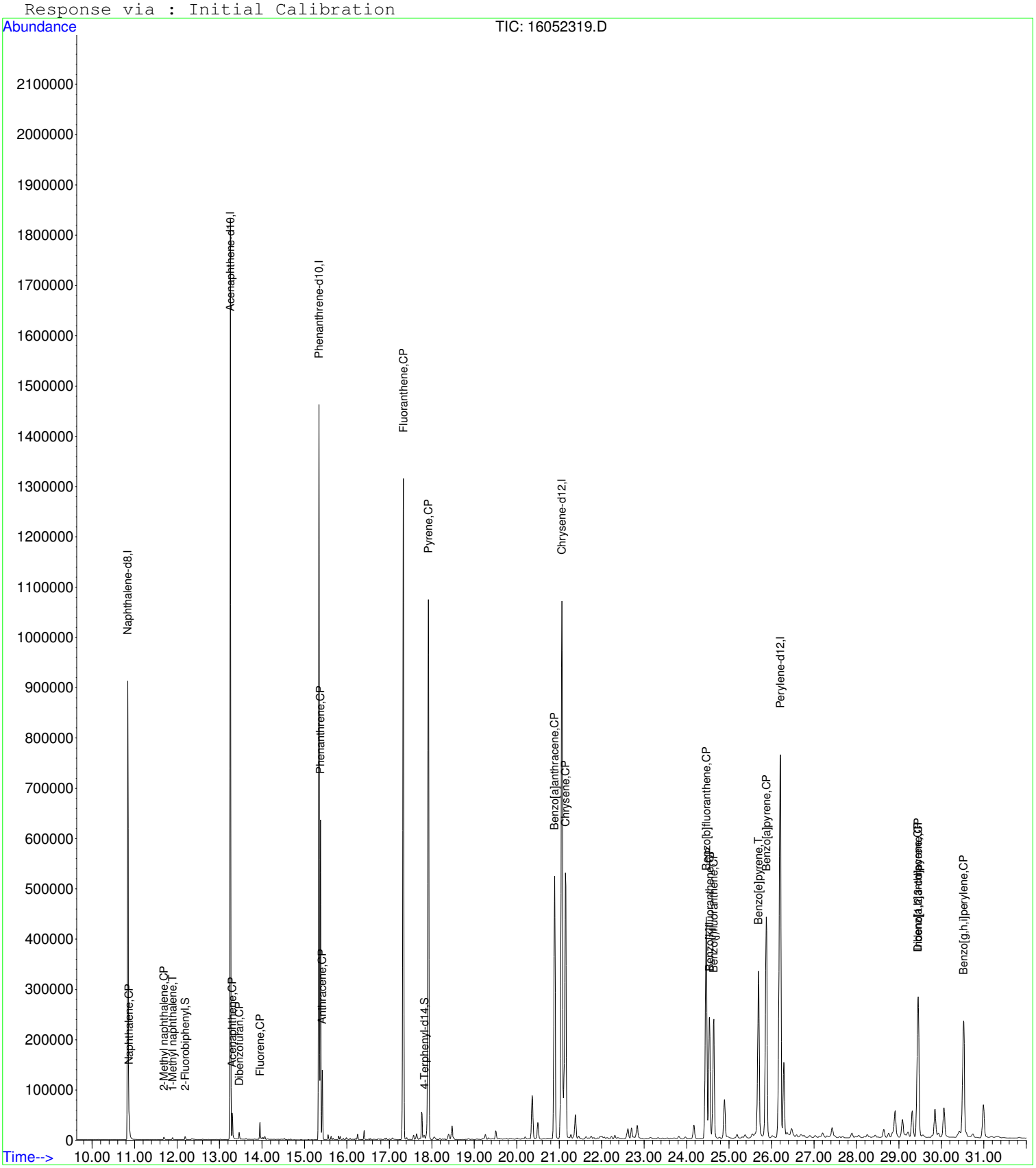
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1145271 | 4000.00 | ug/kg | 99 |
| 5) Acenaphthene-d10 | 13.25 | 164 | 961661 | 4000.00 | ug/kg | 84 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1560264 | 4000.00 | ug/kg | 76 |
| 17) Chrysene-d12 | 21.06 | 240 | 1768396 | 4000.00 | ug/kg | 78 |
| 20) Perylene-d12 | 26.21 | 264 | 1563586 | 4000.00 | ug/kg | 76 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 5453 | 19.44 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.49%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 7411 | 18.36 | ug/kg | -0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.46%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.88 | 128 | 17126 | 59.78 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.69 | 142 | 3668 | 14.50 | ug/kg | 95 |
| 4) 1-Methyl naphthalene | 11.90 | 142 | 2442 | 10.54 | ug/kg | 97 |
| 6) Dibenzofuran | 13.46 | 168 | 11921 | 33.08 | ug/kg | 99 |
| 9) Acenaphthene | 13.30 | 154 | 21633 | 84.16 | ug/kg | 95 |
| 10) Fluorene | 13.96 | 166 | 17880 | 57.27 | ug/kg | 98 |
| 12) Phenanthrene | 15.38 | 178 | 509881 | 1242.63 | ug/kg | 100 |
| 13) Anthracene | 15.42 | 178 | 115900 | 298.42 | ug/kg | 99 |
| 14) Fluoranthene | 17.33 | 202 | 1324183 | 3118.55 | ug/kg | 99 |
| 15) Pyrene | 17.92 | 202 | 1171560 | 2656.10 | ug/kg | 100 |
| 18) Benzo[a]anthracene | 20.89 | 228 | 788473 | 1903.18 | ug/kg | 99 |
| 19) Chrysene | 21.15 | 228 | 869452 | 2172.06 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.46 | 252 | 858613 | 2083.47 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.54 | 252 | 424396 | 1097.78 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.64 | 252 | 386931 | 1123.57 | ug/kg | 93 |
| 24) Benzo[e]pyrene | 25.69 | 252 | 611592 | 1657.14 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.88 | 252 | 860073 | 2280.51 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.44 | 278 | 119276 | 347.26 | ug/kg | 98 |
| 27) Indeno[1,2,3-cd]pyrene | 29.46 | 276 | 506179 | 1235.33 | ug/kg | 90 |
| 28) Benzo[g,h,i]perylene | 30.53 | 276 | 483068 | 1511.89 | ug/kg | 98 |

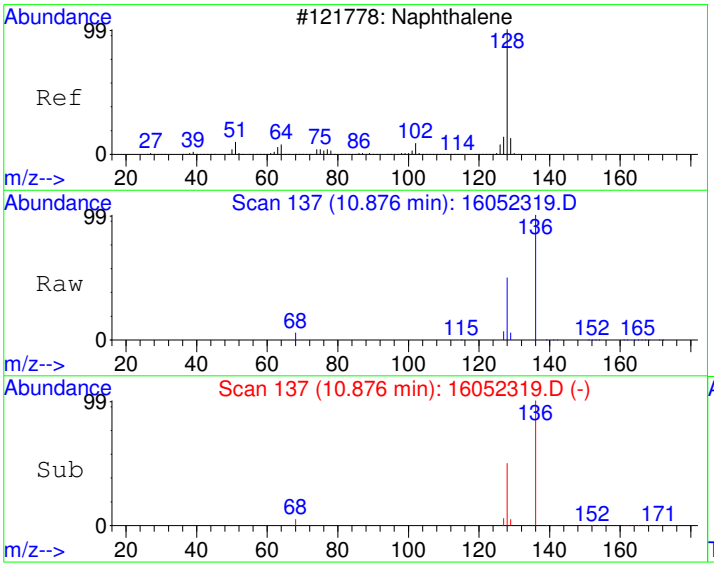
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052319.D Vial: 12
Acq On : 23 May 2016 8:20 pm Operator:
Sample : 1605121-30A Inst : GC/MS #6
Misc : SAMP Multiplr: 50.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:05 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

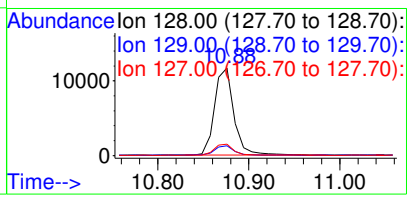


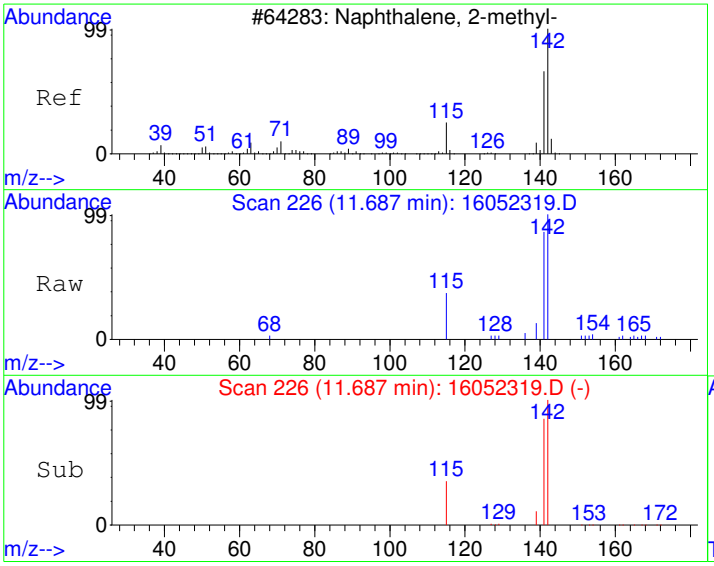



#2
Naphthalene
Concen: 59.78 ug/kg
RT: 10.88 min Scan# 137
Delta R.T. -0.00 min
Lab File: 16052319.D
Acq: 23 May 2016 8:20 pm

Tgt Ion:128 Resp: 17126

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 10.8 | 0.0 | 41.1 |
| 127 | 12.7 | 0.0 | 42.4 |

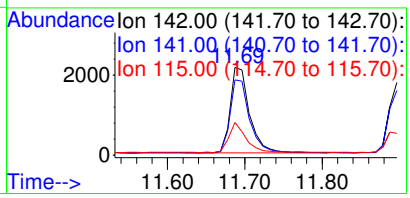


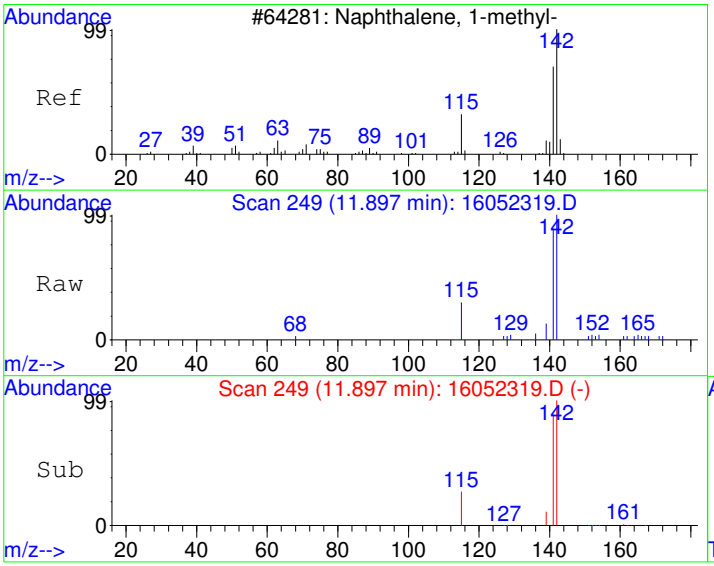




#3
2-Methyl naphthalene
Concen: 14.50 ug/kg
RT: 11.69 min Scan# 226
Delta R.T. -0.01 min
Lab File: 16052319.D
Acq: 23 May 2016 8:20 pm

Tgt Ion:142 Resp: 3668

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 85.1 | 54.4 | 114.4 |
| 115 | 35.0 | 0.0 | 56.0 |

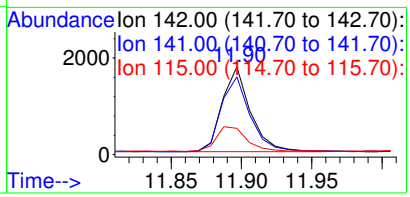


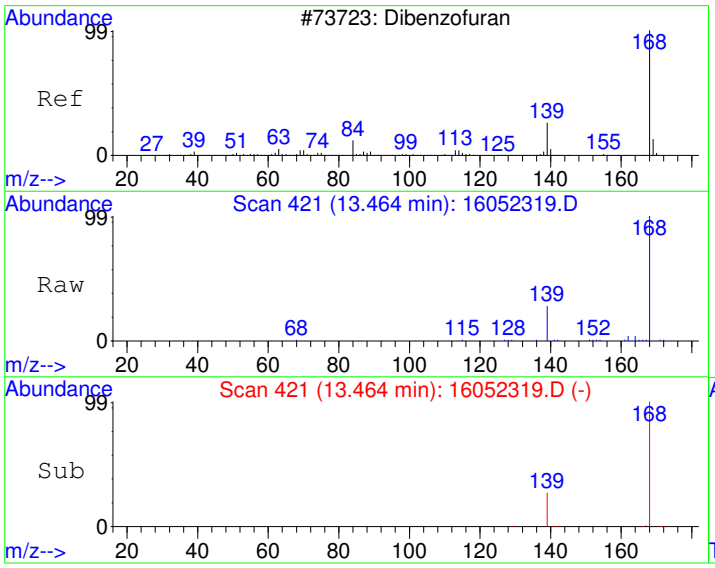




#4
1-Methyl naphthalene
Concen: 10.54 ug/kg
RT: 11.90 min Scan# 249
Delta R.T. -0.00 min
Lab File: 16052319.D
Acq: 23 May 2016 8:20 pm

Tgt Ion:142 Resp: 2442

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 88.5 | 56.5 | 116.5 |
| 115 | 27.3 | 0.0 | 55.0 |

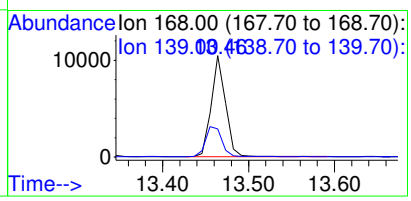


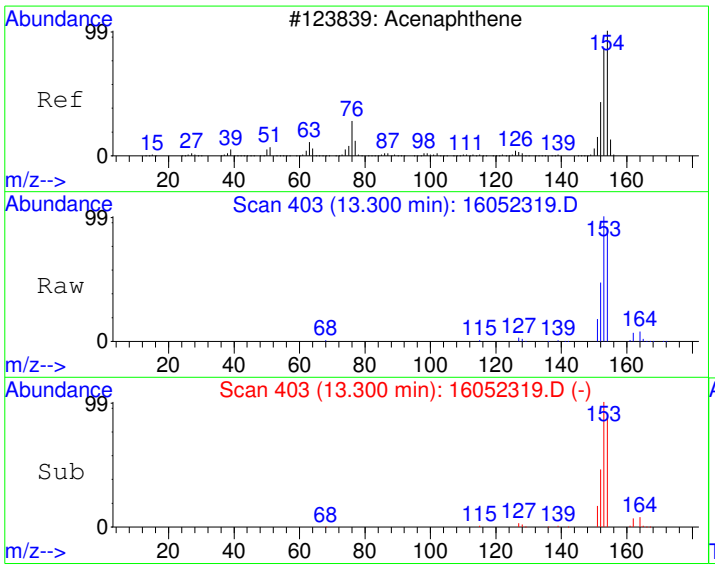



#6
Dibenzofuran
Concen: 33.08 ug/kg
RT: 13.46 min Scan# 421
Delta R.T. -0.01 min
Lab File: 16052319.D
Acq: 23 May 2016 8:20 pm

Tgt Ion:168 Resp: 11921

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 34.0 | 27.0 | 40.4 |

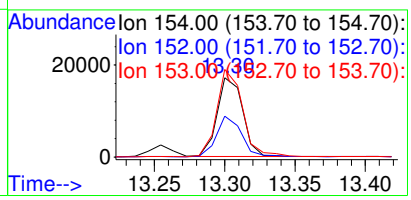


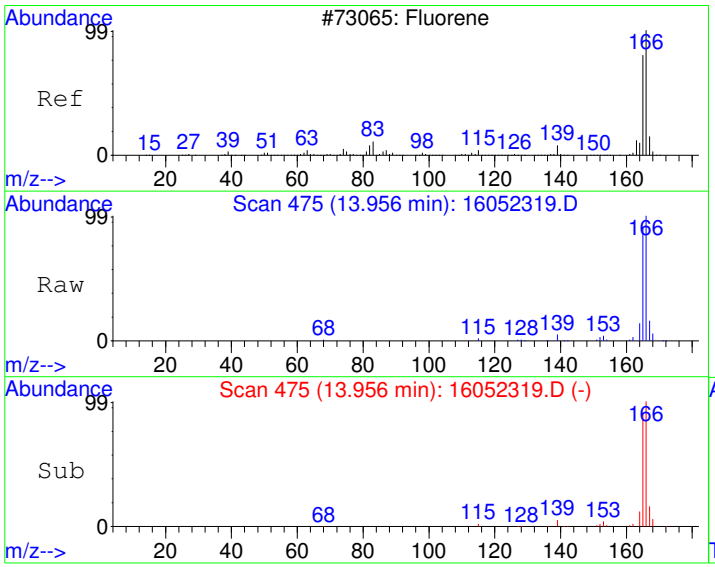




#9
Acenaphthene
Concen: 84.16 ug/kg
RT: 13.30 min Scan# 403
Delta R.T. -0.02 min
Lab File: 16052319.D
Acq: 23 May 2016 8:20 pm

Tgt Ion:154 Resp: 21633

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 51.5 | 18.9 | 78.9 |
| 153 | 110.7 | 75.2 | 135.2 |

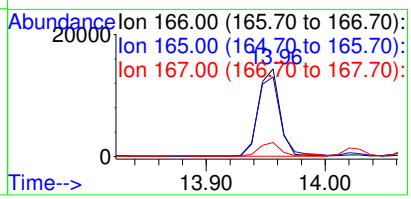


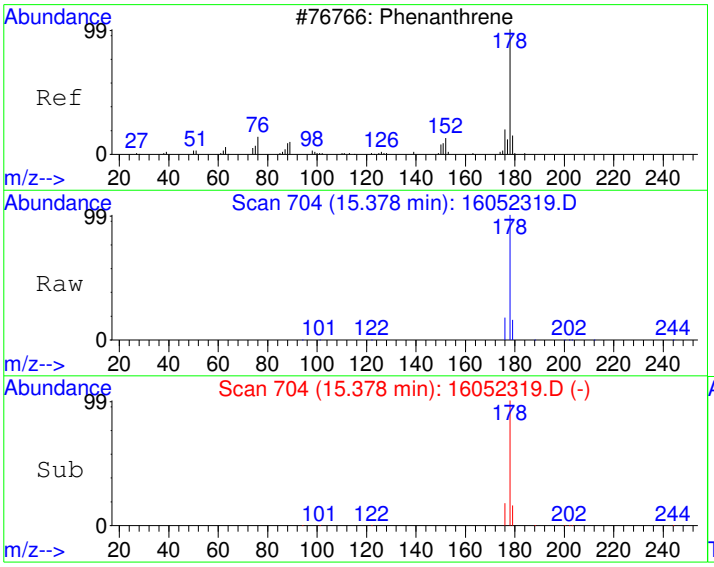




#10
Fluorene
Concen: 57.27 ug/kg
RT: 13.96 min Scan# 475
Delta R.T. -0.01 min
Lab File: 16052319.D
Acq: 23 May 2016 8:20 pm

Tgt Ion:166 Resp: 17880

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 90.8 | 61.8 | 121.8 |
| 167 | 15.7 | 0.0 | 43.6 |

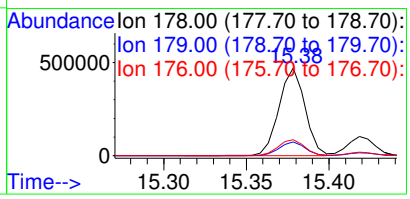


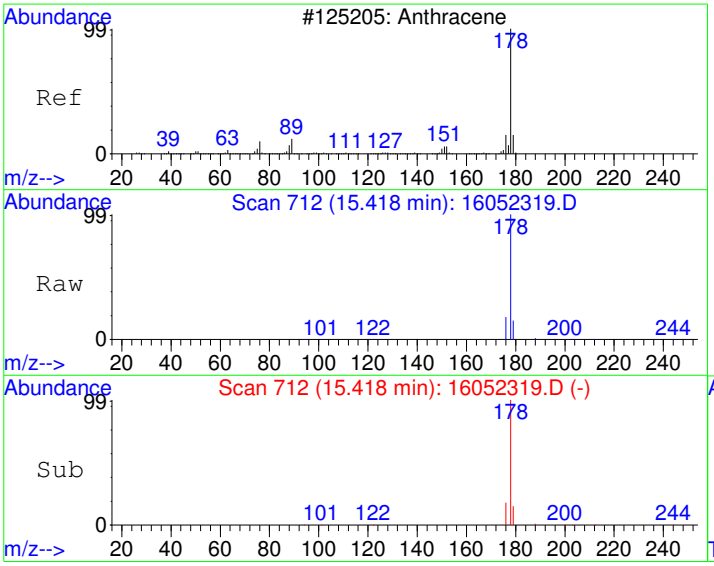



#12
Phenanthrene
Concen: 1242.63 ug/kg
RT: 15.38 min Scan# 704
Delta R.T. -0.01 min
Lab File: 16052319.D
Acq: 23 May 2016 8:20 pm

Tgt Ion:178 Resp: 509881

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.7 | 0.0 | 45.9 |
| 176 | 18.4 | 0.0 | 48.5 |

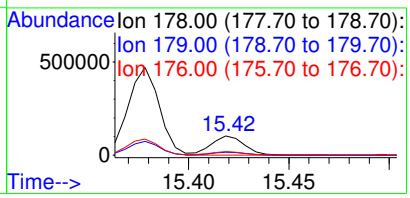


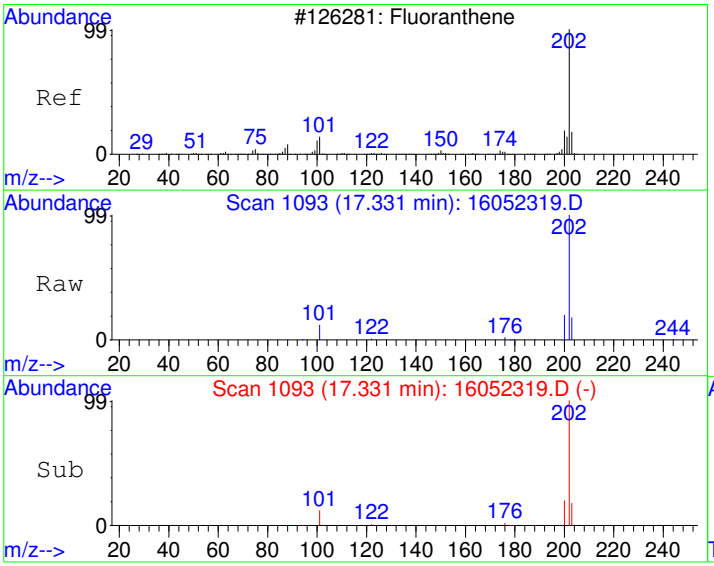




#13
Anthracene
Concen: 298.42 ug/kg
RT: 15.42 min Scan# 712
Delta R.T. -0.01 min
Lab File: 16052319.D
Acq: 23 May 2016 8:20 pm

Tgt Ion:178 Resp: 115900

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.2 | 0.0 | 45.9 |
| 176 | 17.7 | 0.0 | 48.2 |

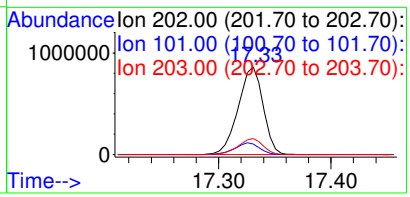


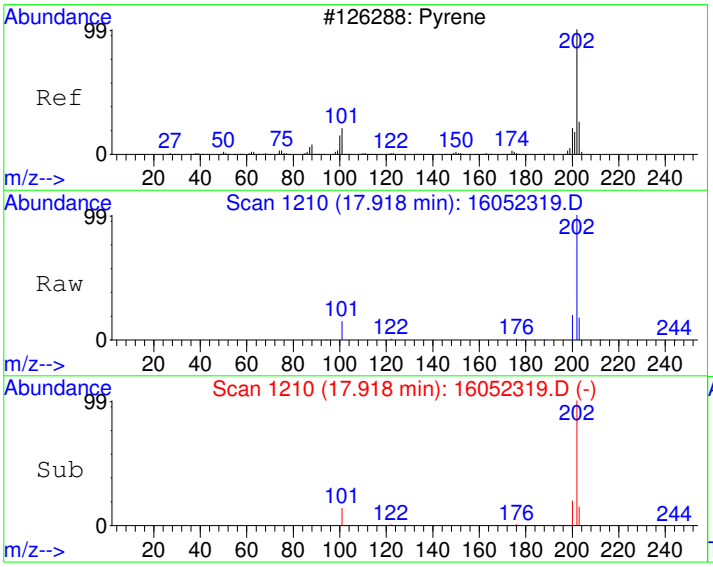




#14
Fluoranthene
Concen: 3118.55 ug/kg
RT: 17.33 min Scan# 1093
Delta R.T. -0.01 min
Lab File: 16052319.D
Acq: 23 May 2016 8:20 pm

Tgt Ion:202 Resp: 1324183

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 12.0 | 0.0 | 43.0 |
| 203 | 18.2 | 0.0 | 47.9 |

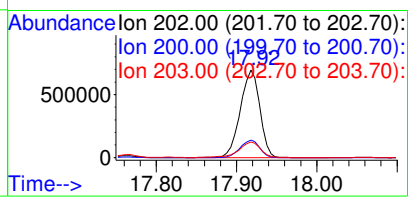


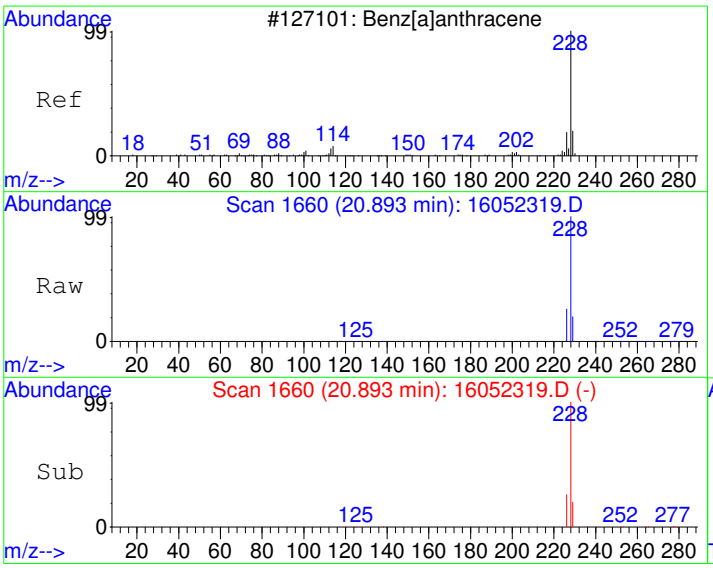



#15
Pyrene
Concen: 2656.10 ug/kg
RT: 17.92 min  Scan# 1210
Delta R.T.  -0.01 min
Lab File:  16052319.D
Acq: 23 May 2016  8:20 pm

Tgt Ion:202 Resp: 1171560

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 200 | 20.2 | 0.0 | 50.0 |
| 203 | 18.0 | 0.0 | 48.0 |

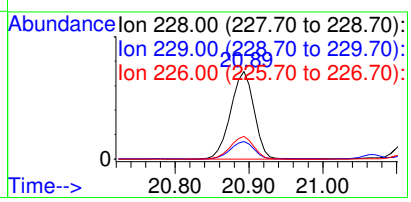


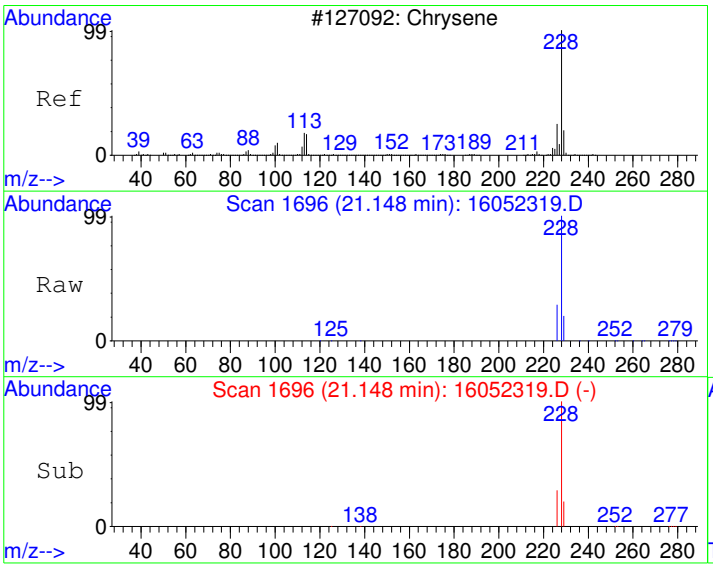




#18
Benzo[a]anthracene
Concen: 1903.18 ug/kg
RT: 20.89 min  Scan# 1660
Delta R.T.  -0.02 min
Lab File:  16052319.D
Acq: 23 May 2016  8:20 pm

Tgt Ion:228 Resp:  788473

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.9 | 0.0 | 50.1 |
| 226 | 25.9 | 0.0 | 55.2 |

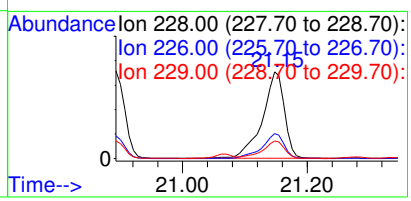


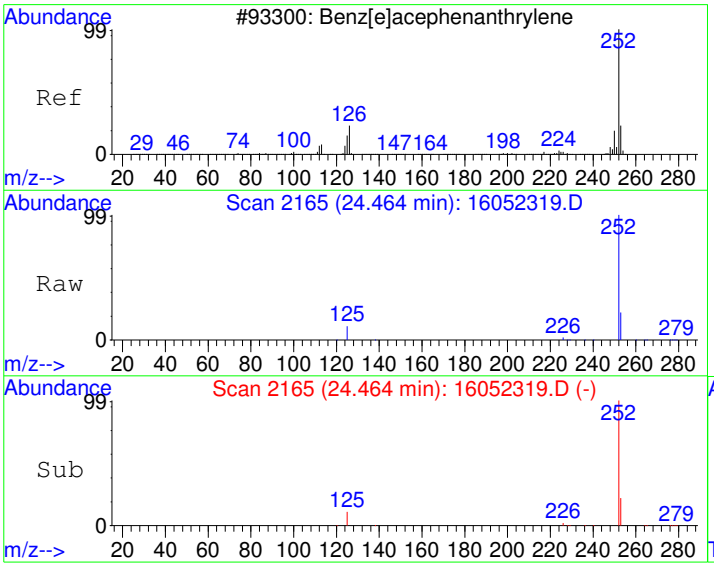




#19
Chrysene
Concen: 2172.06 ug/kg
RT: 21.15 min  Scan# 1696
Delta R.T.  -0.02 min
Lab File:  16052319.D
Acq: 23 May 2016  8:20 pm

Tgt Ion:228 Resp:  869452

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.7 | 0.0 | 58.1 |
| 229 | 20.1 | 0.0 | 50.1 |

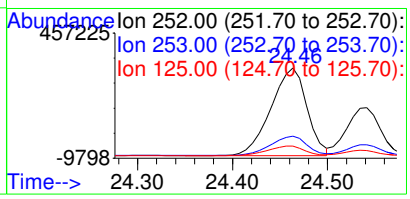


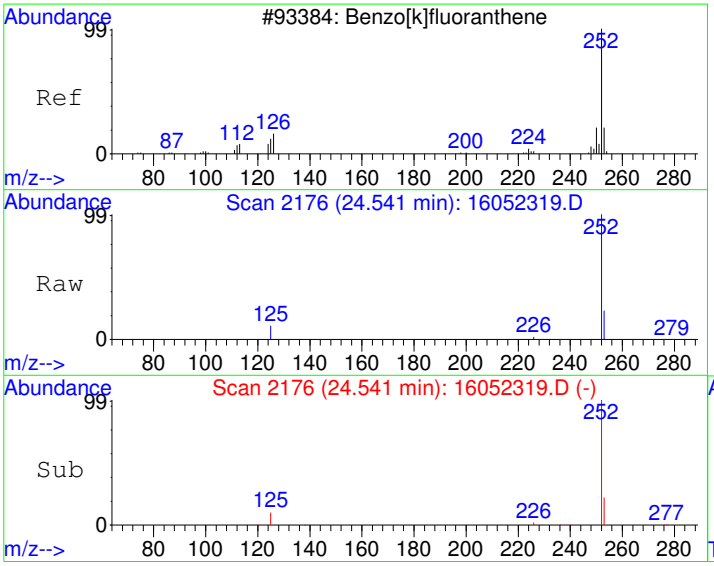



#21
Benzo[b]fluoranthene
Concen: 2083.47 ug/kg
RT: 24.46 min Scan# 2165
Delta R.T. -0.02 min
Lab File: 16052319.D
Acq: 23 May 2016 8:20 pm

Tgt Ion:252 Resp: 858613

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.0 | 0.0 | 52.2 |
| 125 | 10.9 | 0.0 | 41.0 |

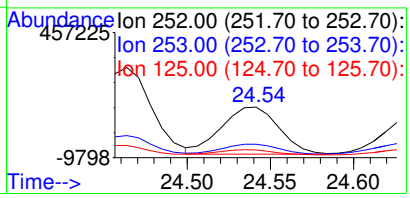


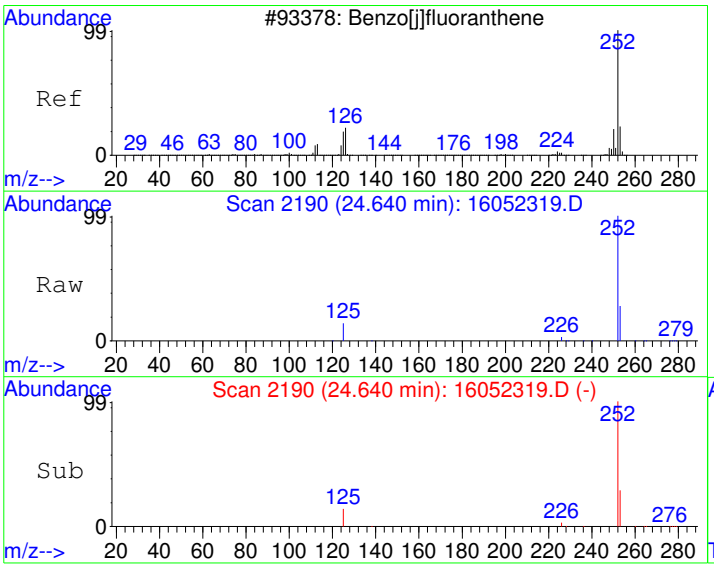




#22
Benzo[k]fluoranthene
Concen: 1097.78 ug/kg
RT: 24.54 min Scan# 2176
Delta R.T. -0.03 min
Lab File: 16052319.D
Acq: 23 May 2016 8:20 pm

Tgt Ion:252 Resp: 424396

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.4 | 2.1 | 42.1 |
| 125 | 10.5 | 0.0 | 31.3 |

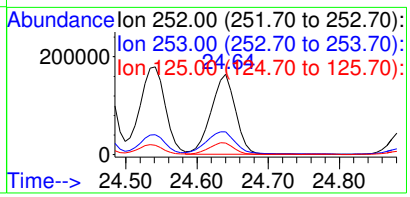


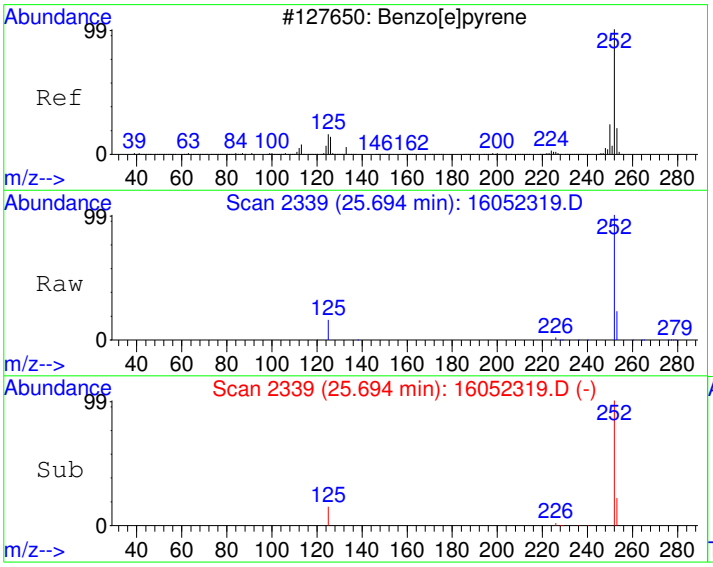




#23
Benzo(j)fluoranthene
Concen: 1123.57 ug/kg
RT: 24.64 min Scan# 2190
Delta R.T. -0.03 min
Lab File: 16052319.D
Acq: 23 May 2016 8:20 pm

Tgt Ion:252 Resp: 386931

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 27.7 | 2.1 | 42.1 |
| 125 | 14.1 | 0.0 | 34.4 |

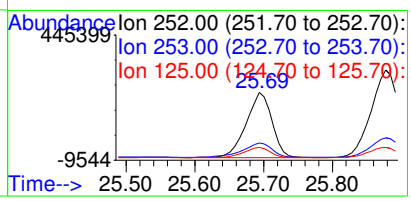


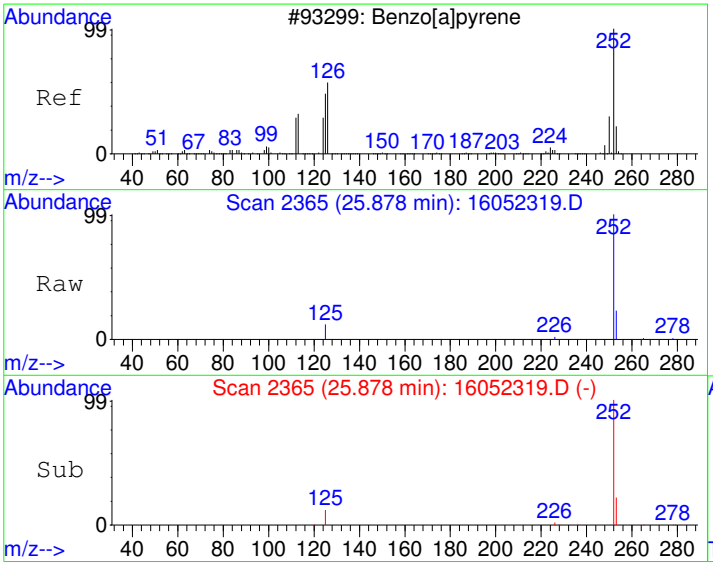



#24
Benzo[e]pyrene
Concen: 1657.14 ug/kg
RT: 25.69 min  Scan# 2339
Delta R.T.  -0.03 min
Lab File:  16052319.D
Acq: 23 May 2016  8:20 pm

Tgt Ion:252 Resp:  611592

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.3 | 2.2 | 42.2 |
| 125 | 15.4 | 0.0 | 36.1 |

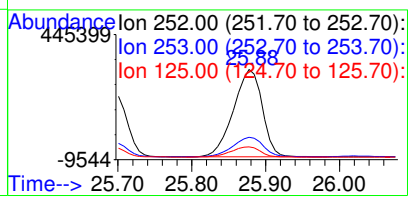


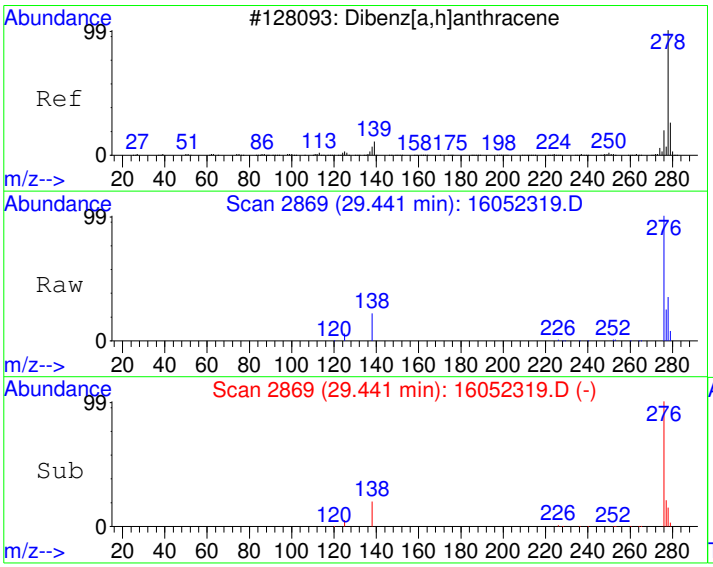




#25
Benzo[a]pyrene
Concen: 2280.51 ug/kg
RT: 25.88 min  Scan# 2365
Delta R.T.  -0.02 min
Lab File:  16052319.D
Acq: 23 May 2016  8:20 pm

Tgt Ion:252 Resp:  860073

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.4 | 1.9 | 41.9 |
| 125 | 11.7 | 0.0 | 31.7 |

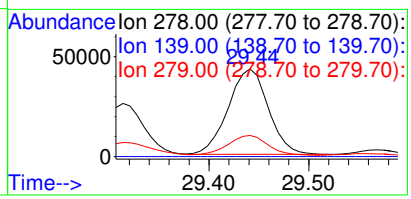


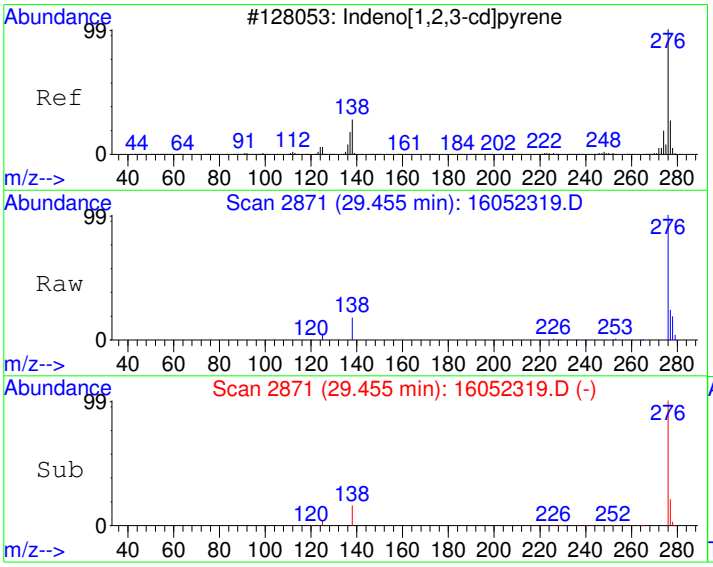




#26
Dibenz[a,h]anthracene
Concen:  347.26 ug/kg
RT: 29.44 min  Scan# 2869
Delta R.T.  -0.04 min
Lab File:  16052319.D
Acq: 23 May 2016  8:20 pm

Tgt Ion:278 Resp:  119276

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 0.0 | 0.0 | 20.0 |
| 279 | 23.1 | 4.2 | 44.2 |

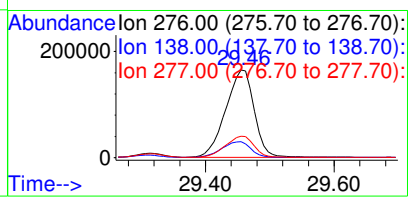


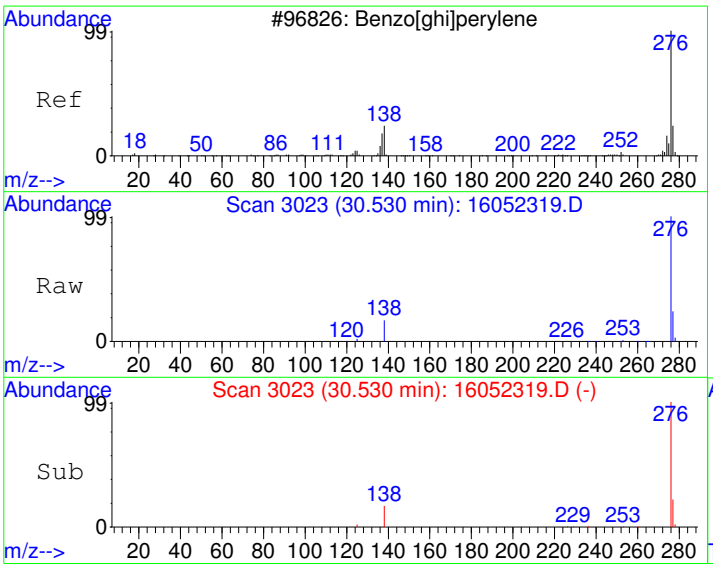



#27
Indeno[1,2,3-cd]pyrene
Concen: 1235.33 ug/kg
RT: 29.46 min Scan# 2871
Delta R.T. -0.02 min
Lab File: 16052319.D
Acq: 23 May 2016 8:20 pm

Tgt Ion:276 Resp: 506179

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 18.0 | 6.7 | 46.7 |
| 277 | 24.2 | 5.8 | 45.8 |

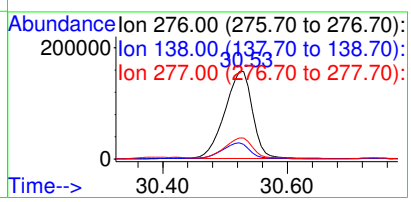



#28
Benzo[g,h,i]perylene
Concen: 1511.89 ug/kg
RT: 30.53 min Scan# 3023
Delta R.T. -0.02 min
Lab File: 16052319.D
Acq: 23 May 2016 8:20 pm

Tgt Ion:276 Resp: 483068

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 16.7 | 0.0 | 39.1 |
| 277 | 23.9 | 4.0 | 44.0 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052320.D Vial: 13
Acq On : 23 May 2016 9:00 pm Operator:
Sample : 1605121-29A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:05 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

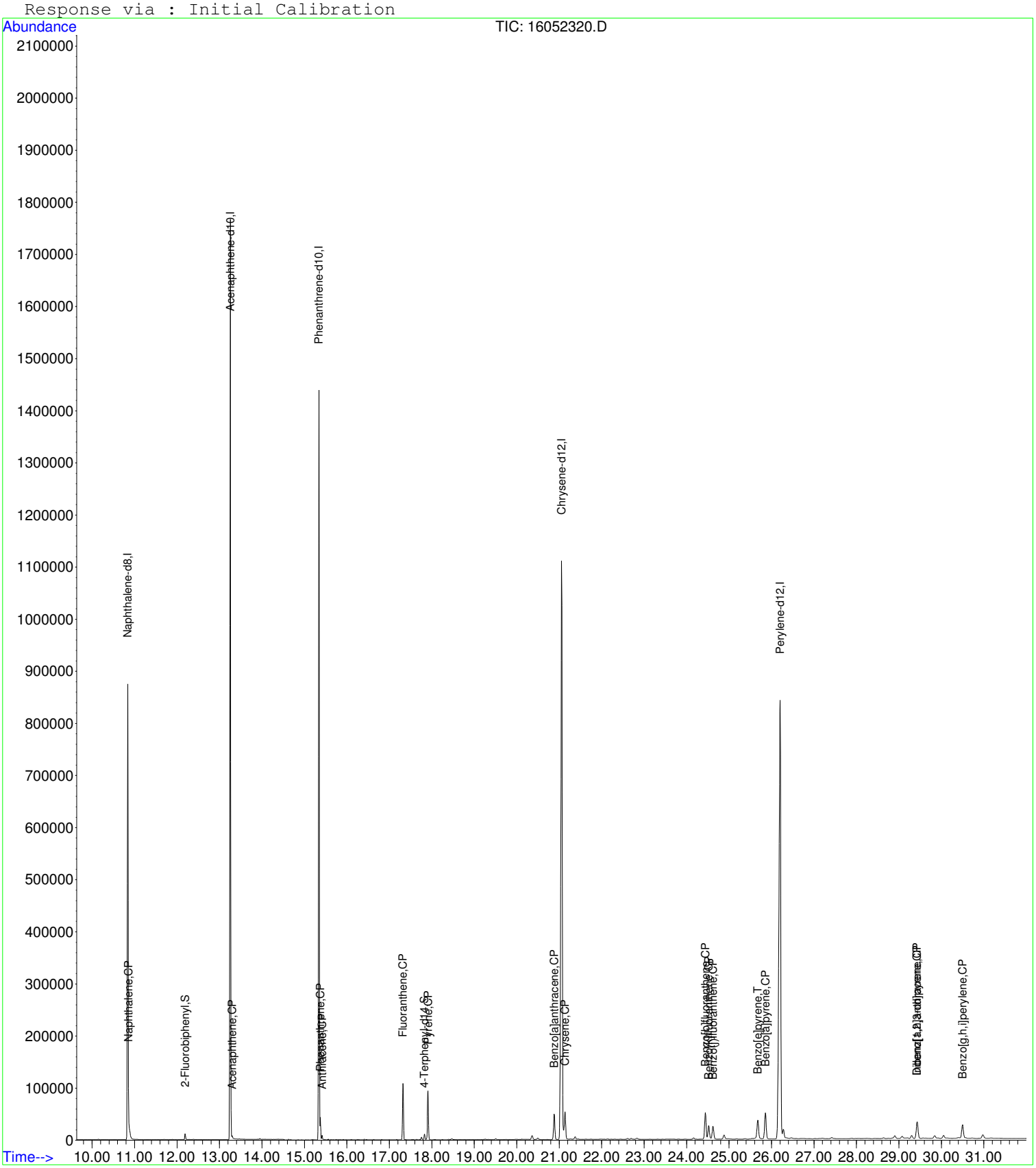
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1094541 | 4000.00 | ug/kg | 94 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 927937 | 4000.00 | ug/kg | 81 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1539521 | 4000.00 | ug/kg | 75 |
| 17) Chrysene-d12 | 21.06 | 240 | 1843951 | 4000.00 | ug/kg | 81 |
| 20) Perylene-d12 | 26.20 | 264 | 1658793 | 4000.00 | ug/kg | 81 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 10198 | 37.67 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.94%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 13588 | 34.11 | ug/kg | -0.03 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.85%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 1516 | 5.54 | ug/kg | 97 |
| 9) Acenaphthene | 13.30 | 154 | 1772 | 7.14 | ug/kg | 96 |
| 12) Phenanthrene | 15.38 | 178 | 34148 | 84.34 | ug/kg | 99 |
| 13) Anthracene | 15.42 | 178 | 7386 | 19.27 | ug/kg | 98 |
| 14) Fluoranthene | 17.32 | 202 | 108088 | 257.99 | ug/kg | 99 |
| 15) Pyrene | 17.91 | 202 | 101022 | 232.12 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.88 | 228 | 72392 | 167.58 | ug/kg | 99 |
| 19) Chrysene | 21.13 | 228 | 83042 | 198.95 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.44 | 252 | 92119 | 210.70 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.52 | 252 | 44326 | 108.08 | ug/kg | 96 |
| 23) Benzo(j)fluoranthene | 24.62 | 252 | 41150 | 112.63 | ug/kg | 90 |
| 24) Benzo[e]pyrene | 25.68 | 252 | 66827 | 170.68 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.86 | 252 | 92073 | 230.12 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.42 | 278 | 12336 | 33.85 | ug/kg | 94 |
| 27) Indeno[1,2,3-cd]pyrene | 29.43 | 276 | 54730 | 125.90 | ug/kg | 88 |
| 28) Benzo[g,h,i]perylene | 30.50 | 276 | 52582 | 155.12 | ug/kg | 97 |

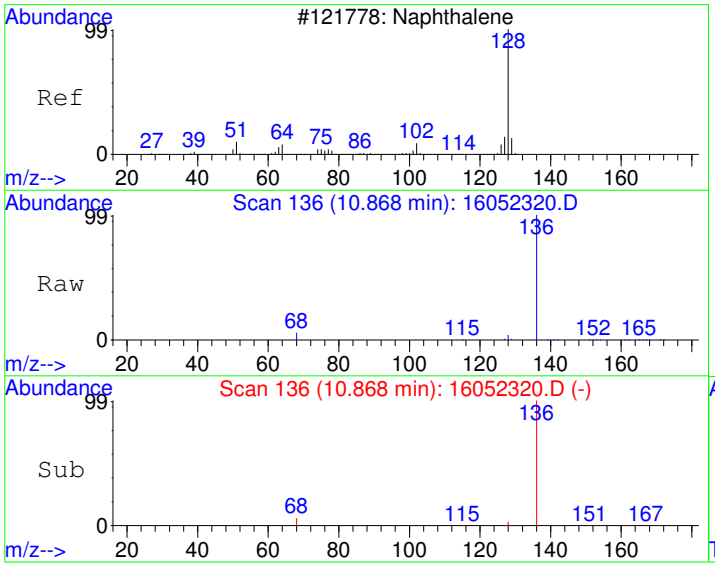
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052320.D Vial: 13
Acq On : 23 May 2016 9:00 pm Operator:
Sample : 1605121-29A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:05 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

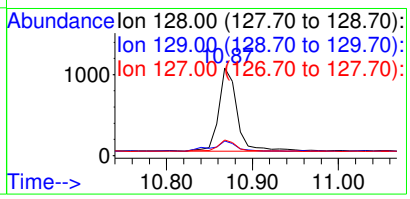


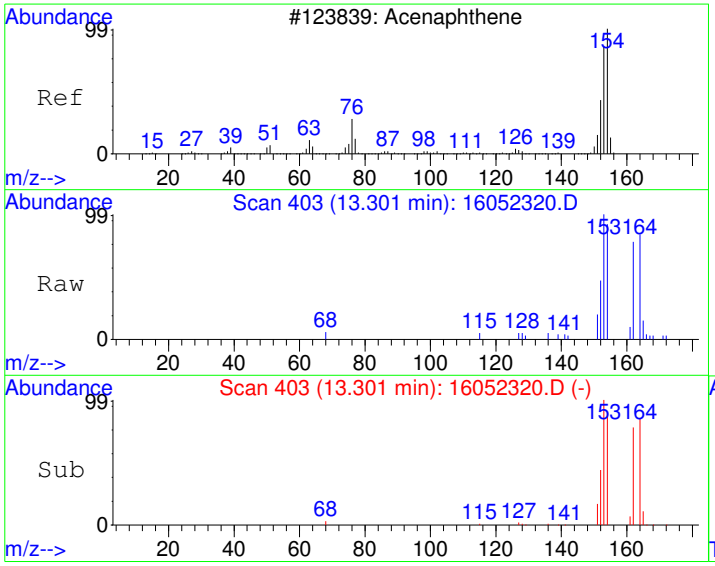



#2
Naphthalene
Concen: 5.54 ug/kg
RT: 10.87 min Scan# 136
Delta R.T. -0.01 min
Lab File: 16052320.D
Acq: 23 May 2016 9:00 pm

Tgt Ion:128 Resp: 1516

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 12.3 | 0.0 | 41.1 |
| 127 | 13.3 | 0.0 | 42.4 |

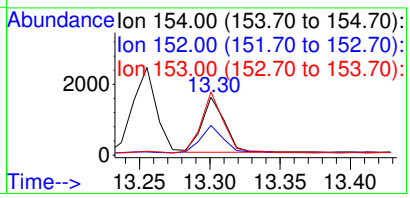


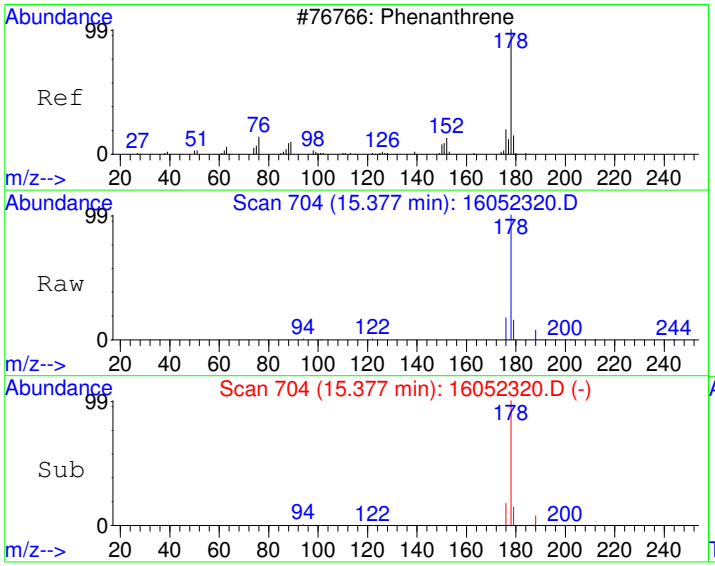




#9
Acenaphthene
Concen: 7.14 ug/kg
RT: 13.30 min Scan# 403
Delta R.T. -0.02 min
Lab File: 16052320.D
Acq: 23 May 2016 9:00 pm

Tgt Ion:154 Resp: 1772

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 49.3 | 18.9 | 78.9 |
| 153 | 110.3 | 75.2 | 135.2 |

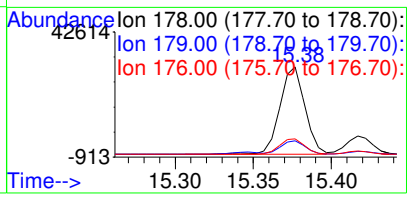


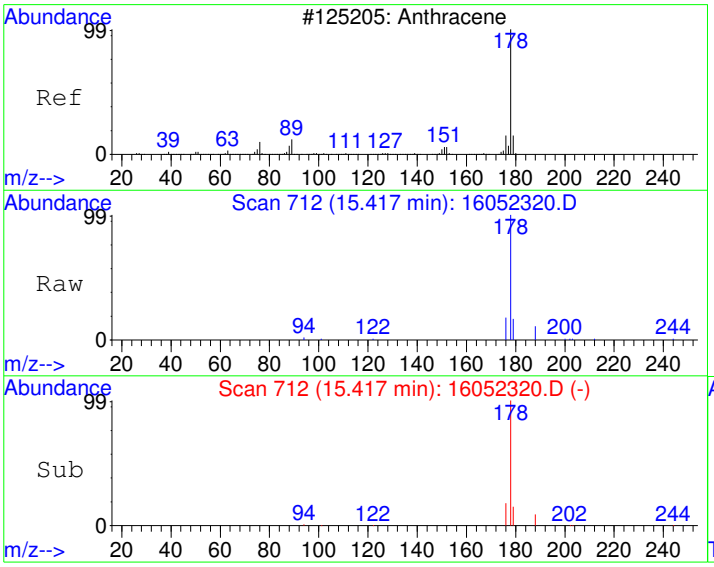




#12
Phenanthrene
Concen: 84.34 ug/kg
RT: 15.38 min Scan# 704
Delta R.T. -0.02 min
Lab File: 16052320.D
Acq: 23 May 2016 9:00 pm

Tgt Ion:178 Resp: 34148

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.4 | 0.0 | 45.9 |
| 176 | 17.9 | 0.0 | 48.5 |

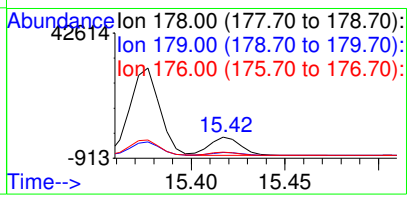


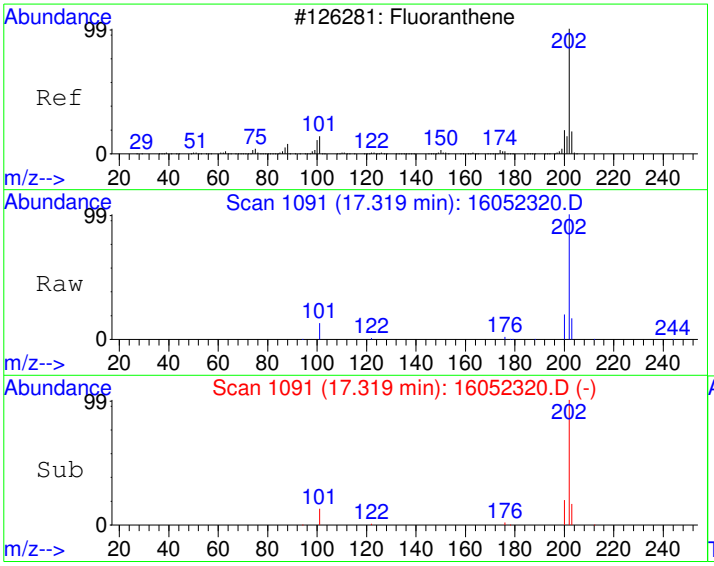



#13
Anthracene
Concen: 19.27 ug/kg
RT: 15.42 min Scan# 712
Delta R.T. -0.02 min
Lab File: 16052320.D
Acq: 23 May 2016 9:00 pm

Tgt Ion:178 Resp: 7386

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.2 | 0.0 | 45.9 |
| 176 | 17.4 | 0.0 | 48.2 |

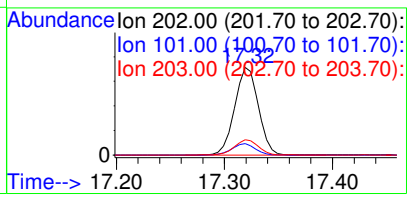


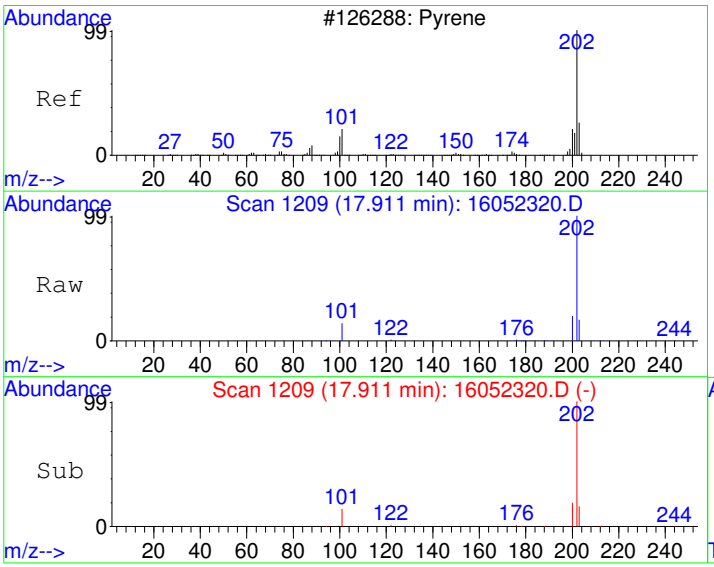




#14
Fluoranthene
Concen: 257.99 ug/kg
RT: 17.32 min Scan# 1091
Delta R.T. -0.02 min
Lab File: 16052320.D
Acq: 23 May 2016 9:00 pm

Tgt Ion:202 Resp: 108088

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 13.0 | 0.0 | 43.0 |
| 203 | 17.4 | 0.0 | 47.9 |

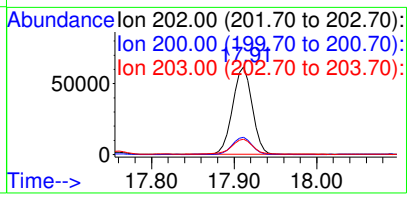


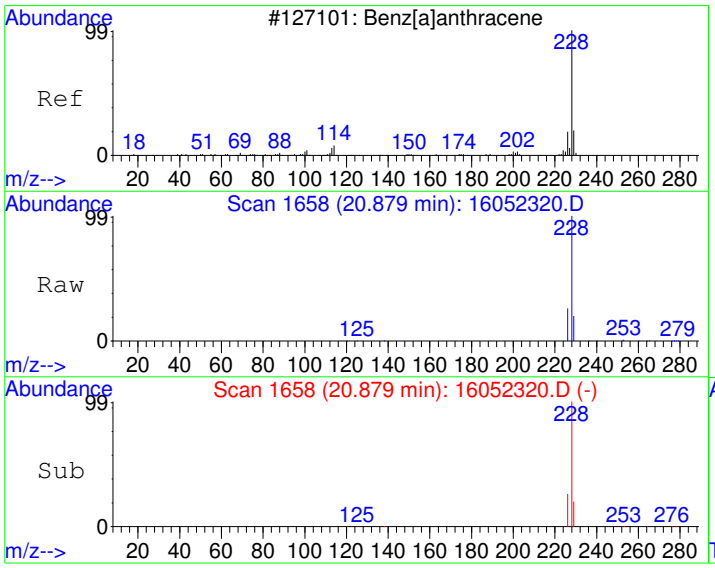




#15
Pyrene
Concen: 232.12 ug/kg
RT: 17.91 min Scan# 1209
Delta R.T. -0.02 min
Lab File: 16052320.D
Acq: 23 May 2016 9:00 pm

Tgt Ion:202 Resp: 101022

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 200 | 19.4 | 0.0 | 50.0 |
| 203 | 17.4 | 0.0 | 48.0 |

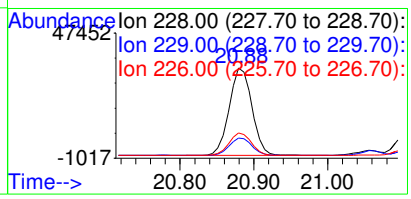


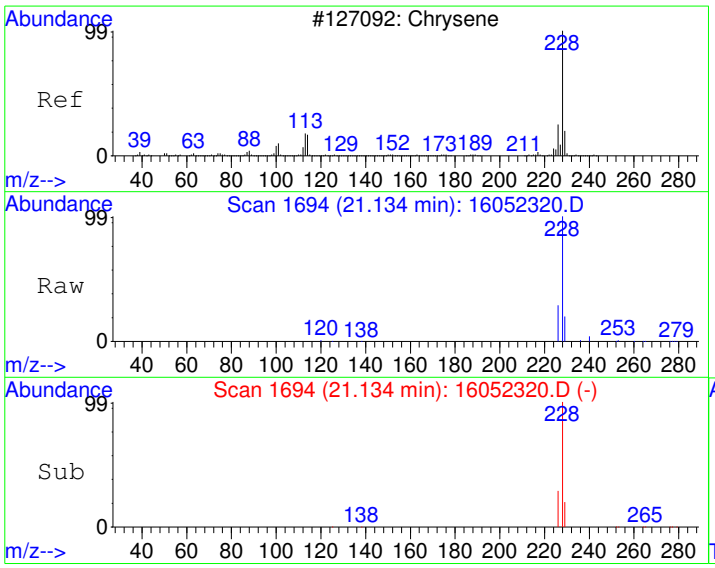



#18
Benzo[a]anthracene
Concen: 167.58 ug/kg
RT: 20.88 min Scan# 1658
Delta R.T. -0.04 min
Lab File: 16052320.D
Acq: 23 May 2016 9:00 pm

Tgt Ion:228 Resp: 72392

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.9 | 0.0 | 50.1 |
| 226 | 25.9 | 0.0 | 55.2 |

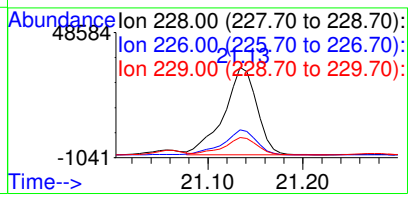


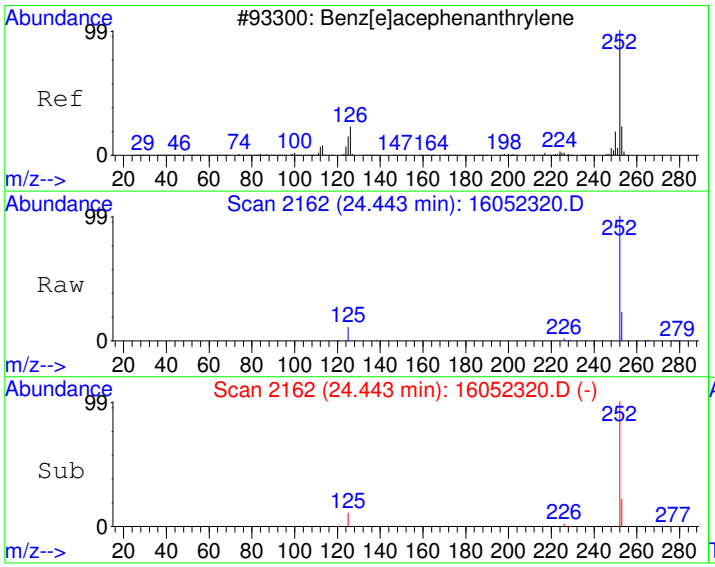




#19
Chrysene
Concen: 198.95 ug/kg
RT: 21.13 min Scan# 1694
Delta R.T. -0.04 min
Lab File: 16052320.D
Acq: 23 May 2016 9:00 pm

Tgt Ion:228 Resp: 83042

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.8 | 0.0 | 58.1 |
| 229 | 19.7 | 0.0 | 50.1 |

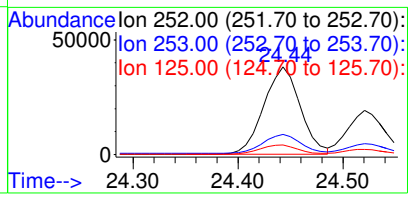


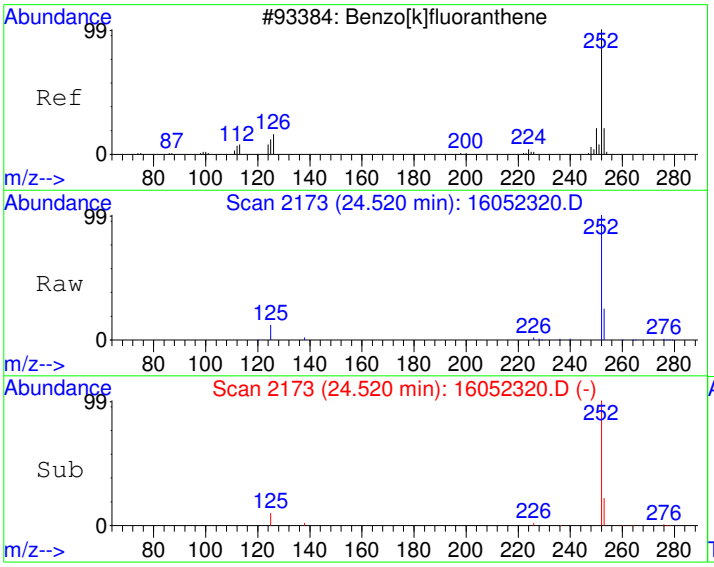




#21
Benzo[b]fluoranthene
Concen: 210.70 ug/kg
RT: 24.44 min Scan# 2162
Delta R.T. -0.04 min
Lab File: 16052320.D
Acq: 23 May 2016 9:00 pm

Tgt Ion:252 Resp: 92119

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.6 | 0.0 | 52.2 |
| 125 | 10.9 | 0.0 | 41.0 |

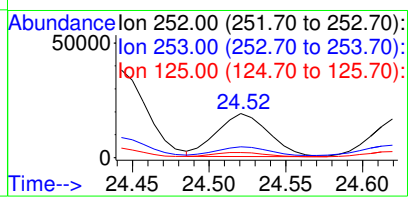


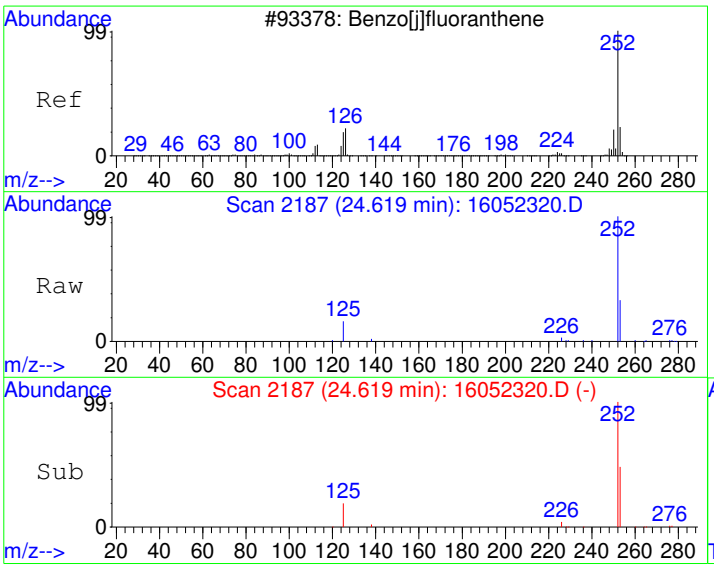



#22
Benzo[k]fluoranthene
Concen: 108.08 ug/kg
RT: 24.52 min Scan# 2173
Delta R.T. -0.05 min
Lab File: 16052320.D
Acq: 23 May 2016 9:00 pm

Tgt Ion:252 Resp: 44326

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 20.2 | 2.1 | 42.1 |
| 125 | 9.9 | 0.0 | 31.3 |

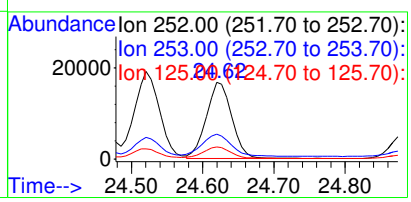


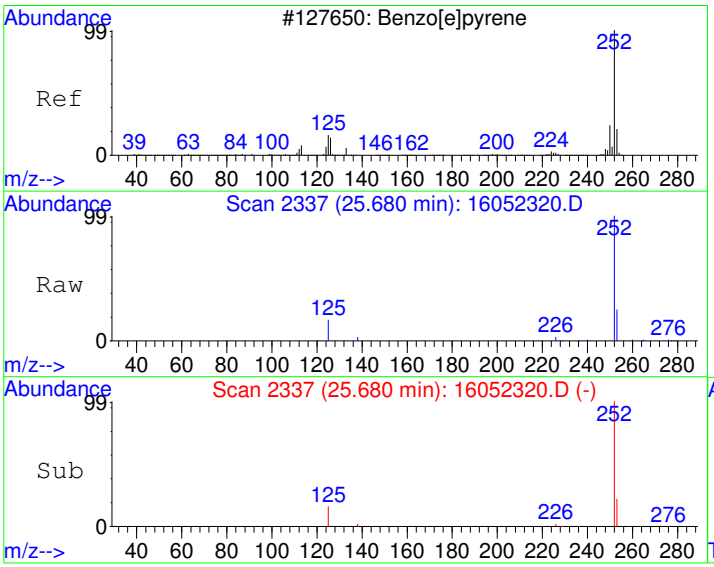




#23
Benzo(j)fluoranthene
Concen: 112.63 ug/kg
RT: 24.62 min Scan# 2187
Delta R.T. -0.05 min
Lab File: 16052320.D
Acq: 23 May 2016 9:00 pm

Tgt Ion:252 Resp: 41150

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 29.3 | 2.1 | 42.1 |
| 125 | 15.1 | 0.0 | 34.4 |

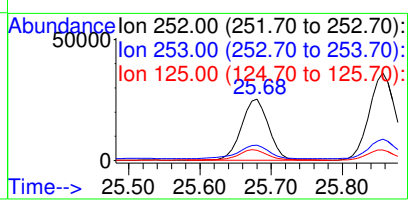


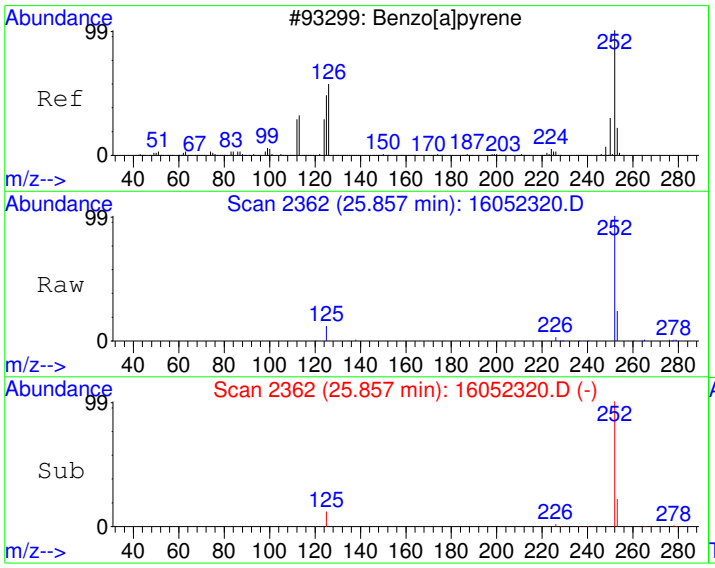




#24
Benzo[e]pyrene
Concen: 170.68 ug/kg
RT: 25.68 min Scan# 2337
Delta R.T. -0.04 min
Lab File: 16052320.D
Acq: 23 May 2016 9:00 pm

Tgt Ion:252 Resp: 66827

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.0 | 2.2 | 42.2 |
| 125 | 16.2 | 0.0 | 36.1 |

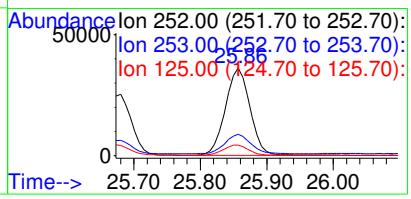


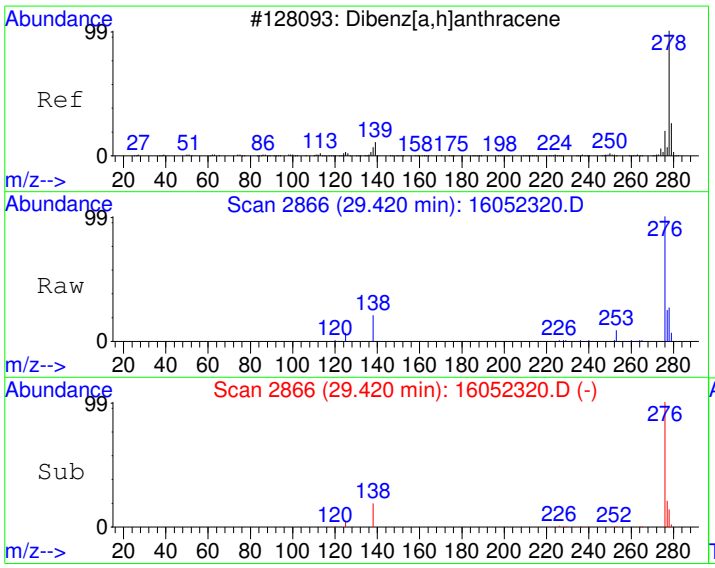



#25
Benzo[a]pyrene
Concen: 230.12 ug/kg
RT: 25.86 min Scan# 2362
Delta R.T. -0.04 min
Lab File: 16052320.D
Acq: 23 May 2016 9:00 pm

Tgt Ion:252 Resp: 92073

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.4 | 1.9 | 41.9 |
| 125 | 11.8 | 0.0 | 31.7 |

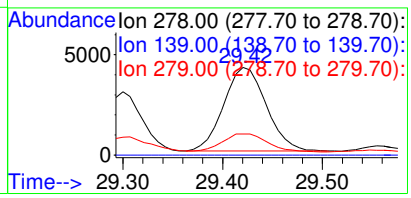


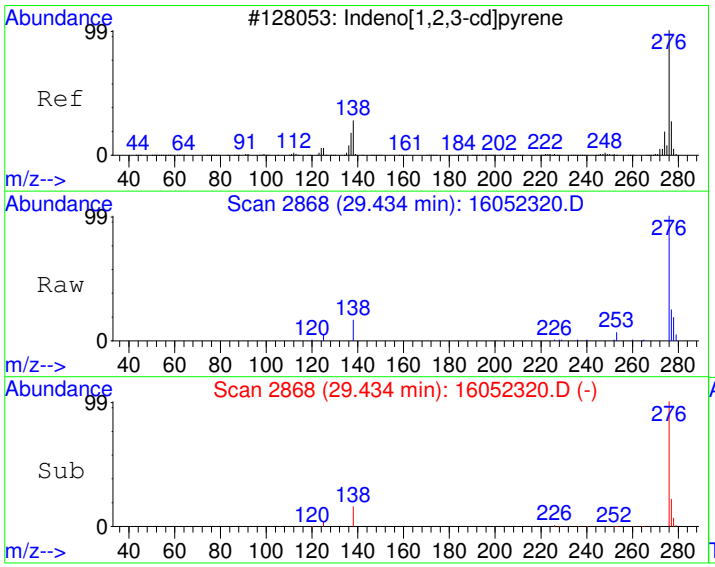




#26
Dibenz[a,h]anthracene
Concen: 33.85 ug/kg
RT: 29.42 min Scan# 2866
Delta R.T. -0.06 min
Lab File: 16052320.D
Acq: 23 May 2016 9:00 pm

Tgt Ion:278 Resp: 12336

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 0.0 | 0.0 | 20.0 |
| 279 | 21.5 | 4.2 | 44.2 |

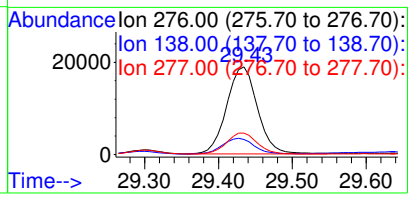


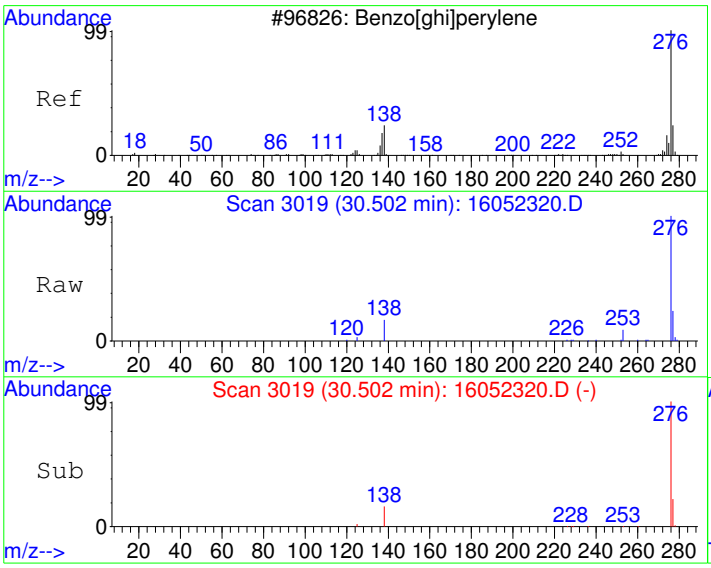




#27
Indeno[1,2,3-cd]pyrene
Concen: 125.90 ug/kg
RT: 29.43 min Scan# 2868
Delta R.T. -0.04 min
Lab File: 16052320.D
Acq: 23 May 2016 9:00 pm

Tgt Ion:276 Resp: 54730

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 16.6 | 6.7 | 46.7 |
| 277 | 24.1 | 5.8 | 45.8 |

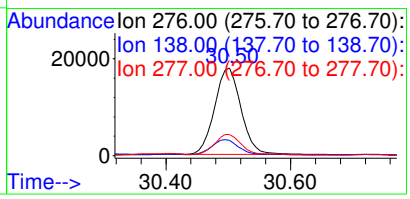





#28
Benzo[g,h,i]perylene
Concen: 155.12 ug/kg
RT: 30.50 min Scan# 3019
Delta R.T. -0.05 min
Lab File: 16052320.D
Acq: 23 May 2016 9:00 pm

Tgt Ion:276 Resp: 52582

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 16.7 | 0.0 | 39.1 |
| 277 | 23.7 | 4.0 | 44.0 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052321.D Vial: 14
Acq On : 23 May 2016 9:40 pm Operator:
Sample : 1605121-17A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:05 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

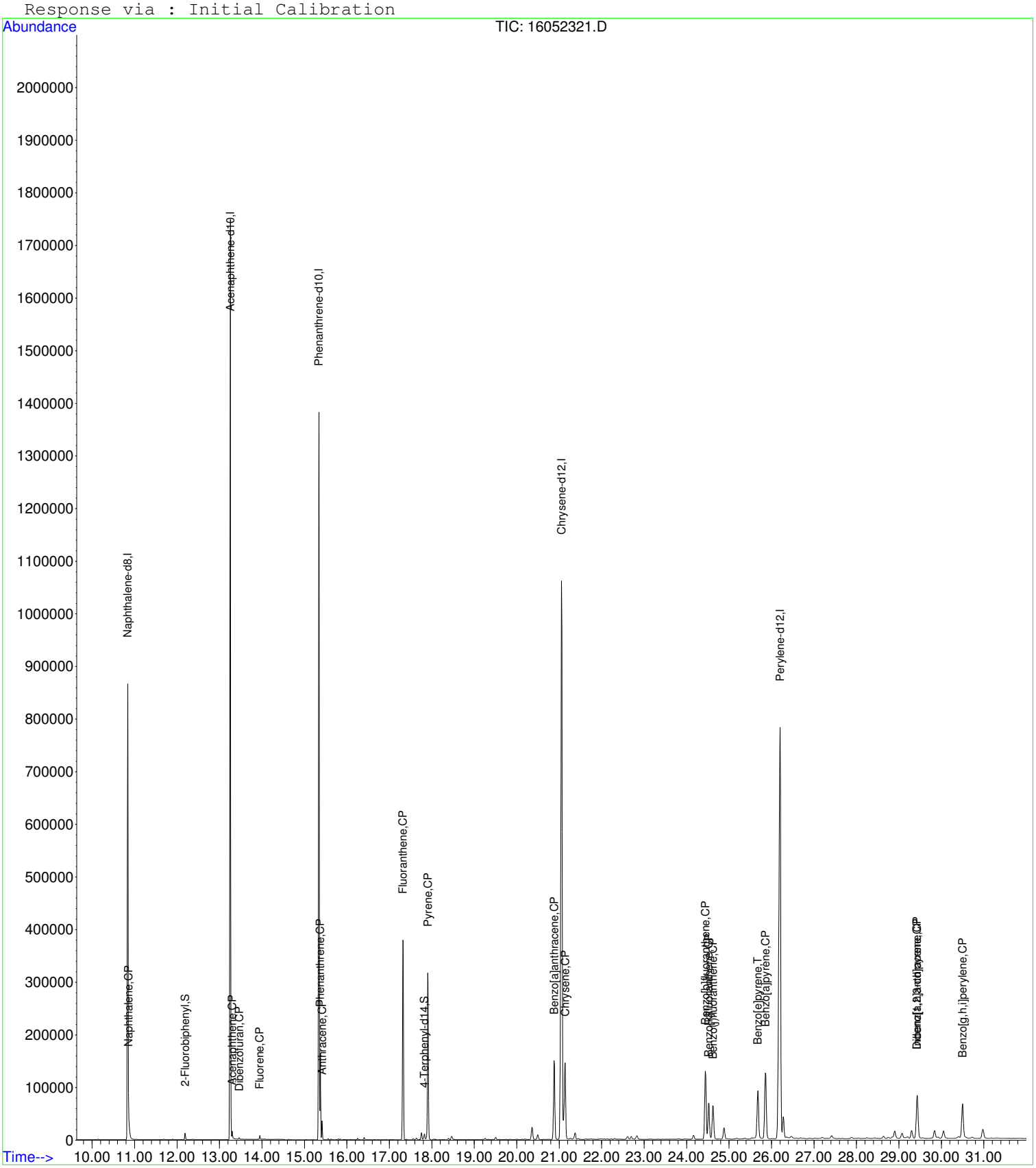
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1092571 | 4000.00 | ug/kg | 94 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 915737 | 4000.00 | ug/kg | 80 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1490939 | 4000.00 | ug/kg | 73 |
| 17) Chrysene-d12 | 21.06 | 240 | 1739613 | 4000.00 | ug/kg | 77 |
| 20) Perylene-d12 | 26.20 | 264 | 1558637 | 4000.00 | ug/kg | 76 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 10842 | 40.59 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.01%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 13767 | 35.69 | ug/kg | -0.03 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.89%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 4254 | 15.57 | ug/kg | 100 |
| 6) Dibenzofuran | 13.46 | 168 | 2694 | 7.85 | ug/kg | 98 |
| 9) Acenaphthene | 13.30 | 154 | 5205 | 21.26 | ug/kg | 99 |
| 10) Fluorene | 13.95 | 166 | 3875 | 13.04 | ug/kg | 98 |
| 12) Phenanthrene | 15.37 | 178 | 138335 | 352.81 | ug/kg | 99 |
| 13) Anthracene | 15.42 | 178 | 30137 | 81.21 | ug/kg | 99 |
| 14) Fluoranthene | 17.32 | 202 | 378005 | 931.62 | ug/kg | 99 |
| 15) Pyrene | 17.91 | 202 | 333352 | 790.90 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.88 | 228 | 218788 | 536.84 | ug/kg | 99 |
| 19) Chrysene | 21.14 | 228 | 236674 | 601.04 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.44 | 252 | 240969 | 586.58 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.52 | 252 | 118794 | 308.26 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.62 | 252 | 108970 | 317.43 | ug/kg | 90 |
| 24) Benzo[e]pyrene | 25.68 | 252 | 170535 | 463.54 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.86 | 252 | 244185 | 649.52 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.42 | 278 | 31771 | 92.79 | ug/kg | 96 |
| 27) Indeno[1,2,3-cd]pyrene | 29.43 | 276 | 138478 | 339.03 | ug/kg | 89 |
| 28) Benzo[g,h,i]perylene | 30.50 | 276 | 128258 | 402.69 | ug/kg | 97 |

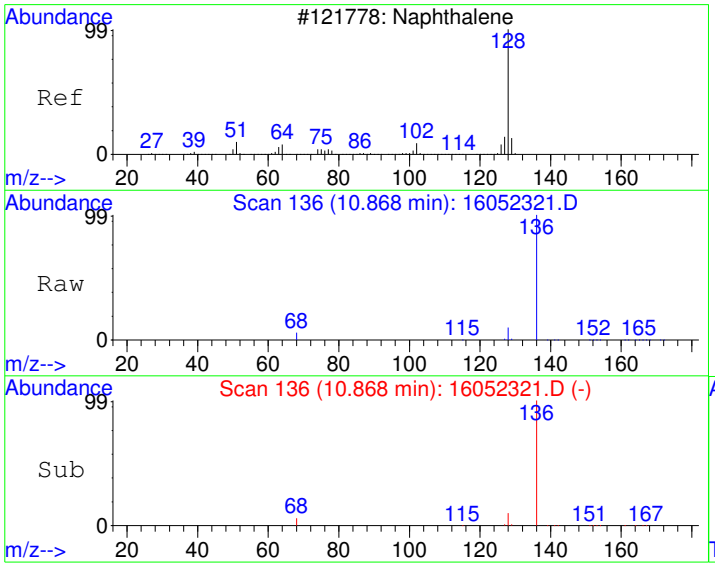
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052321.D Vial: 14
Acq On : 23 May 2016 9:40 pm Operator:
Sample : 1605121-17A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:05 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

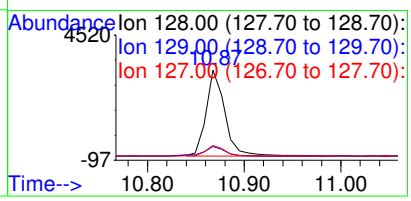


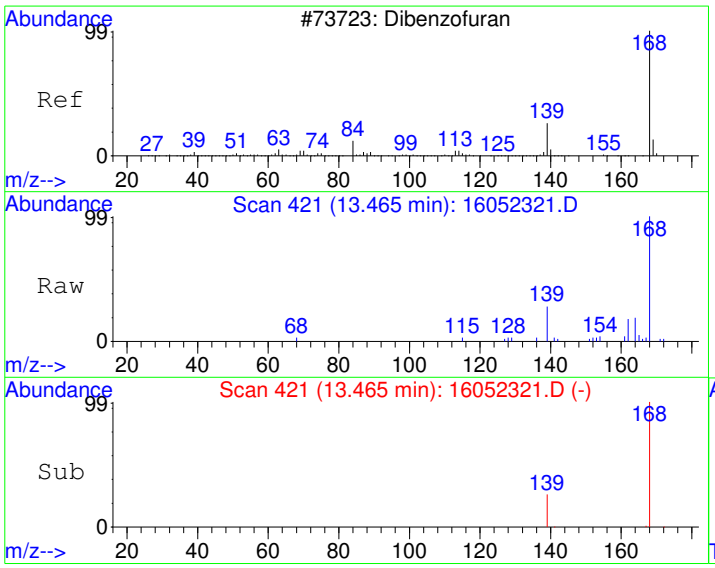



#2
Naphthalene
Concen: 15.57 ug/kg
RT: 10.87 min Scan# 136
Delta R.T. -0.01 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:128 Resp: 4254

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 11.1 | 0.0 | 41.1 |
| 127 | 12.4 | 0.0 | 42.4 |

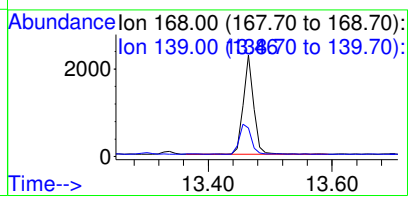


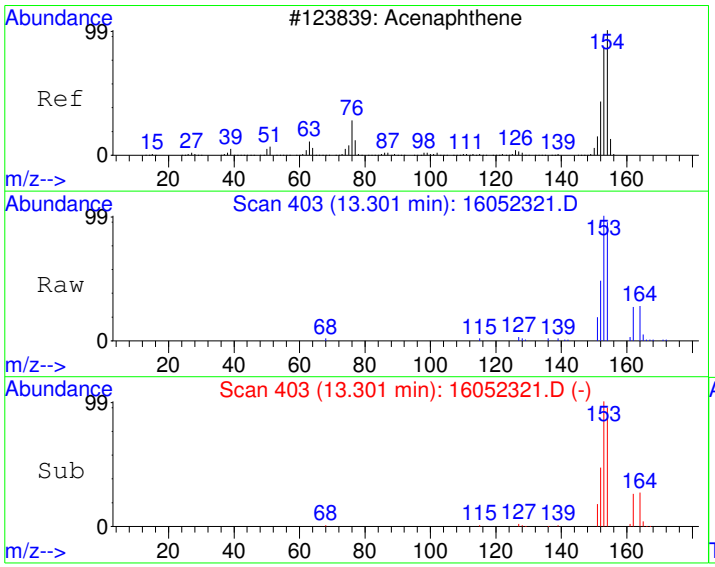




#6
Dibenzofuran
Concen: 7.85 ug/kg
RT: 13.46 min Scan# 421
Delta R.T. -0.01 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:168 Resp: 2694

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 34.7 | 27.0 | 40.4 |

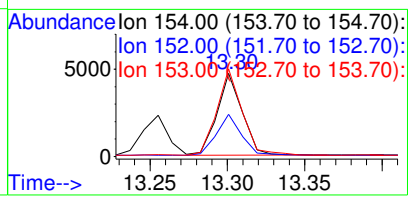


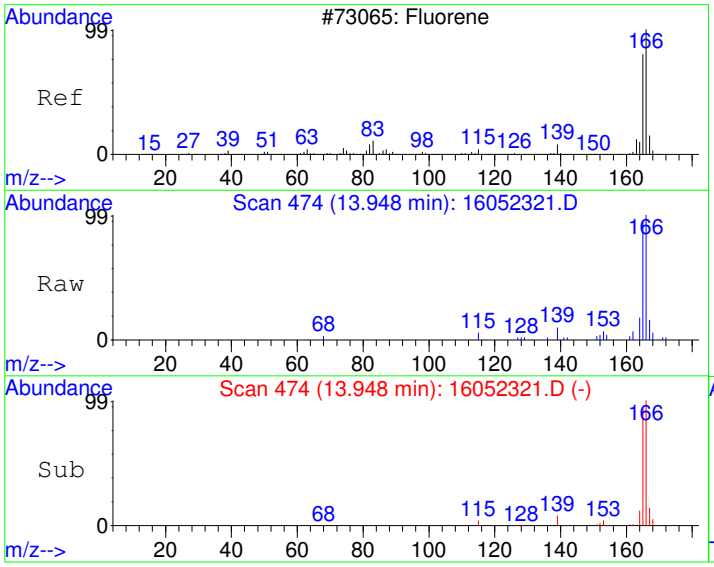




#9
Acenaphthene
Concen: 21.26 ug/kg
RT: 13.30 min Scan# 403
Delta R.T. -0.02 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:154 Resp: 5205

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 50.4 | 18.9 | 78.9 |
| 153 | 105.8 | 75.2 | 135.2 |

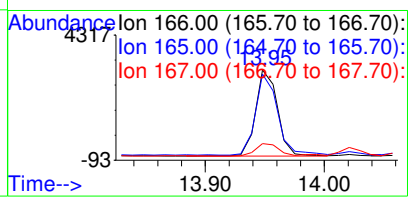


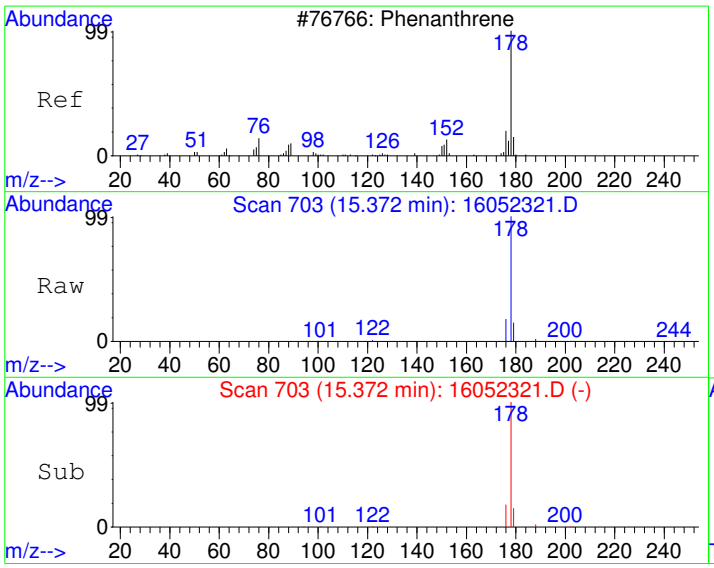



#10
Fluorene
Concen: 13.04 ug/kg
RT: 13.95 min Scan# 474
Delta R.T. -0.02 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:166 Resp: 3875

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 93.9 | 61.8 | 121.8 |
| 167 | 14.1 | 0.0 | 43.6 |

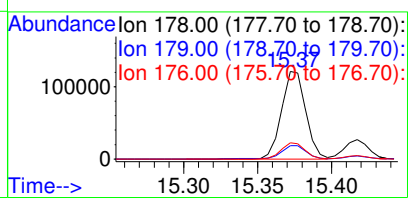


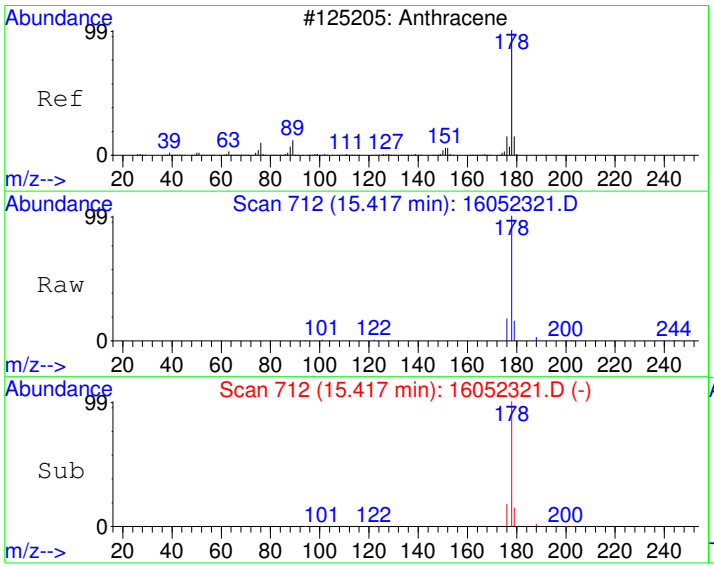




#12
Phenanthrene
Concen: 352.81 ug/kg
RT: 15.37 min Scan# 703
Delta R.T. -0.02 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:178 Resp: 138335

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.2 | 0.0 | 45.9 |
| 176 | 18.5 | 0.0 | 48.5 |

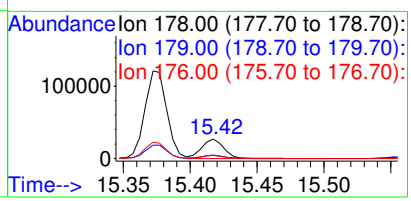


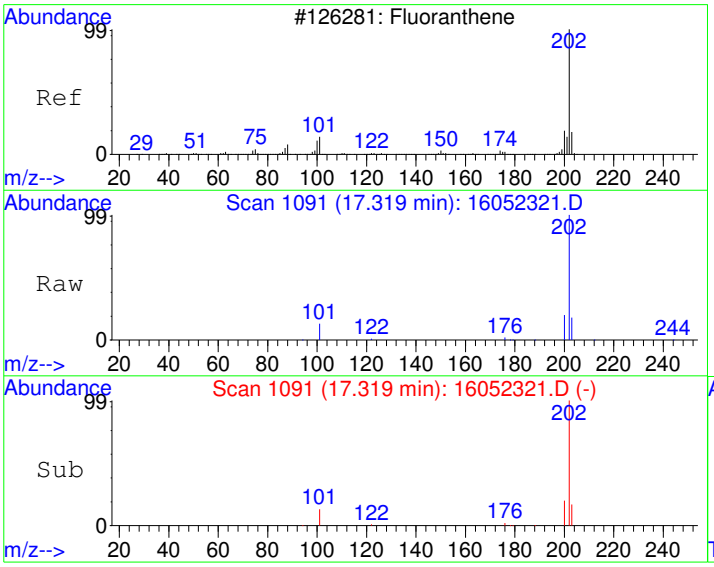




#13
Anthracene
Concen: 81.21 ug/kg
RT: 15.42 min Scan# 712
Delta R.T. -0.02 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:178 Resp: 30137

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.6 | 0.0 | 45.9 |
| 176 | 17.7 | 0.0 | 48.2 |

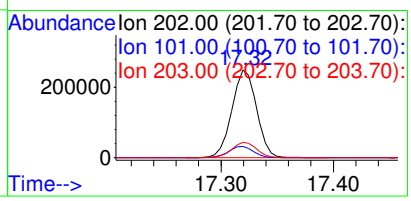


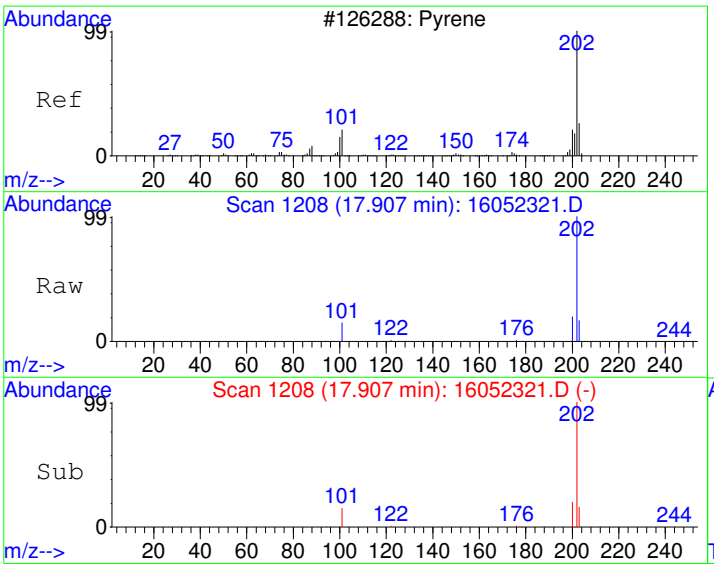



#14
Fluoranthene
Concen: 931.62 ug/kg
RT: 17.32 min Scan# 1091
Delta R.T. -0.02 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:202 Resp: 378005

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 12.8 | 0.0 | 43.0 |
| 203 | 17.5 | 0.0 | 47.9 |

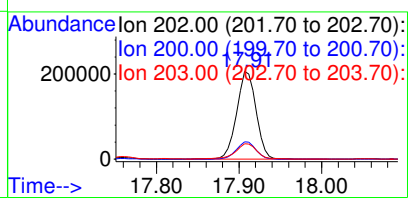


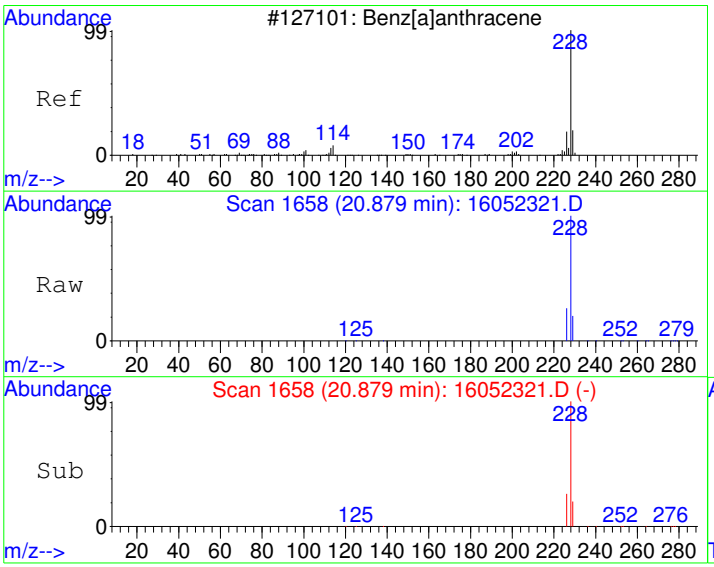




#15
Pyrene
Concen: 790.90 ug/kg
RT: 17.91 min Scan# 1208
Delta R.T. -0.03 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:202 Resp: 333352

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 200 | 19.8 | 0.0 | 50.0 |
| 203 | 17.5 | 0.0 | 48.0 |

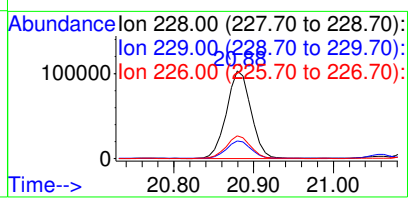


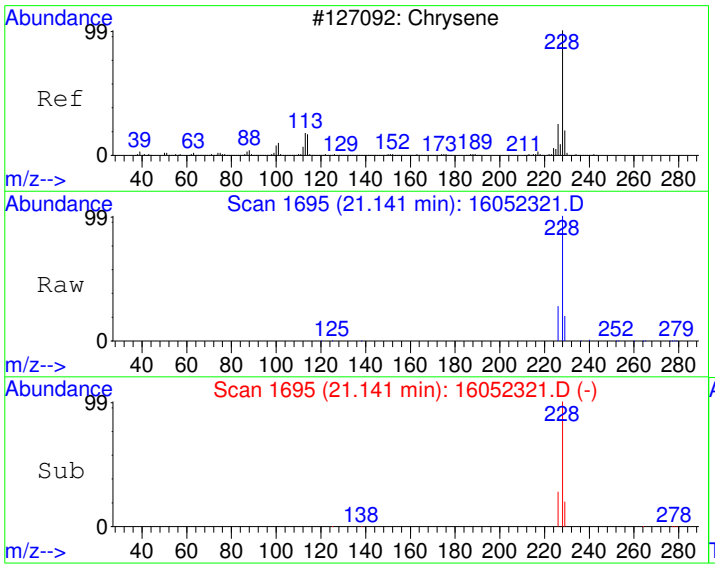




#18
Benzo[a]anthracene
Concen: 536.84 ug/kg
RT: 20.88 min Scan# 1658
Delta R.T. -0.04 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:228 Resp: 218788

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.8 | 0.0 | 50.1 |
| 226 | 25.8 | 0.0 | 55.2 |

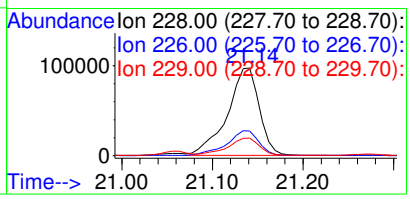


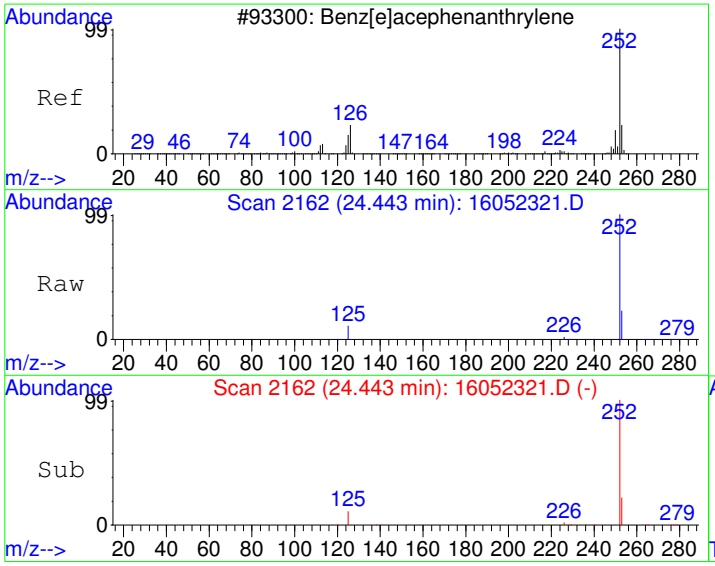



#19
Chrysene
Concen: 601.04 ug/kg
RT: 21.14 min Scan# 1695
Delta R.T. -0.03 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:228 Resp: 236674

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.1 | 0.0 | 58.1 |
| 229 | 20.0 | 0.0 | 50.1 |

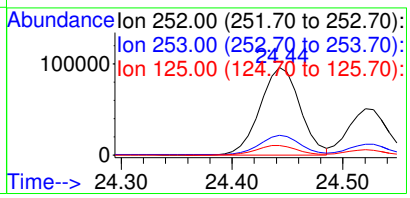


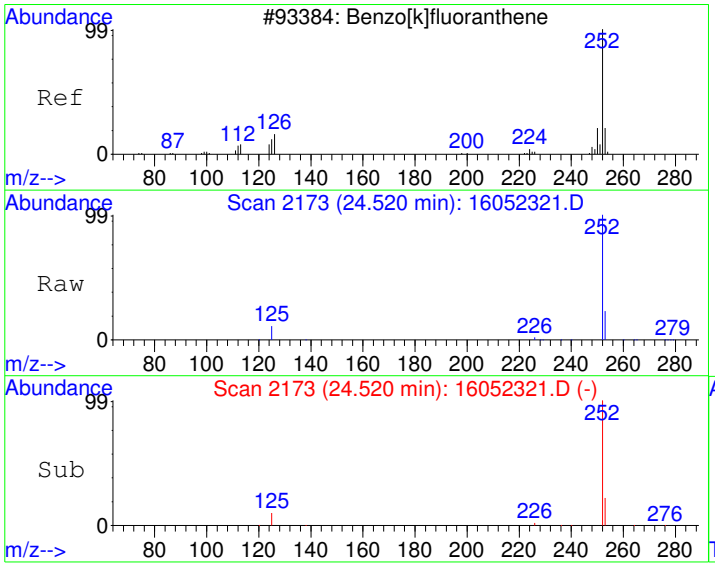




#21
Benzo[b]fluoranthene
Concen: 586.58 ug/kg
RT: 24.44 min Scan# 2162
Delta R.T. -0.04 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:252 Resp: 240969

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.1 | 0.0 | 52.2 |
| 125 | 10.8 | 0.0 | 41.0 |

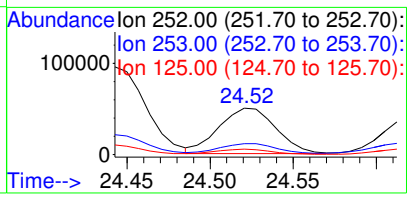


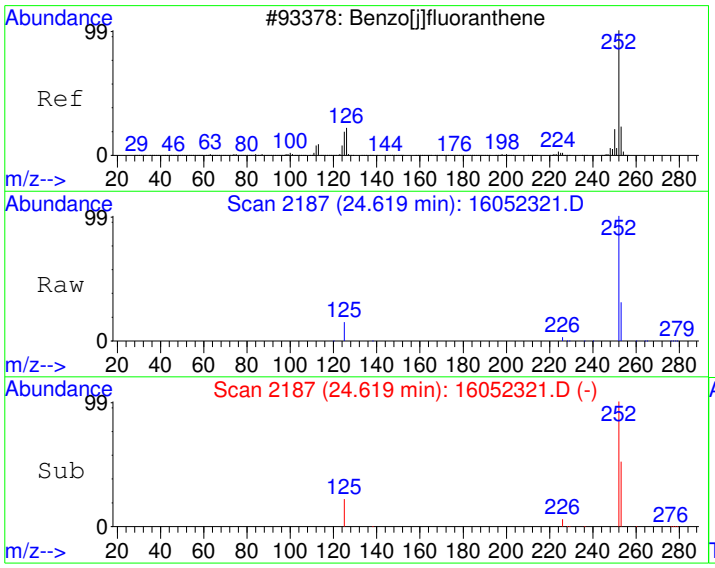




#22
Benzo[k]fluoranthene
Concen: 308.26 ug/kg
RT: 24.52 min Scan# 2173
Delta R.T. -0.05 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:252 Resp: 118794

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.3 | 2.1 | 42.1 |
| 125 | 11.2 | 0.0 | 31.3 |

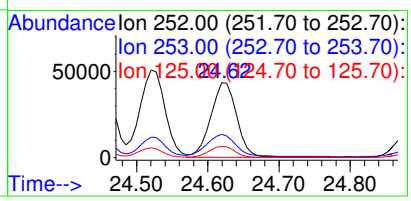


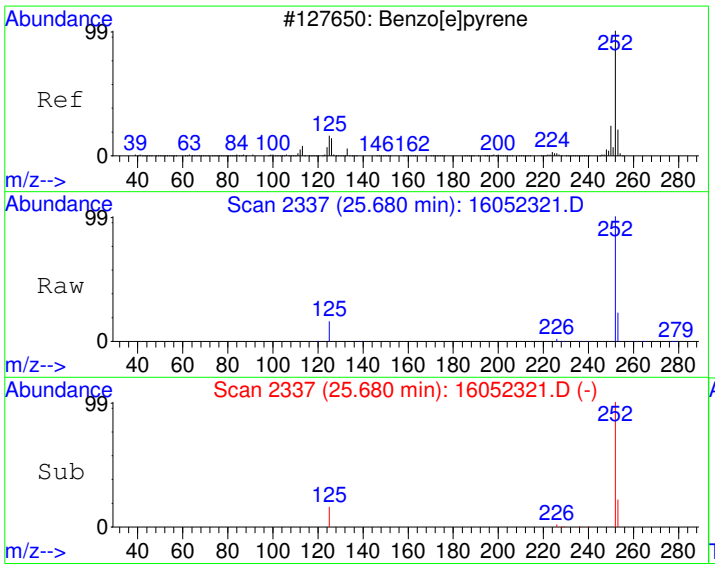



#23
Benzo(j)fluoranthene
Concen: 317.43 ug/kg
RT: 24.62 min Scan# 2187
Delta R.T. -0.05 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:252 Resp: 108970

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 29.7 | 2.1 | 42.1 |
| 125 | 14.9 | 0.0 | 34.4 |

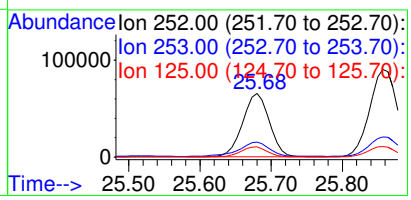


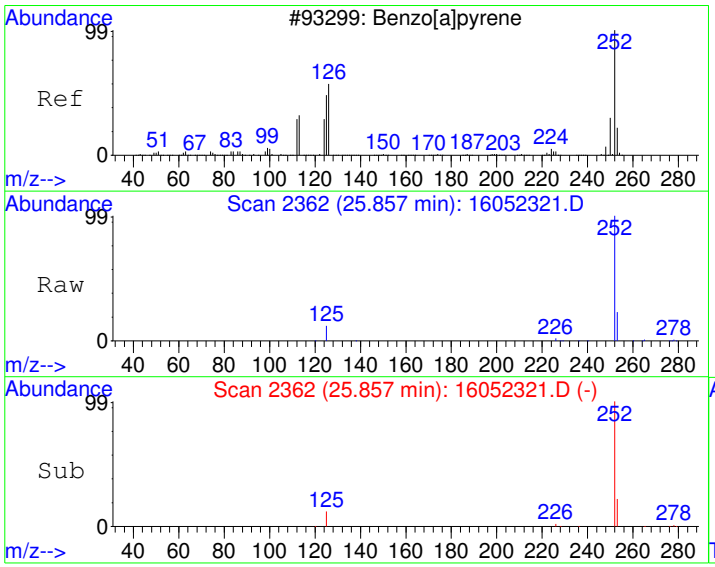




#24
Benzo[e]pyrene
Concen: 463.54 ug/kg
RT: 25.68 min Scan# 2337
Delta R.T. -0.04 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:252 Resp: 170535

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.3 | 2.2 | 42.2 |
| 125 | 15.7 | 0.0 | 36.1 |

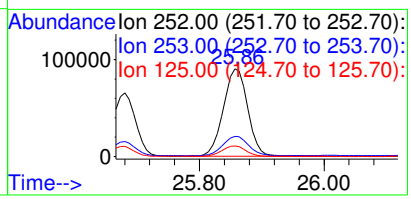


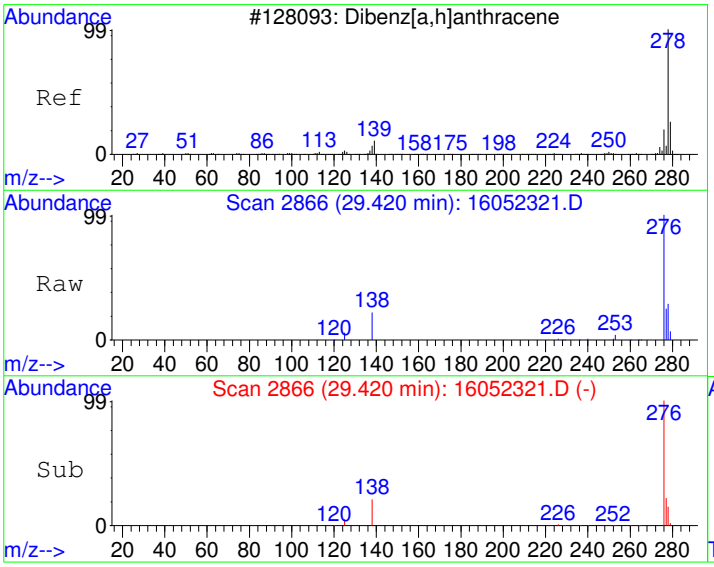




#25
Benzo[a]pyrene
Concen: 649.52 ug/kg
RT: 25.86 min Scan# 2362
Delta R.T. -0.04 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:252 Resp: 244185

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.3 | 1.9 | 41.9 |
| 125 | 11.9 | 0.0 | 31.7 |

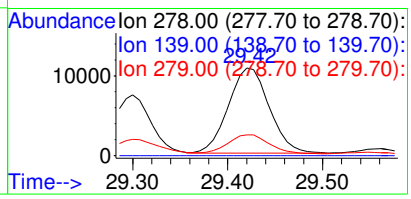


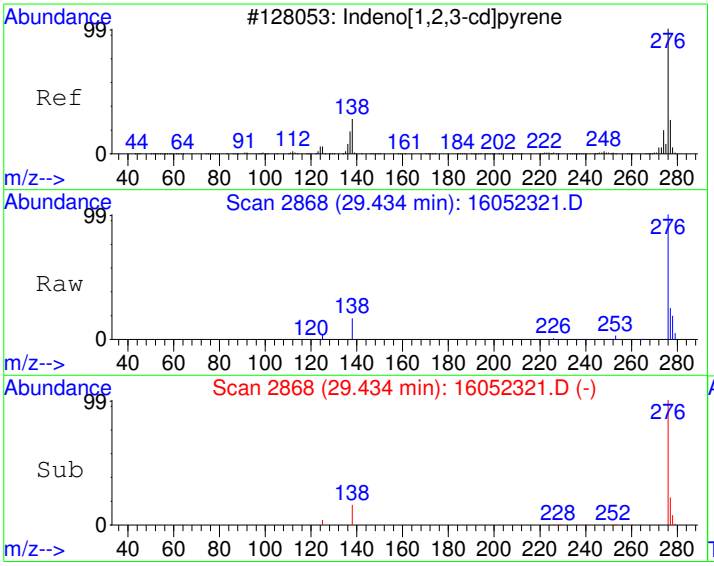



#26
Dibenz[a,h]anthracene
Concen: 92.79 ug/kg
RT: 29.42 min Scan# 2866
Delta R.T. -0.06 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:278 Resp: 31771

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 0.0 | 0.0 | 20.0 |
| 279 | 22.3 | 4.2 | 44.2 |

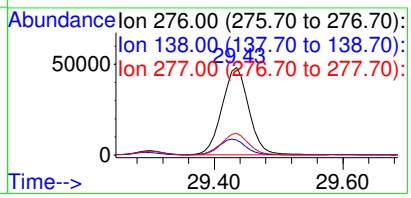


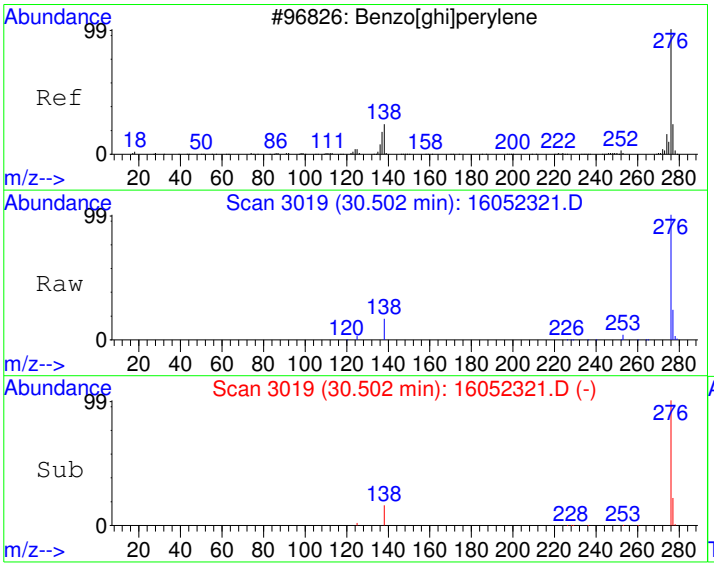




#27
Indeno[1,2,3-cd]pyrene
Concen: 339.03 ug/kg
RT: 29.43 min Scan# 2868
Delta R.T. -0.04 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:276 Resp: 138478

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 17.0 | 6.7 | 46.7 |
| 277 | 24.5 | 5.8 | 45.8 |

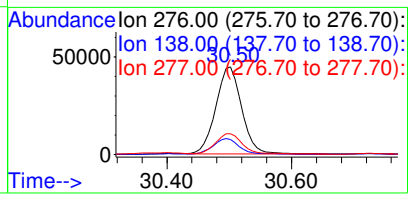



#28
Benzo[g,h,i]perylene
Concen: 402.69 ug/kg
RT: 30.50 min Scan# 3019
Delta R.T. -0.05 min
Lab File: 16052321.D
Acq: 23 May 2016 9:40 pm

Tgt Ion:276 Resp: 128258

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 16.7 | 0.0 | 39.1 |
| 277 | 23.6 | 4.0 | 44.0 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052322.D Vial: 15
Acq On : 23 May 2016 10:20 pm Operator:
Sample : 1605121-19A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:06 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

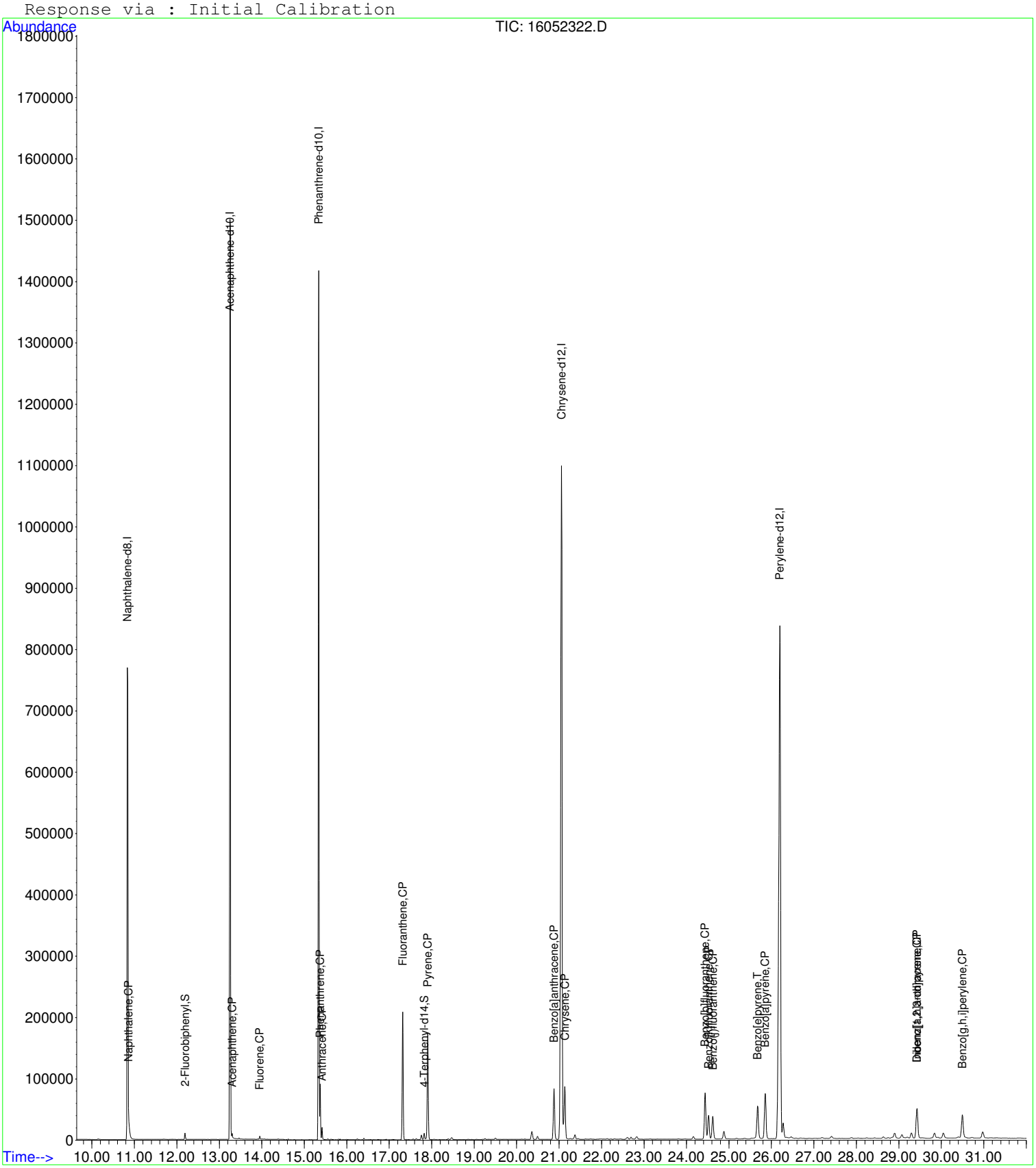
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.83 | 136 | 1098089 | 4000.00 | ug/kg | 95 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 933490 | 4000.00 | ug/kg | 81 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1546743 | 4000.00 | ug/kg | 76 |
| 17) Chrysene-d12 | 21.06 | 240 | 1841452 | 4000.00 | ug/kg | 81 |
| 20) Perylene-d12 | 26.20 | 264 | 1687139 | 4000.00 | ug/kg | 82 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 9617 | 35.32 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.88%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 13004 | 32.50 | ug/kg | -0.03 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.81%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 2128 | 7.75 | ug/kg | 99 |
| 9) Acenaphthene | 13.30 | 154 | 2892 | 11.59 | ug/kg | 97 |
| 10) Fluorene | 13.95 | 166 | 2444 | 8.06 | ug/kg | 99 |
| 12) Phenanthrene | 15.37 | 178 | 73885 | 181.64 | ug/kg | 99 |
| 13) Anthracene | 15.42 | 178 | 16436 | 42.69 | ug/kg | 98 |
| 14) Fluoranthene | 17.32 | 202 | 205601 | 488.44 | ug/kg | 98 |
| 15) Pyrene | 17.91 | 202 | 182123 | 416.51 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.88 | 228 | 122863 | 284.80 | ug/kg | 100 |
| 19) Chrysene | 21.13 | 228 | 132526 | 317.94 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.44 | 252 | 136744 | 307.52 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.52 | 252 | 68256 | 163.63 | ug/kg | 97 |
| 23) Benzo(j)fluoranthene | 24.62 | 252 | 62262 | 167.56 | ug/kg | 91 |
| 24) Benzo[e]pyrene | 25.67 | 252 | 99617 | 250.15 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.86 | 252 | 142225 | 349.50 | ug/kg | 100 |
| 26) Dibenz[a,h]anthracene | 29.42 | 278 | 18715 | 50.50 | ug/kg | 97 |
| 27) Indeno[1,2,3-cd]pyrene | 29.43 | 276 | 81300 | 183.88 | ug/kg | 90 |
| 28) Benzo[g,h,i]perylene | 30.50 | 276 | 74868 | 217.16 | ug/kg | 98 |

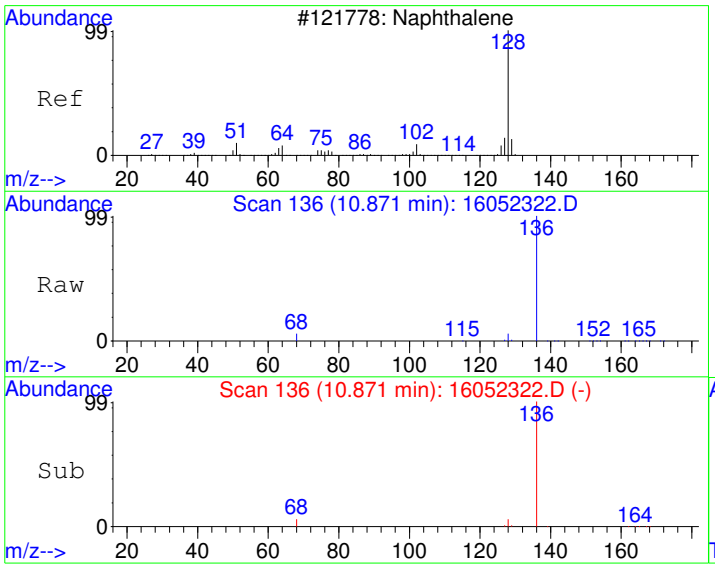
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052322.D Vial: 15
Acq On : 23 May 2016 10:20 pm Operator:
Sample : 1605121-19A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:06 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

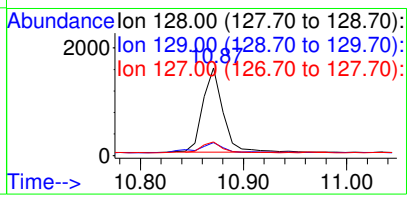


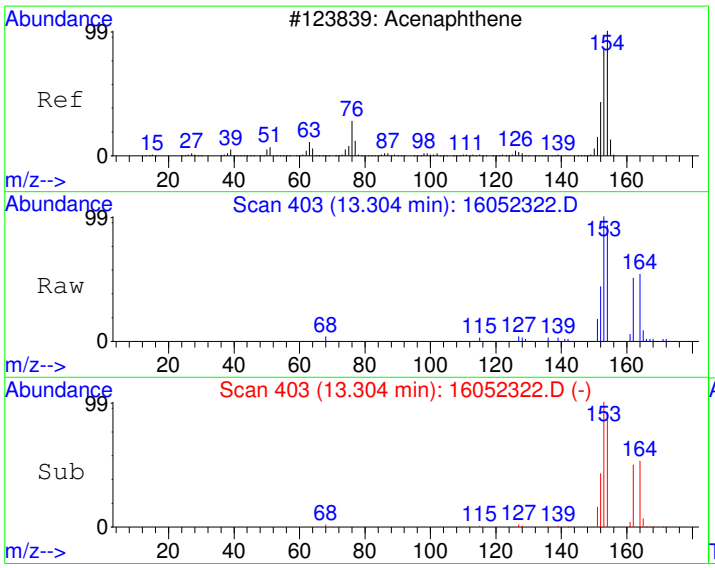



#2
Naphthalene
Concen: 7.75 ug/kg
RT: 10.87 min Scan# 136
Delta R.T. -0.01 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:128 Resp: 2128

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 11.5 | 0.0 | 41.1 |
| 127 | 12.6 | 0.0 | 42.4 |

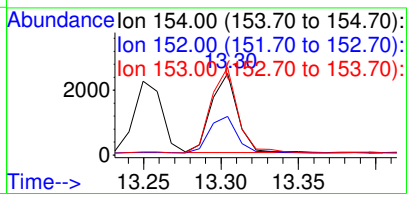


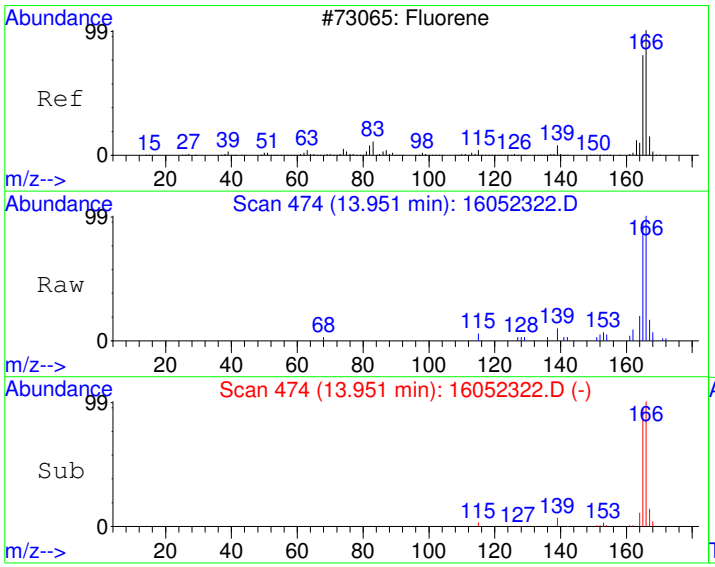




#9
Acenaphthene
Concen: 11.59 ug/kg
RT: 13.30 min Scan# 403
Delta R.T. -0.02 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:154 Resp: 2892

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 46.0 | 18.9 | 78.9 |
| 153 | 107.5 | 75.2 | 135.2 |

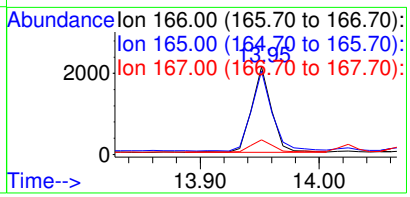


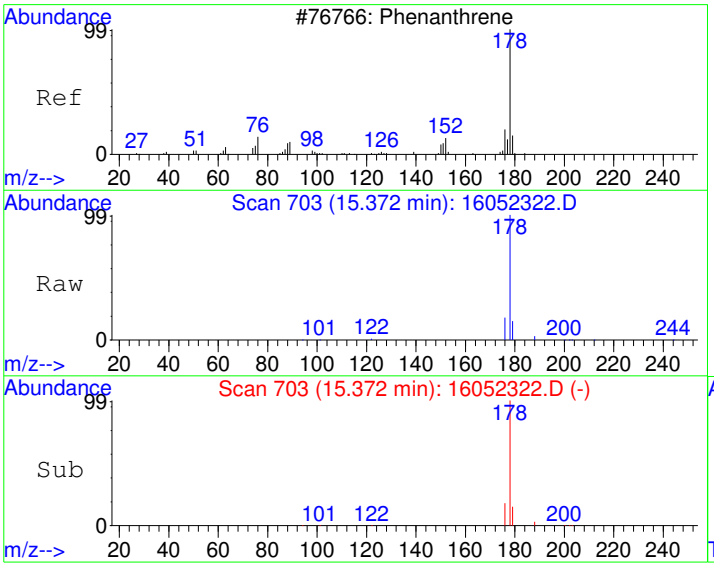




#10
Fluorene
Concen: 8.06 ug/kg
RT: 13.95 min Scan# 474
Delta R.T. -0.02 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:166 Resp: 2444

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 93.2 | 61.8 | 121.8 |
| 167 | 14.2 | 0.0 | 43.6 |

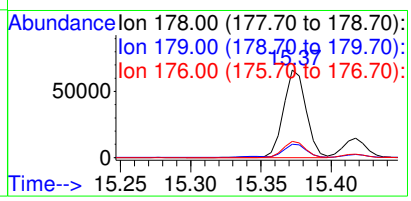


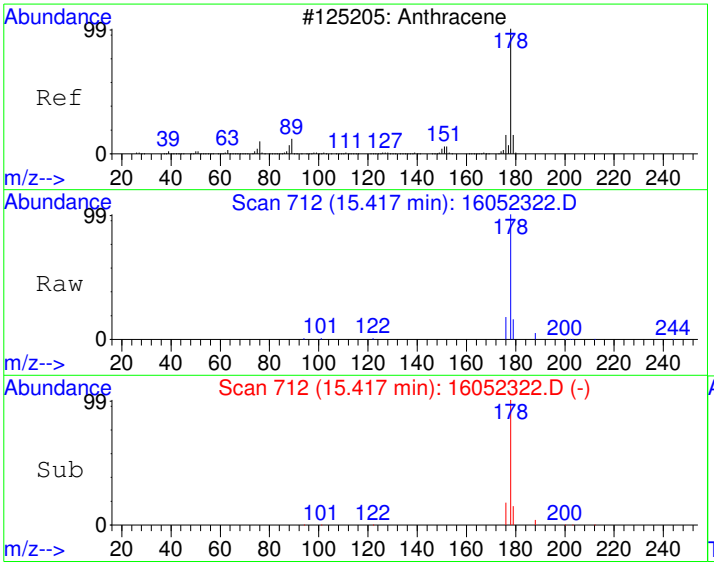



#12
Phenanthrene
Concen: 181.64 ug/kg
RT: 15.37 min Scan# 703
Delta R.T. -0.02 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:178 Resp: 73885

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.2 | 0.0 | 45.9 |
| 176 | 18.4 | 0.0 | 48.5 |

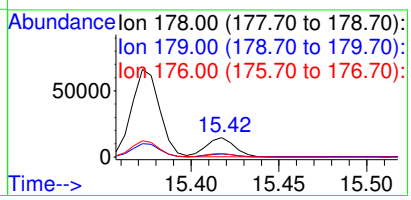


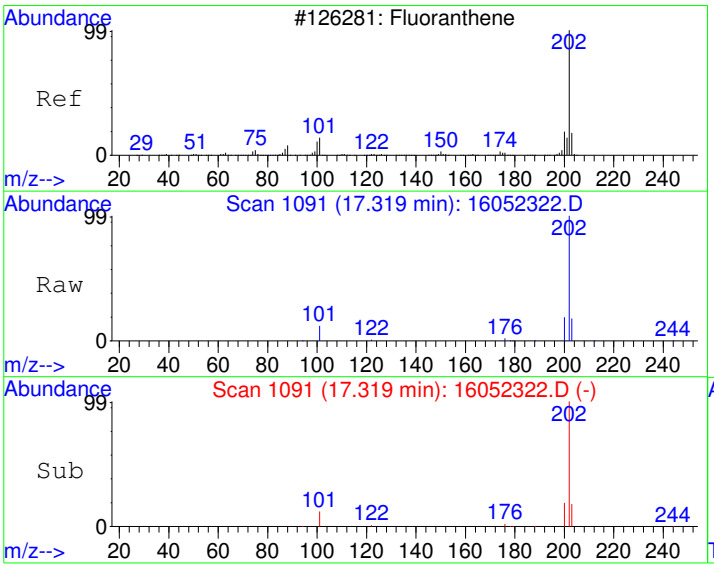




#13
Anthracene
Concen: 42.69 ug/kg
RT: 15.42 min Scan# 712
Delta R.T. -0.02 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:178 Resp: 16436

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 14.9 | 0.0 | 45.9 |
| 176 | 17.7 | 0.0 | 48.2 |

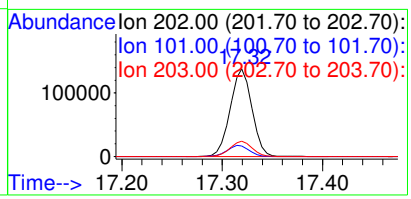


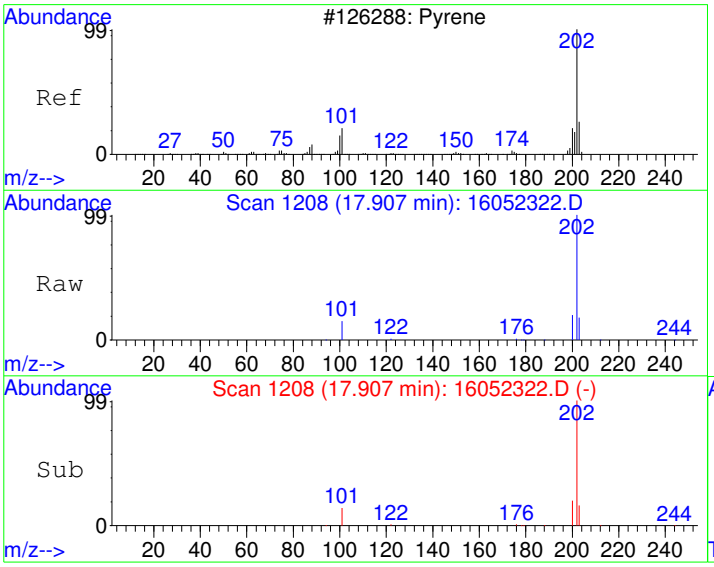




#14
Fluoranthene
Concen: 488.44 ug/kg
RT: 17.32 min Scan# 1091
Delta R.T. -0.02 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:202 Resp: 205601

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 12.0 | 0.0 | 43.0 |
| 203 | 17.5 | 0.0 | 47.9 |

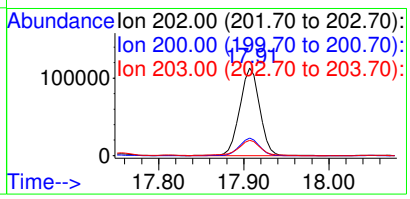


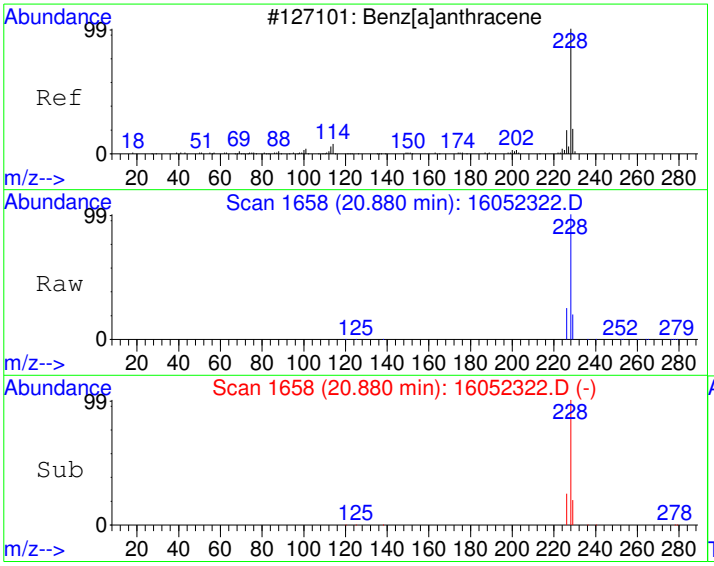



#15
Pyrene
Concen: 416.51 ug/kg
RT: 17.91 min Scan# 1208
Delta R.T. -0.03 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:202 Resp: 182123

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 200 | 19.9 | 0.0 | 50.0 |
| 203 | 17.6 | 0.0 | 48.0 |

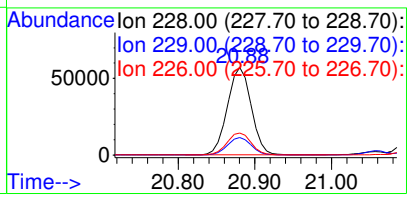


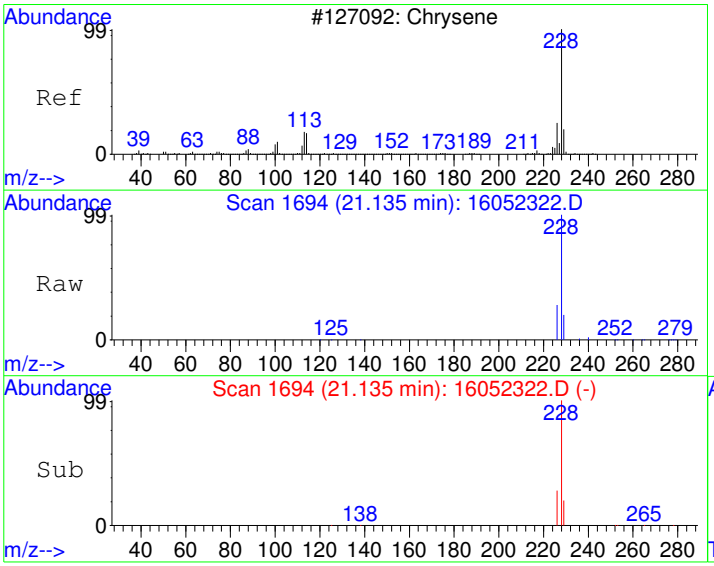




#18
Benzo[a]anthracene
Concen: 284.80 ug/kg
RT: 20.88 min Scan# 1658
Delta R.T. -0.03 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:228 Resp: 122863

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.8 | 0.0 | 50.1 |
| 226 | 25.1 | 0.0 | 55.2 |

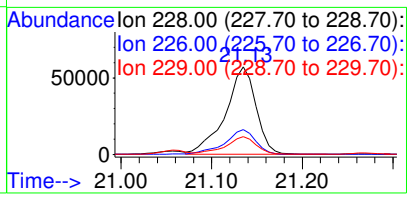


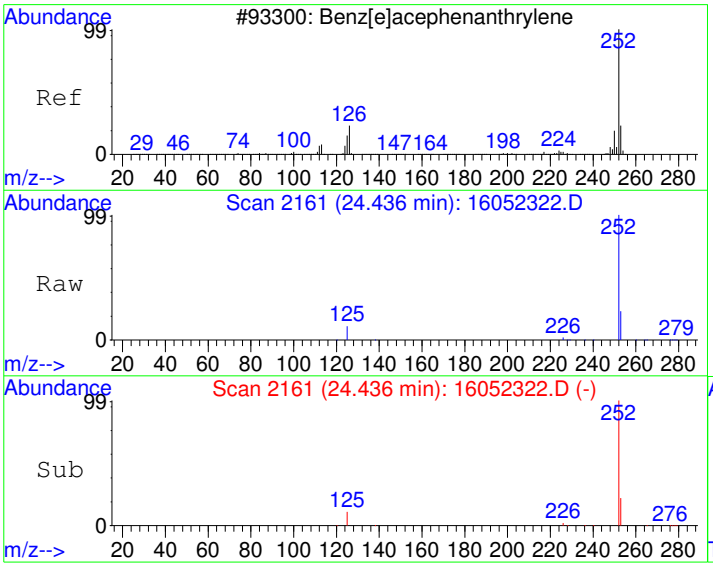




#19
Chrysene
Concen: 317.94 ug/kg
RT: 21.13 min Scan# 1694
Delta R.T. -0.03 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:228 Resp: 132526

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.2 | 0.0 | 58.1 |
| 229 | 20.1 | 0.0 | 50.1 |

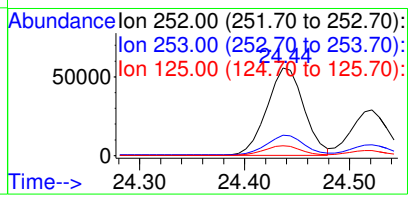


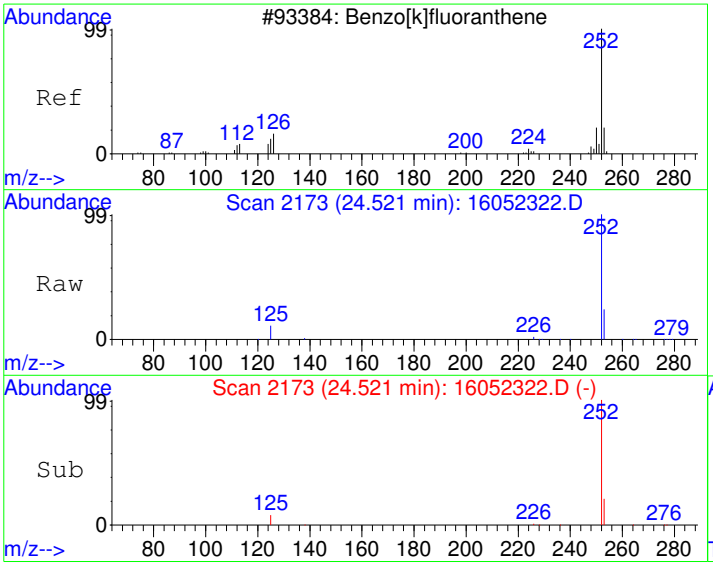



#21
Benzo[b]fluoranthene
Concen: 307.52 ug/kg
RT: 24.44 min Scan# 2161
Delta R.T. -0.05 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:252 Resp: 136744

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.4 | 0.0 | 52.2 |
| 125 | 11.2 | 0.0 | 41.0 |

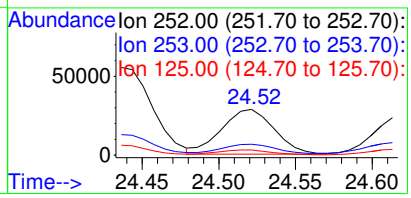


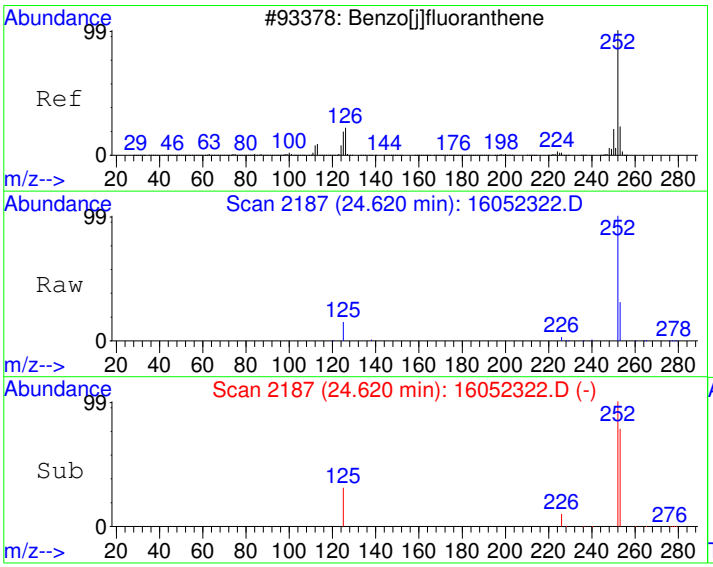




#22
Benzo[k]fluoranthene
Concen: 163.63 ug/kg
RT: 24.52 min Scan# 2173
Delta R.T. -0.05 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:252 Resp: 68256

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 20.5 | 2.1 | 42.1 |
| 125 | 10.3 | 0.0 | 31.3 |

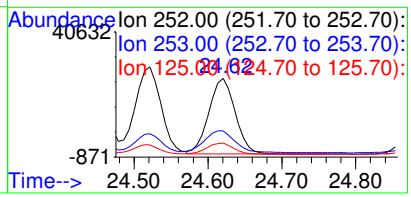


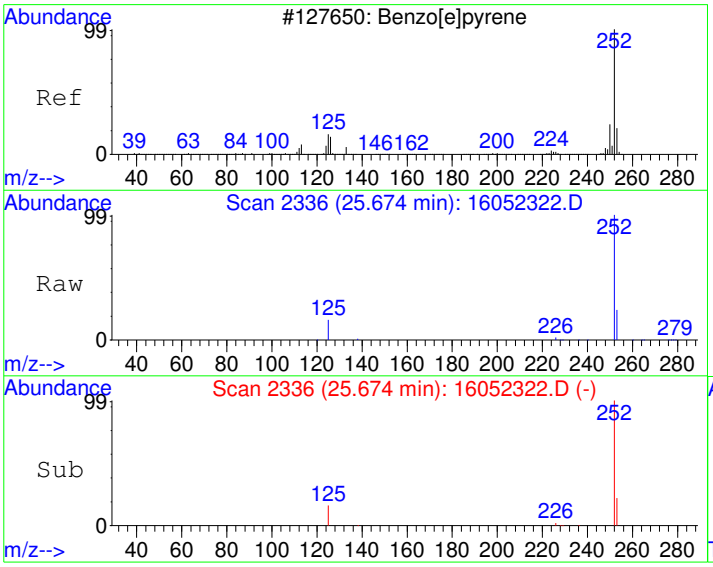




#23
Benzo(j)fluoranthene
Concen: 167.56 ug/kg
RT: 24.62 min Scan# 2187
Delta R.T. -0.05 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:252 Resp: 62262

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 28.8 | 2.1 | 42.1 |
| 125 | 14.6 | 0.0 | 34.4 |

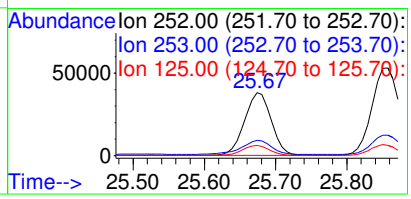


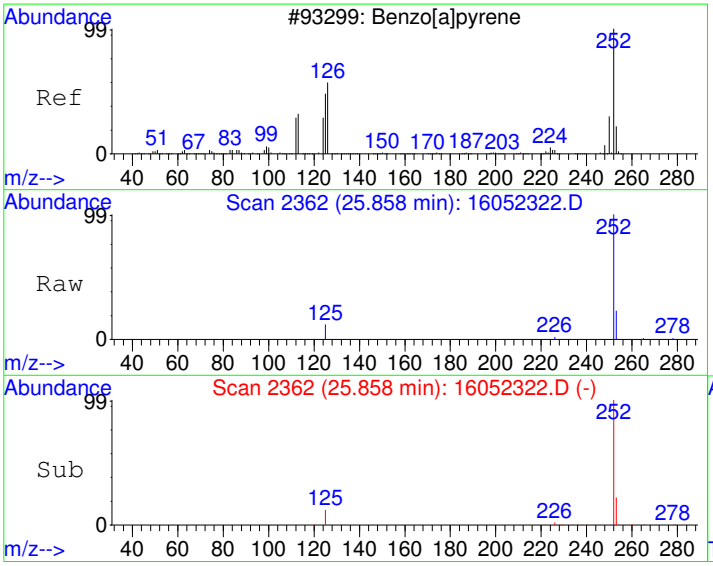



#24
Benzo[e]pyrene
Concen: 250.15 ug/kg
RT: 25.67 min Scan# 2336
Delta R.T. -0.05 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:252 Resp: 99617

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.2 | 2.2 | 42.2 |
| 125 | 16.0 | 0.0 | 36.1 |

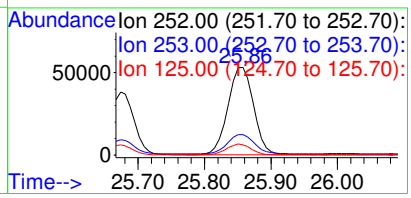


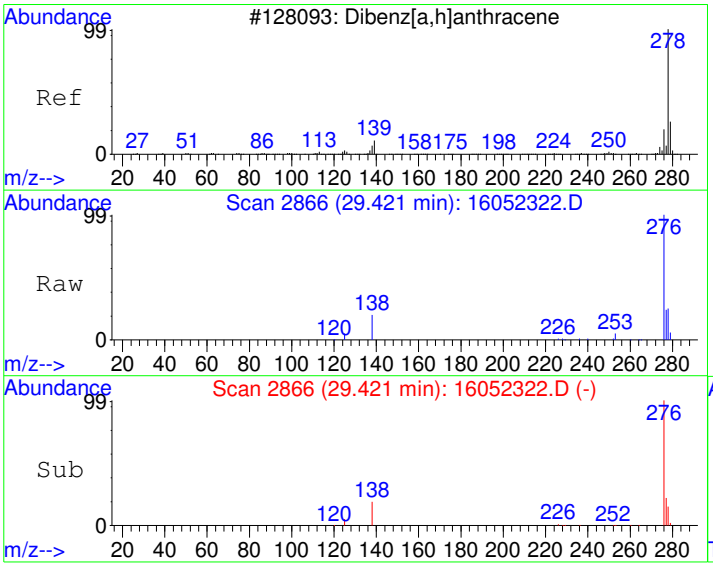




#25
Benzo[a]pyrene
Concen: 349.50 ug/kg
RT: 25.86 min Scan# 2362
Delta R.T. -0.04 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:252 Resp: 142225

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.0 | 1.9 | 41.9 |
| 125 | 11.6 | 0.0 | 31.7 |

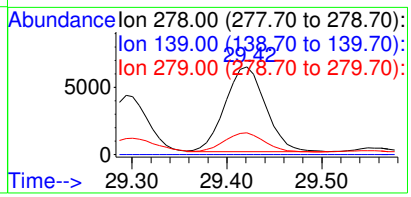


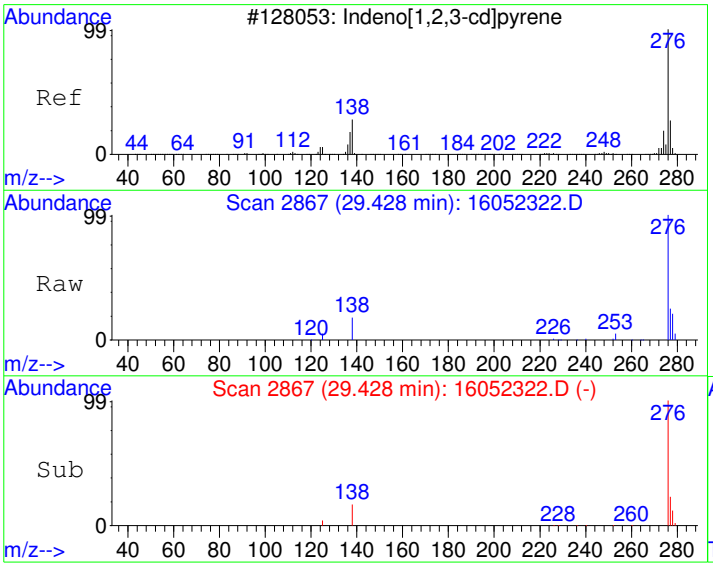




#26
Dibenz[a,h]anthracene
Concen: 50.50 ug/kg
RT: 29.42 min Scan# 2866
Delta R.T. -0.06 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:278 Resp: 18715

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 0.0 | 0.0 | 20.0 |
| 279 | 22.6 | 4.2 | 44.2 |

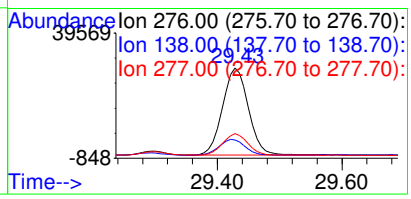


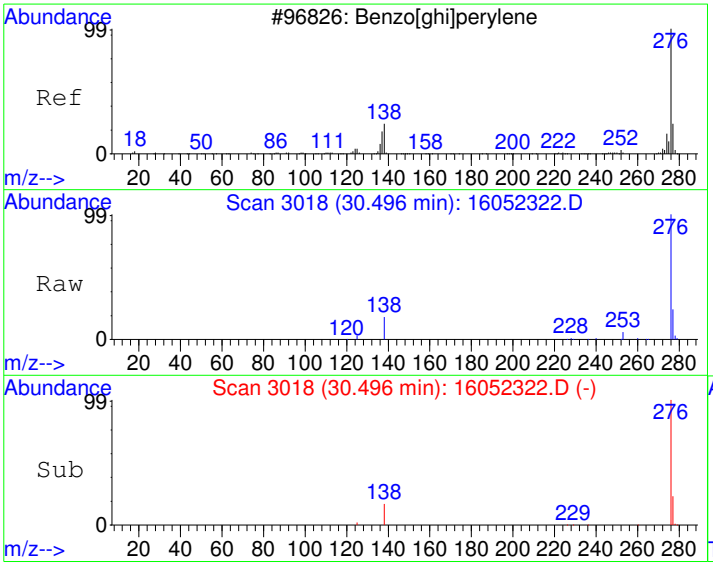



#27
Indeno[1,2,3-cd]pyrene
Concen: 183.88 ug/kg
RT: 29.43 min Scan# 2867
Delta R.T. -0.05 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:276 Resp: 81300

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 17.5 | 6.7 | 46.7 |
| 277 | 24.7 | 5.8 | 45.8 |

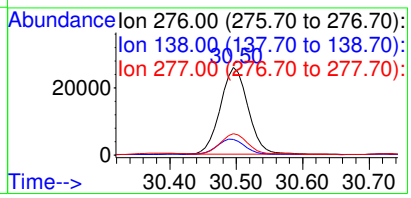



#28
Benzo[g,h,i]perylene
Concen: 217.16 ug/kg
RT: 30.50 min Scan# 3018
Delta R.T. -0.06 min
Lab File: 16052322.D
Acq: 23 May 2016 10:20 pm

Tgt Ion:276 Resp: 74868

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 17.3 | 0.0 | 39.1 |
| 277 | 24.1 | 4.0 | 44.0 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052323.D Vial: 16
Acq On : 23 May 2016 10:59 pm Operator:
Sample : 1605121-22AMS Inst : GC/MS #6
Misc : MS Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:02 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

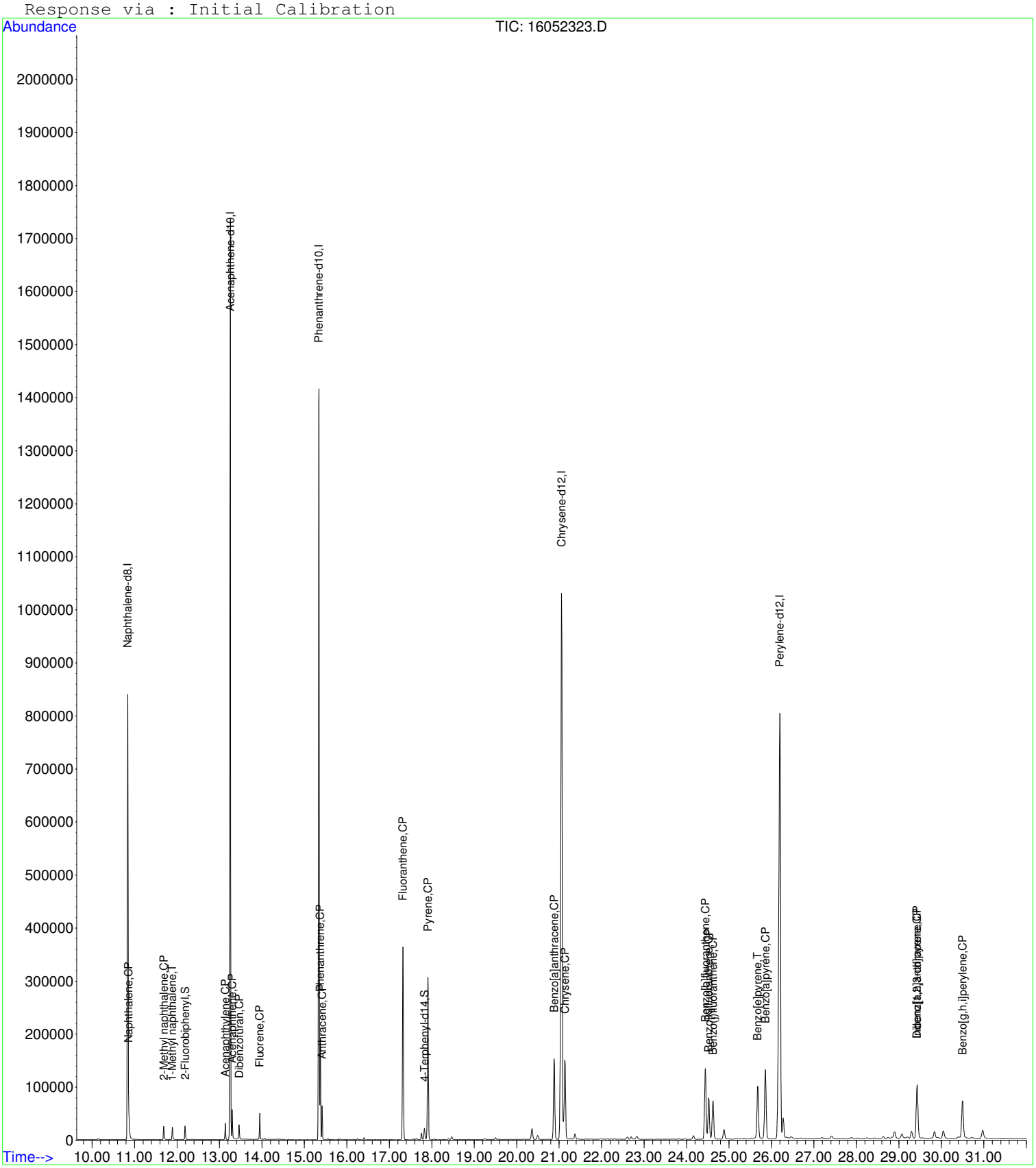
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1070572 | 4000.00 | ug/kg | 92 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 919536 | 4000.00 | ug/kg | 80 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1564679 | 4000.00 | ug/kg | 77 |
| 17) Chrysene-d12 | 21.06 | 240 | 1769917 | 4000.00 | ug/kg | 78 |
| 20) Perylene-d12 | 26.20 | 264 | 1605687 | 4000.00 | ug/kg | 78 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 20558 | 76.64 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.92%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 27869 | 68.84 | ug/kg | -0.03 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.72%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 20272 | 75.70 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.69 | 142 | 15361 | 64.94 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.89 | 142 | 13863 | 63.99 | ug/kg | 92 |
| 6) Dibenzofuran | 13.46 | 168 | 27224 | 78.99 | ug/kg | 98 |
| 8) Acenaphthylene | 13.14 | 152 | 26581 | 67.12 | ug/kg | 99 |
| 9) Acenaphthene | 13.30 | 154 | 20447 | 83.19 | ug/kg | 97 |
| 10) Fluorene | 13.95 | 166 | 23980 | 80.33 | ug/kg | 99 |
| 12) Phenanthrene | 15.37 | 178 | 153048 | 371.94 | ug/kg | 99 |
| 13) Anthracene | 15.42 | 178 | 53723 | 137.94 | ug/kg | 98 |
| 14) Fluoranthene | 17.32 | 202 | 357531 | 839.64 | ug/kg | 99 |
| 15) Pyrene | 17.91 | 202 | 322251 | 728.53 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.88 | 228 | 219060 | 528.30 | ug/kg | 99 |
| 19) Chrysene | 21.13 | 228 | 236092 | 589.30 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.44 | 252 | 248064 | 586.16 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.52 | 252 | 134654 | 339.17 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.63 | 252 | 124411 | 351.79 | ug/kg | 95 |
| 24) Benzo[e]pyrene | 25.68 | 252 | 184313 | 486.31 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.86 | 252 | 245546 | 634.00 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.42 | 278 | 51768 | 146.77 | ug/kg | 97 |
| 27) Indeno[1,2,3-cd]pyrene | 29.43 | 276 | 154310 | 366.72 | ug/kg | 89 |
| 28) Benzo[g,h,i]perylene | 30.50 | 276 | 140038 | 426.79 | ug/kg | 98 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052323.D Vial: 16
Acq On : 23 May 2016 10:59 pm Operator:
Sample : 1605121-22AMS Inst : GC/MS #6
Misc : MS Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:02 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052324.D Vial: 17
Acq On : 23 May 2016 11:39 pm Operator:
Sample : 1605121-22AMSD Inst : GC/MS #6
Misc : MSD Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:02 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

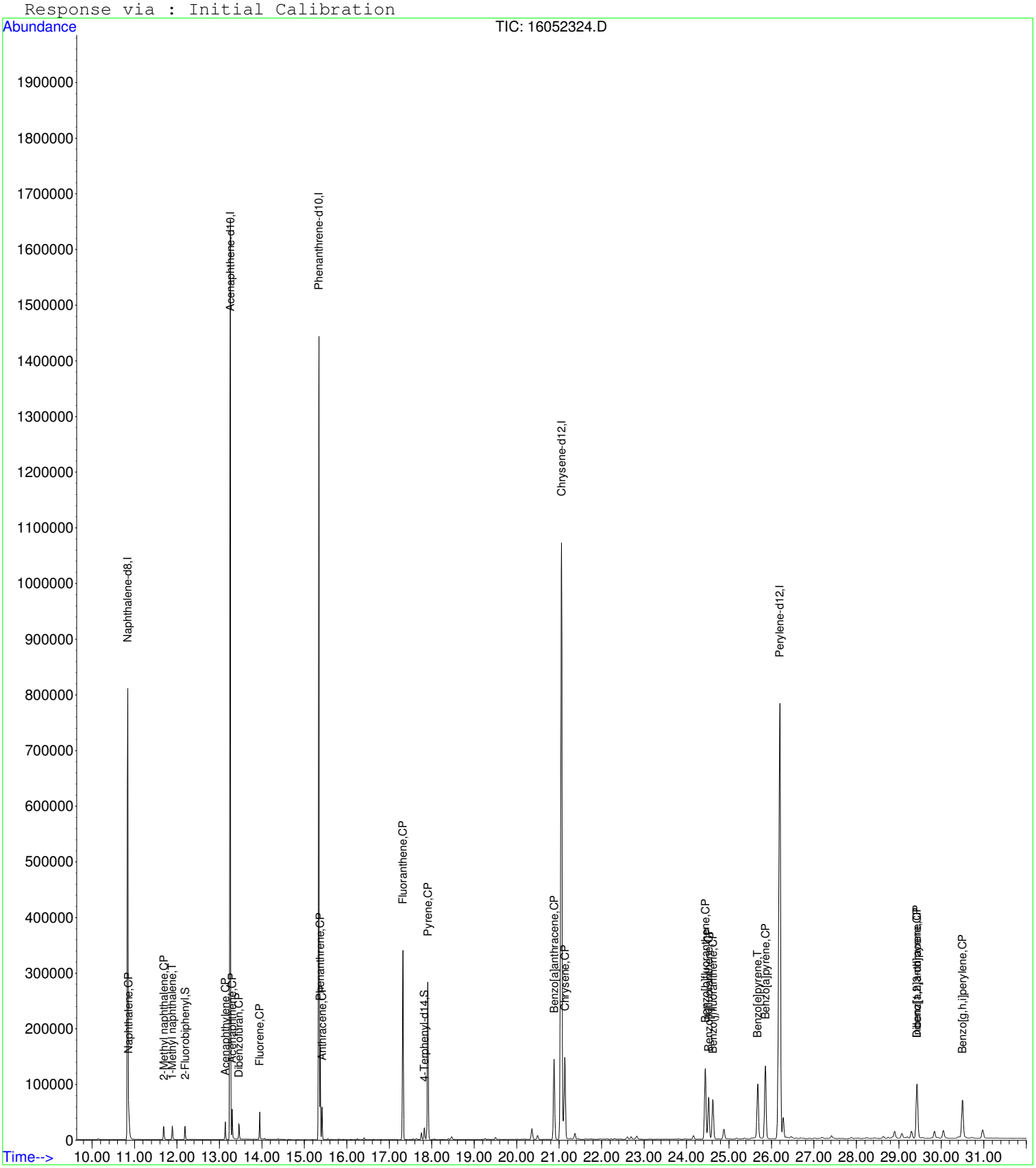
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1062593 | 4000.00 | ug/kg | 92 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 920817 | 4000.00 | ug/kg | 80 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1573766 | 4000.00 | ug/kg | 77 |
| 17) Chrysene-d12 | 21.06 | 240 | 1805663 | 4000.00 | ug/kg | 79 |
| 20) Perylene-d12 | 26.20 | 264 | 1630654 | 4000.00 | ug/kg | 79 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 19864 | 73.95 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.85%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 27145 | 66.67 | ug/kg | -0.03 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.67%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 20219 | 76.07 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.69 | 142 | 15577 | 66.35 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.89 | 142 | 13832 | 64.33 | ug/kg | 94 |
| 6) Dibenzofuran | 13.47 | 168 | 26944 | 78.07 | ug/kg | 99 |
| 8) Acenaphthylene | 13.14 | 152 | 26664 | 67.24 | ug/kg | 98 |
| 9) Acenaphthene | 13.30 | 154 | 20687 | 84.05 | ug/kg | 99 |
| 10) Fluorene | 13.95 | 166 | 23317 | 78.00 | ug/kg | 99 |
| 12) Phenanthrene | 15.37 | 178 | 136545 | 329.92 | ug/kg | 99 |
| 13) Anthracene | 15.42 | 178 | 49600 | 126.62 | ug/kg | 98 |
| 14) Fluoranthene | 17.32 | 202 | 330422 | 771.49 | ug/kg | 98 |
| 15) Pyrene | 17.91 | 202 | 300279 | 674.94 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.88 | 228 | 211236 | 499.35 | ug/kg | 99 |
| 19) Chrysene | 21.13 | 228 | 232650 | 569.21 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.44 | 252 | 239124 | 556.38 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.52 | 252 | 129935 | 322.28 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.62 | 252 | 120813 | 336.39 | ug/kg | 94 |
| 24) Benzo[e]pyrene | 25.67 | 252 | 180319 | 468.49 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.86 | 252 | 237166 | 602.99 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.42 | 278 | 50310 | 140.45 | ug/kg | 98 |
| 27) Indeno[1,2,3-cd]pyrene | 29.43 | 276 | 150159 | 351.39 | ug/kg | 91 |
| 28) Benzo[g,h,i]perylene | 30.50 | 276 | 135639 | 407.06 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052324.D Vial: 17
Acq On : 23 May 2016 11:39 pm Operator:
Sample : 1605121-22AMSD Inst : GC/MS #6
Misc : MSD Multiplr: 10.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:02 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052326.D Vial: 19
Acq On : 24 May 2016 12:54 am Operator:
Sample : ICV-160523 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:02 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

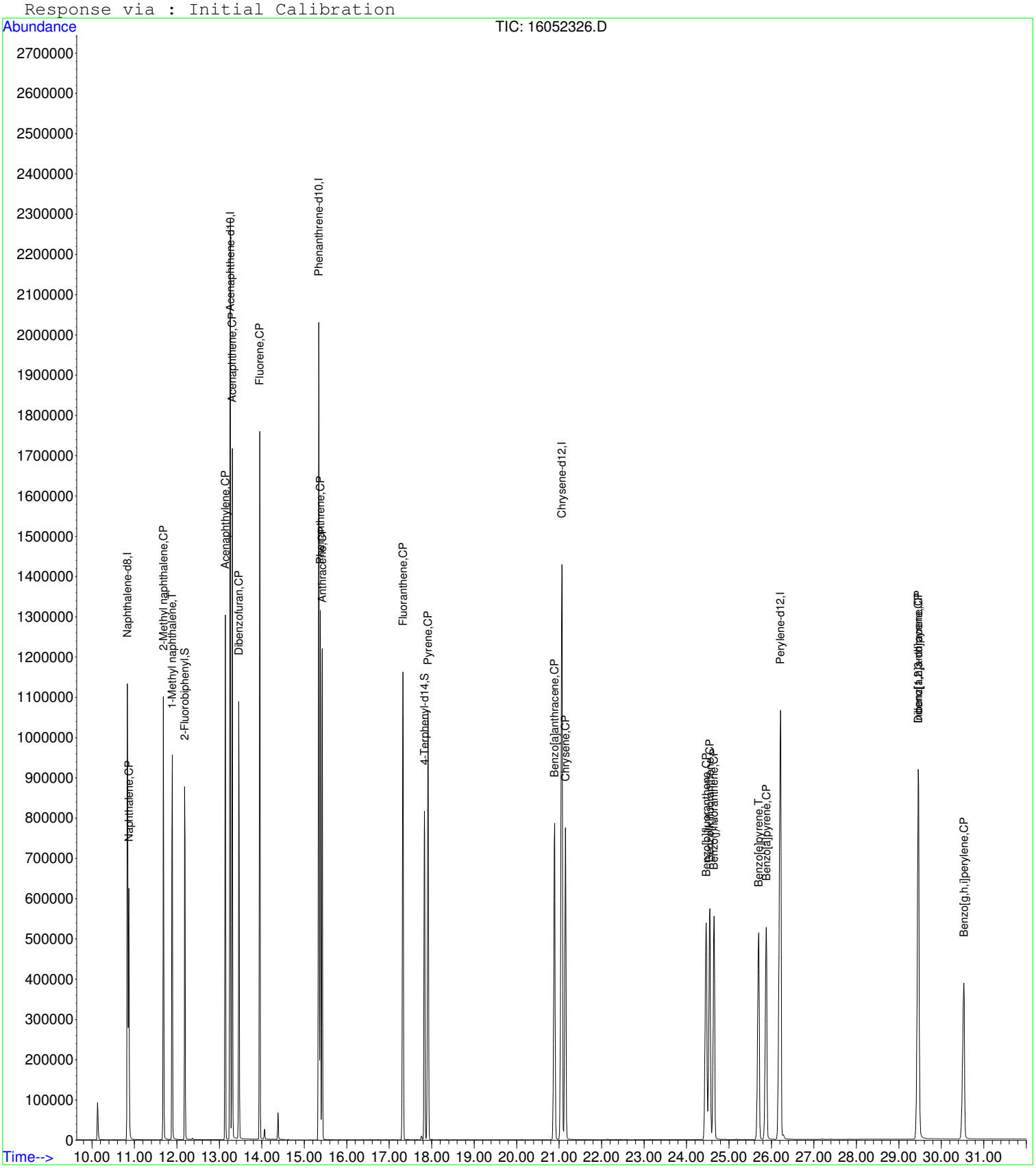
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.83 | 136 | 1401069 | 4000.00 | ug/kg | 121 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 1313743 | 4000.00 | ug/kg | 114 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 2308514 | 4000.00 | ug/kg | 113 |
| 17) Chrysene-d12 | 21.06 | 240 | 2611945 | 4000.00 | ug/kg | 115 |
| 20) Perylene-d12 | 26.21 | 264 | 2296748 | 4000.00 | ug/kg | 112 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.18 | 172 | 721129 | 1881.72 | ug/kg | -0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 47.04% | | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 1067046 | 1786.59 | ug/kg | -0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 44.66% | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 649376 | 1852.93 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.68 | 142 | 551192 | 1780.51 | ug/kg | 97 |
| 4) 1-Methyl naphthalene | 11.89 | 142 | 495678 | 1748.28 | ug/kg | 99 |
| 6) Dibenzofuran | 13.46 | 168 | 966090 | 1962.09 | ug/kg | 98 |
| 8) Acenaphthylene | 13.14 | 152 | 1103513 | 1950.44 | ug/kg | 99 |
| 9) Acenaphthene | 13.30 | 154 | 660543 | 1880.97 | ug/kg | 100 |
| 10) Fluorene | 13.95 | 166 | 845381 | 1982.22 | ug/kg | 100 |
| 12) Phenanthrene | 15.38 | 178 | 1084557 | 1786.45 | ug/kg | 100 |
| 13) Anthracene | 15.42 | 178 | 1020446 | 1775.84 | ug/kg | 99 |
| 14) Fluoranthene | 17.32 | 202 | 1165717 | 1855.51 | ug/kg | 100 |
| 15) Pyrene | 17.91 | 202 | 1174733 | 1800.05 | ug/kg | 100 |
| 18) Benzo[a]anthracene | 20.89 | 228 | 1177855 | 1924.87 | ug/kg | 100 |
| 19) Chrysene | 21.15 | 228 | 1057854 | 1789.24 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.46 | 252 | 1163359 | 1921.82 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.55 | 252 | 1063669 | 1873.09 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.65 | 252 | 966041 | 1909.73 | ug/kg | 99 |
| 24) Benzo[e]pyrene | 25.70 | 252 | 1020987 | 1883.33 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.88 | 252 | 1023983 | 1848.41 | ug/kg | 100 |
| 26) Dibenz[a,h]anthracene | 29.46 | 278 | 887052 | 1758.19 | ug/kg | 100 |
| 27) Indeno[1,2,3-cd]pyrene | 29.46 | 276 | 1025310 | 1703.51 | ug/kg | 95 |
| 28) Benzo[g,h,i]perylene | 30.53 | 276 | 822930 | 1753.41 | ug/kg | 98 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052326.D Vial: 19
Acq On : 24 May 2016 12:54 am Operator:
Sample : ICV-160523 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:02 2016 Quant Results File: PP160421.RES

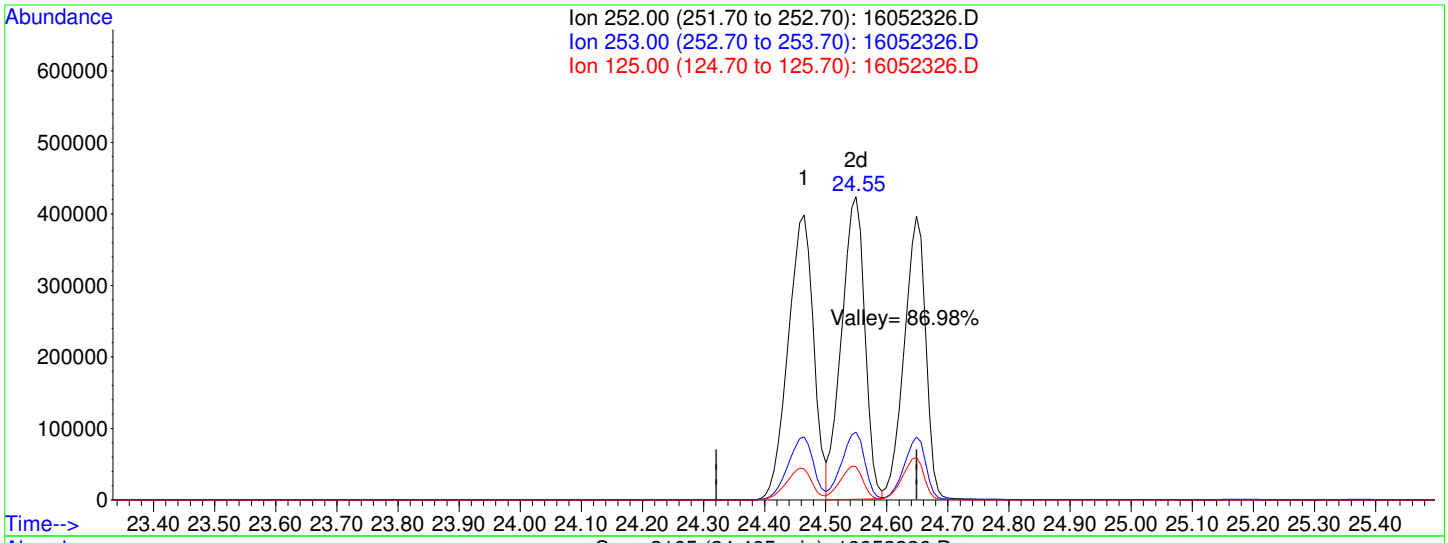
Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

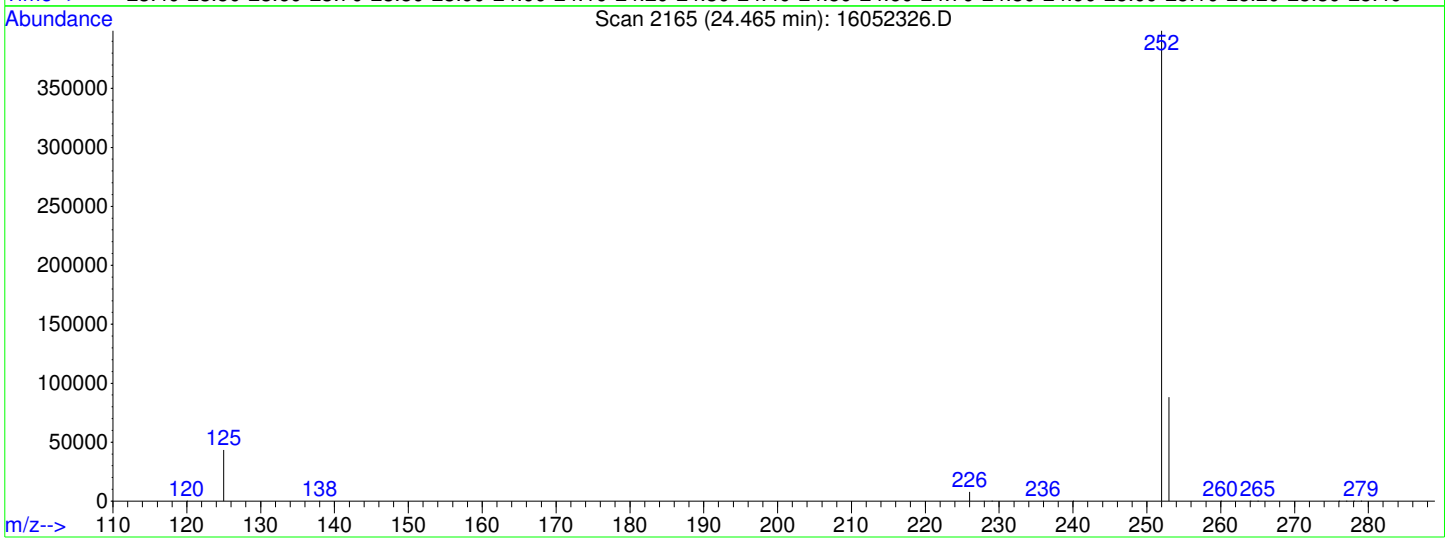


Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\160523\16052326.D Vial: 19
Acq On : 24 May 2016 12:54 am Operator:
Sample : ICV-160523 Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 1:27 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Multiple Level Calibration




TIC: 16052326.D

(21) Benzo[b]fluoranthene (CP)

24.46min 1921.82ug/kg

response 1163359

| Ion | Exp% | Act% |
|---|---|---|
| 252.00 | 100 | 100 |
| 253.00 | 22.20 | 21.96 |
| 125.00 | 11.00 | 10.84 |
| 0.00 | 0.00 | 0.00 |

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052328.D Vial: 21
Acq On : 24 May 2016 2:13 am Operator:
Sample : SB-160523 Inst : GC/MS #6
Misc : SBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:02 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

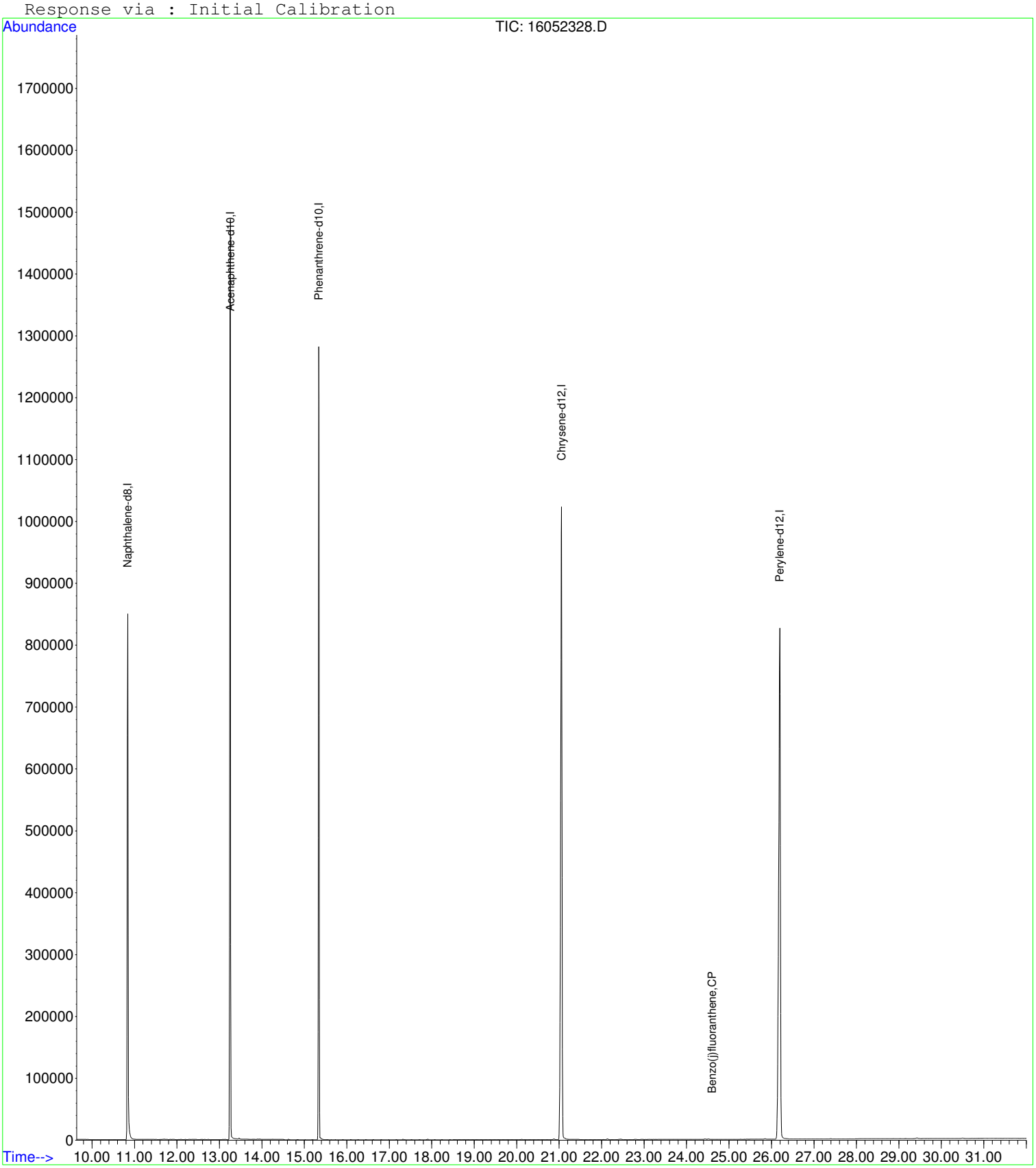
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1112829 | 4000.00 | ug/kg | 96 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 890247 | 4000.00 | ug/kg | 77 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1388146 | 4000.00 | ug/kg | 68 |
| 17) Chrysene-d12 | 21.06 | 240 | 1710629 | 4000.00 | ug/kg | 75 |
| 20) Perylene-d12 | 26.20 | 264 | 1554419 | 4000.00 | ug/kg | 75 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.20 | 172 | 52 | 0.20 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.01%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 113 | 0.31 | ug/kg | -0.03 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.01%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 23) Benzo(j)fluoranthene | 24.60 | 252 | 55 | 0.16 | ug/kg | 91 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052328.D Vial: 21
Acq On : 24 May 2016 2:13 am Operator:
Sample : SB-160523 Inst : GC/MS #6
Misc : SBLK Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:02 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052329.D Vial: 22
Acq On : 24 May 2016 2:53 am Operator:
Sample : 1605121-16A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:06 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

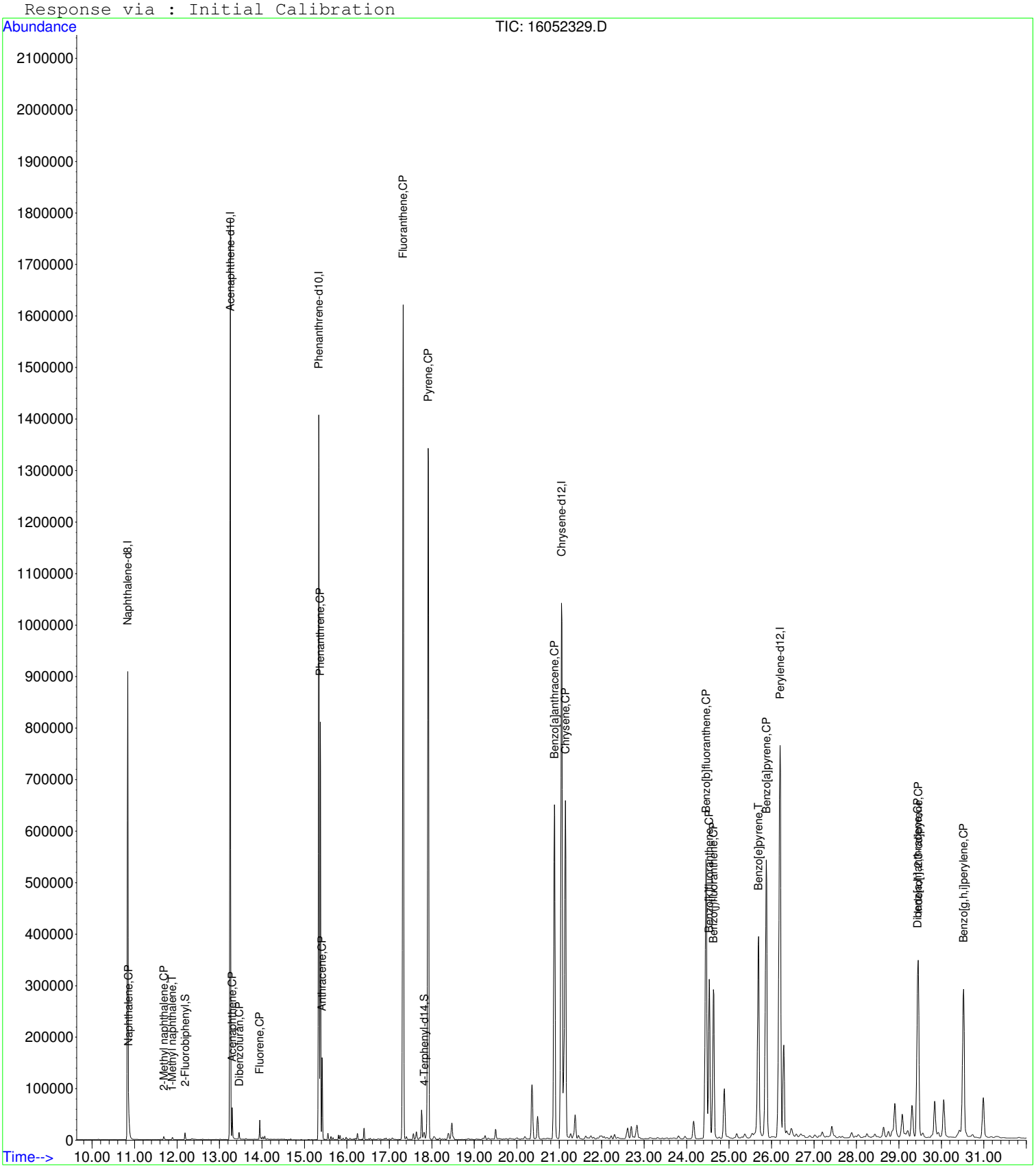
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1148144 | 4000.00 | ug/kg | 99 |
| 5) Acenaphthene-d10 | 13.25 | 164 | 959520 | 4000.00 | ug/kg | 83 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1548423 | 4000.00 | ug/kg | 76 |
| 17) Chrysene-d12 | 21.06 | 240 | 1765830 | 4000.00 | ug/kg | 78 |
| 20) Perylene-d12 | 26.20 | 264 | 1577538 | 4000.00 | ug/kg | 77 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 10655 | 38.07 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.95%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 13851 | 34.58 | ug/kg | -0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.86%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 18340 | 63.86 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.69 | 142 | 3933 | 15.50 | ug/kg | 97 |
| 4) 1-Methyl naphthalene | 11.89 | 142 | 2702 | 11.63 | ug/kg | 91 |
| 6) Dibenzofuran | 13.46 | 168 | 13219 | 36.76 | ug/kg | 99 |
| 9) Acenaphthene | 13.30 | 154 | 22373 | 87.23 | ug/kg | 98 |
| 10) Fluorene | 13.95 | 166 | 17275 | 55.46 | ug/kg | 97 |
| 12) Phenanthrene | 15.37 | 178 | 656398 | 1611.94 | ug/kg | 99 |
| 13) Anthracene | 15.41 | 178 | 138788 | 360.09 | ug/kg | 99 |
| 14) Fluoranthene | 17.33 | 202 | 1675588 | 3976.31 | ug/kg | 100 |
| 15) Pyrene | 17.92 | 202 | 1470917 | 3360.28 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.89 | 228 | 990040 | 2393.19 | ug/kg | 99 |
| 19) Chrysene | 21.15 | 228 | 1072152 | 2682.34 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.46 | 252 | 1066663 | 2565.42 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.53 | 252 | 518742 | 1329.95 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.63 | 252 | 482335 | 1388.22 | ug/kg | 91 |
| 24) Benzo[e]pyrene | 25.69 | 252 | 752072 | 2019.75 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.88 | 252 | 1060456 | 2786.96 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.43 | 278 | 151459 | 437.06 | ug/kg | 98 |
| 27) Indeno[1,2,3-cd]pyrene | 29.46 | 276 | 640349 | 1548.96 | ug/kg | 90 |
| 28) Benzo[g,h,i]perylene | 30.52 | 276 | 599095 | 1858.44 | ug/kg | 99 |

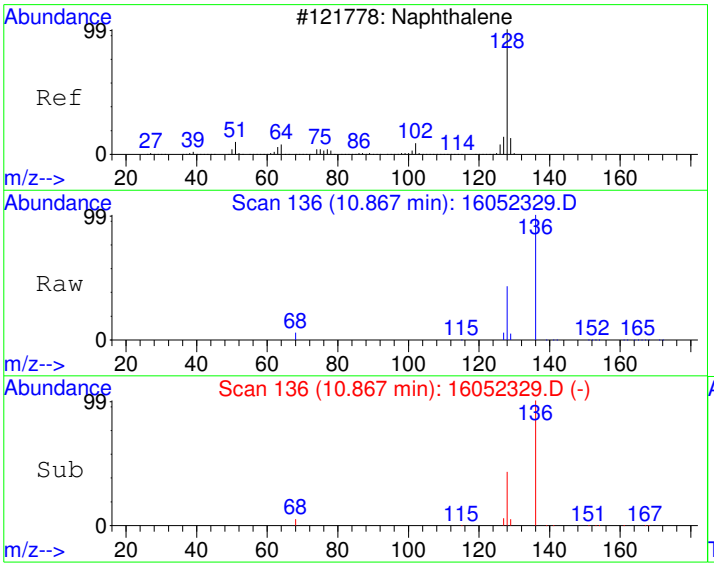
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052329.D Vial: 22
Acq On : 24 May 2016 2:53 am Operator:
Sample : 1605121-16A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:06 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

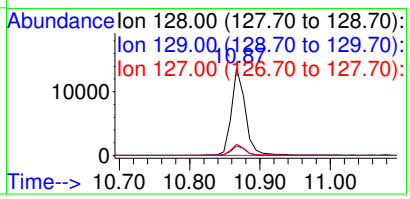


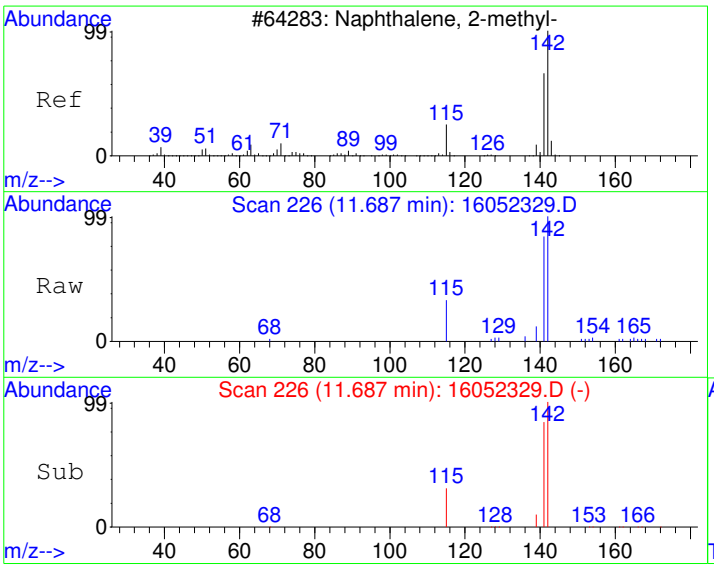



#2
Naphthalene
Concen: 63.86 ug/kg
RT: 10.87 min Scan# 136
Delta R.T. -0.01 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:128 Resp: 18340

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 10.9 | 0.0 | 41.1 |
| 127 | 12.8 | 0.0 | 42.4 |

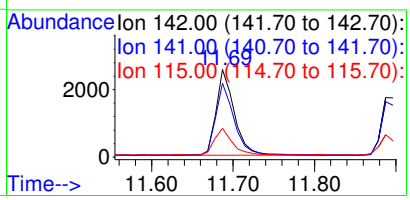


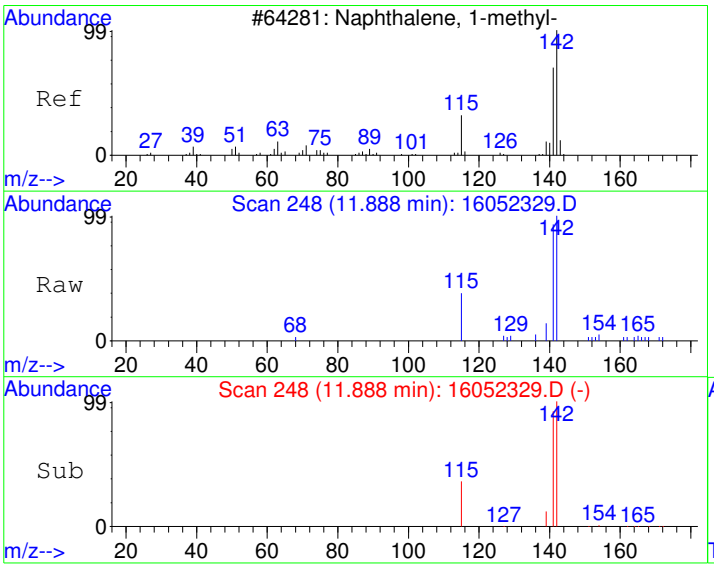




#3
2-Methyl naphthalene
Concen: 15.50 ug/kg
RT: 11.69 min Scan# 226
Delta R.T. -0.01 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:142 Resp: 3933

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 84.0 | 54.4 | 114.4 |
| 115 | 31.0 | 0.0 | 56.0 |

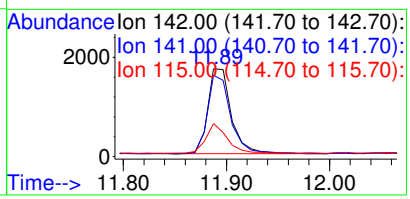


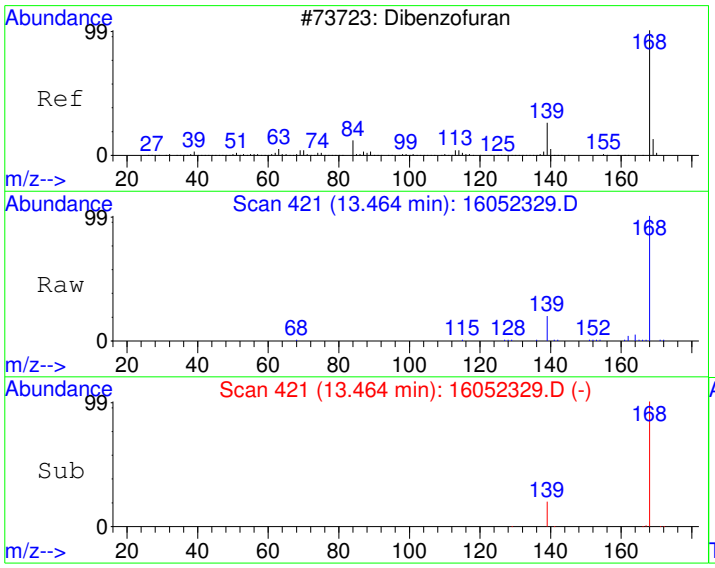




#4
1-Methyl naphthalene
Concen: 11.63 ug/kg
RT: 11.89 min Scan# 248
Delta R.T. -0.01 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:142 Resp: 2702

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 92.3 | 56.5 | 116.5 |
| 115 | 35.0 | 0.0 | 55.0 |

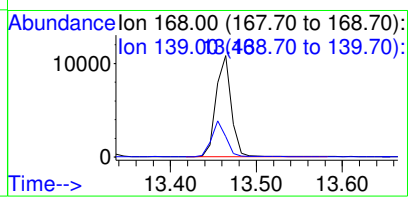


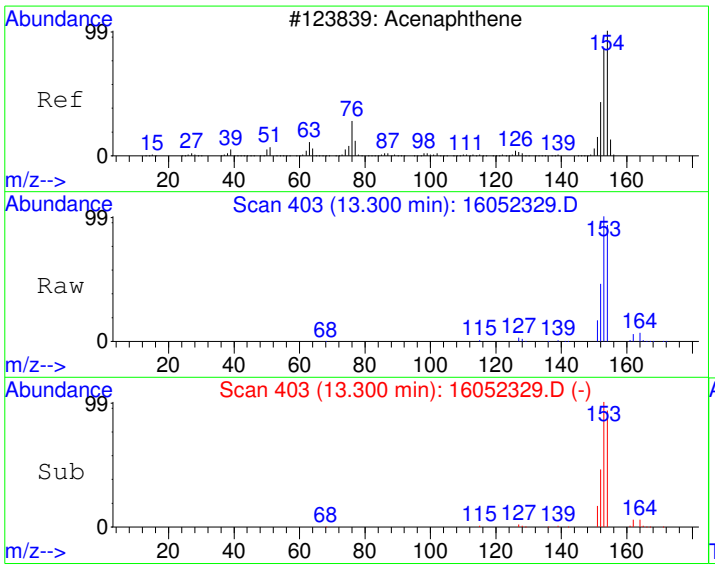



#6
Dibenzofuran
Concen: 36.76 ug/kg
RT: 13.46 min Scan# 421
Delta R.T. -0.01 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:168 Resp: 13219

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 34.0 | 27.0 | 40.4 |

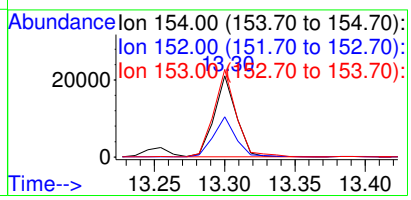


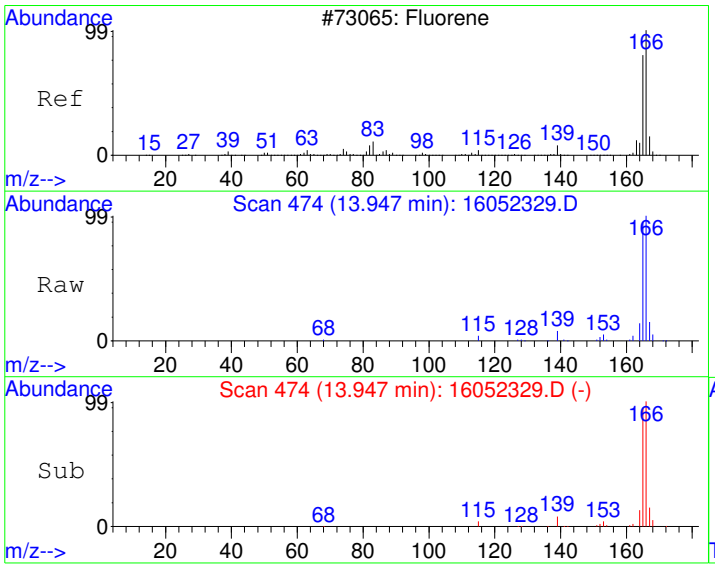




#9
Acenaphthene
Concen: 87.23 ug/kg
RT: 13.30 min Scan# 403
Delta R.T. -0.02 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:154 Resp: 22373

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 49.6 | 18.9 | 78.9 |
| 153 | 108.0 | 75.2 | 135.2 |

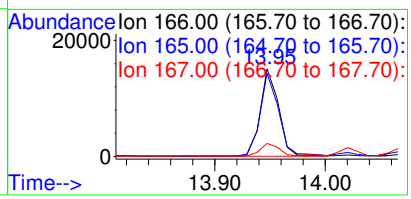


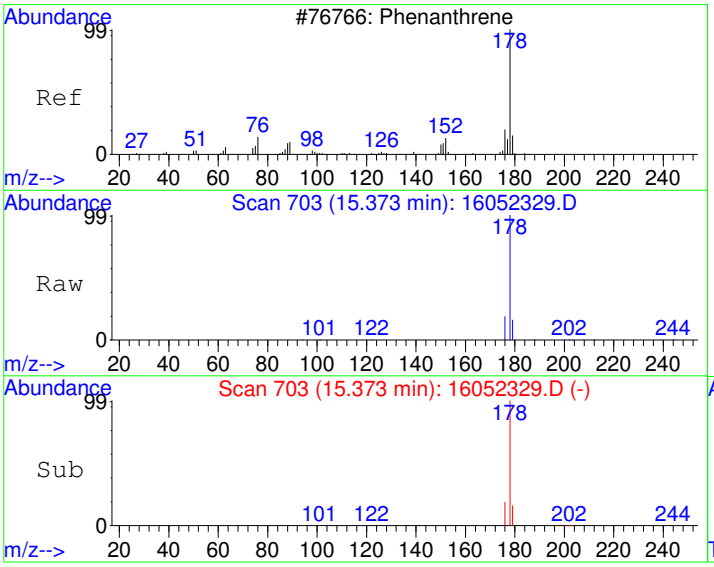




#10
Fluorene
Concen: 55.46 ug/kg
RT: 13.95 min Scan# 474
Delta R.T. -0.02 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:166 Resp: 17275

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 94.7 | 61.8 | 121.8 |
| 167 | 14.6 | 0.0 | 43.6 |

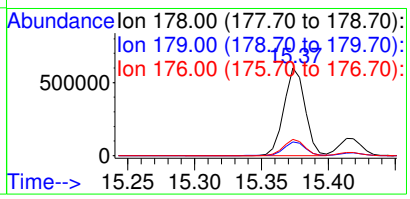


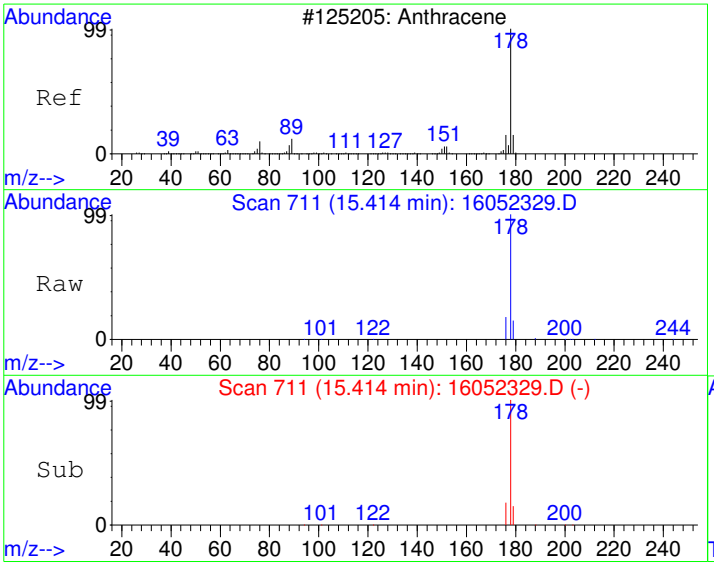



#12
Phenanthrene
Concen: 1611.94 ug/kg
RT: 15.37 min Scan# 703
Delta R.T. -0.02 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:178 Resp: 656398

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.6 | 0.0 | 45.9 |
| 176 | 18.7 | 0.0 | 48.5 |

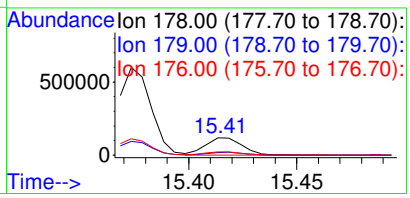


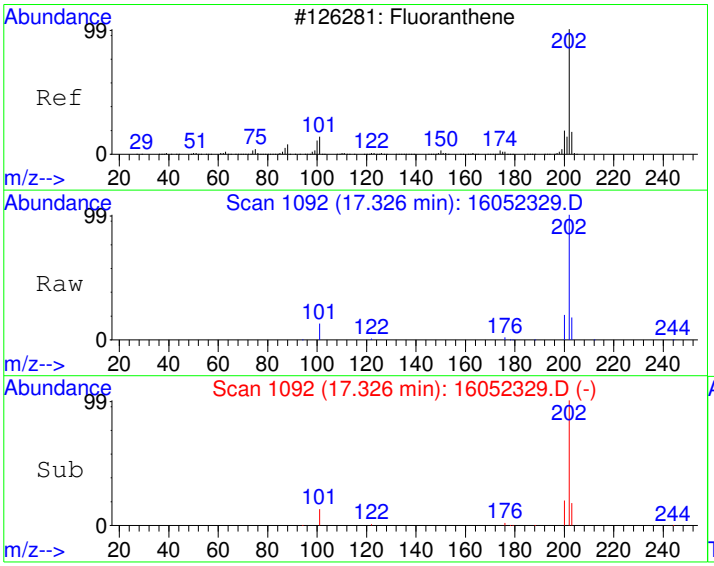




#13
Anthracene
Concen: 360.09 ug/kg
RT: 15.41 min Scan# 711
Delta R.T. -0.02 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:178 Resp: 138788

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.1 | 0.0 | 45.9 |
| 176 | 18.1 | 0.0 | 48.2 |

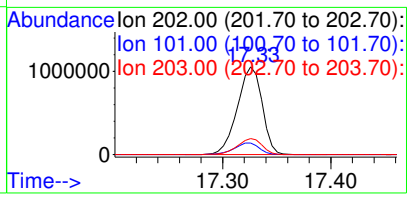


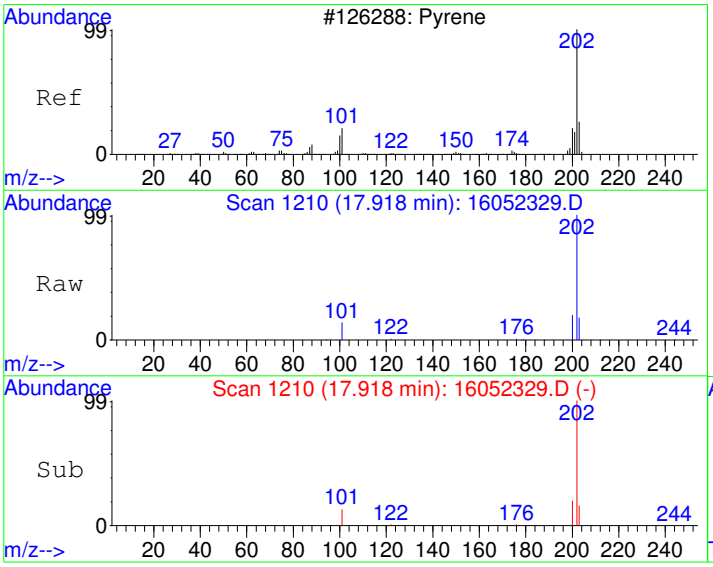




#14
Fluoranthene
Concen: 3976.31 ug/kg
RT: 17.33 min Scan# 1092
Delta R.T. -0.01 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:202 Resp: 1675588

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 13.1 | 0.0 | 43.0 |
| 203 | 18.1 | 0.0 | 47.9 |

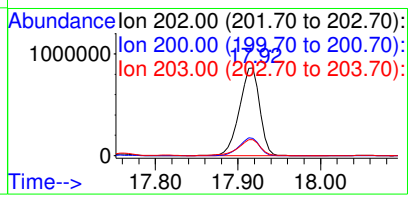


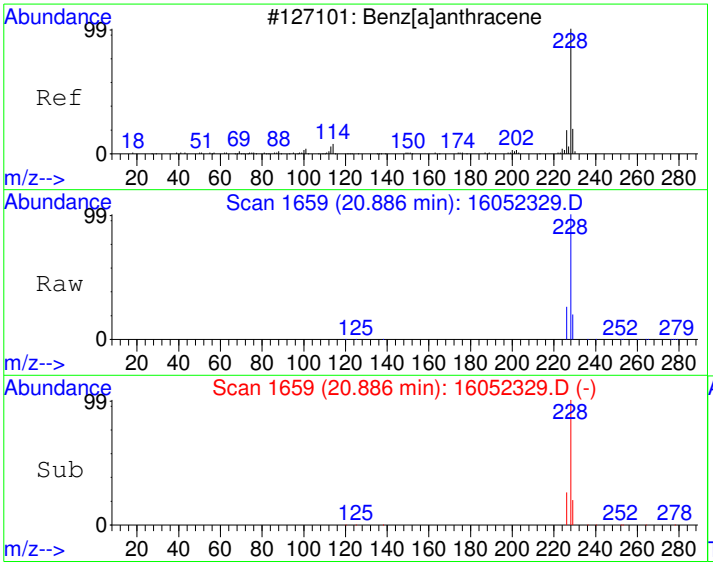



#15
Pyrene
Concen: 3360.28 ug/kg
RT: 17.92 min Scan# 1210
Delta R.T. -0.01 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:202 Resp: 1470917

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 200 | 19.8 | 0.0 | 50.0 |
| 203 | 18.3 | 0.0 | 48.0 |

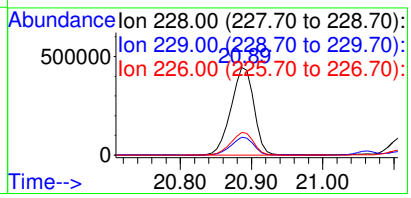


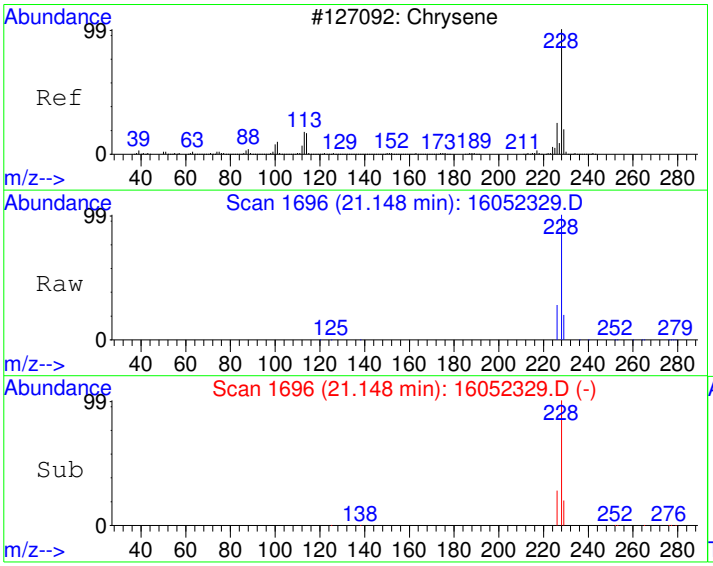




#18
Benzo[a]anthracene
Concen: 2393.19 ug/kg
RT: 20.89 min Scan# 1659
Delta R.T. -0.03 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:228 Resp: 990040

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 20.2 | 0.0 | 50.1 |
| 226 | 25.8 | 0.0 | 55.2 |

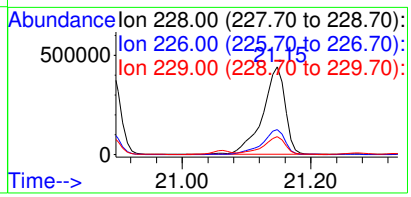


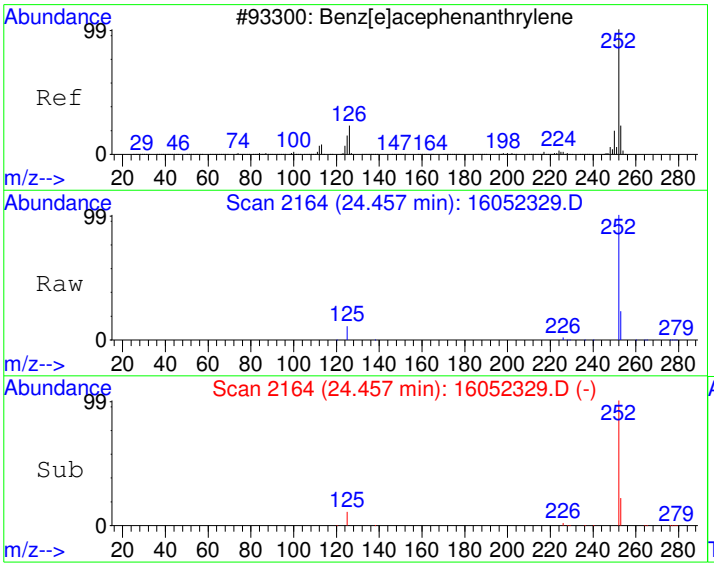




#19
Chrysene
Concen: 2682.34 ug/kg
RT: 21.15 min Scan# 1696
Delta R.T. -0.02 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:228 Resp: 1072152

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.5 | 0.0 | 58.1 |
| 229 | 20.2 | 0.0 | 50.1 |

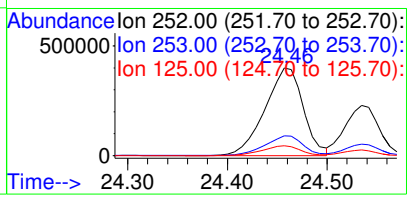


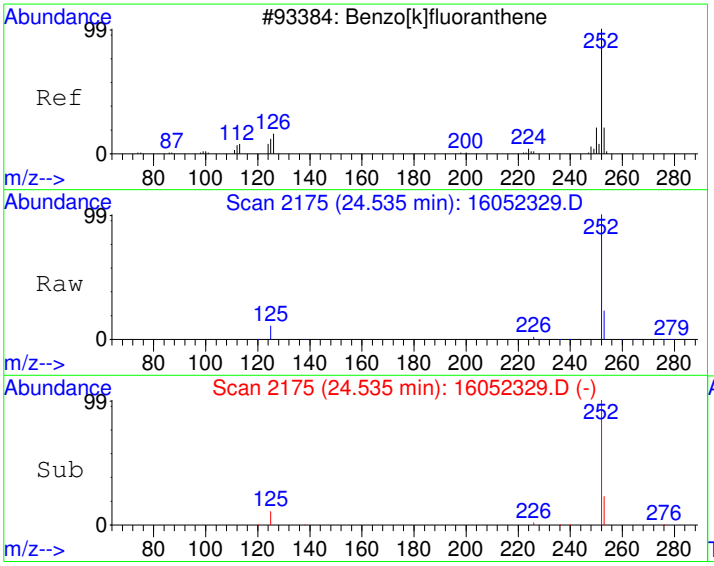



#21
Benzo[b]fluoranthene
Concen: 2565.42 ug/kg
RT: 24.46 min Scan# 2164
Delta R.T. -0.03 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:252 Resp: 1066663

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.3 | 0.0 | 52.2 |
| 125 | 11.4 | 0.0 | 41.0 |

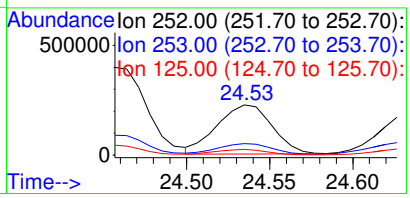


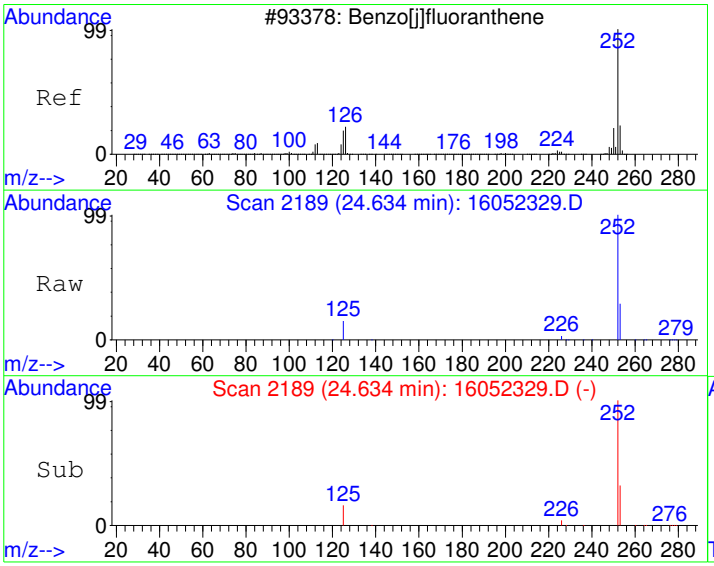




#22
Benzo[k]fluoranthene
Concen: 1329.95 ug/kg
RT: 24.53 min Scan# 2175
Delta R.T. -0.04 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:252 Resp: 518742

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.3 | 2.1 | 42.1 |
| 125 | 11.0 | 0.0 | 31.3 |

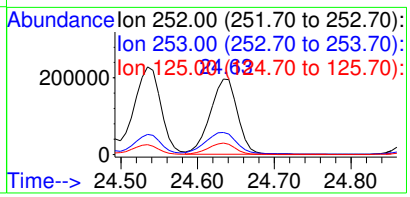


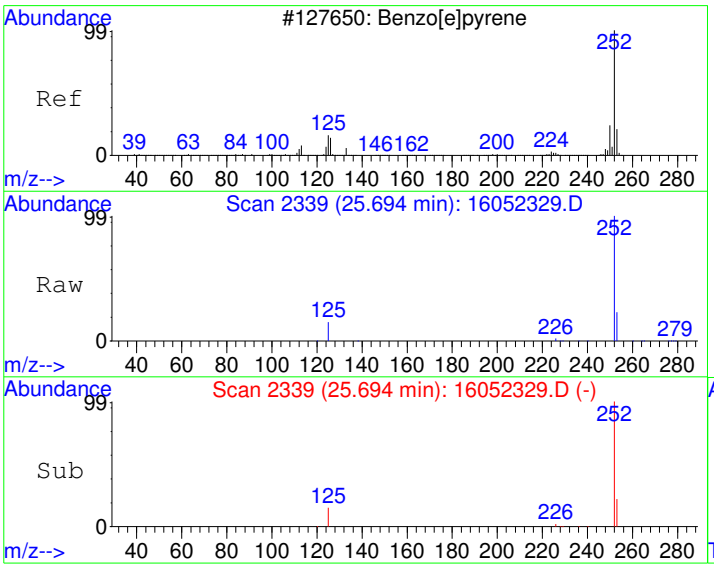




#23
Benzo(j)fluoranthene
Concen: 1388.22 ug/kg
RT: 24.63 min Scan# 2189
Delta R.T. -0.04 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:252 Resp: 482335

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 29.0 | 2.1 | 42.1 |
| 125 | 15.1 | 0.0 | 34.4 |

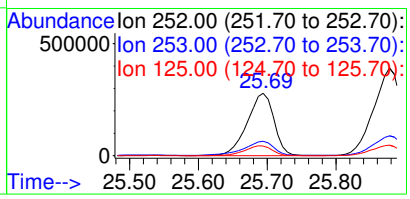


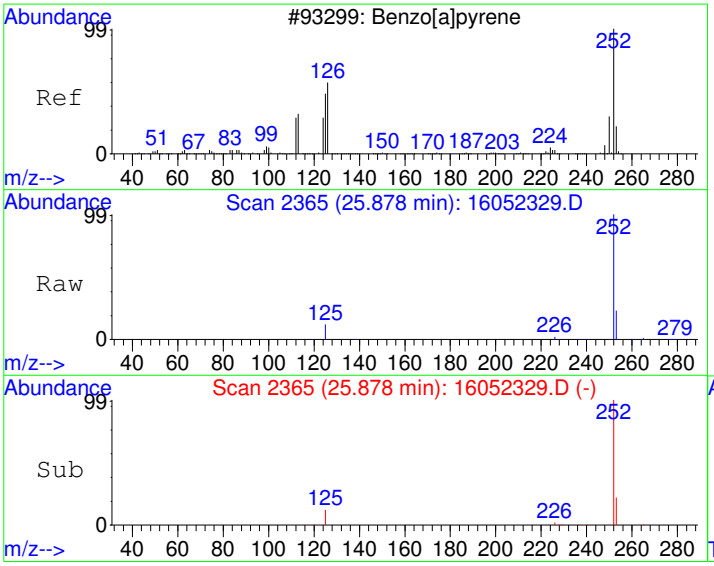



#24
Benzo[e]pyrene
Concen: 2019.75 ug/kg
RT: 25.69 min  Scan# 2339
Delta R.T.  -0.03 min
Lab File:  16052329.D
Acq: 24 May 2016  2:53 am

Tgt Ion:252 Resp:  752072

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.4 | 2.2 | 42.2 |
| 125 | 15.4 | 0.0 | 36.1 |

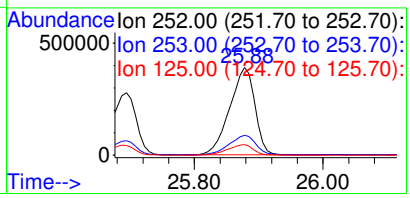


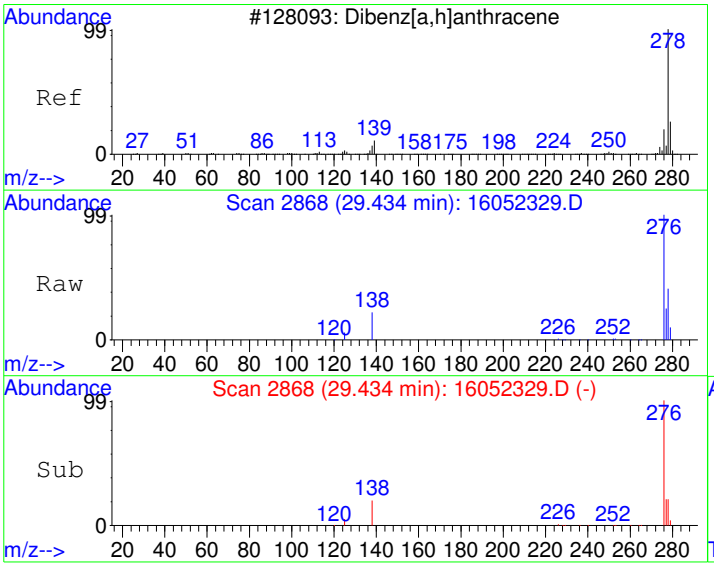




#25
Benzo[a]pyrene
Concen: 2786.96 ug/kg
RT: 25.88 min  Scan# 2365
Delta R.T.  -0.02 min
Lab File:  16052329.D
Acq: 24 May 2016  2:53 am

Tgt Ion:252 Resp: 1060456

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.4 | 1.9 | 41.9 |
| 125 | 11.9 | 0.0 | 31.7 |

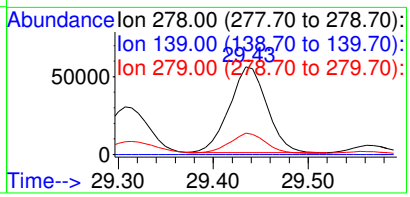


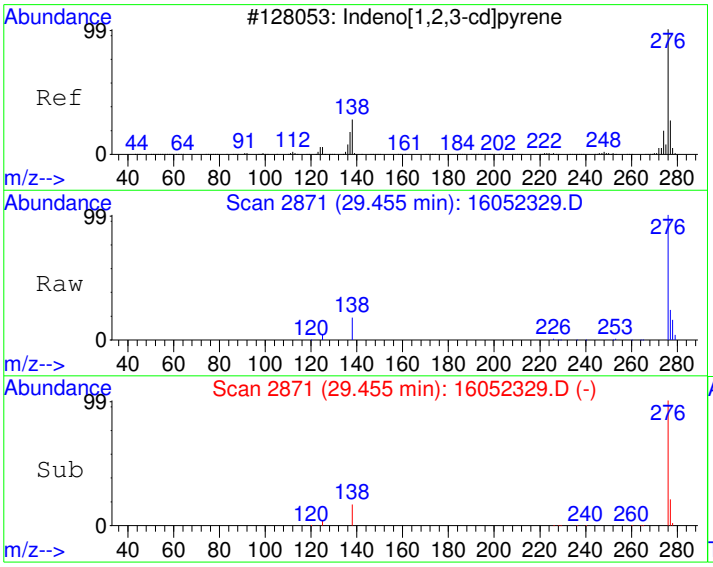




#26
Dibenz[a,h]anthracene
Concen:  437.06 ug/kg
RT: 29.43 min  Scan# 2868
Delta R.T.  -0.04 min
Lab File:  16052329.D
Acq: 24 May 2016  2:53 am

Tgt Ion:278 Resp:  151459

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 0.0 | 0.0 | 20.0 |
| 279 | 23.3 | 4.2 | 44.2 |

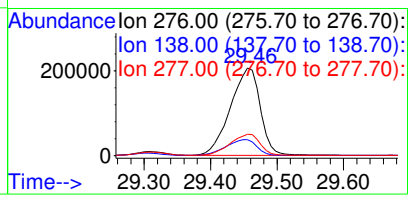


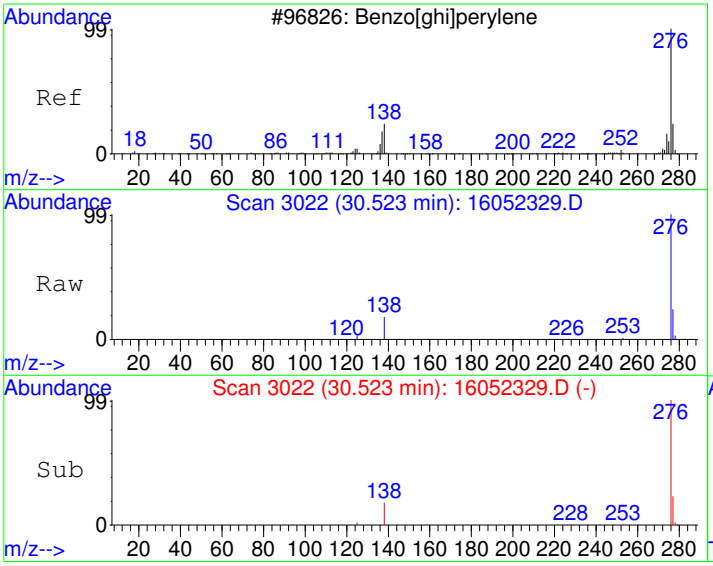



#27
Indeno[1,2,3-cd]pyrene
Concen: 1548.96 ug/kg
RT: 29.46 min Scan# 2871
Delta R.T. -0.02 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:276 Resp: 640349

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 18.3 | 6.7 | 46.7 |
| 277 | 24.2 | 5.8 | 45.8 |

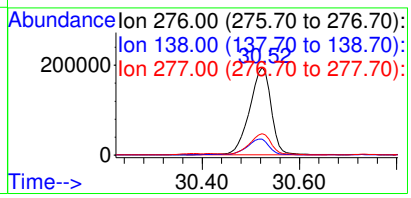



#28
Benzo[g,h,i]perylene
Concen: 1858.44 ug/kg
RT: 30.52 min Scan# 3022
Delta R.T. -0.03 min
Lab File: 16052329.D
Acq: 24 May 2016 2:53 am

Tgt Ion:276 Resp: 599095

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 18.2 | 0.0 | 39.1 |
| 277 | 24.1 | 4.0 | 44.0 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052330.D Vial: 23
Acq On : 24 May 2016 3:33 am Operator:
Sample : 1605121-18A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:06 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

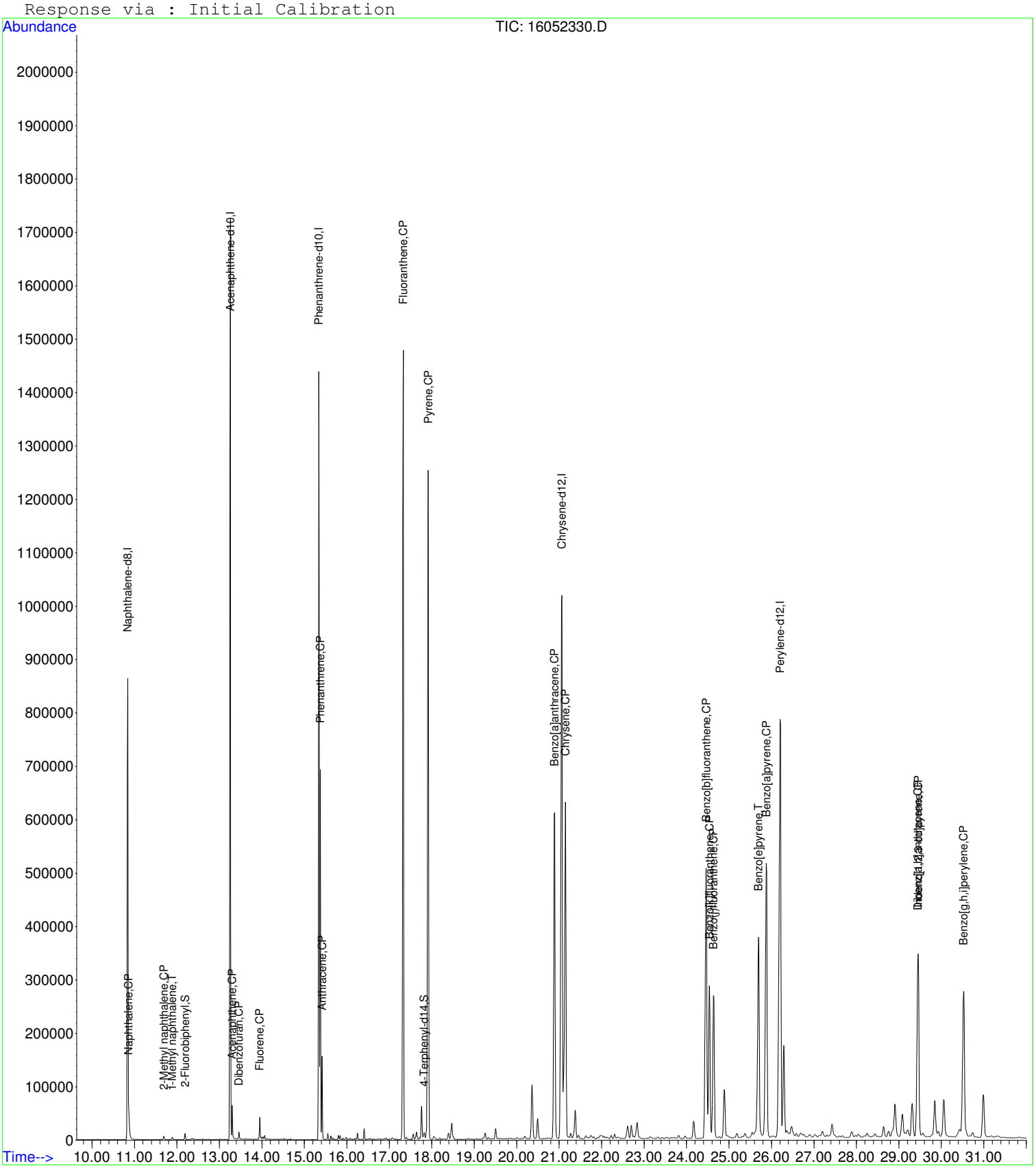
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1137571 | 4000.00 | ug/kg | 98 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 949608 | 4000.00 | ug/kg | 82 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1548385 | 4000.00 | ug/kg | 76 |
| 17) Chrysene-d12 | 21.06 | 240 | 1764020 | 4000.00 | ug/kg | 78 |
| 20) Perylene-d12 | 26.20 | 264 | 1588346 | 4000.00 | ug/kg | 77 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 9619 | 34.72 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.87%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 12592 | 31.43 | ug/kg | -0.03 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.79%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 21019 | 73.87 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.69 | 142 | 4267 | 16.98 | ug/kg | 98 |
| 4) 1-Methyl naphthalene | 11.89 | 142 | 2736 | 11.89 | ug/kg | 93 |
| 6) Dibenzofuran | 13.47 | 168 | 13028 | 36.61 | ug/kg | 99 |
| 9) Acenaphthene | 13.30 | 154 | 24076 | 94.85 | ug/kg | 99 |
| 10) Fluorene | 13.95 | 166 | 18801 | 60.99 | ug/kg | 98 |
| 12) Phenanthrene | 15.38 | 178 | 576434 | 1415.61 | ug/kg | 100 |
| 13) Anthracene | 15.42 | 178 | 128551 | 333.54 | ug/kg | 99 |
| 14) Fluoranthene | 17.33 | 202 | 1523821 | 3616.25 | ug/kg | 98 |
| 15) Pyrene | 17.92 | 202 | 1359314 | 3105.40 | ug/kg | 100 |
| 18) Benzo[a]anthracene | 20.89 | 228 | 936038 | 2264.97 | ug/kg | 100 |
| 19) Chrysene | 21.15 | 228 | 1021878 | 2559.19 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.46 | 252 | 1007995 | 2407.82 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.54 | 252 | 492030 | 1252.89 | ug/kg | 97 |
| 23) Benzo(j)fluoranthene | 24.64 | 252 | 457018 | 1306.40 | ug/kg | 93 |
| 24) Benzo[e]pyrene | 25.69 | 252 | 715141 | 1907.50 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.88 | 252 | 1017162 | 2654.99 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.44 | 278 | 145397 | 416.72 | ug/kg | 98 |
| 27) Indeno[1,2,3-cd]pyrene | 29.46 | 276 | 609535 | 1464.39 | ug/kg | 89 |
| 28) Benzo[g,h,i]perylene | 30.53 | 276 | 584055 | 1799.46 | ug/kg | 98 |

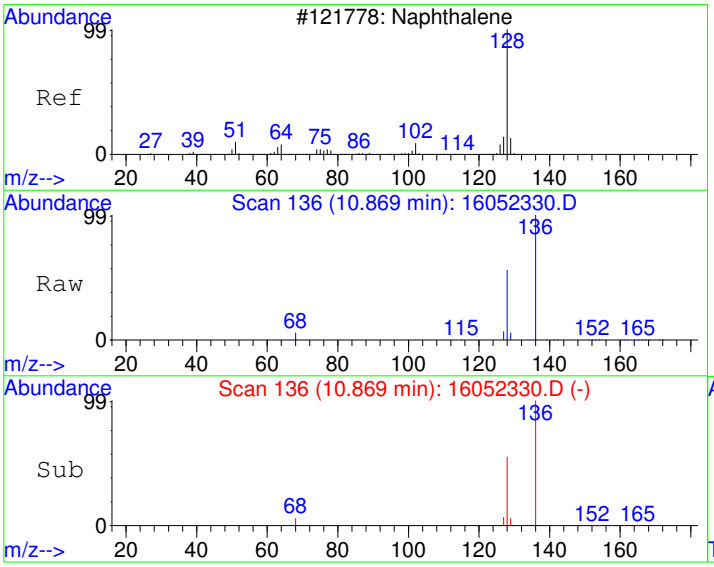
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052330.D Vial: 23
Acq On : 24 May 2016 3:33 am Operator:
Sample : 1605121-18A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:06 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

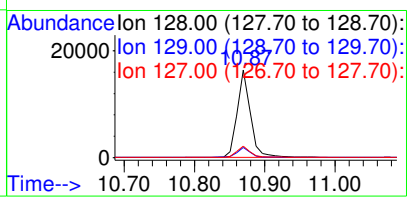


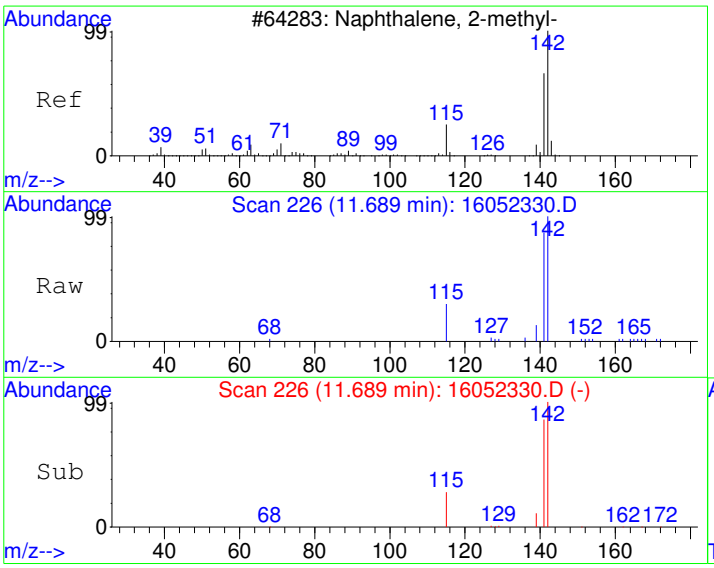



#2
Naphthalene
Concen: 73.87 ug/kg
RT: 10.87 min Scan# 136
Delta R.T. -0.01 min
Lab File: 16052330.D
Acq: 24 May 2016 3:33 am

Tgt Ion:128 Resp: 21019

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 11.2 | 0.0 | 41.1 |
| 127 | 12.6 | 0.0 | 42.4 |

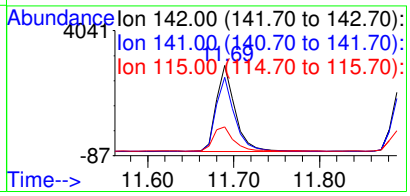


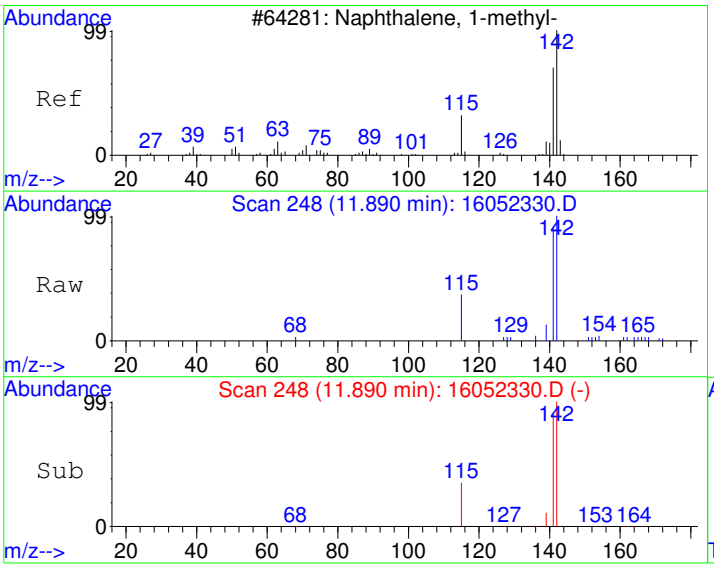




#3
2-Methyl naphthalene
Concen: 16.98 ug/kg
RT: 11.69 min Scan# 226
Delta R.T. -0.01 min
Lab File: 16052330.D
Acq: 24 May 2016 3:33 am

Tgt Ion:142 Resp: 4267

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 86.1 | 54.4 | 114.4 |
| 115 | 28.1 | 0.0 | 56.0 |

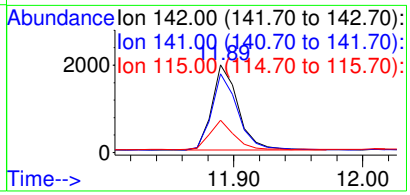


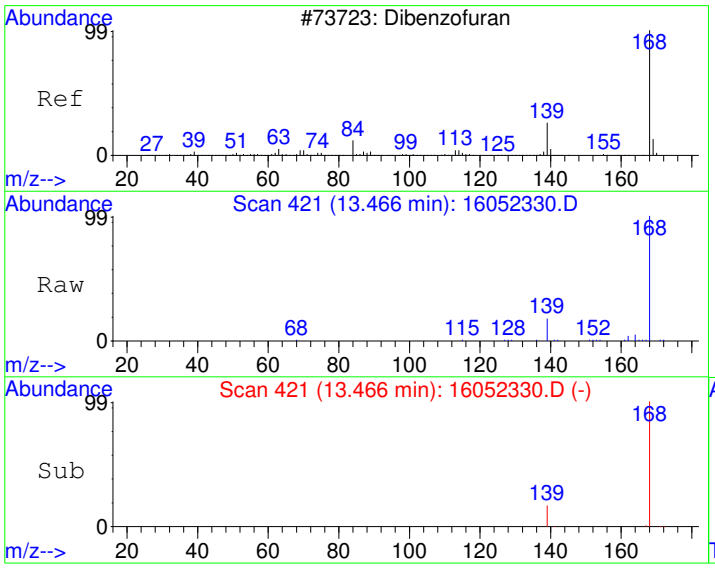




#4
1-Methyl naphthalene
Concen: 11.89 ug/kg
RT: 11.89 min Scan# 248
Delta R.T. -0.01 min
Lab File: 16052330.D
Acq: 24 May 2016 3:33 am

Tgt Ion:142 Resp: 2736

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 89.5 | 56.5 | 116.5 |
| 115 | 34.3 | 0.0 | 55.0 |

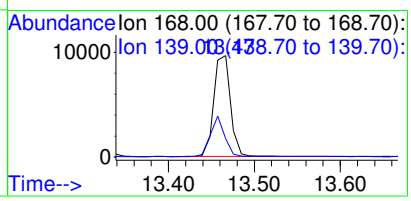


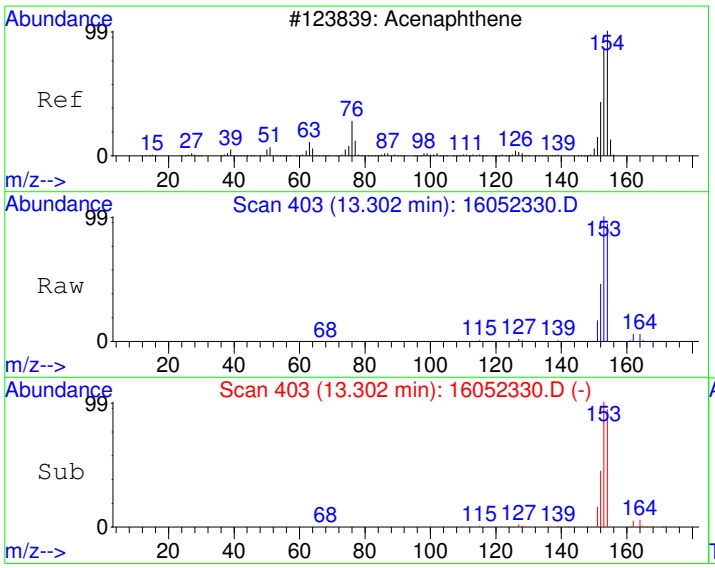



#6
Dibenzofuran
Concen: 36.61 ug/kg
RT: 13.47 min Scan# 421
Delta R.T. -0.01 min
Lab File: 16052330.D
Acq: 24 May 2016 3:33 am

Tgt Ion:168 Resp: 13028

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 34.3 | 27.0 | 40.4 |

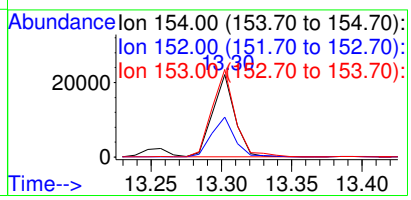


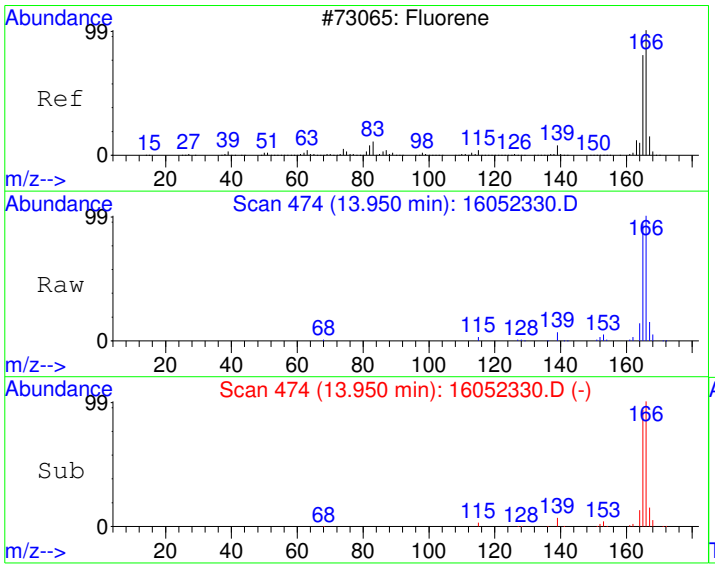




#9
Acenaphthene
Concen: 94.85 ug/kg
RT: 13.30 min Scan# 403
Delta R.T. -0.02 min
Lab File: 16052330.D
Acq: 24 May 2016 3:33 am

Tgt Ion:154 Resp: 24076

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 48.3 | 18.9 | 78.9 |
| 153 | 106.1 | 75.2 | 135.2 |

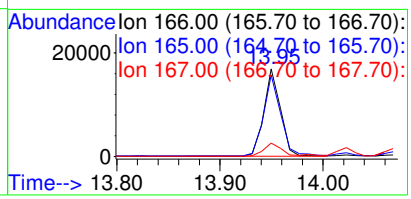


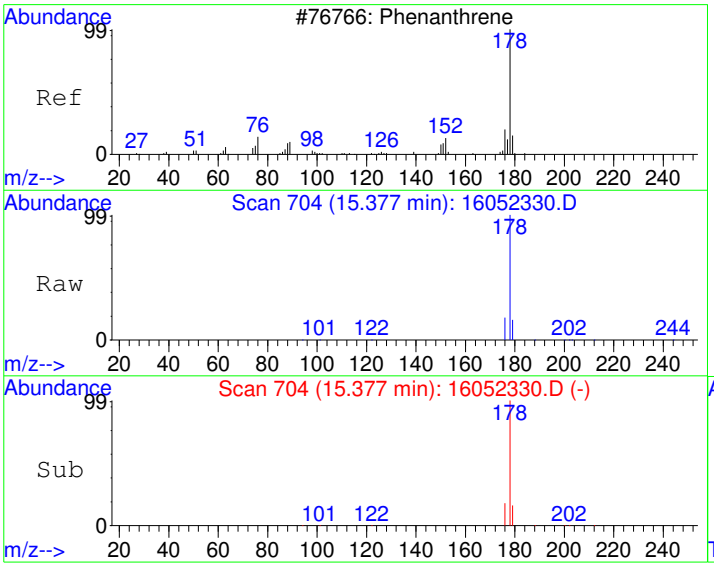




#10
Fluorene
Concen: 60.99 ug/kg
RT: 13.95 min Scan# 474
Delta R.T. -0.02 min
Lab File: 16052330.D
Acq: 24 May 2016 3:33 am

Tgt Ion:166 Resp: 18801

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 93.0 | 61.8 | 121.8 |
| 167 | 14.9 | 0.0 | 43.6 |

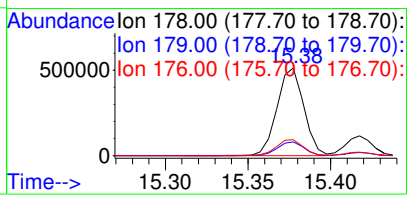


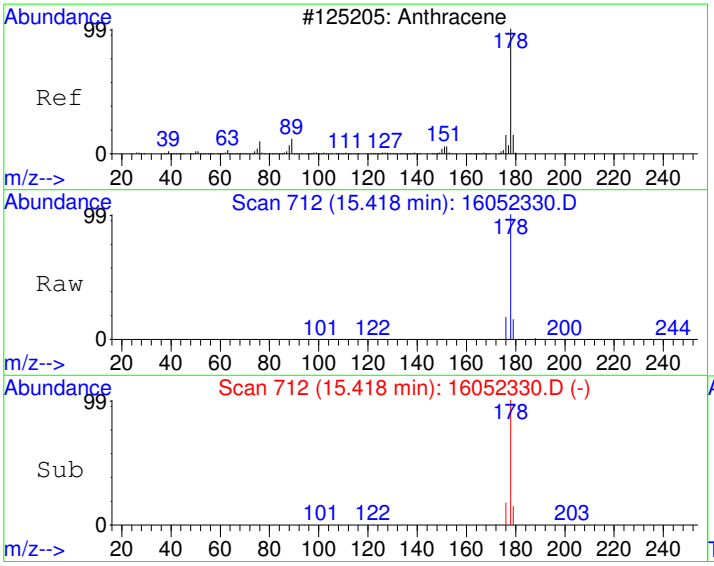



#12
Phenanthrene
Concen: 1415.61 ug/kg
RT: 15.38 min Scan# 704
Delta R.T. -0.02 min
Lab File: 16052330.D
Acq: 24 May 2016 3:33 am

Tgt Ion:178 Resp: 576434

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.7 | 0.0 | 45.9 |
| 176 | 18.3 | 0.0 | 48.5 |

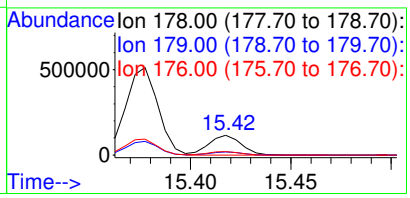


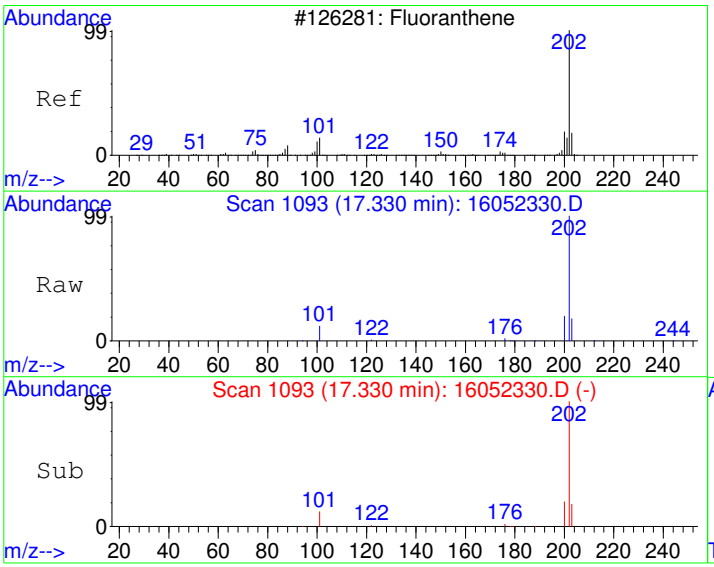




#13
Anthracene
Concen: 333.54 ug/kg
RT: 15.42 min Scan# 712
Delta R.T. -0.02 min
Lab File: 16052330.D
Acq: 24 May 2016 3:33 am

Tgt Ion:178 Resp: 128551

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.5 | 0.0 | 45.9 |
| 176 | 17.6 | 0.0 | 48.2 |

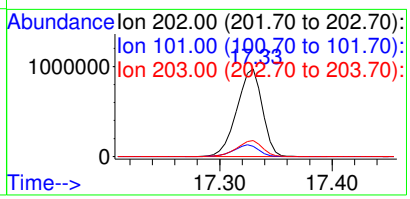


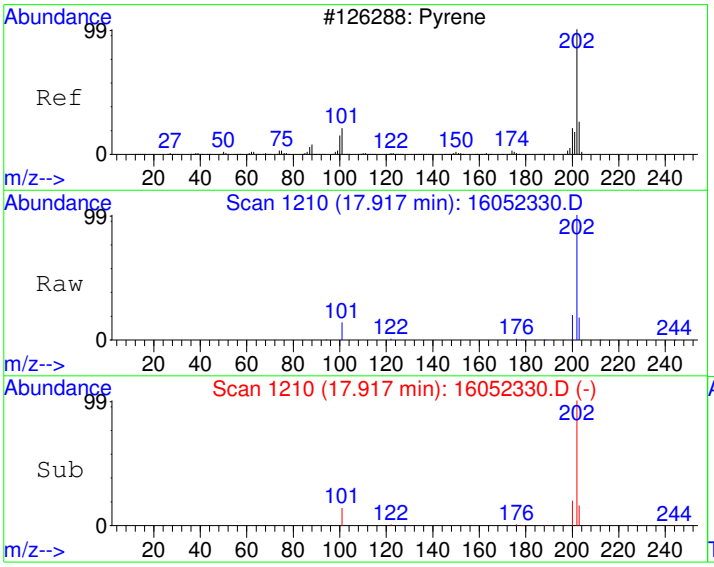




#14
Fluoranthene
Concen: 3616.25 ug/kg
RT: 17.33 min Scan# 1093
Delta R.T. -0.01 min
Lab File: 16052330.D
Acq: 24 May 2016 3:33 am

Tgt Ion:202 Resp: 1523821

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 11.6 | 0.0 | 43.0 |
| 203 | 18.1 | 0.0 | 47.9 |

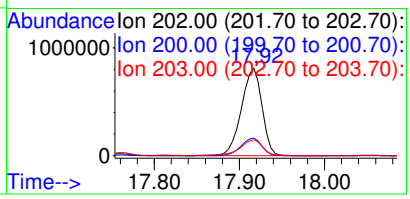


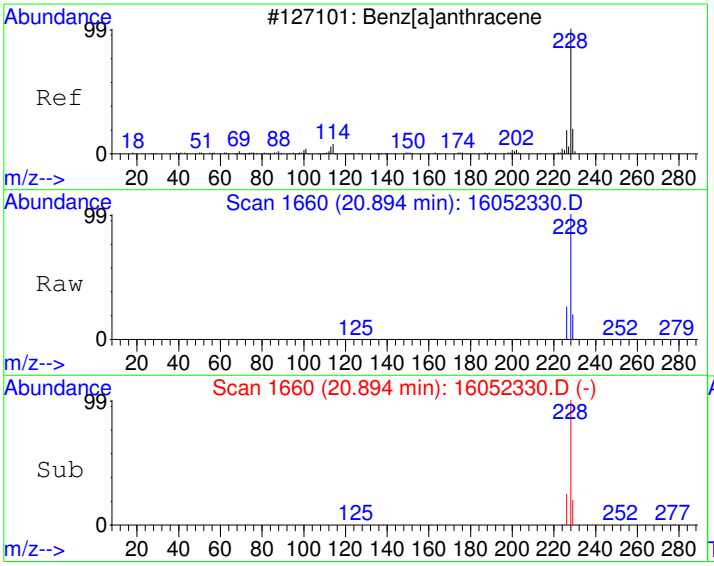



#15
Pyrene
Concen: 3105.40 ug/kg
RT: 17.92 min  Scan# 1210
Delta R.T.  -0.02 min
Lab File:  16052330.D
Acq: 24 May 2016  3:33 am

Tgt Ion:202 Resp: 1359314

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 200 | 20.2 | 0.0 | 50.0 |
| 203 | 18.1 | 0.0 | 48.0 |

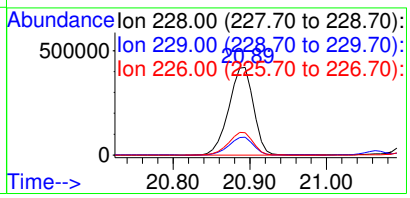


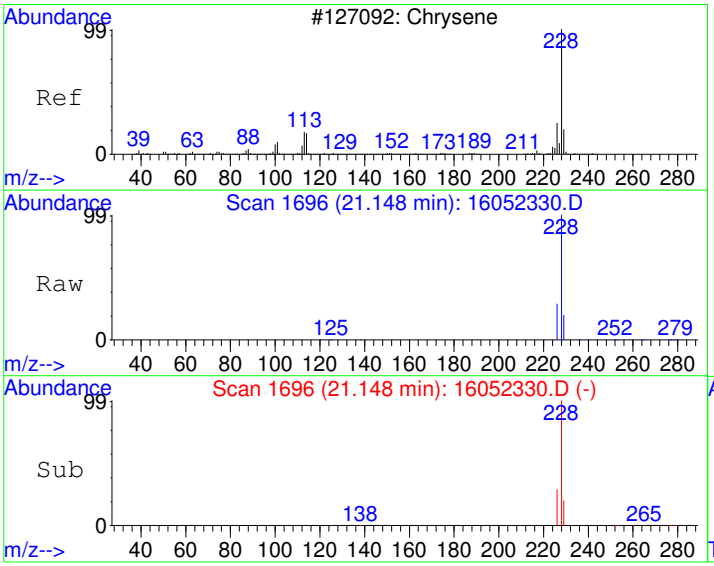




#18
Benzo[a]anthracene
Concen: 2264.97 ug/kg
RT: 20.89 min  Scan# 1660
Delta R.T.  -0.02 min
Lab File:  16052330.D
Acq: 24 May 2016  3:33 am

Tgt Ion:228 Resp:  936038

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 20.2 | 0.0 | 50.1 |
| 226 | 25.5 | 0.0 | 55.2 |

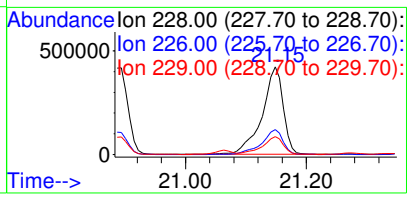


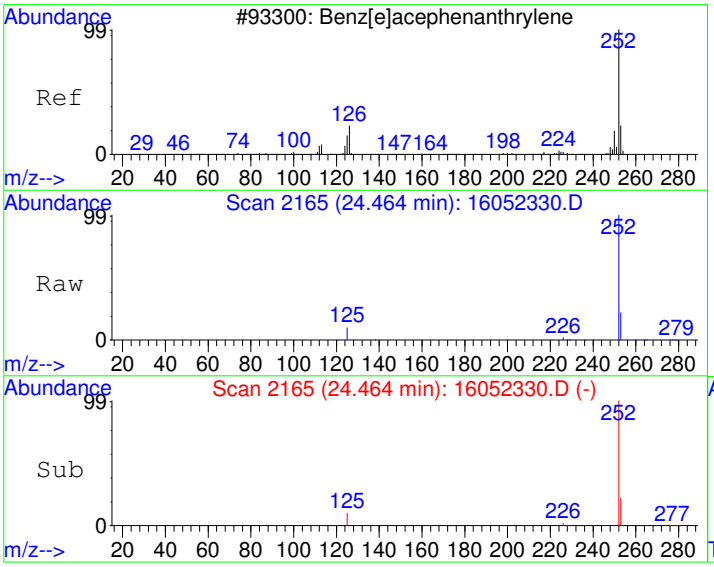




#19
Chrysene
Concen: 2559.19 ug/kg
RT: 21.15 min  Scan# 1696
Delta R.T.  -0.02 min
Lab File:  16052330.D
Acq: 24 May 2016  3:33 am

Tgt Ion:228 Resp: 1021878

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.6 | 0.0 | 58.1 |
| 229 | 20.2 | 0.0 | 50.1 |

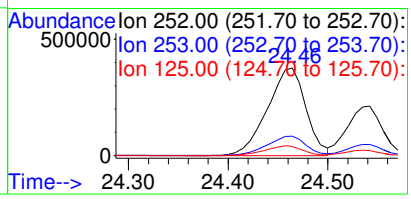


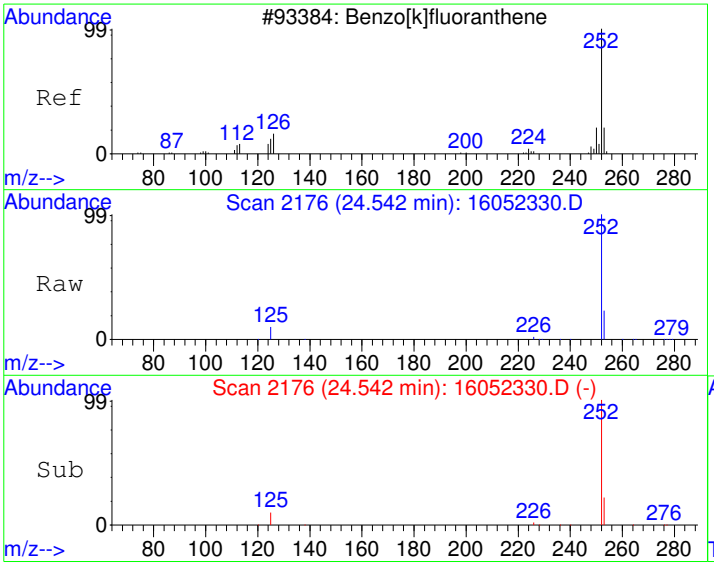



#21
Benzo[b]fluoranthene
Concen: 2407.82 ug/kg
RT: 24.46 min  Scan# 2165
Delta R.T.  -0.02 min
Lab File:  16052330.D
Acq: 24 May 2016  3:33 am

Tgt Ion:252 Resp: 1007995

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.0 | 0.0 | 52.2 |
| 125 | 10.4 | 0.0 | 41.0 |

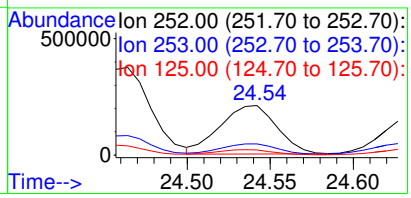


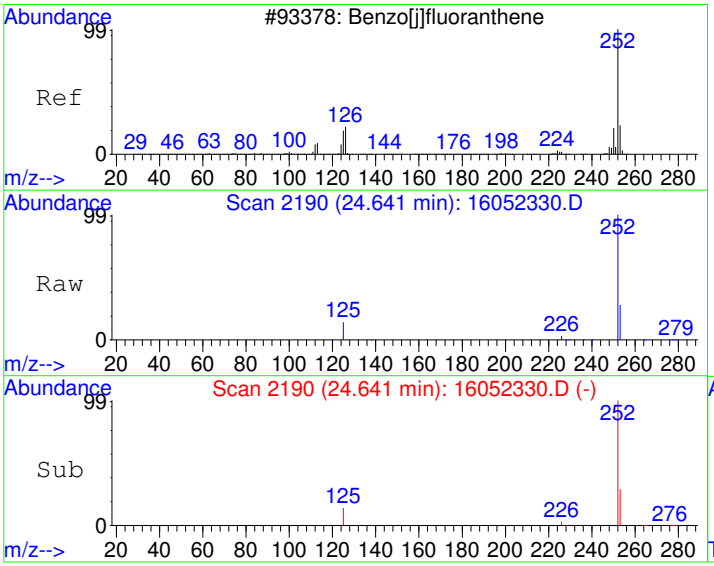




#22
Benzo[k]fluoranthene
Concen: 1252.89 ug/kg
RT: 24.54 min  Scan# 2176
Delta R.T.  -0.03 min
Lab File:  16052330.D
Acq: 24 May 2016  3:33 am

Tgt Ion:252 Resp: 492030

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.2 | 2.1 | 42.1 |
| 125 | 9.8 | 0.0 | 31.3 |

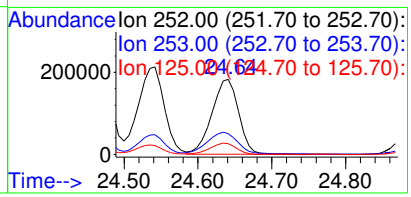


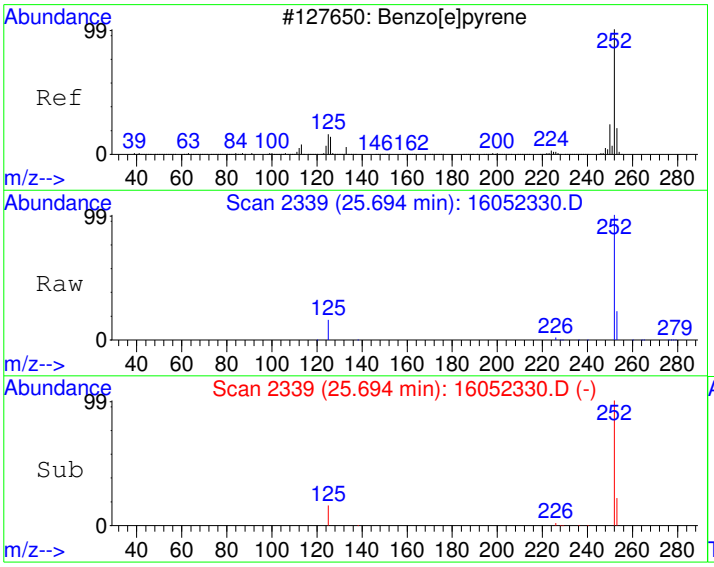




#23
Benzo(j)fluoranthene
Concen: 1306.40 ug/kg
RT: 24.64 min  Scan# 2190
Delta R.T.  -0.03 min
Lab File:  16052330.D
Acq: 24 May 2016  3:33 am

Tgt Ion:252 Resp: 457018

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 27.4 | 2.1 | 42.1 |
| 125 | 14.2 | 0.0 | 34.4 |

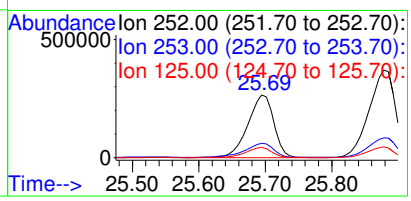


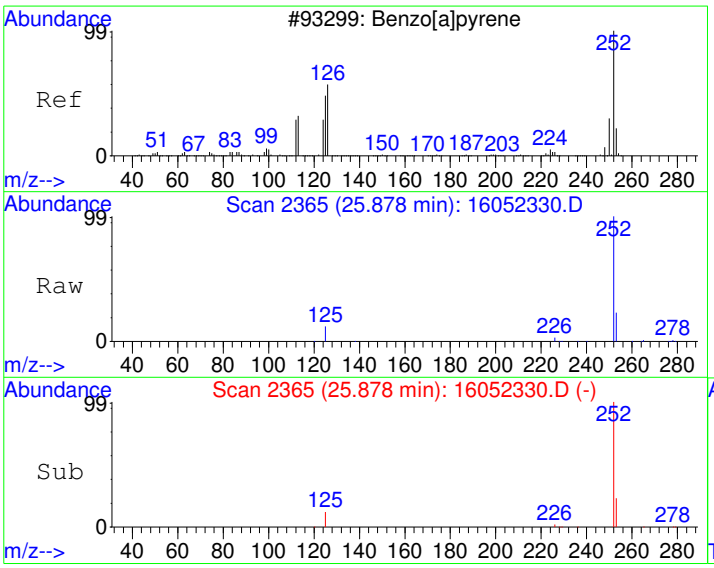



#24
Benzo[e]pyrene
Concen: 1907.50 ug/kg
RT: 25.69 min  Scan# 2339
Delta R.T.  -0.03 min
Lab File:  16052330.D
Acq: 24 May 2016  3:33 am

Tgt Ion:252 Resp:  715141

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.5 | 2.2 | 42.2 |
| 125 | 16.1 | 0.0 | 36.1 |

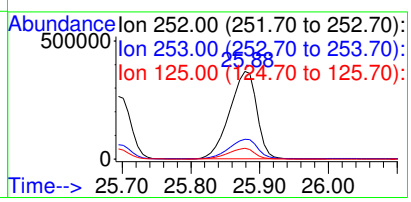


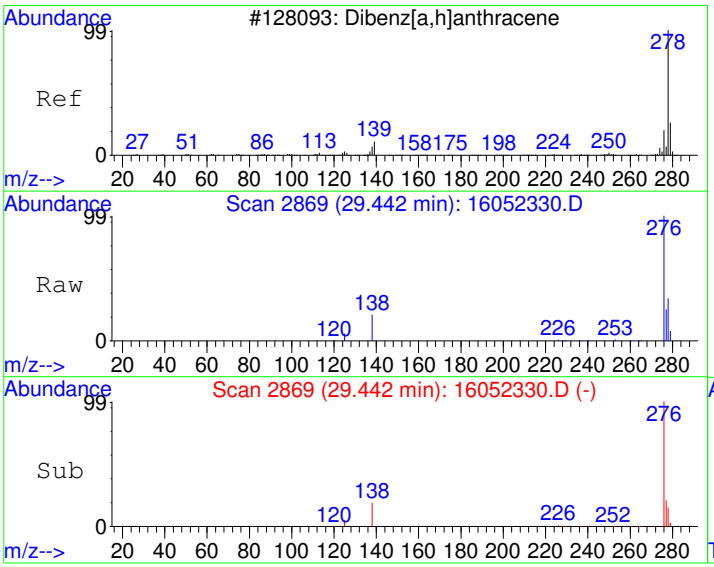




#25
Benzo[a]pyrene
Concen: 2654.99 ug/kg
RT: 25.88 min  Scan# 2365
Delta R.T.  -0.02 min
Lab File:  16052330.D
Acq: 24 May 2016  3:33 am

Tgt Ion:252 Resp: 1017162

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.5 | 1.9 | 41.9 |
| 125 | 12.2 | 0.0 | 31.7 |

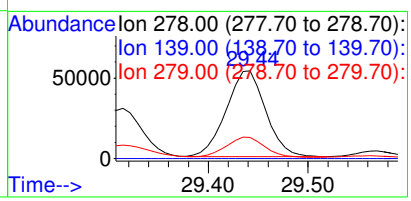


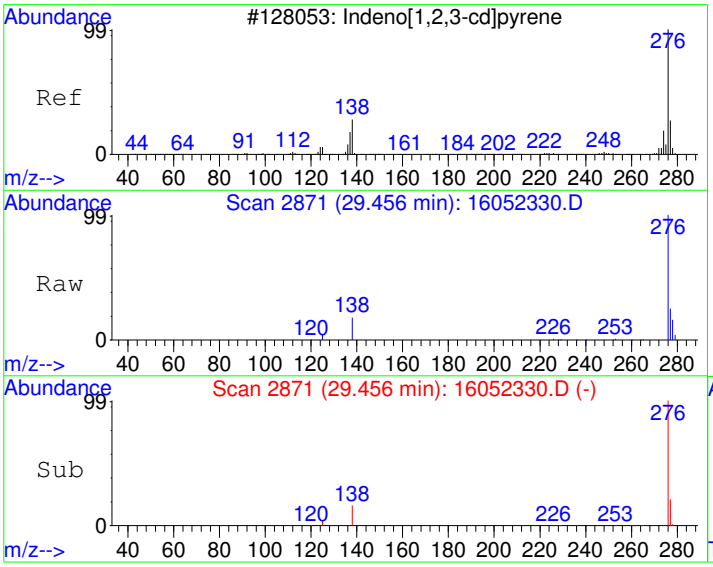




#26
Dibenz[a,h]anthracene
Concen:  416.72 ug/kg
RT: 29.44 min  Scan# 2869
Delta R.T.  -0.04 min
Lab File:  16052330.D
Acq: 24 May 2016  3:33 am

Tgt Ion:278 Resp:  145397

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 0.0 | 0.0 | 20.0 |
| 279 | 23.2 | 4.2 | 44.2 |

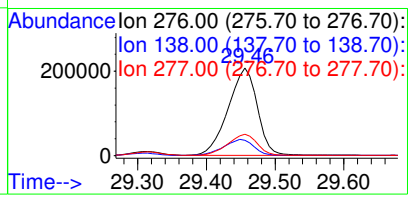


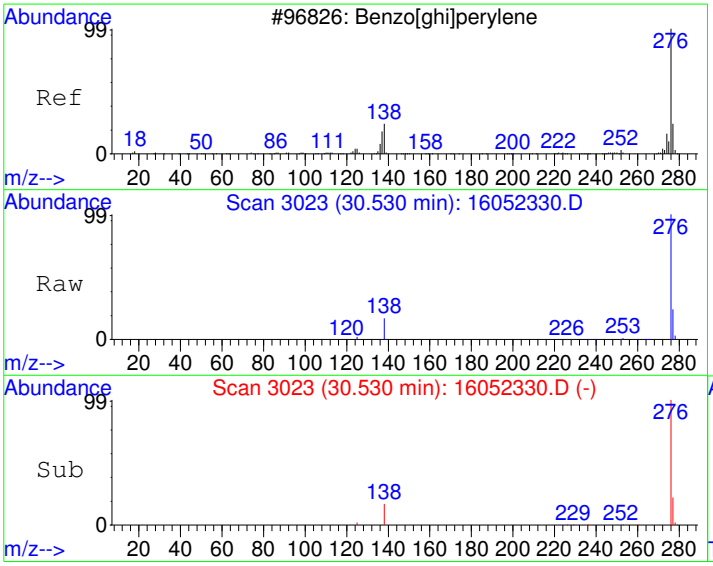



#27
Indeno[1,2,3-cd]pyrene
Concen: 1464.39 ug/kg
RT: 29.46 min Scan# 2871
Delta R.T. -0.02 min
Lab File: 16052330.D
Acq: 24 May 2016 3:33 am

Tgt Ion:276 Resp: 609535

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 17.5 | 6.7 | 46.7 |
| 277 | 24.3 | 5.8 | 45.8 |

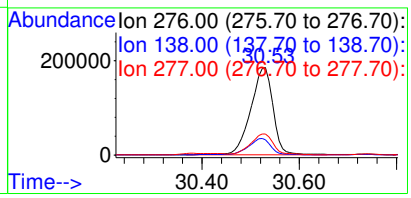



#28
Benzo[g,h,i]perylene
Concen: 1799.46 ug/kg
RT: 30.53 min Scan# 3023
Delta R.T. -0.02 min
Lab File: 16052330.D
Acq: 24 May 2016 3:33 am

Tgt Ion:276 Resp: 584055

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 17.2 | 0.0 | 39.1 |
| 277 | 23.9 | 4.0 | 44.0 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052331.D Vial: 24
Acq On : 24 May 2016 4:13 am Operator:
Sample : 1605121-20A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:07 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

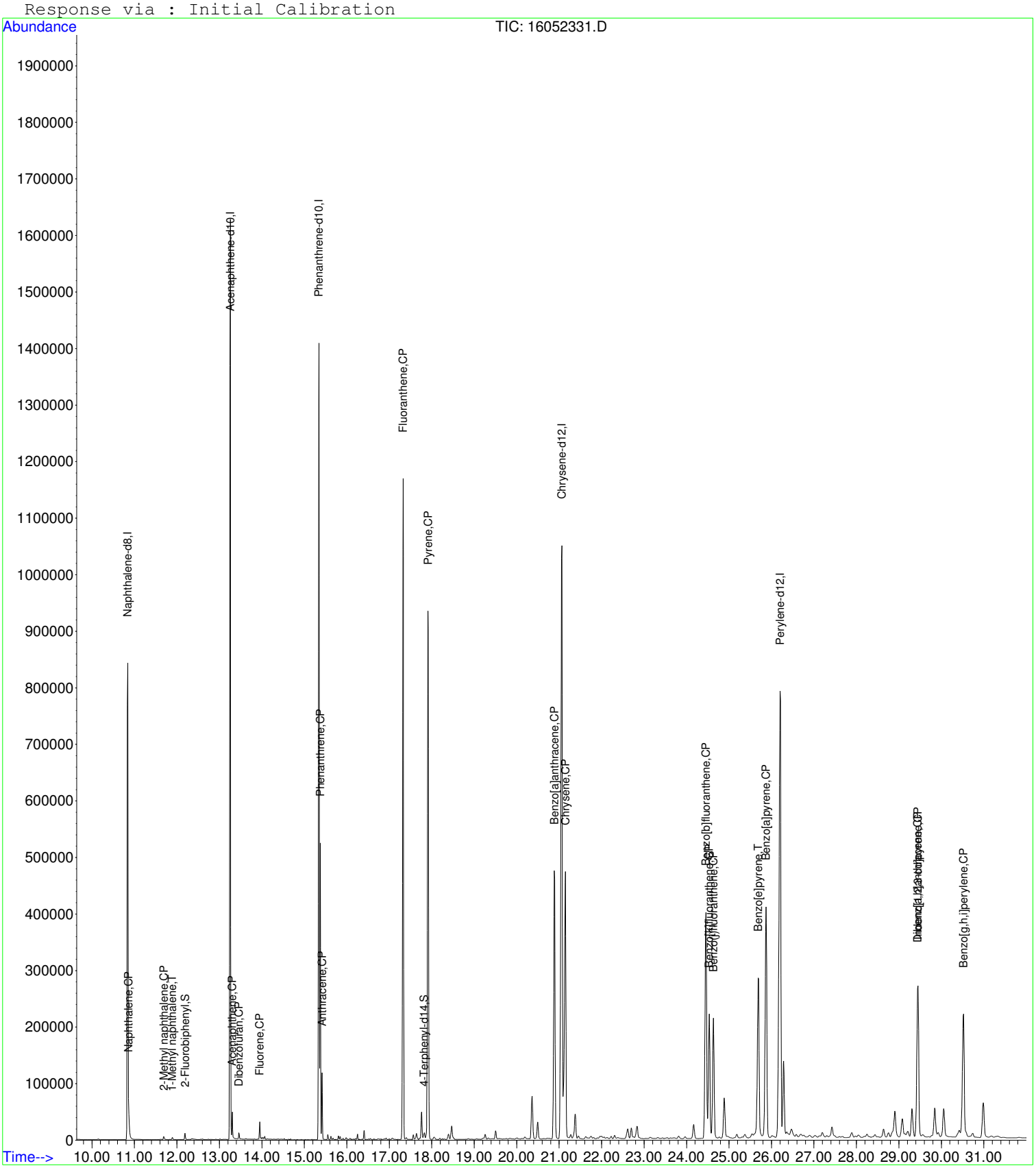
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1166984 | 4000.00 | ug/kg | 101 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 935484 | 4000.00 | ug/kg | 81 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1554041 | 4000.00 | ug/kg | 76 |
| 17) Chrysene-d12 | 21.06 | 240 | 1754673 | 4000.00 | ug/kg | 77 |
| 20) Perylene-d12 | 26.20 | 264 | 1573619 | 4000.00 | ug/kg | 76 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 9848 | 36.09 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.90%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 13177 | 32.77 | ug/kg | -0.03 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.82%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 17367 | 59.50 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.69 | 142 | 3539 | 13.73 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.89 | 142 | 2280 | 9.65 | ug/kg | 97 |
| 6) Dibenzofuran | 13.47 | 168 | 10556 | 30.11 | ug/kg | 99 |
| 9) Acenaphthene | 13.30 | 154 | 18177 | 72.69 | ug/kg | 99 |
| 10) Fluorene | 13.95 | 166 | 13700 | 45.11 | ug/kg | 97 |
| 12) Phenanthrene | 15.38 | 178 | 445901 | 1091.06 | ug/kg | 99 |
| 13) Anthracene | 15.42 | 178 | 98559 | 254.79 | ug/kg | 98 |
| 14) Fluoranthene | 17.32 | 202 | 1167234 | 2759.93 | ug/kg | 99 |
| 15) Pyrene | 17.91 | 202 | 1026652 | 2336.89 | ug/kg | 100 |
| 18) Benzo[a]anthracene | 20.89 | 228 | 707271 | 1720.53 | ug/kg | 99 |
| 19) Chrysene | 21.15 | 228 | 770449 | 1939.79 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.46 | 252 | 766276 | 1847.55 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.53 | 252 | 383774 | 986.37 | ug/kg | 97 |
| 23) Benzo(j)fluoranthene | 24.63 | 252 | 346254 | 999.04 | ug/kg | 91 |
| 24) Benzo[e]pyrene | 25.69 | 252 | 551035 | 1483.54 | ug/kg | 98 |
| 25) Benzo[a]pyrene | 25.87 | 252 | 776314 | 2045.29 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.43 | 278 | 110467 | 319.57 | ug/kg | 98 |
| 27) Indeno[1,2,3-cd]pyrene | 29.45 | 276 | 468044 | 1134.98 | ug/kg | 90 |
| 28) Benzo[g,h,i]perylene | 30.52 | 276 | 437811 | 1361.51 | ug/kg | 98 |

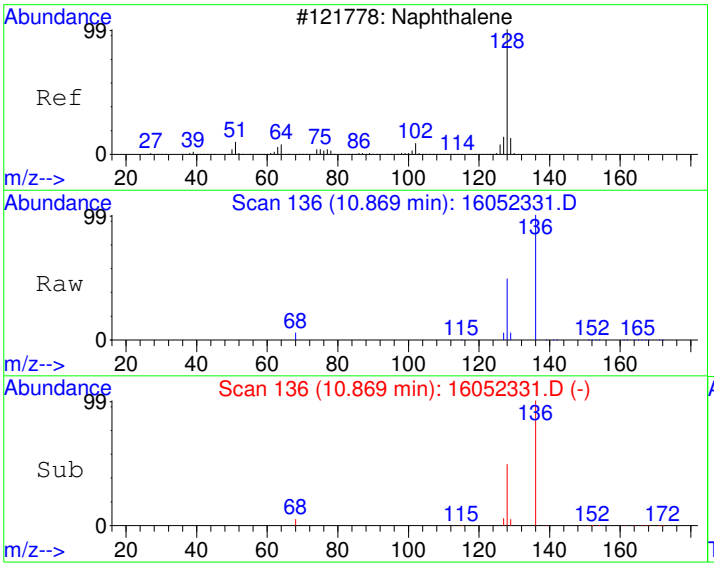
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052331.D Vial: 24
Acq On : 24 May 2016 4:13 am Operator:
Sample : 1605121-20A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:07 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

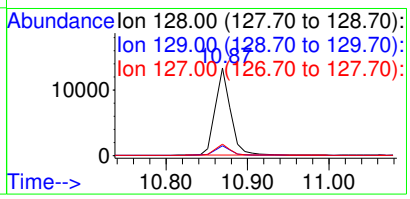


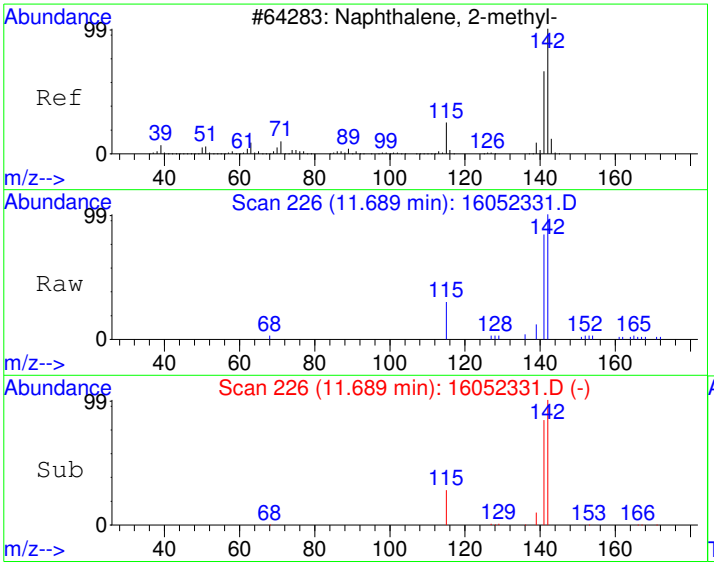



#2
Naphthalene
Concen: 59.50 ug/kg
RT: 10.87 min Scan# 136
Delta R.T. -0.01 min
Lab File: 16052331.D
Acq: 24 May 2016 4:13 am

Tgt Ion:128 Resp: 17367

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 11.0 | 0.0 | 41.1 |
| 127 | 12.8 | 0.0 | 42.4 |

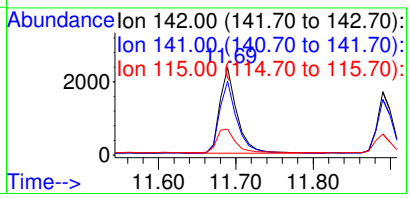


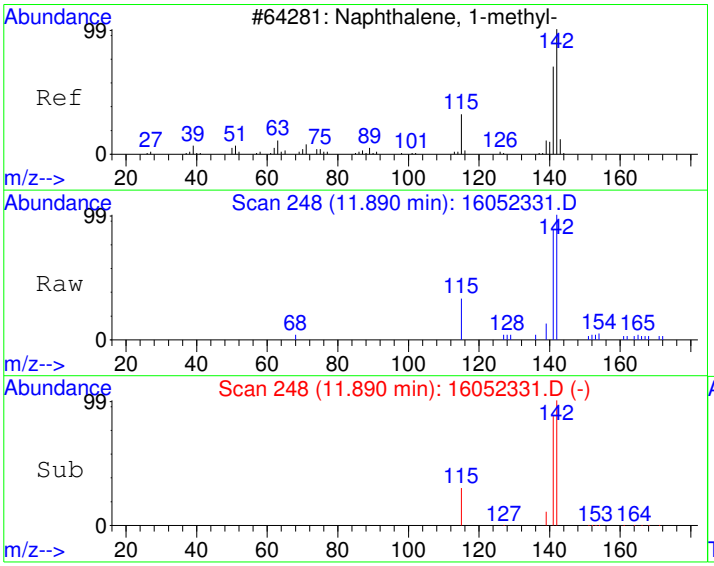




#3
2-Methyl naphthalene
Concen: 13.73 ug/kg
RT: 11.69 min Scan# 226
Delta R.T. -0.01 min
Lab File: 16052331.D
Acq: 24 May 2016 4:13 am

Tgt Ion:142 Resp: 3539

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 83.7 | 54.4 | 114.4 |
| 115 | 27.5 | 0.0 | 56.0 |

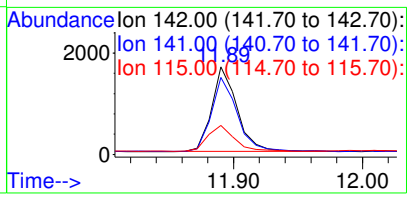


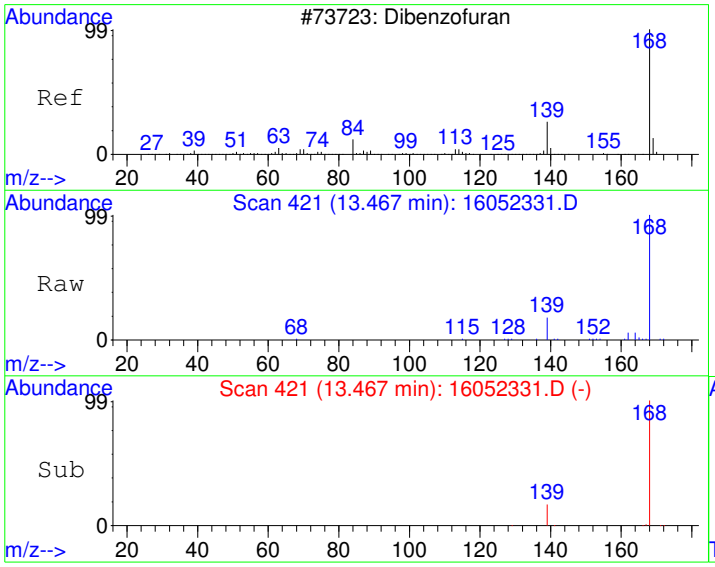




#4
1-Methyl naphthalene
Concen: 9.65 ug/kg
RT: 11.89 min Scan# 248
Delta R.T. -0.01 min
Lab File: 16052331.D
Acq: 24 May 2016 4:13 am

Tgt Ion:142 Resp: 2280

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 87.3 | 56.5 | 116.5 |
| 115 | 30.5 | 0.0 | 55.0 |

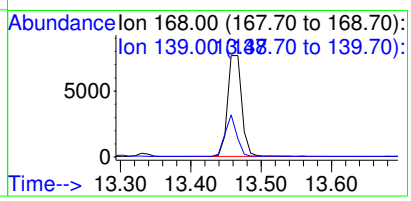


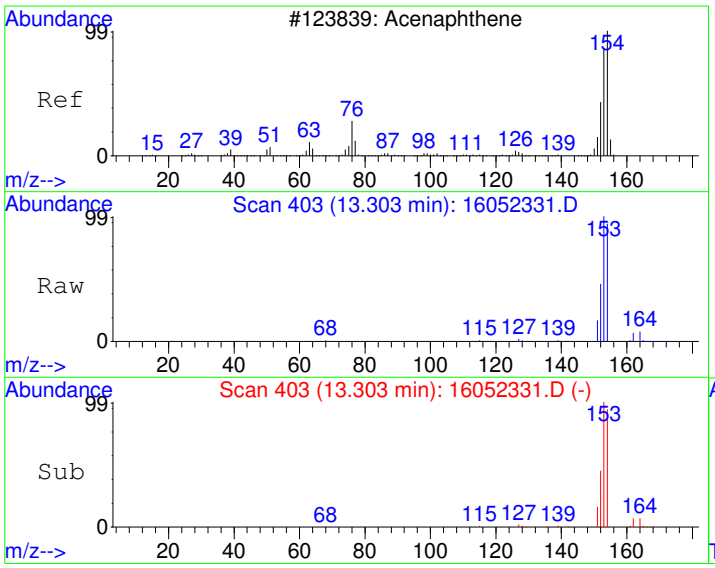



#6
Dibenzofuran
Concen: 30.11 ug/kg
RT: 13.47 min Scan# 421
Delta R.T. -0.01 min
Lab File: 16052331.D
Acq: 24 May 2016 4:13 am

Tgt Ion:168 Resp: 10556

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 34.4 | 27.0 | 40.4 |

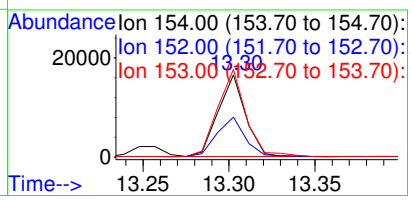


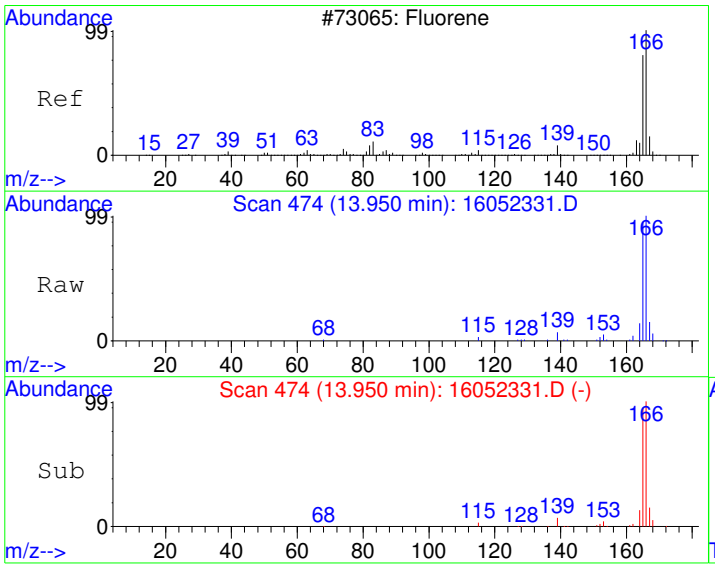




#9
Acenaphthene
Concen: 72.69 ug/kg
RT: 13.30 min Scan# 403
Delta R.T. -0.02 min
Lab File: 16052331.D
Acq: 24 May 2016 4:13 am

Tgt Ion:154 Resp: 18177

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 48.2 | 18.9 | 78.9 |
| 153 | 106.5 | 75.2 | 135.2 |

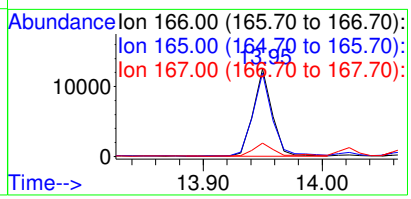


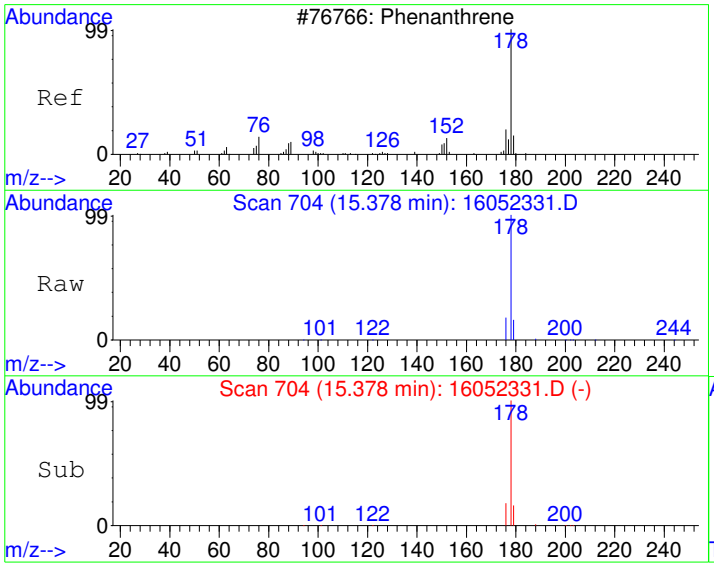




#10
Fluorene
Concen: 45.11 ug/kg
RT: 13.95 min Scan# 474
Delta R.T. -0.02 min
Lab File: 16052331.D
Acq: 24 May 2016 4:13 am

Tgt Ion:166 Resp: 13700

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 95.0 | 61.8 | 121.8 |
| 167 | 15.0 | 0.0 | 43.6 |

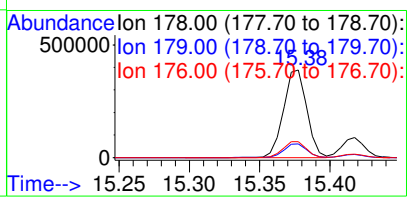


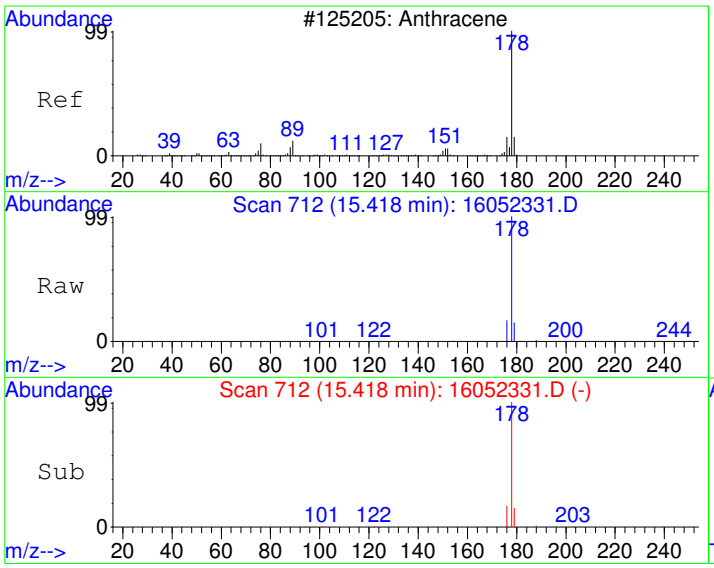



#12
Phenanthrene
Concen: 1091.06 ug/kg
RT: 15.38 min Scan# 704
Delta R.T. -0.02 min
Lab File: 16052331.D
Acq: 24 May 2016 4:13 am

Tgt Ion:178 Resp: 445901

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.7 | 0.0 | 45.9 |
| 176 | 18.2 | 0.0 | 48.5 |

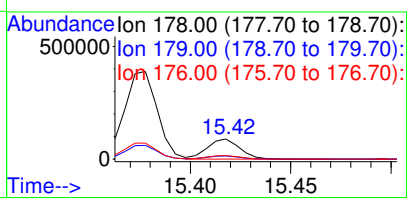


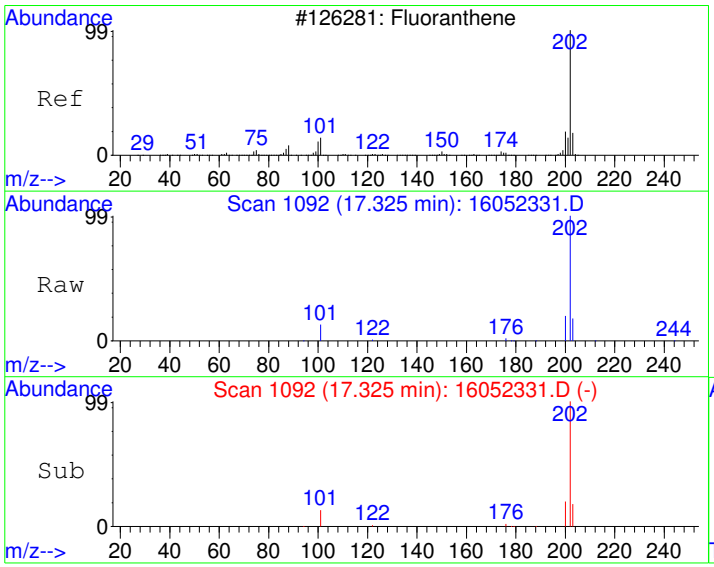




#13
Anthracene
Concen: 254.79 ug/kg
RT: 15.42 min Scan# 712
Delta R.T. -0.02 min
Lab File: 16052331.D
Acq: 24 May 2016 4:13 am

Tgt Ion:178 Resp: 98559

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.2 | 0.0 | 45.9 |
| 176 | 17.4 | 0.0 | 48.2 |

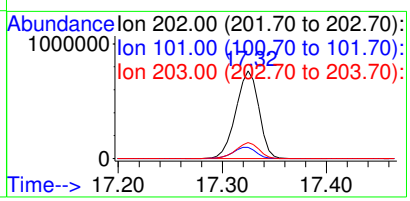


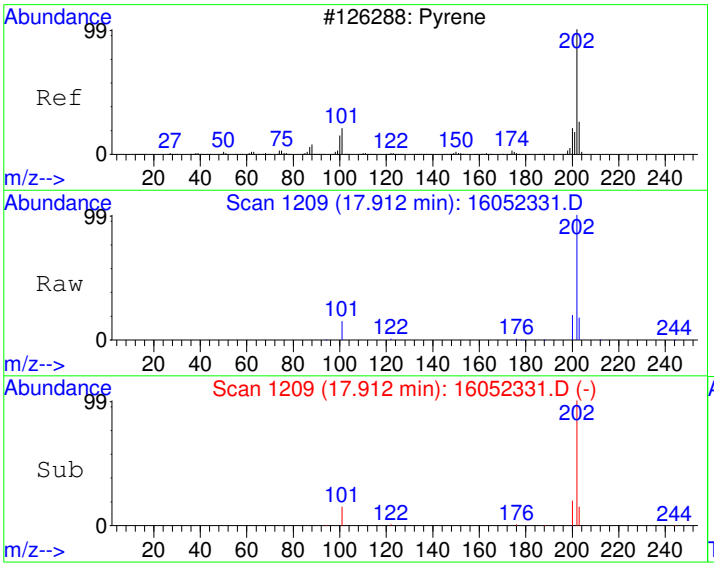




#14
Fluoranthene
Concen: 2759.93 ug/kg
RT: 17.32 min Scan# 1092
Delta R.T. -0.02 min
Lab File: 16052331.D
Acq: 24 May 2016 4:13 am

Tgt Ion:202 Resp: 1167234

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 12.7 | 0.0 | 43.0 |
| 203 | 18.0 | 0.0 | 47.9 |

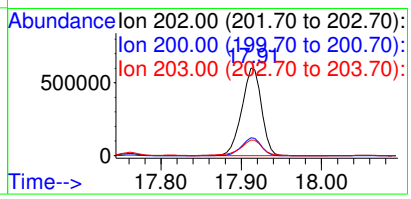


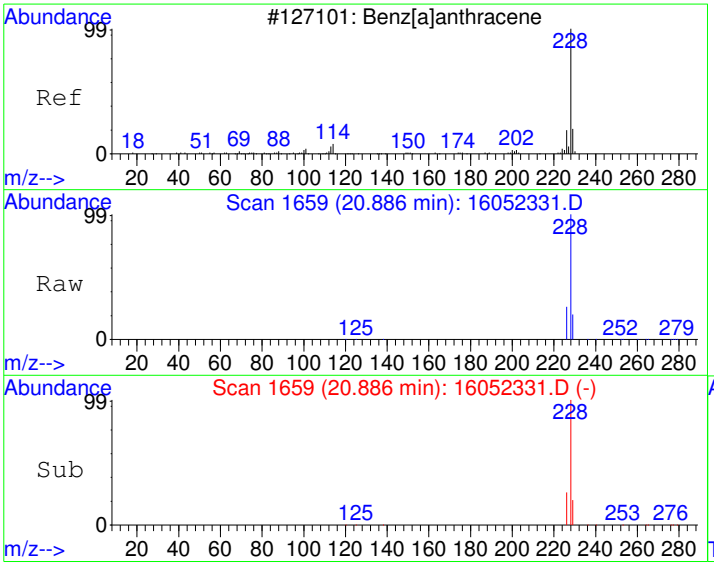



#15
Pyrene
Concen: 2336.89 ug/kg
RT: 17.91 min  Scan# 1209
Delta R.T.  -0.02 min
Lab File:  16052331.D
Acq: 24 May 2016  4:13 am

Tgt Ion:202 Resp: 1026652

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 200 | 20.3 | 0.0 | 50.0 |
| 203 | 17.9 | 0.0 | 48.0 |

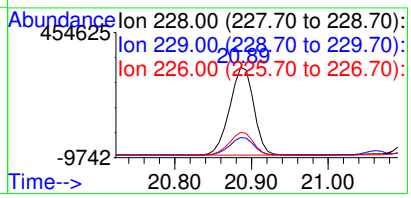


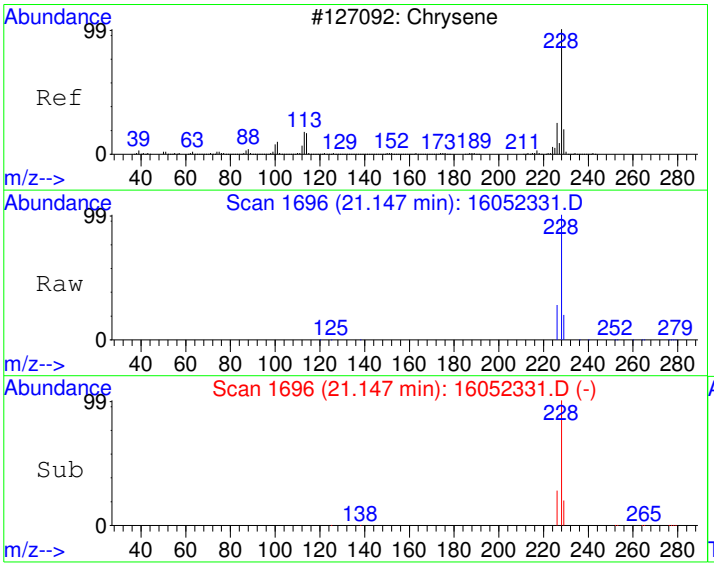




#18
Benzo[a]anthracene
Concen: 1720.53 ug/kg
RT: 20.89 min  Scan# 1659
Delta R.T.  -0.03 min
Lab File:  16052331.D
Acq: 24 May 2016  4:13 am

Tgt Ion:228 Resp:  707271

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.9 | 0.0 | 50.1 |
| 226 | 26.0 | 0.0 | 55.2 |

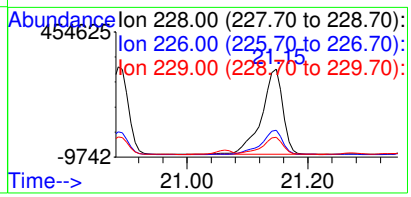


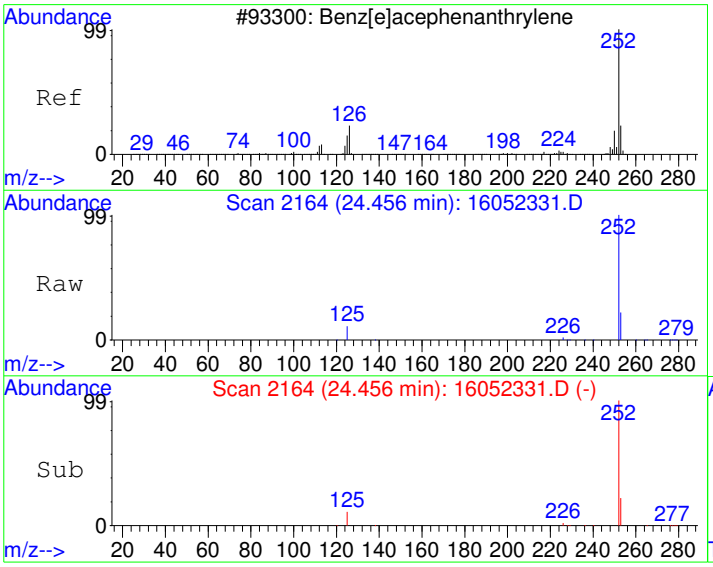




#19
Chrysene
Concen: 1939.79 ug/kg
RT: 21.15 min  Scan# 1696
Delta R.T.  -0.02 min
Lab File:  16052331.D
Acq: 24 May 2016  4:13 am

Tgt Ion:228 Resp:  770449

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.3 | 0.0 | 58.1 |
| 229 | 20.1 | 0.0 | 50.1 |

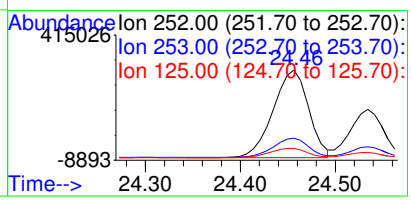


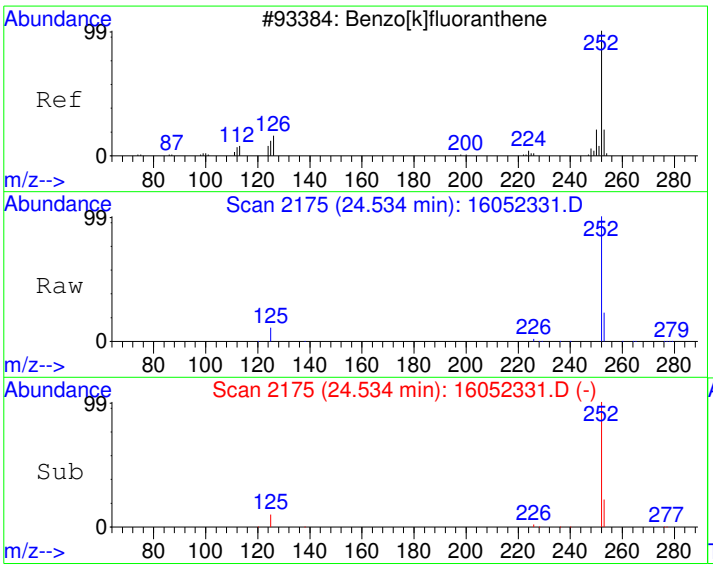



#21
Benzo[b]fluoranthene
Concen: 1847.55 ug/kg
RT: 24.46 min Scan# 2164
Delta R.T. -0.03 min
Lab File: 16052331.D
Acq: 24 May 2016 4:13 am

Tgt Ion:252 Resp: 766276

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.1 | 0.0 | 52.2 |
| 125 | 10.6 | 0.0 | 41.0 |

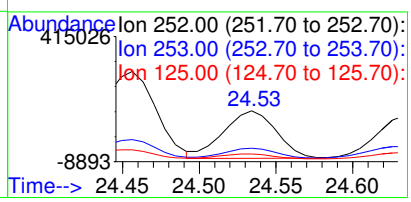


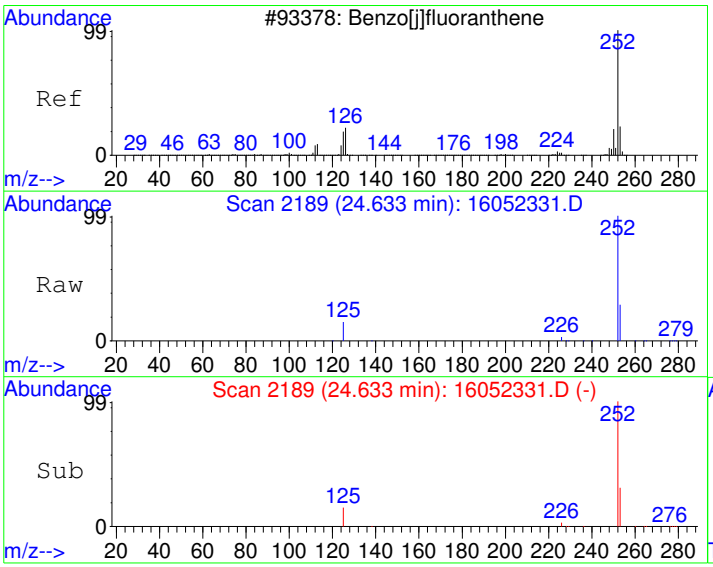




#22
Benzo[k]fluoranthene
Concen: 986.37 ug/kg
RT: 24.53 min Scan# 2175
Delta R.T. -0.04 min
Lab File: 16052331.D
Acq: 24 May 2016 4:13 am

Tgt Ion:252 Resp: 383774

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 20.6 | 2.1 | 42.1 |
| 125 | 10.4 | 0.0 | 31.3 |

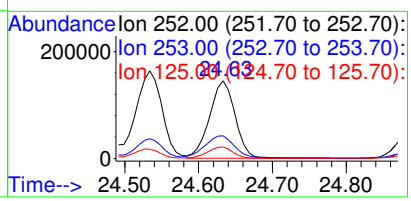


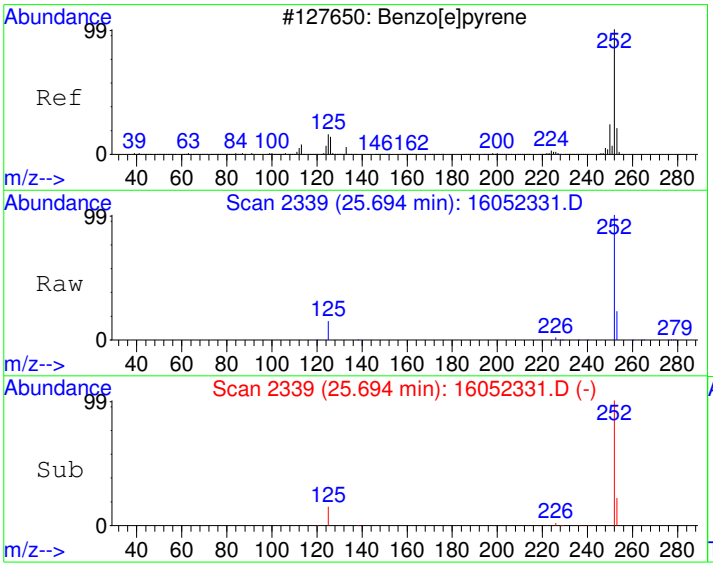




#23
Benzo(j)fluoranthene
Concen: 999.04 ug/kg
RT: 24.63 min Scan# 2189
Delta R.T. -0.04 min
Lab File: 16052331.D
Acq: 24 May 2016 4:13 am

Tgt Ion:252 Resp: 346254

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 28.6 | 2.1 | 42.1 |
| 125 | 14.7 | 0.0 | 34.4 |

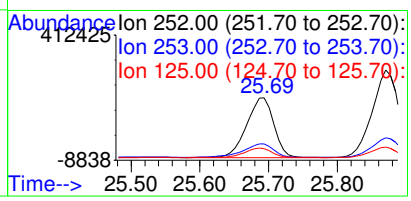


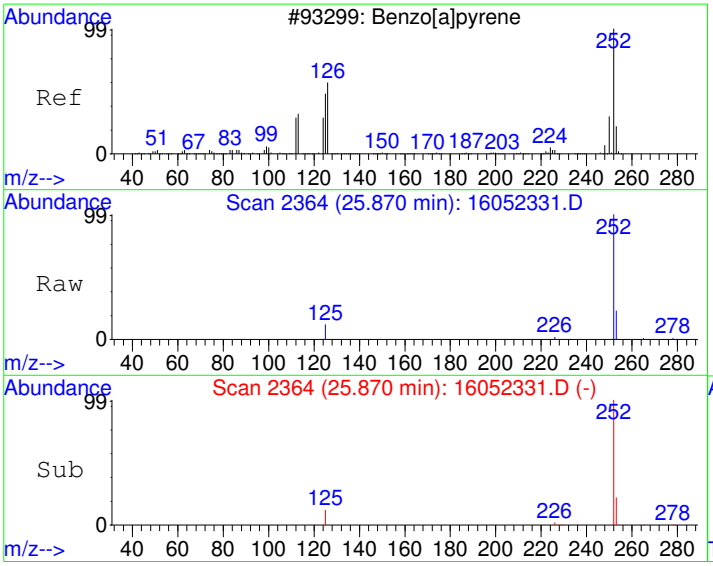



#24
Benzo[e]pyrene
Concen: 1483.54 ug/kg
RT: 25.69 min  Scan# 2339
Delta R.T.  -0.03 min
Lab File:  16052331.D
Acq: 24 May 2016  4:13 am

Tgt Ion:252 Resp:  551035

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.4 | 2.2 | 42.2 |
| 125 | 14.8 | 0.0 | 36.1 |

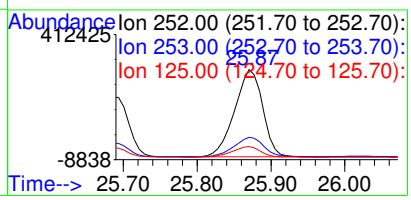


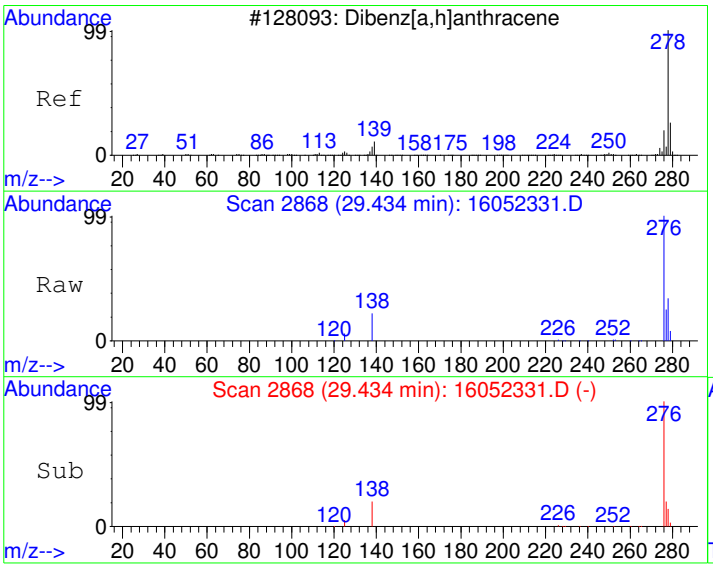




#25
Benzo[a]pyrene
Concen: 2045.29 ug/kg
RT: 25.87 min  Scan# 2364
Delta R.T.  -0.03 min
Lab File:  16052331.D
Acq: 24 May 2016  4:13 am

Tgt Ion:252 Resp:  776314

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.5 | 1.9 | 41.9 |
| 125 | 11.9 | 0.0 | 31.7 |

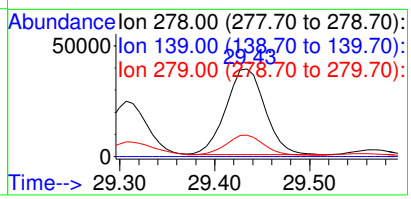


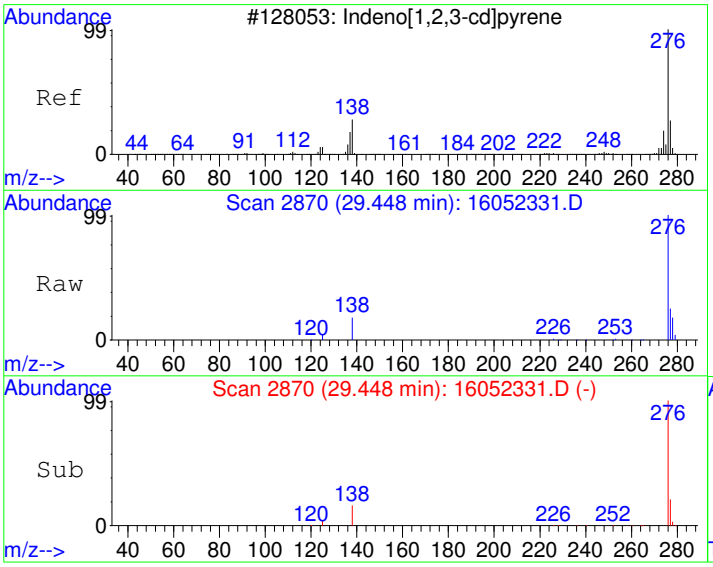




#26
Dibenz[a,h]anthracene
Concen:  319.57 ug/kg
RT: 29.43 min  Scan# 2868
Delta R.T.  -0.04 min
Lab File:  16052331.D
Acq: 24 May 2016  4:13 am

Tgt Ion:278 Resp:  110467

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 0.0 | 0.0 | 20.0 |
| 279 | 23.2 | 4.2 | 44.2 |

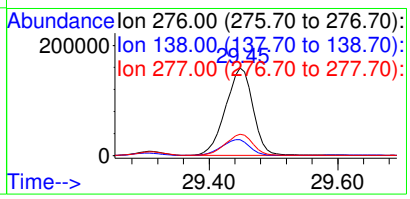


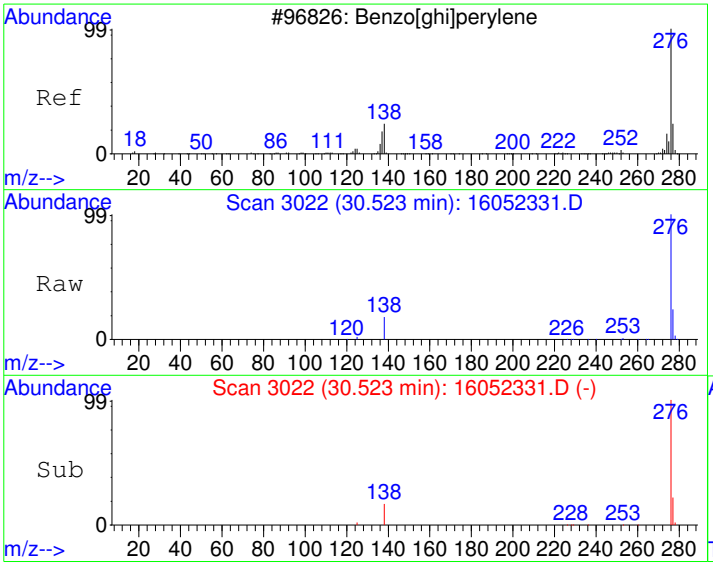



#27
Indeno[1,2,3-cd]pyrene
Concen: 1134.98 ug/kg
RT: 29.45 min Scan# 2870
Delta R.T. -0.03 min
Lab File: 16052331.D
Acq: 24 May 2016 4:13 am

Tgt Ion:276 Resp: 468044

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 18.0 | 6.7 | 46.7 |
| 277 | 24.3 | 5.8 | 45.8 |

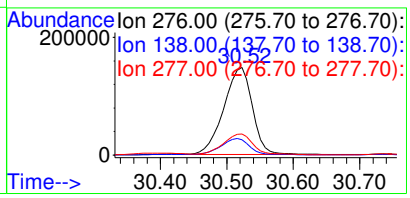



#28
Benzo[g,h,i]perylene
Concen: 1361.51 ug/kg
RT: 30.52 min Scan# 3022
Delta R.T. -0.03 min
Lab File: 16052331.D
Acq: 24 May 2016 4:13 am

Tgt Ion:276 Resp: 437811

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 17.4 | 0.0 | 39.1 |
| 277 | 24.0 | 4.0 | 44.0 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052332.D Vial: 25
Acq On : 24 May 2016 4:53 am Operator:
Sample : 1605121-21A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:07 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

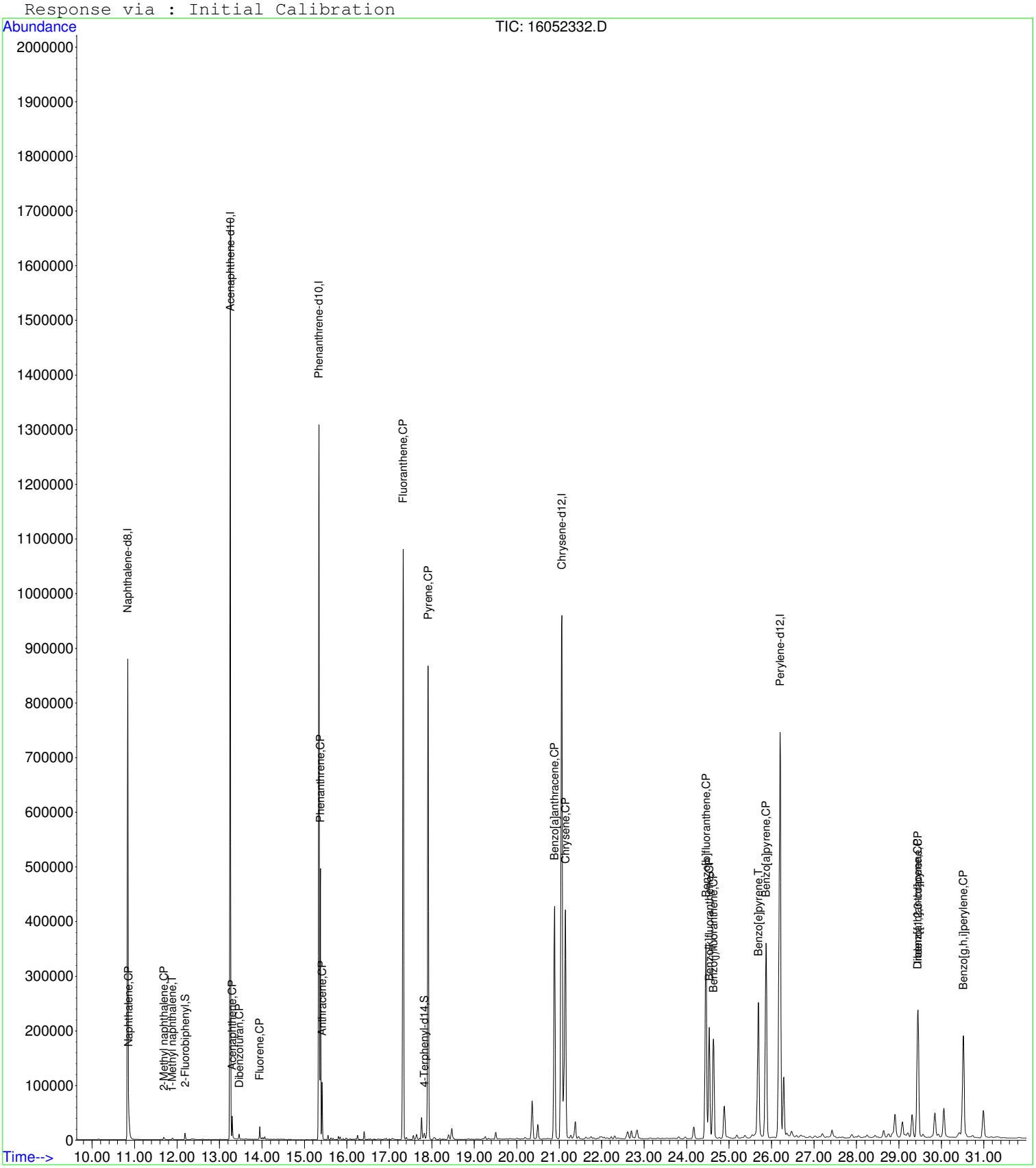
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1103019 | 4000.00 | ug/kg | 95 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 882490 | 4000.00 | ug/kg | 77 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1425065 | 4000.00 | ug/kg | 70 |
| 17) Chrysene-d12 | 21.06 | 240 | 1624779 | 4000.00 | ug/kg | 72 |
| 20) Perylene-d12 | 26.20 | 264 | 1452666 | 4000.00 | ug/kg | 71 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 9954 | 38.67 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.97%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 12690 | 34.42 | ug/kg | -0.03 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.86%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 13283 | 48.14 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.69 | 142 | 3080 | 12.64 | ug/kg | 97 |
| 4) 1-Methyl naphthalene | 11.89 | 142 | 1934 | 8.66 | ug/kg | 91 |
| 6) Dibenzofuran | 13.46 | 168 | 8810 | 26.64 | ug/kg | 98 |
| 9) Acenaphthene | 13.30 | 154 | 15468 | 65.57 | ug/kg | 99 |
| 10) Fluorene | 13.95 | 166 | 11022 | 38.47 | ug/kg | 96 |
| 12) Phenanthrene | 15.38 | 178 | 411850 | 1098.95 | ug/kg | 99 |
| 13) Anthracene | 15.42 | 178 | 87975 | 248.01 | ug/kg | 99 |
| 14) Fluoranthene | 17.32 | 202 | 1072596 | 2765.70 | ug/kg | 99 |
| 15) Pyrene | 17.92 | 202 | 945849 | 2347.82 | ug/kg | 100 |
| 18) Benzo[a]anthracene | 20.89 | 228 | 633179 | 1663.43 | ug/kg | 99 |
| 19) Chrysene | 21.15 | 228 | 695664 | 1891.52 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.46 | 252 | 672800 | 1757.24 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.53 | 252 | 341710 | 951.39 | ug/kg | 97 |
| 23) Benzo(j)fluoranthene | 24.63 | 252 | 310117 | 969.28 | ug/kg | 92 |
| 24) Benzo[e]pyrene | 25.69 | 252 | 475415 | 1386.52 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.87 | 252 | 674022 | 1923.65 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.43 | 278 | 96961 | 303.85 | ug/kg | 97 |
| 27) Indeno[1,2,3-cd]pyrene | 29.45 | 276 | 405283 | 1064.62 | ug/kg | 91 |
| 28) Benzo[g,h,i]perylene | 30.52 | 276 | 374118 | 1260.31 | ug/kg | 98 |

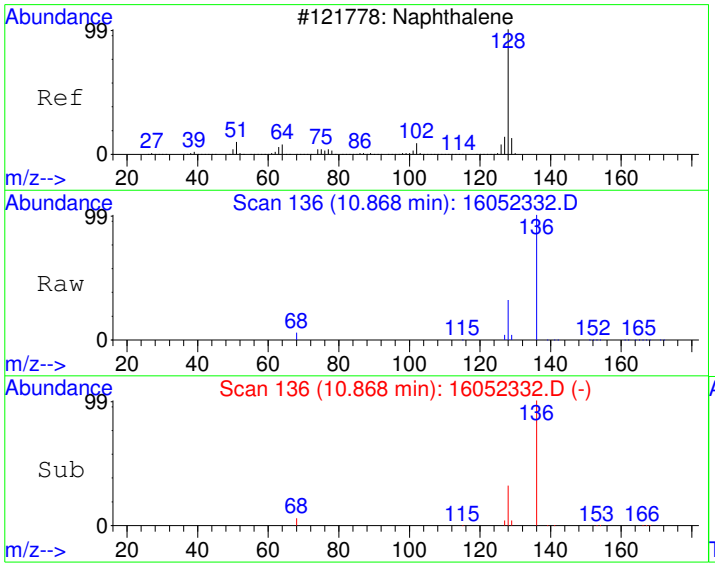
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052332.D Vial: 25
Acq On : 24 May 2016 4:53 am Operator:
Sample : 1605121-21A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:07 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

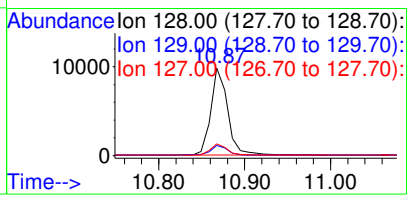


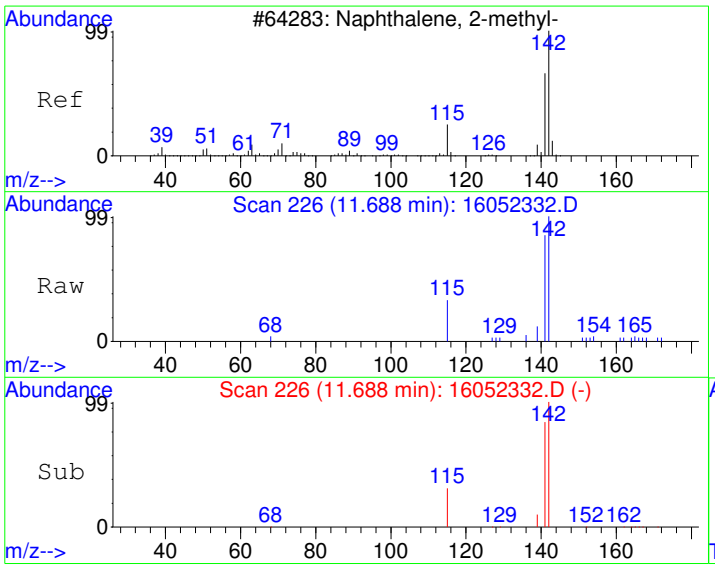



#2
Naphthalene
Concen: 48.14 ug/kg
RT: 10.87 min Scan# 136
Delta R.T. -0.01 min
Lab File: 16052332.D
Acq: 24 May 2016 4:53 am

Tgt Ion:128 Resp: 13283

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 11.2 | 0.0 | 41.1 |
| 127 | 13.0 | 0.0 | 42.4 |

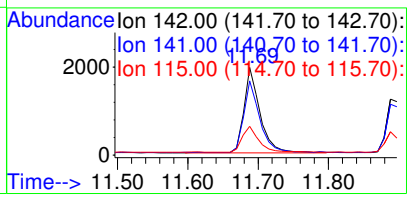


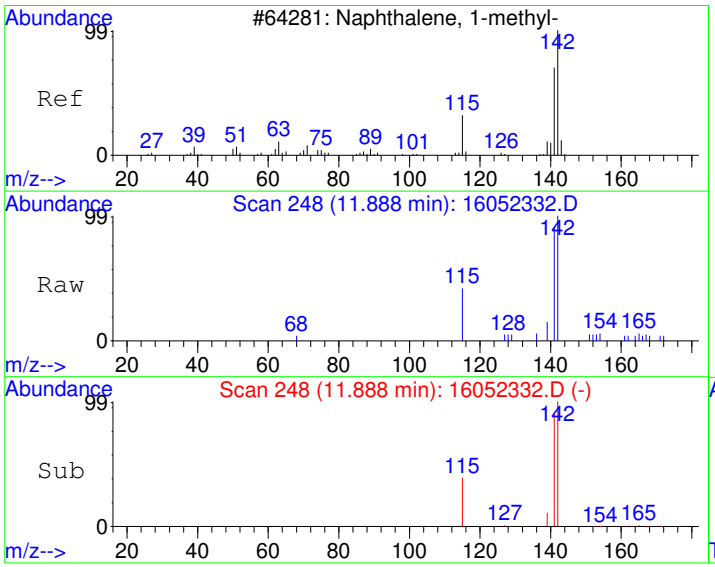




#3
2-Methyl naphthalene
Concen: 12.64 ug/kg
RT: 11.69 min Scan# 226
Delta R.T. -0.01 min
Lab File: 16052332.D
Acq: 24 May 2016 4:53 am

Tgt Ion:142 Resp: 3080

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 83.7 | 54.4 | 114.4 |
| 115 | 30.5 | 0.0 | 56.0 |

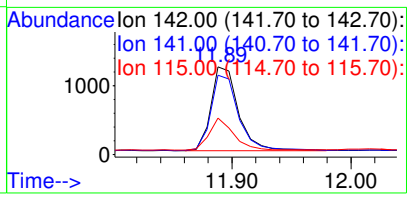


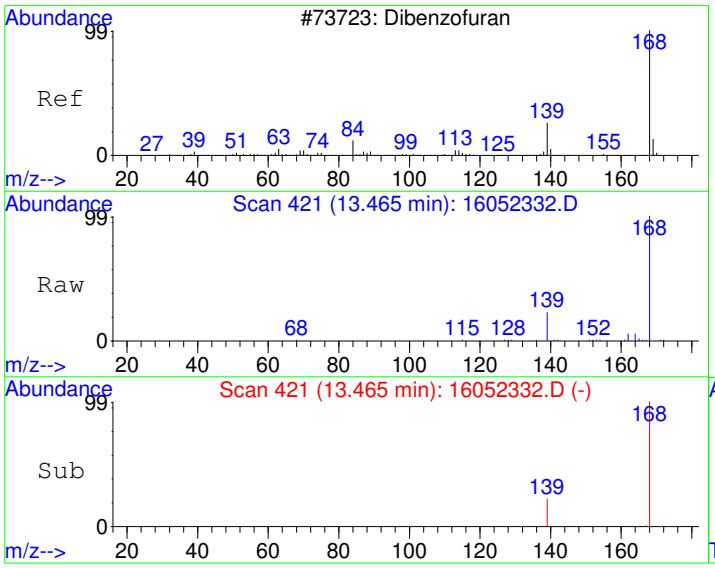




#4
1-Methyl naphthalene
Concen: 8.66 ug/kg
RT: 11.89 min Scan# 248
Delta R.T. -0.01 min
Lab File: 16052332.D
Acq: 24 May 2016 4:53 am

Tgt Ion:142 Resp: 1934

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 89.7 | 56.5 | 116.5 |
| 115 | 38.2 | 0.0 | 55.0 |

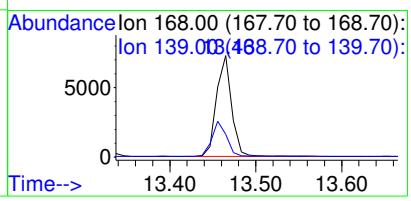


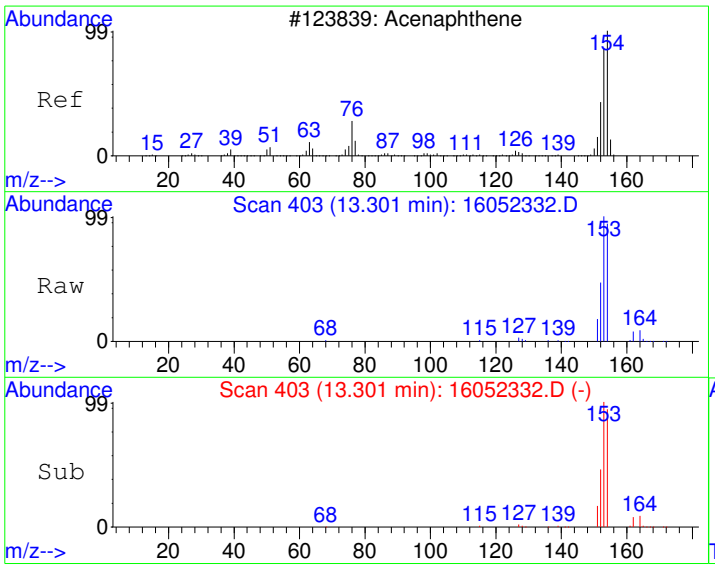



#6
Dibenzofuran
Concen: 26.64 ug/kg
RT: 13.46 min Scan# 421
Delta R.T. -0.01 min
Lab File: 16052332.D
Acq: 24 May 2016 4:53 am

Tgt Ion:168 Resp: 8810

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 34.9 | 27.0 | 40.4 |

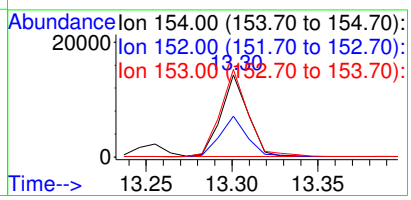


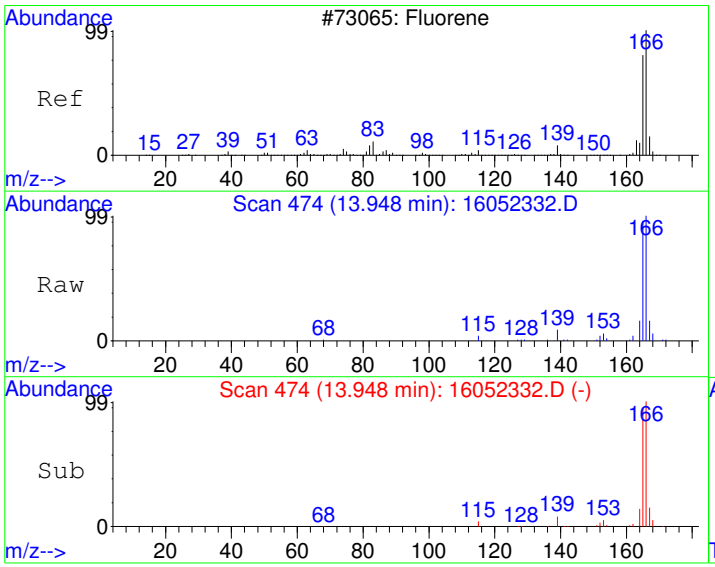




#9
Acenaphthene
Concen: 65.57 ug/kg
RT: 13.30 min Scan# 403
Delta R.T. -0.02 min
Lab File: 16052332.D
Acq: 24 May 2016 4:53 am

Tgt Ion:154 Resp: 15468

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 49.6 | 18.9 | 78.9 |
| 153 | 106.7 | 75.2 | 135.2 |

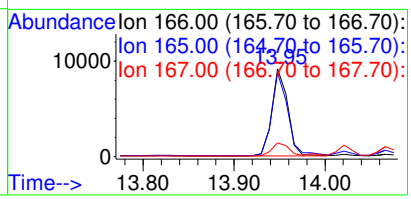


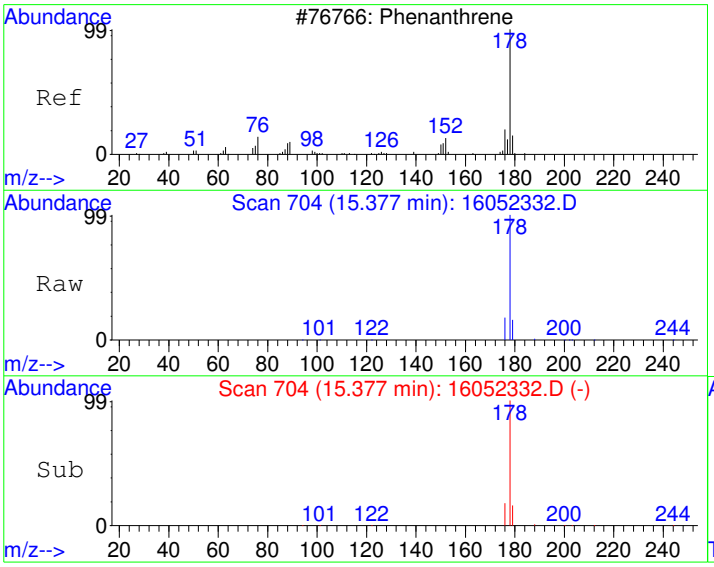




#10
Fluorene
Concen: 38.47 ug/kg
RT: 13.95 min Scan# 474
Delta R.T. -0.02 min
Lab File: 16052332.D
Acq: 24 May 2016 4:53 am

Tgt Ion:166 Resp: 11022

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 95.3 | 61.8 | 121.8 |
| 167 | 15.0 | 0.0 | 43.6 |

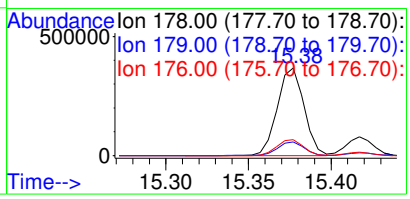


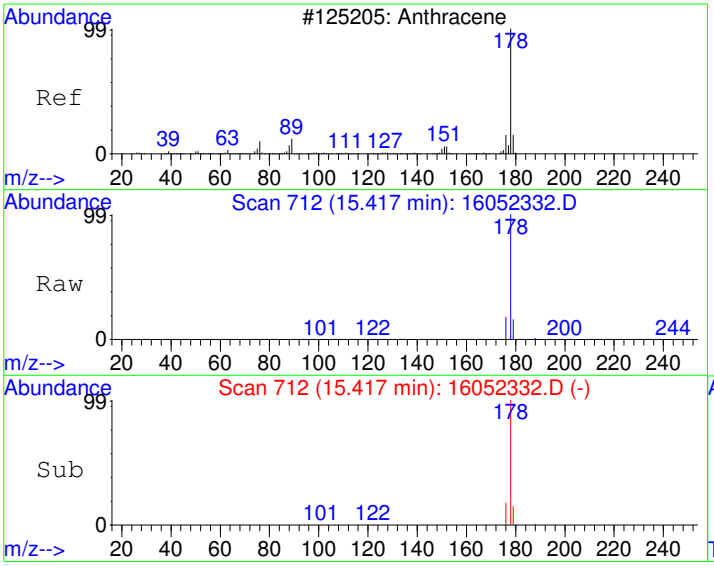



#12
Phenanthrene
Concen: 1098.95 ug/kg
RT: 15.38 min Scan# 704
Delta R.T. -0.02 min
Lab File: 16052332.D
Acq: 24 May 2016 4:53 am

Tgt Ion:178 Resp: 411850

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.7 | 0.0 | 45.9 |
| 176 | 18.1 | 0.0 | 48.5 |

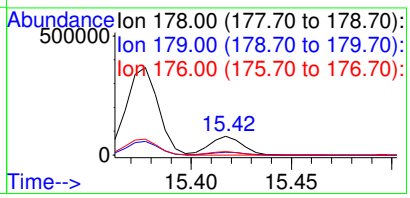


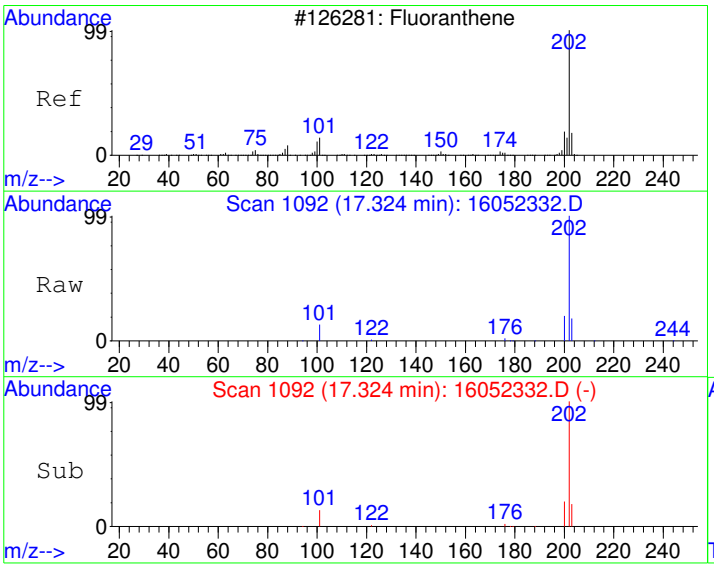




#13
Anthracene
Concen: 248.01 ug/kg
RT: 15.42 min Scan# 712
Delta R.T. -0.02 min
Lab File: 16052332.D
Acq: 24 May 2016 4:53 am

Tgt Ion:178 Resp: 87975

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.4 | 0.0 | 45.9 |
| 176 | 17.6 | 0.0 | 48.2 |

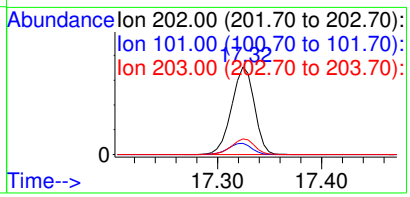


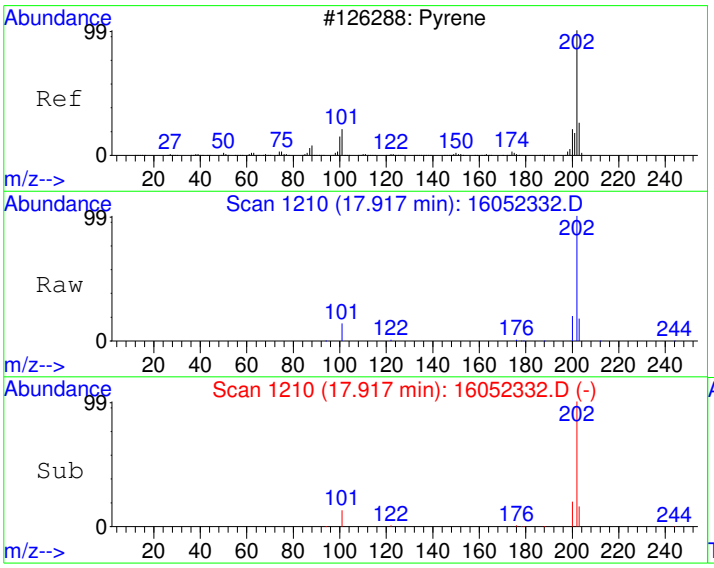




#14
Fluoranthene
Concen: 2765.70 ug/kg
RT: 17.32 min Scan# 1092
Delta R.T. -0.02 min
Lab File: 16052332.D
Acq: 24 May 2016 4:53 am

Tgt Ion:202 Resp: 1072596

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 12.7 | 0.0 | 43.0 |
| 203 | 17.8 | 0.0 | 47.9 |

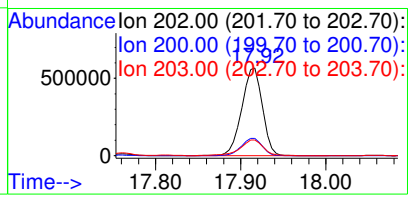


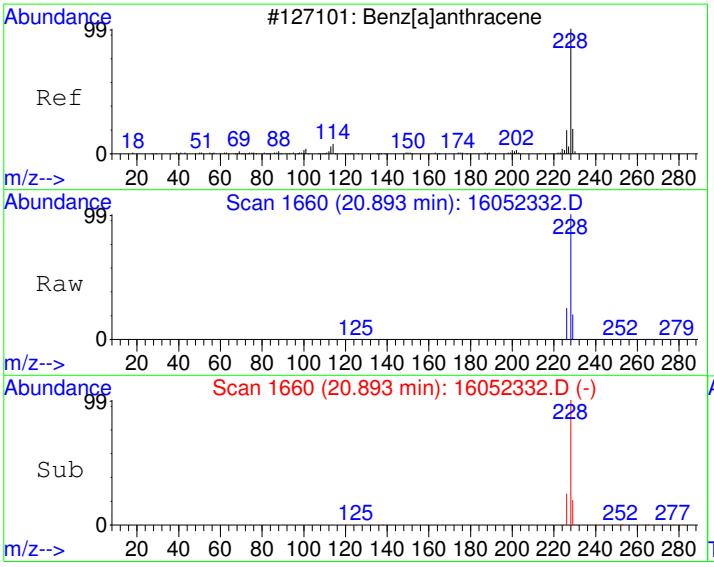



#15
Pyrene
Concen: 2347.82 ug/kg
RT: 17.92 min  Scan# 1210
Delta R.T.  -0.02 min
Lab File:  16052332.D
Acq: 24 May 2016  4:53 am

Tgt Ion:202 Resp:  945849

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 200 | 19.8 | 0.0 | 50.0 |
| 203 | 18.0 | 0.0 | 48.0 |

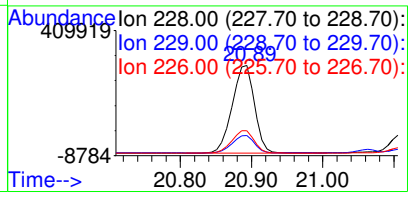


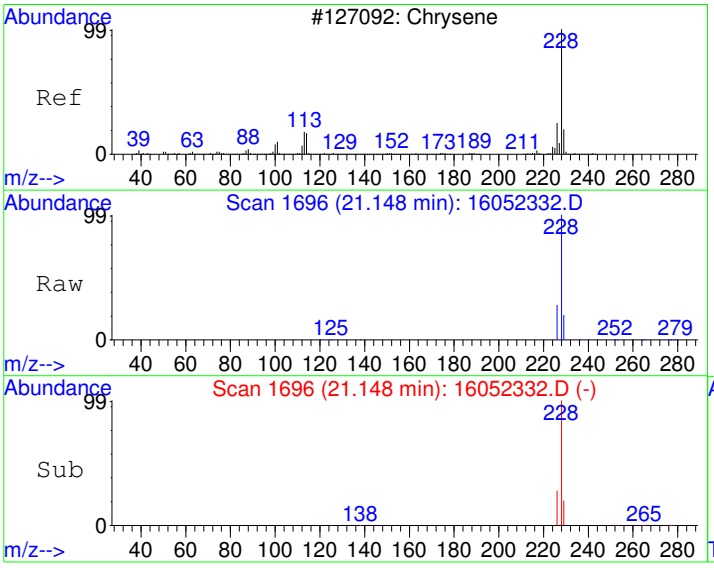




#18
Benzo[a]anthracene
Concen: 1663.43 ug/kg
RT: 20.89 min  Scan# 1660
Delta R.T.  -0.02 min
Lab File:  16052332.D
Acq: 24 May 2016  4:53 am

Tgt Ion:228 Resp:  633179

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.8 | 0.0 | 50.1 |
| 226 | 25.5 | 0.0 | 55.2 |

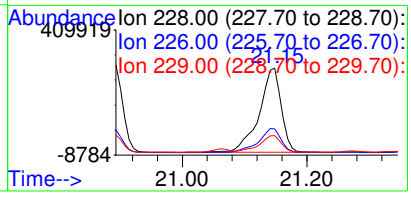


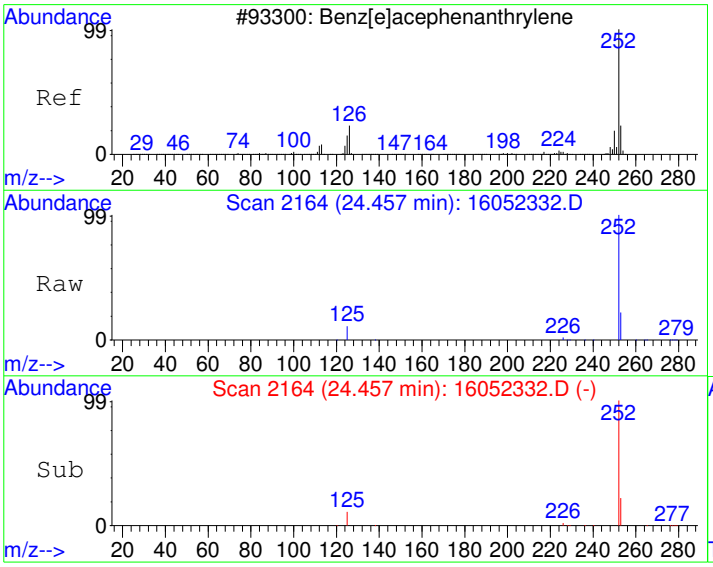




#19
Chrysene
Concen: 1891.52 ug/kg
RT: 21.15 min  Scan# 1696
Delta R.T.  -0.02 min
Lab File:  16052332.D
Acq: 24 May 2016  4:53 am

Tgt Ion:228 Resp:  695664

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.2 | 0.0 | 58.1 |
| 229 | 20.0 | 0.0 | 50.1 |

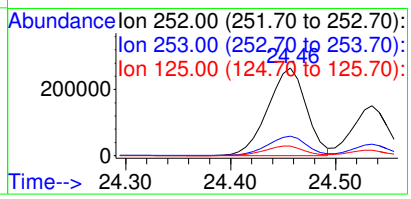


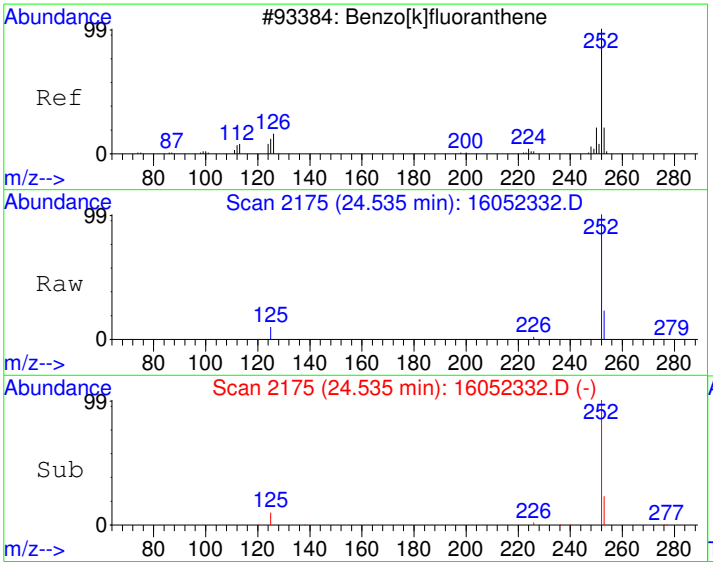



#21
Benzo[b]fluoranthene
Concen: 1757.24 ug/kg
RT: 24.46 min Scan# 2164
Delta R.T. -0.03 min
Lab File: 16052332.D
Acq: 24 May 2016 4:53 am

Tgt Ion:252 Resp: 672800

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.1 | 0.0 | 52.2 |
| 125 | 10.8 | 0.0 | 41.0 |

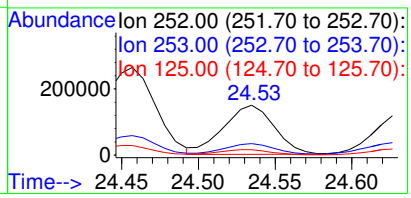


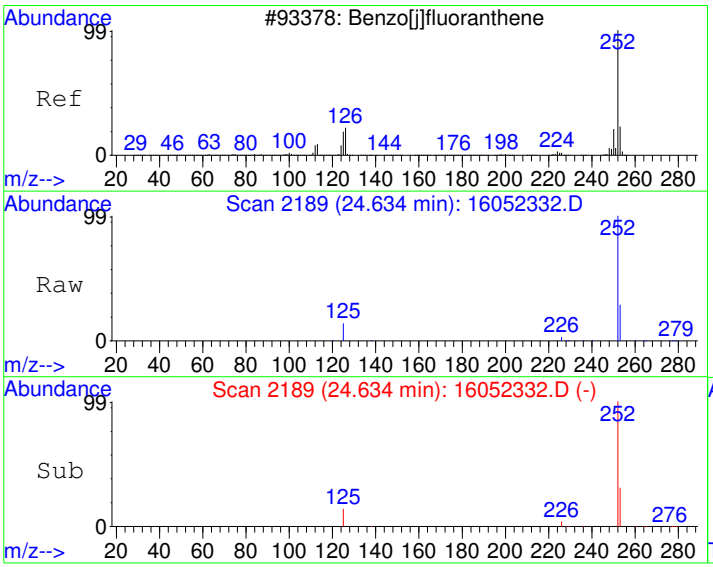




#22
Benzo[k]fluoranthene
Concen: 951.39 ug/kg
RT: 24.53 min Scan# 2175
Delta R.T. -0.04 min
Lab File: 16052332.D
Acq: 24 May 2016 4:53 am

Tgt Ion:252 Resp: 341710

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.1 | 2.1 | 42.1 |
| 125 | 10.1 | 0.0 | 31.3 |

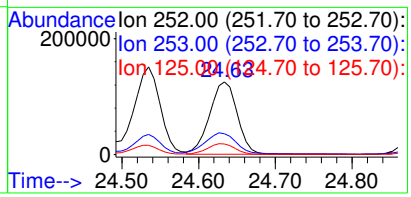


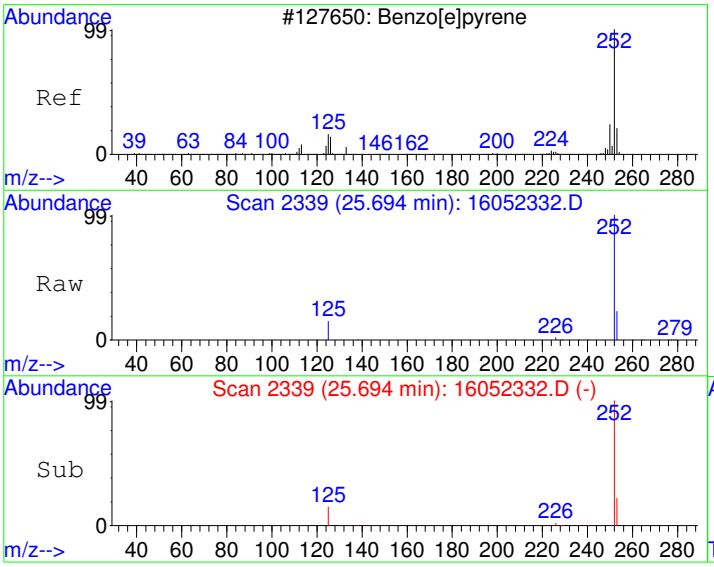




#23
Benzo(j)fluoranthene
Concen: 969.28 ug/kg
RT: 24.63 min Scan# 2189
Delta R.T. -0.04 min
Lab File: 16052332.D
Acq: 24 May 2016 4:53 am

Tgt Ion:252 Resp: 310117

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 28.3 | 2.1 | 42.1 |
| 125 | 14.3 | 0.0 | 34.4 |

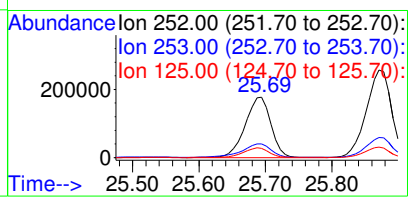


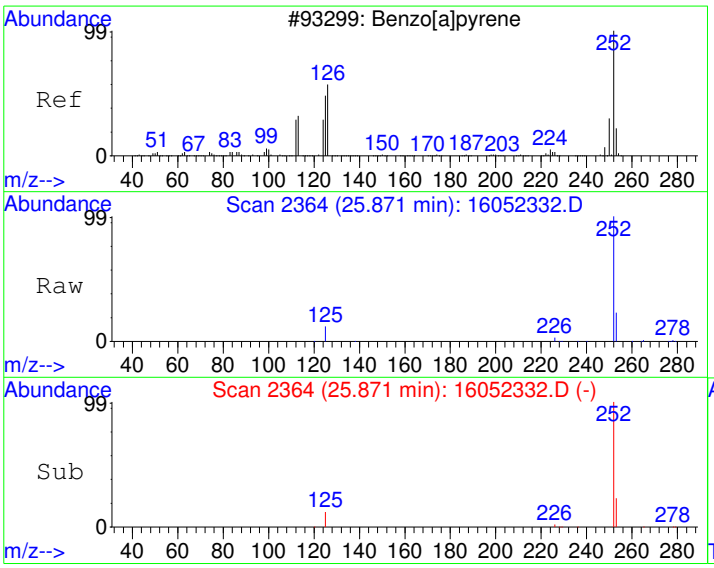



#24
Benzo[e]pyrene
Concen: 1386.52 ug/kg
RT: 25.69 min  Scan# 2339
Delta R.T.  -0.03 min
Lab File:  16052332.D
Acq: 24 May 2016  4:53 am

Tgt Ion:252 Resp:  475415

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.2 | 2.2 | 42.2 |
| 125 | 15.1 | 0.0 | 36.1 |

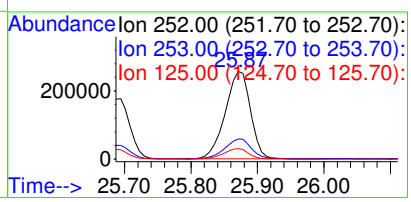


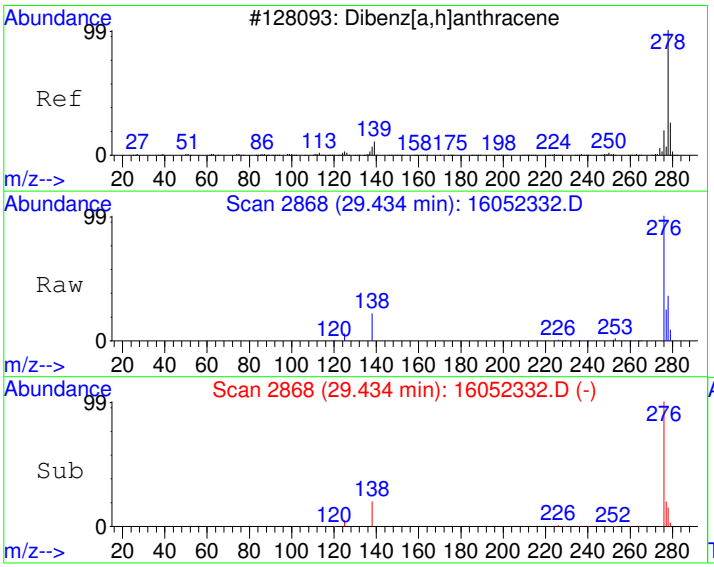




#25
Benzo[a]pyrene
Concen: 1923.65 ug/kg
RT: 25.87 min  Scan# 2364
Delta R.T.  -0.03 min
Lab File:  16052332.D
Acq: 24 May 2016  4:53 am

Tgt Ion:252 Resp:  674022

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.6 | 1.9 | 41.9 |
| 125 | 11.9 | 0.0 | 31.7 |

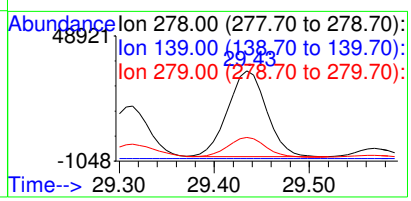


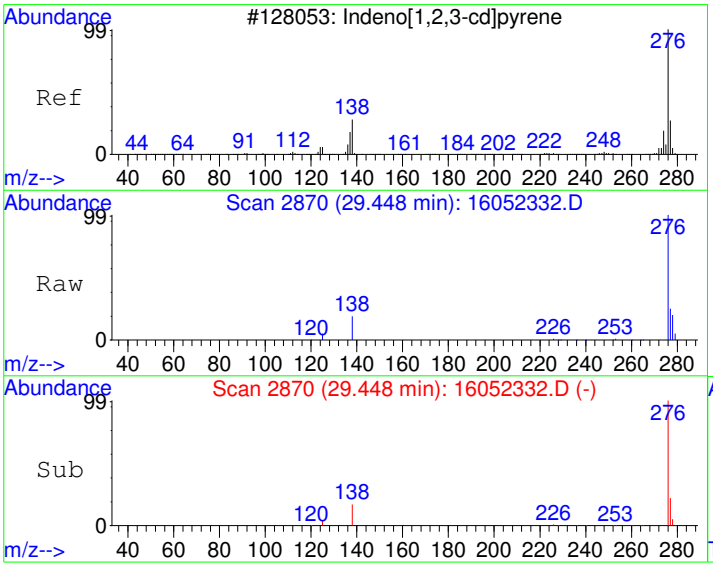




#26
Dibenz[a,h]anthracene
Concen:  303.85 ug/kg
RT: 29.43 min  Scan# 2868
Delta R.T.  -0.04 min
Lab File:  16052332.D
Acq: 24 May 2016  4:53 am

Tgt Ion:278 Resp:  96961

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 0.0 | 0.0 | 20.0 |
| 279 | 22.9 | 4.2 | 44.2 |

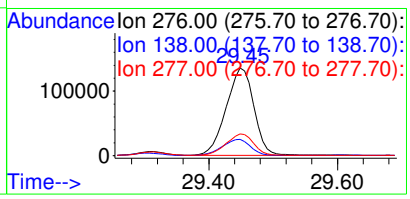


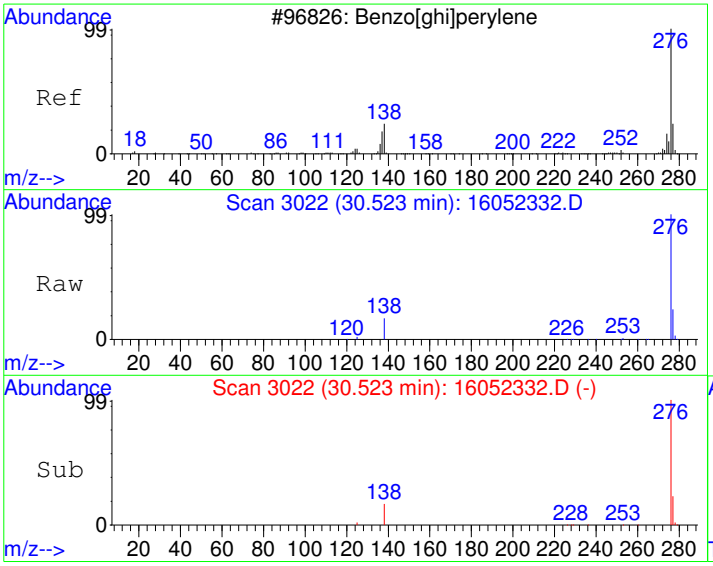



#27
Indeno[1,2,3-cd]pyrene
Concen: 1064.62 ug/kg
RT: 29.45 min Scan# 2870
Delta R.T. -0.03 min
Lab File: 16052332.D
Acq: 24 May 2016 4:53 am

Tgt Ion:276 Resp: 405283

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 18.5 | 6.7 | 46.7 |
| 277 | 24.5 | 5.8 | 45.8 |

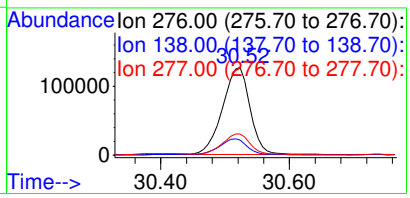



#28
Benzo[g,h,i]perylene
Concen: 1260.31 ug/kg
RT: 30.52 min Scan# 3022
Delta R.T. -0.03 min
Lab File: 16052332.D
Acq: 24 May 2016 4:53 am

Tgt Ion:276 Resp: 374118

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 17.0 | 0.0 | 39.1 |
| 277 | 24.0 | 4.0 | 44.0 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052333.D Vial: 26
Acq On : 24 May 2016 5:34 am Operator:
Sample : 1605121-23A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:08 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

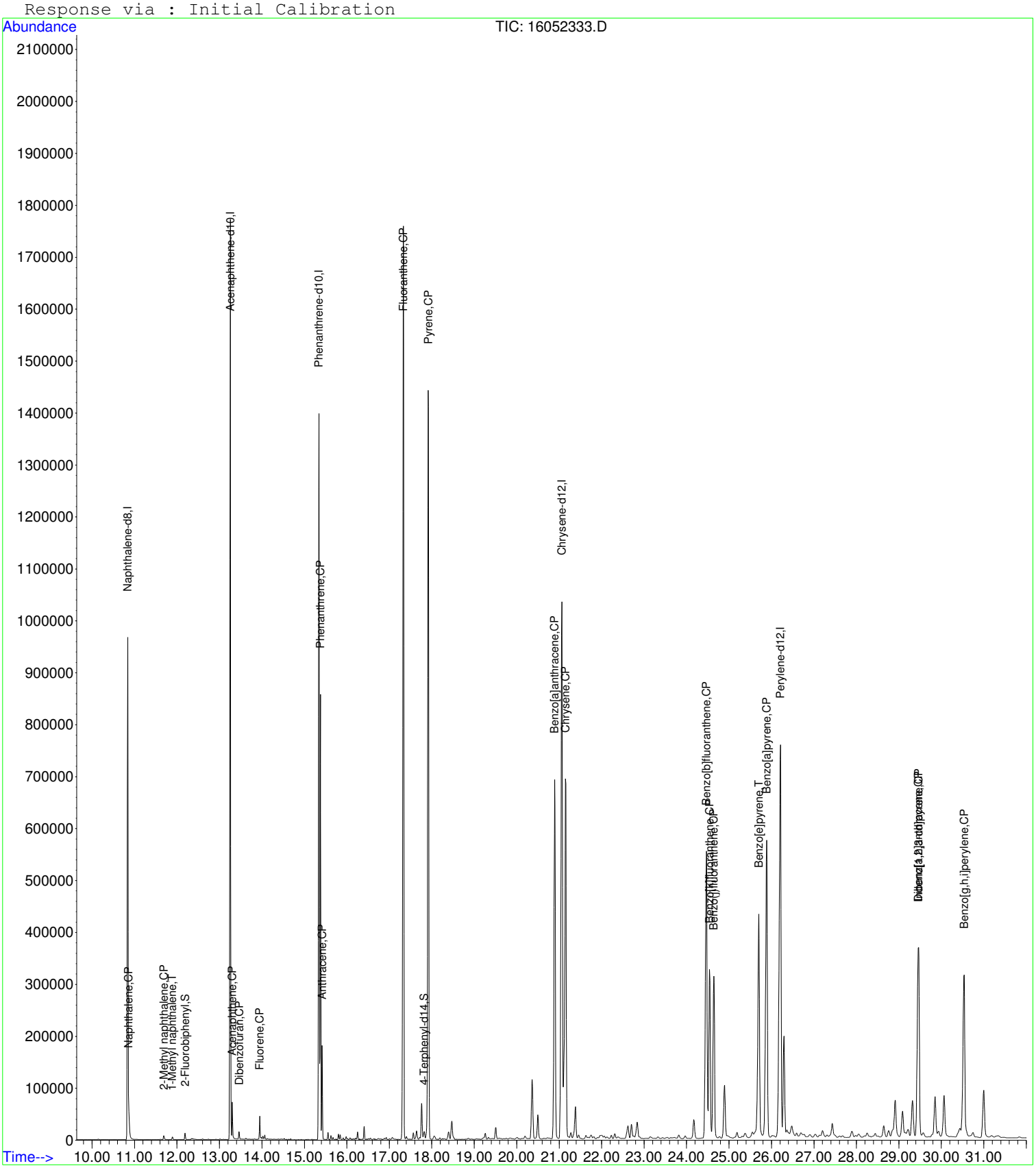
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1206257 | 4000.00 | ug/kg | 104 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 928977 | 4000.00 | ug/kg | 81 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1530018 | 4000.00 | ug/kg | 75 |
| 17) Chrysene-d12 | 21.06 | 240 | 1698082 | 4000.00 | ug/kg | 75 |
| 20) Perylene-d12 | 26.21 | 264 | 1509715 | 4000.00 | ug/kg | 73 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 10552 | 38.94 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.97%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 13604 | 34.37 | ug/kg | -0.03 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.86%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 24180 | 80.14 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.69 | 142 | 5001 | 18.76 | ug/kg | 98 |
| 4) 1-Methyl naphthalene | 11.89 | 142 | 3397 | 13.92 | ug/kg | 95 |
| 6) Dibenzofuran | 13.47 | 168 | 14785 | 42.46 | ug/kg | 99 |
| 9) Acenaphthene | 13.30 | 154 | 27483 | 110.68 | ug/kg | 99 |
| 10) Fluorene | 13.95 | 166 | 20848 | 69.13 | ug/kg | 97 |
| 12) Phenanthrene | 15.38 | 178 | 696793 | 1731.72 | ug/kg | 100 |
| 13) Anthracene | 15.42 | 178 | 154308 | 405.17 | ug/kg | 99 |
| 14) Fluoranthene | 17.33 | 202 | 1800569 | 4324.30 | ug/kg | 99 |
| 15) Pyrene | 17.92 | 202 | 1591754 | 3680.07 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.89 | 228 | 1059169 | 2662.44 | ug/kg | 99 |
| 19) Chrysene | 21.15 | 228 | 1150229 | 2992.48 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.46 | 252 | 1147116 | 2882.86 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.54 | 252 | 551449 | 1477.32 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.64 | 252 | 516909 | 1554.56 | ug/kg | 90 |
| 24) Benzo[e]pyrene | 25.70 | 252 | 803961 | 2256.10 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.89 | 252 | 1139426 | 3129.02 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.45 | 278 | 164944 | 497.36 | ug/kg | 98 |
| 27) Indeno[1,2,3-cd]pyrene | 29.47 | 276 | 691494 | 1747.82 | ug/kg | 88 |
| 28) Benzo[g,h,i]perylene | 30.54 | 276 | 663753 | 2151.52 | ug/kg | 98 |

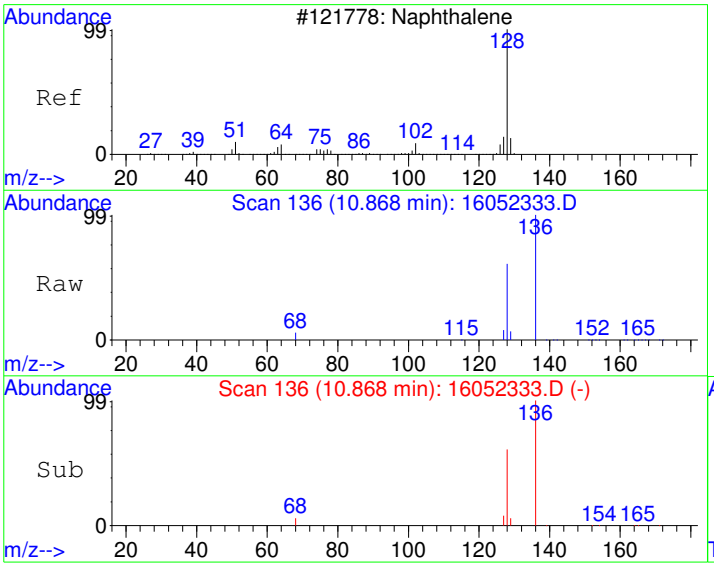
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052333.D Vial: 26
Acq On : 24 May 2016 5:34 am Operator:
Sample : 1605121-23A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:08 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

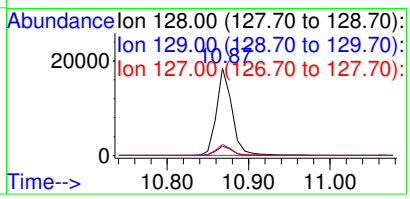


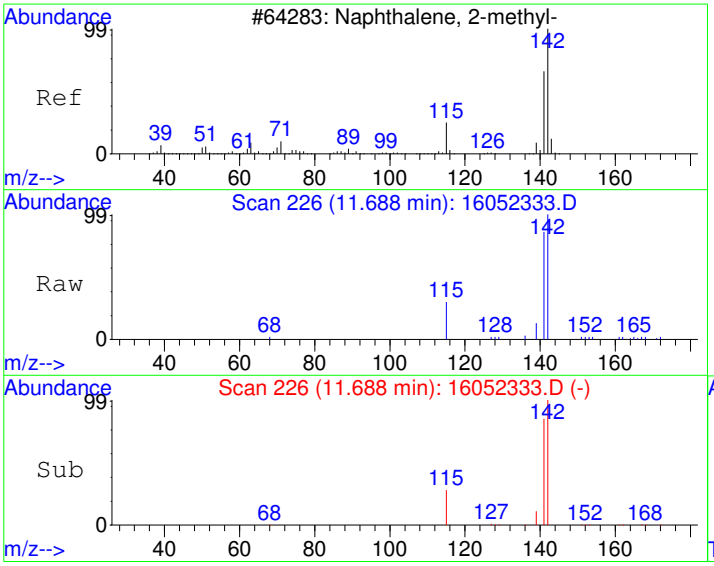



#2
Naphthalene
Concen: 80.14 ug/kg
RT: 10.87 min Scan# 136
Delta R.T. -0.01 min
Lab File: 16052333.D
Acq: 24 May 2016 5:34 am

Tgt Ion:128 Resp: 24180

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 10.5 | 0.0 | 41.1 |
| 127 | 12.5 | 0.0 | 42.4 |

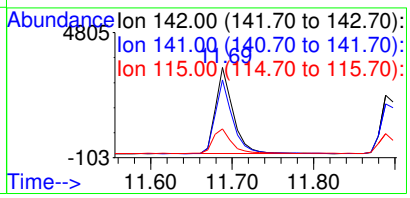


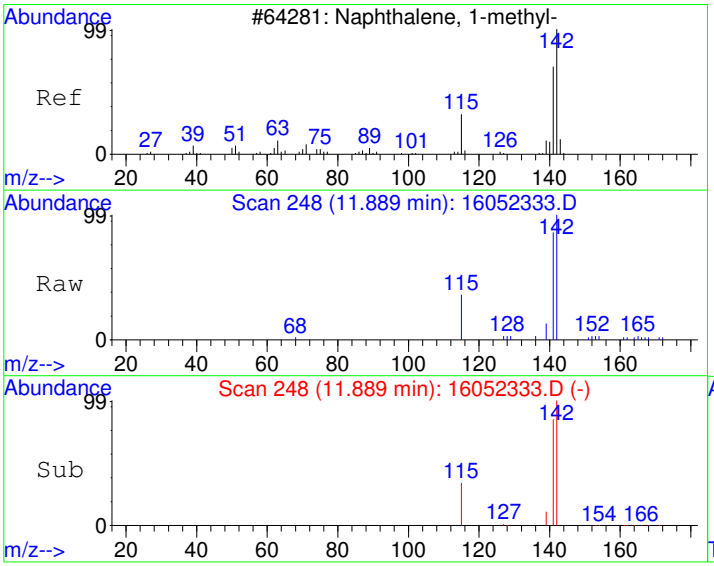




#3
2-Methyl naphthalene
Concen: 18.76 ug/kg
RT: 11.69 min Scan# 226
Delta R.T. -0.01 min
Lab File: 16052333.D
Acq: 24 May 2016 5:34 am

Tgt Ion:142 Resp: 5001

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 85.5 | 54.4 | 114.4 |
| 115 | 28.5 | 0.0 | 56.0 |

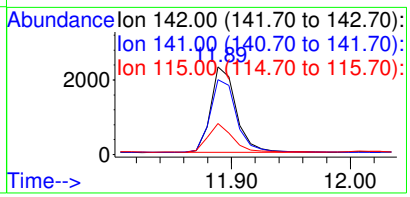


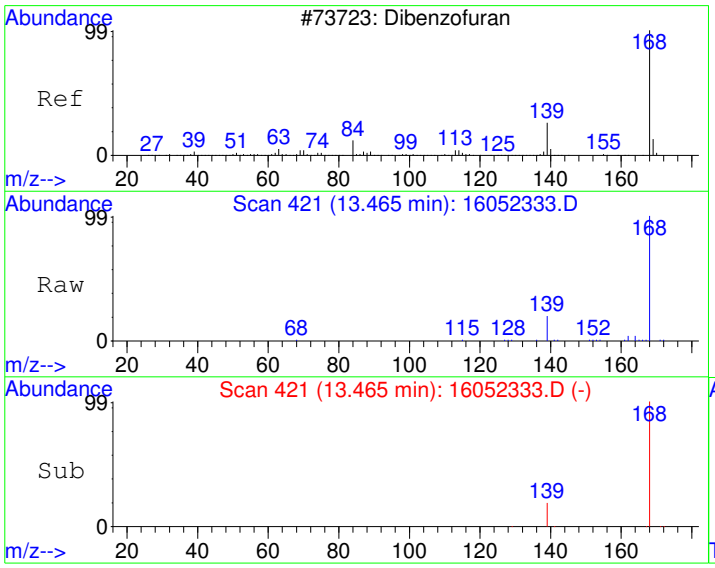




#4
1-Methyl naphthalene
Concen: 13.92 ug/kg
RT: 11.89 min Scan# 248
Delta R.T. -0.01 min
Lab File: 16052333.D
Acq: 24 May 2016 5:34 am

Tgt Ion:142 Resp: 3397

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 84.9 | 56.5 | 116.5 |
| 115 | 33.8 | 0.0 | 55.0 |

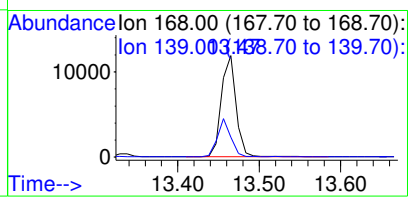


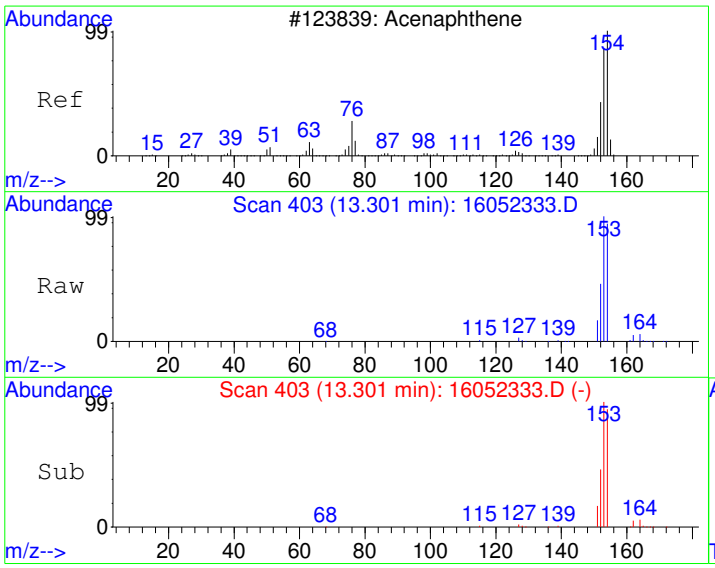



#6
Dibenzofuran
Concen: 42.46 ug/kg
RT: 13.47 min Scan# 421
Delta R.T. -0.01 min
Lab File: 16052333.D
Acq: 24 May 2016 5:34 am

Tgt Ion:168 Resp: 14785

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 34.3 | 27.0 | 40.4 |

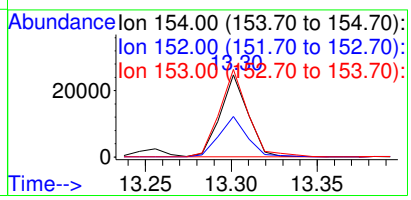


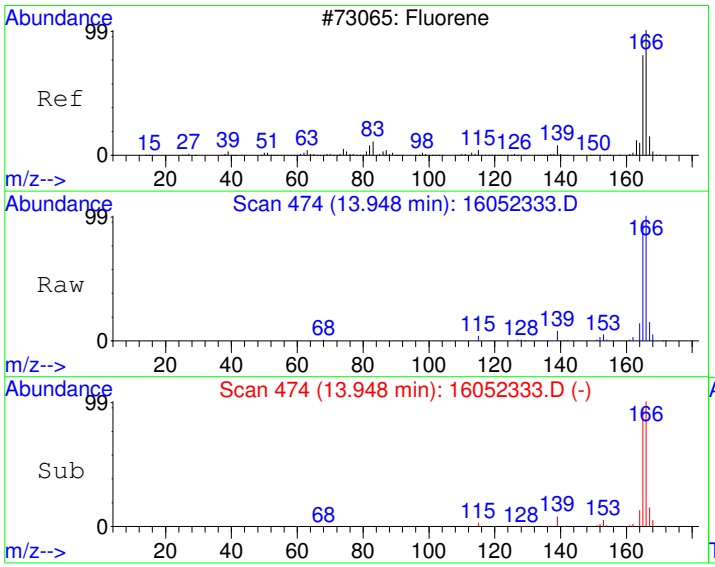




#9
Acenaphthene
Concen: 110.68 ug/kg
RT: 13.30 min Scan# 403
Delta R.T. -0.02 min
Lab File: 16052333.D
Acq: 24 May 2016 5:34 am

Tgt Ion:154 Resp: 27483

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 49.3 | 18.9 | 78.9 |
| 153 | 106.4 | 75.2 | 135.2 |

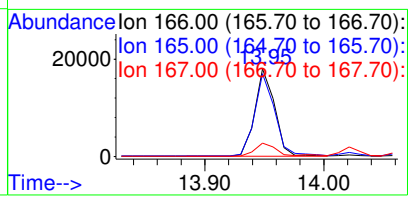


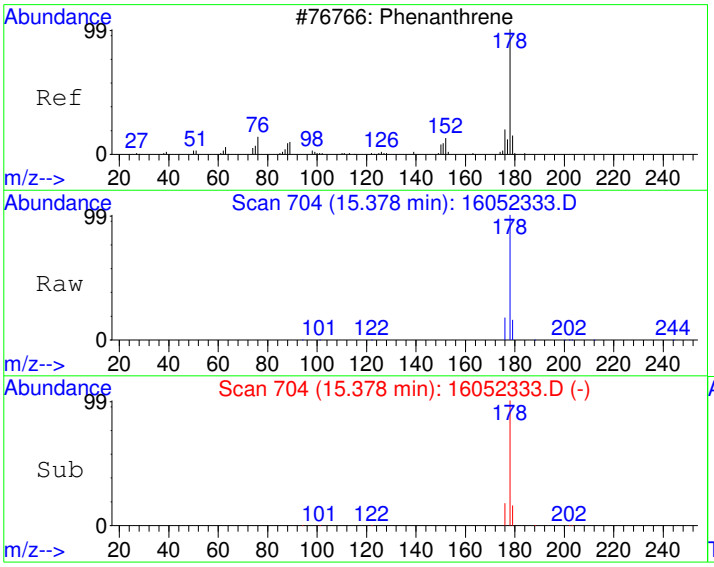




#10
Fluorene
Concen: 69.13 ug/kg
RT: 13.95 min Scan# 474
Delta R.T. -0.02 min
Lab File: 16052333.D
Acq: 24 May 2016 5:34 am

Tgt Ion:166 Resp: 20848

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 94.2 | 61.8 | 121.8 |
| 167 | 14.8 | 0.0 | 43.6 |

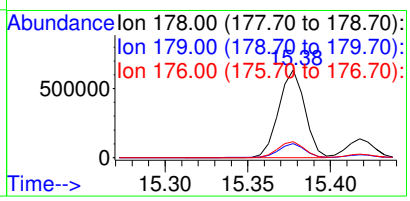


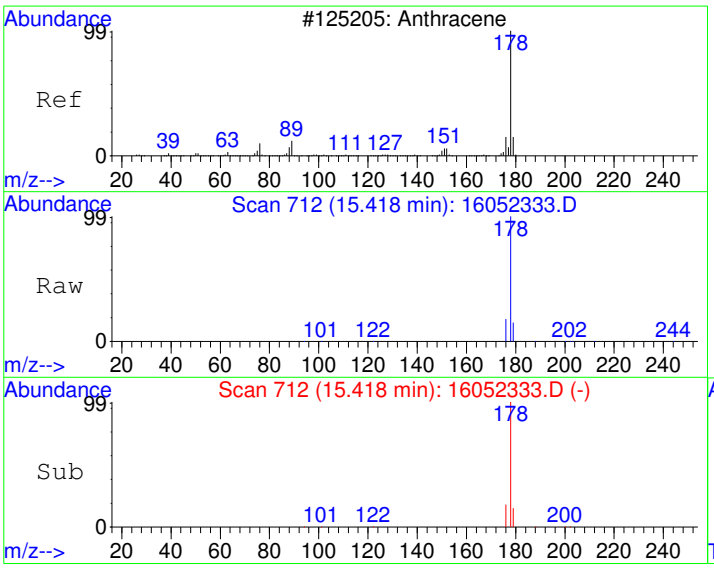



#12
Phenanthrene
Concen: 1731.72 ug/kg
RT: 15.38 min Scan# 704
Delta R.T. -0.02 min
Lab File: 16052333.D
Acq: 24 May 2016 5:34 am

Tgt Ion:178 Resp: 696793

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.8 | 0.0 | 45.9 |
| 176 | 18.4 | 0.0 | 48.5 |

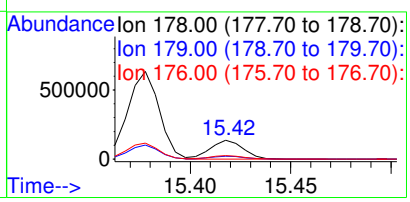


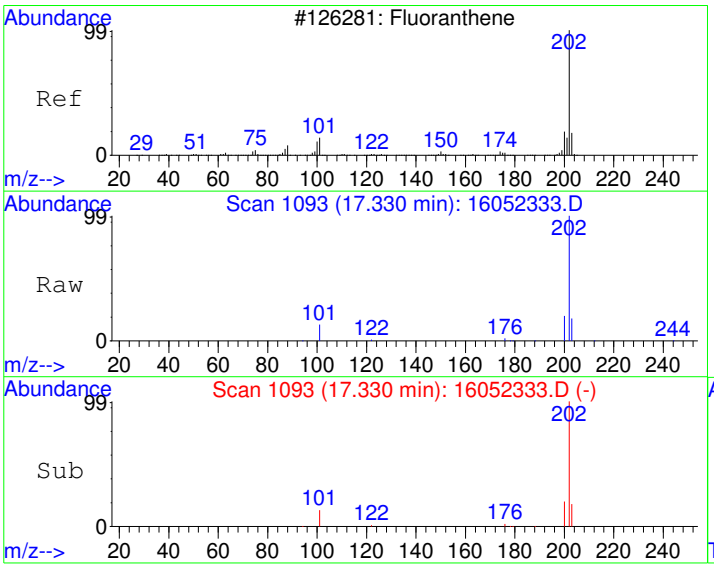




#13
Anthracene
Concen: 405.17 ug/kg
RT: 15.42 min Scan# 712
Delta R.T. -0.02 min
Lab File: 16052333.D
Acq: 24 May 2016 5:34 am

Tgt Ion:178 Resp: 154308

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.4 | 0.0 | 45.9 |
| 176 | 17.9 | 0.0 | 48.2 |

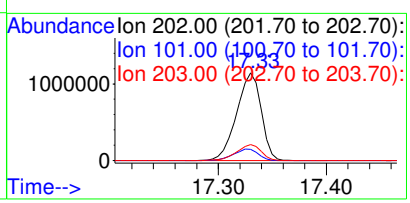


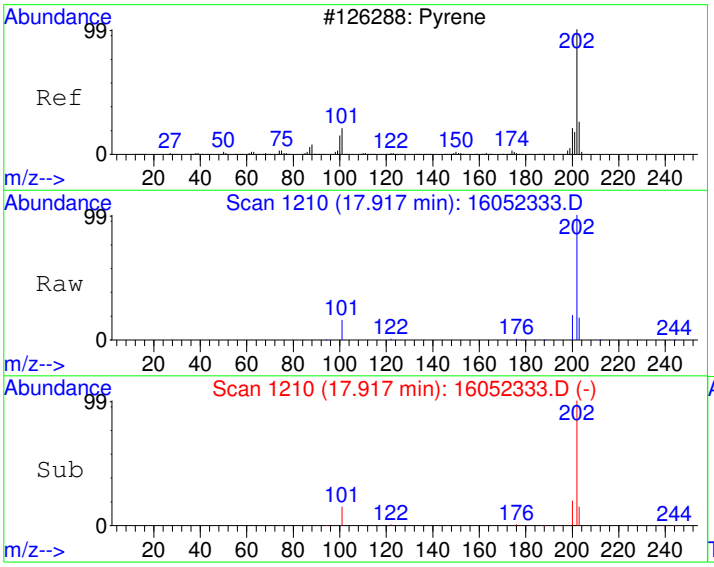




#14
Fluoranthene
Concen: 4324.30 ug/kg
RT: 17.33 min Scan# 1093
Delta R.T. -0.01 min
Lab File: 16052333.D
Acq: 24 May 2016 5:34 am

Tgt Ion:202 Resp: 1800569

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 12.7 | 0.0 | 43.0 |
| 203 | 18.2 | 0.0 | 47.9 |

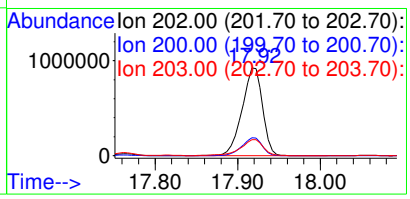


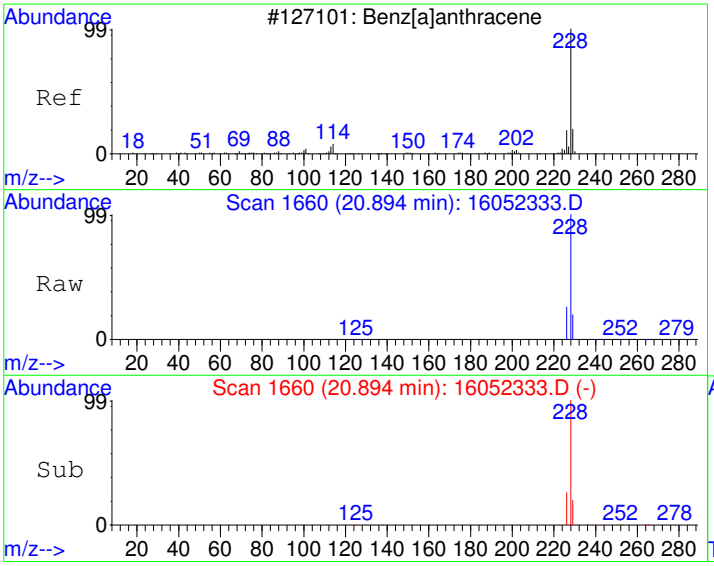



#15
Pyrene
Concen: 3680.07 ug/kg
RT: 17.92 min  Scan# 1210
Delta R.T.  -0.02 min
Lab File:  16052333.D
Acq: 24 May 2016  5:34 am

Tgt Ion:202 Resp: 1591754

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 200 | 20.5 | 0.0 | 50.0 |
| 203 | 18.2 | 0.0 | 48.0 |

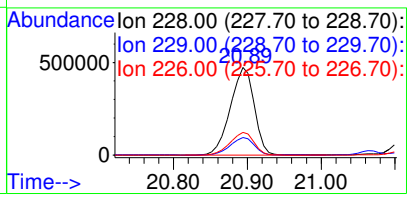


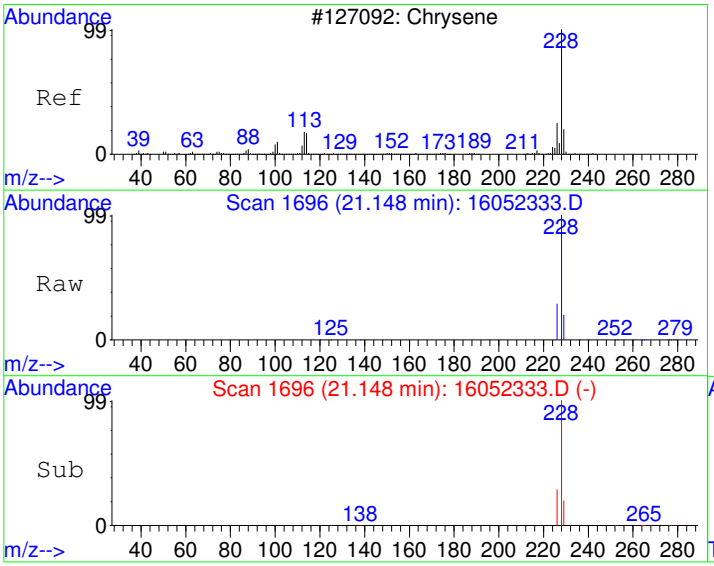




#18
Benzo[a]anthracene
Concen: 2662.44 ug/kg
RT: 20.89 min  Scan# 1660
Delta R.T.  -0.02 min
Lab File:  16052333.D
Acq: 24 May 2016  5:34 am

Tgt Ion:228 Resp: 1059169

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 20.1 | 0.0 | 50.1 |
| 226 | 26.0 | 0.0 | 55.2 |

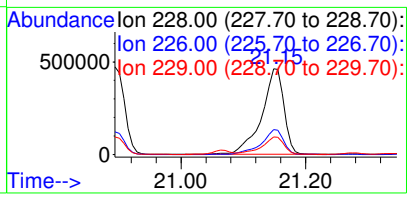


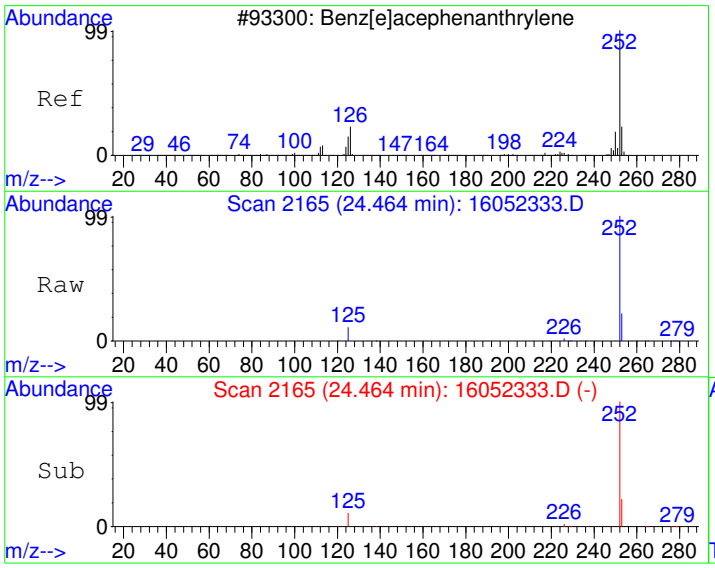




#19
Chrysene
Concen: 2992.48 ug/kg
RT: 21.15 min  Scan# 1696
Delta R.T.  -0.02 min
Lab File:  16052333.D
Acq: 24 May 2016  5:34 am

Tgt Ion:228 Resp: 1150229

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.9 | 0.0 | 58.1 |
| 229 | 20.3 | 0.0 | 50.1 |

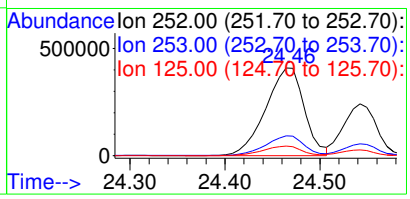


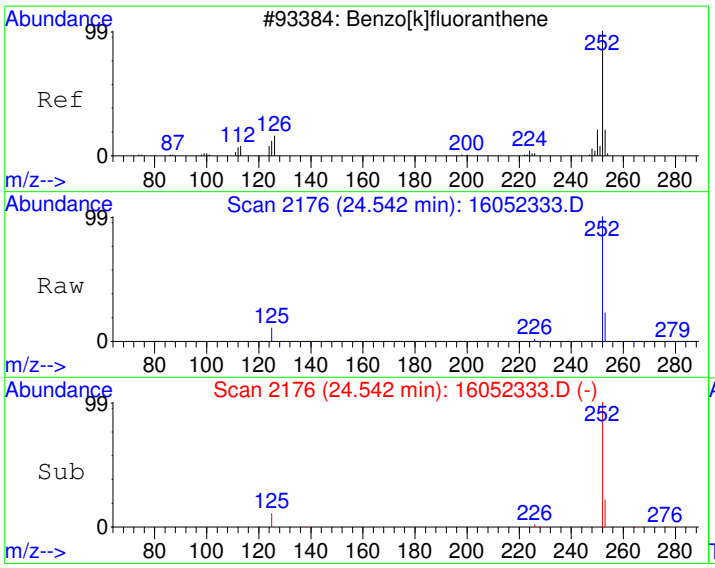



#21
Benzo[b]fluoranthene
Concen: 2882.86 ug/kg
RT: 24.46 min  Scan# 2165
Delta R.T.  -0.02 min
Lab File:  16052333.D
Acq: 24 May 2016  5:34 am

Tgt Ion:252 Resp: 1147116

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.2 | 0.0 | 52.2 |
| 125 | 11.0 | 0.0 | 41.0 |

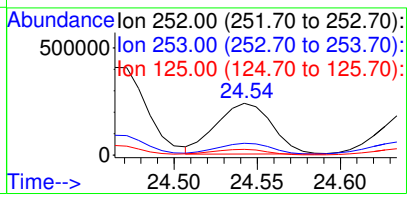


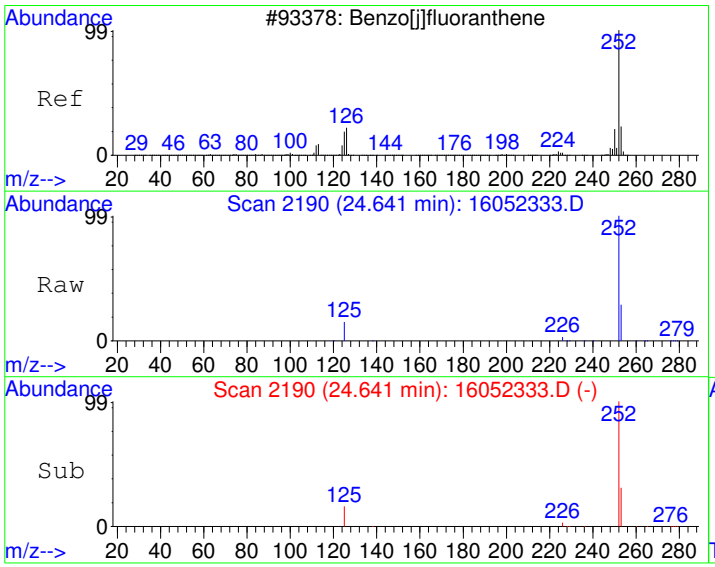




#22
Benzo[k]fluoranthene
Concen: 1477.32 ug/kg
RT: 24.54 min  Scan# 2176
Delta R.T.  -0.03 min
Lab File:  16052333.D
Acq: 24 May 2016  5:34 am

Tgt Ion:252 Resp: 551449

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 20.7 | 2.1 | 42.1 |
| 125 | 10.8 | 0.0 | 31.3 |

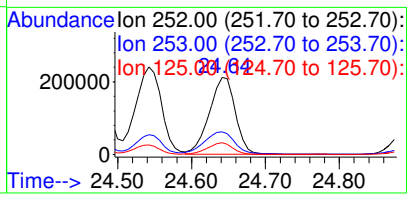


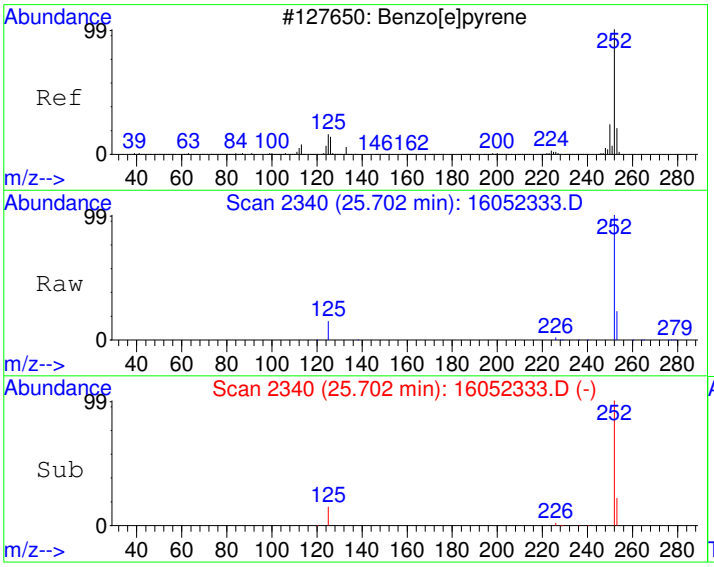




#23
Benzo(j)fluoranthene
Concen: 1554.56 ug/kg
RT: 24.64 min  Scan# 2190
Delta R.T.  -0.03 min
Lab File:  16052333.D
Acq: 24 May 2016  5:34 am

Tgt Ion:252 Resp: 516909

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 29.2 | 2.1 | 42.1 |
| 125 | 15.1 | 0.0 | 34.4 |

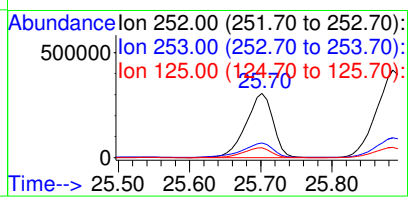


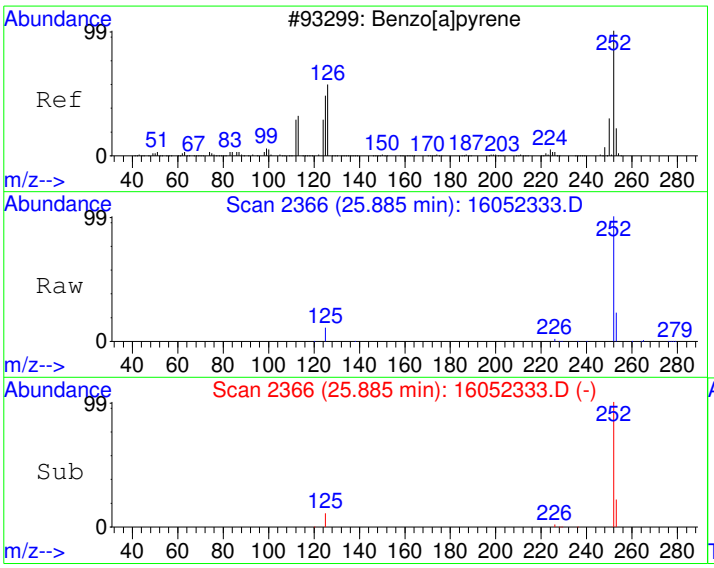



#24
Benzo[e]pyrene
Concen: 2256.10 ug/kg
RT: 25.70 min  Scan# 2340
Delta R.T.  -0.02 min
Lab File:  16052333.D
Acq: 24 May 2016  5:34 am

Tgt Ion:252 Resp:  803961

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.4 | 2.2 | 42.2 |
| 125 | 15.3 | 0.0 | 36.1 |

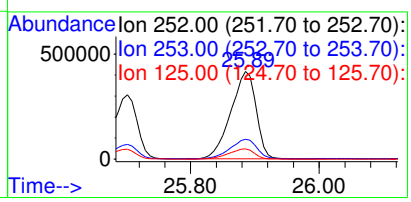


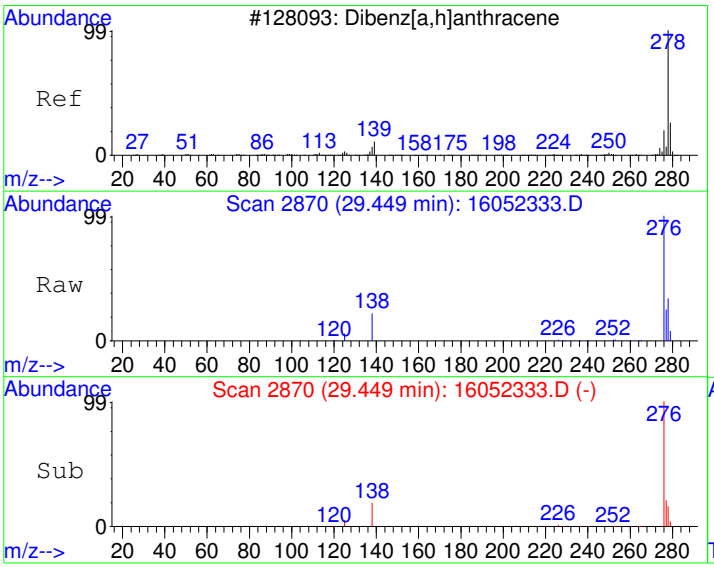




#25
Benzo[a]pyrene
Concen: 3129.02 ug/kg
RT: 25.89 min  Scan# 2366
Delta R.T.  -0.01 min
Lab File:  16052333.D
Acq: 24 May 2016  5:34 am

Tgt Ion:252 Resp: 1139426

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.5 | 1.9 | 41.9 |
| 125 | 11.4 | 0.0 | 31.7 |

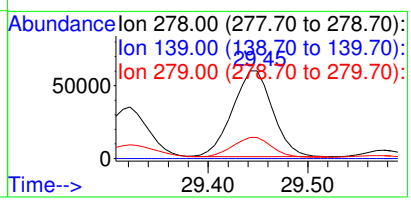


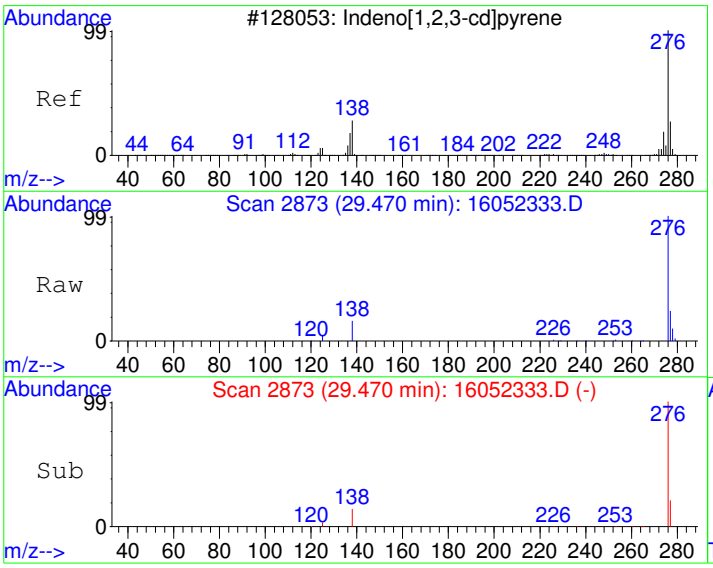




#26
Dibenz[a,h]anthracene
Concen:  497.36 ug/kg
RT: 29.45 min  Scan# 2870
Delta R.T.  -0.03 min
Lab File:  16052333.D
Acq: 24 May 2016  5:34 am

Tgt Ion:278 Resp:  164944

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 0.0 | 0.0 | 20.0 |
| 279 | 23.3 | 4.2 | 44.2 |

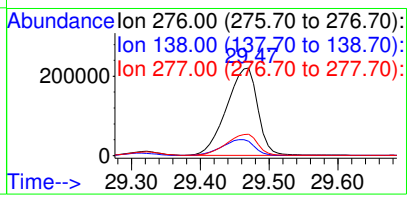


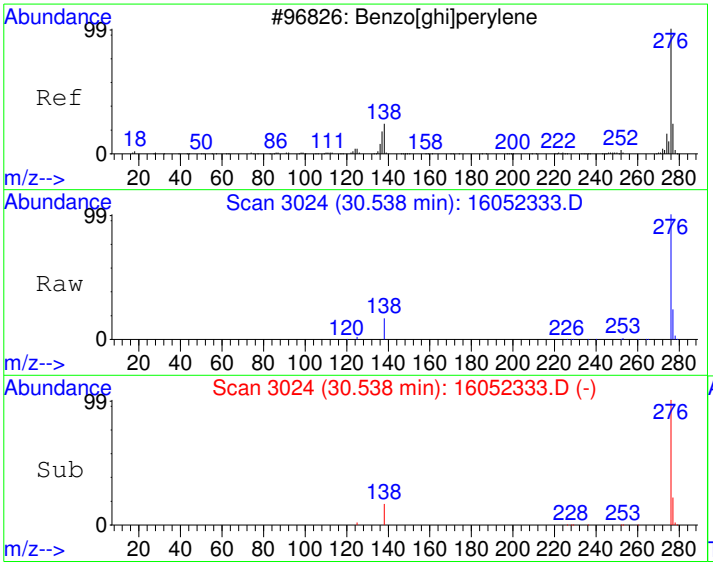



#27
Indeno[1,2,3-cd]pyrene
Concen: 1747.82 ug/kg
RT: 29.47 min Scan# 2873
Delta R.T. -0.01 min
Lab File: 16052333.D
Acq: 24 May 2016 5:34 am

Tgt Ion:276 Resp: 691494

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 16.2 | 6.7 | 46.7 |
| 277 | 24.2 | 5.8 | 45.8 |

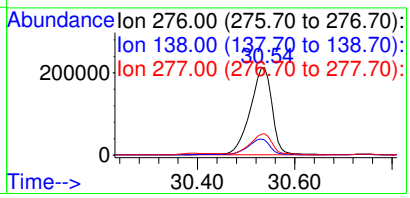



#28
Benzo[g,h,i]perylene
Concen: 2151.52 ug/kg
RT: 30.54 min Scan# 3024
Delta R.T. -0.01 min
Lab File: 16052333.D
Acq: 24 May 2016 5:34 am

Tgt Ion:276 Resp: 663753

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 17.2 | 0.0 | 39.1 |
| 277 | 24.1 | 4.0 | 44.0 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052334.D Vial: 27
Acq On : 24 May 2016 6:14 am Operator:
Sample : 1605121-24A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:08 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

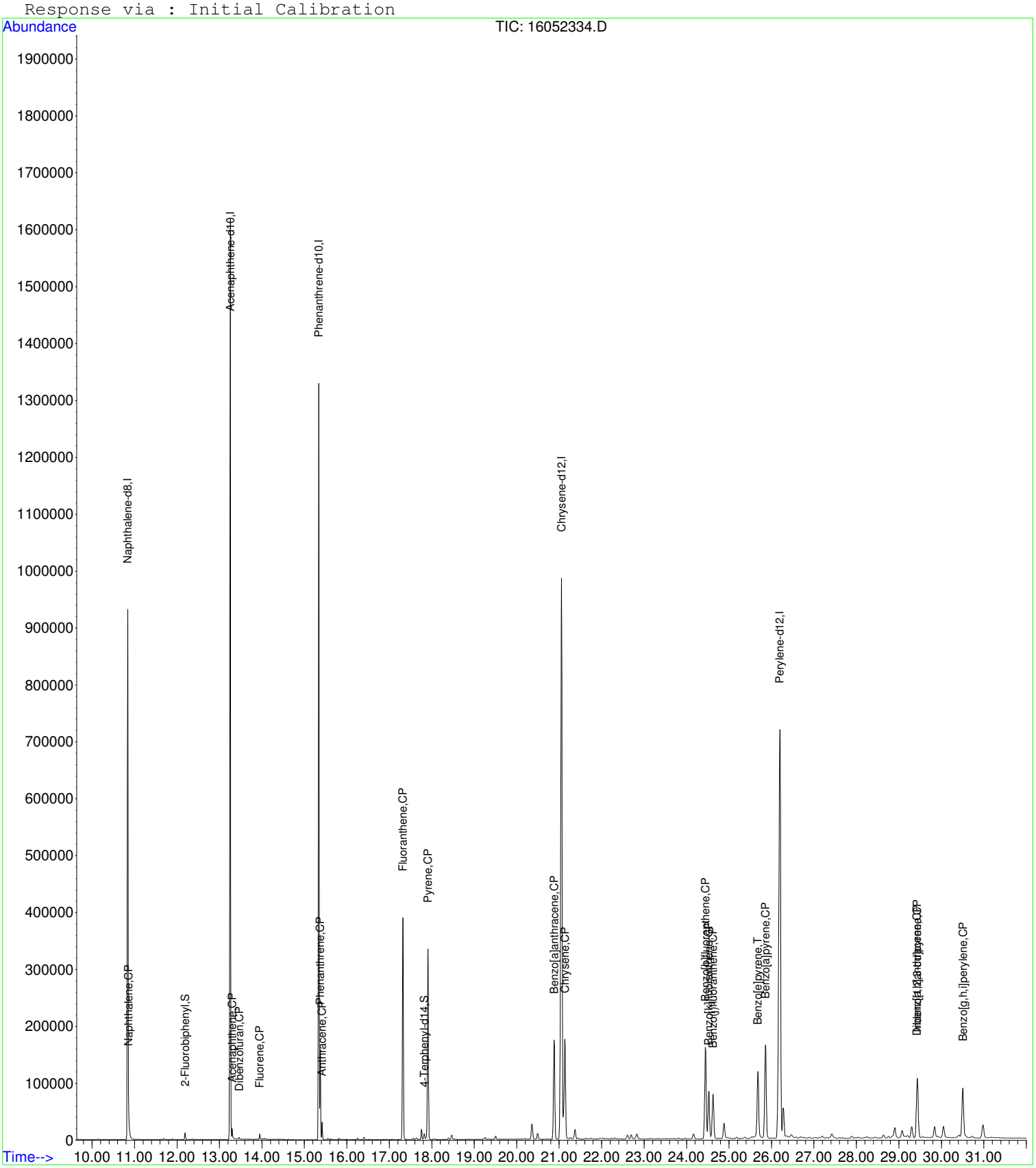
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1171531 | 4000.00 | ug/kg | 101 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 873485 | 4000.00 | ug/kg | 76 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1409779 | 4000.00 | ug/kg | 69 |
| 17) Chrysene-d12 | 21.06 | 240 | 1647473 | 4000.00 | ug/kg | 73 |
| 20) Perylene-d12 | 26.20 | 264 | 1466784 | 4000.00 | ug/kg | 71 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 10187 | 39.98 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.00%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 13374 | 36.67 | ug/kg | -0.03 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.92%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 6172 | 21.06 | ug/kg | 99 |
| 6) Dibenzofuran | 13.46 | 168 | 3005 | 9.18 | ug/kg | 95 |
| 9) Acenaphthene | 13.30 | 154 | 6436 | 27.56 | ug/kg | 99 |
| 10) Fluorene | 13.95 | 166 | 4459 | 15.73 | ug/kg | 97 |
| 12) Phenanthrene | 15.37 | 178 | 124433 | 335.63 | ug/kg | 99 |
| 13) Anthracene | 15.41 | 178 | 26831 | 76.46 | ug/kg | 99 |
| 14) Fluoranthene | 17.32 | 202 | 389058 | 1014.07 | ug/kg | 99 |
| 15) Pyrene | 17.91 | 202 | 354526 | 889.56 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.88 | 228 | 255565 | 662.15 | ug/kg | 99 |
| 19) Chrysene | 21.13 | 228 | 289138 | 775.34 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.44 | 252 | 298792 | 772.88 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.53 | 252 | 147579 | 406.93 | ug/kg | 97 |
| 23) Benzo(j)fluoranthene | 24.63 | 252 | 136177 | 421.53 | ug/kg | 93 |
| 24) Benzo[e]pyrene | 25.68 | 252 | 216454 | 625.20 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.86 | 252 | 301826 | 853.12 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.42 | 278 | 41889 | 130.01 | ug/kg | 98 |
| 27) Indeno[1,2,3-cd]pyrene | 29.43 | 276 | 179182 | 466.16 | ug/kg | 90 |
| 28) Benzo[g,h,i]perylene | 30.51 | 276 | 171132 | 570.95 | ug/kg | 97 |

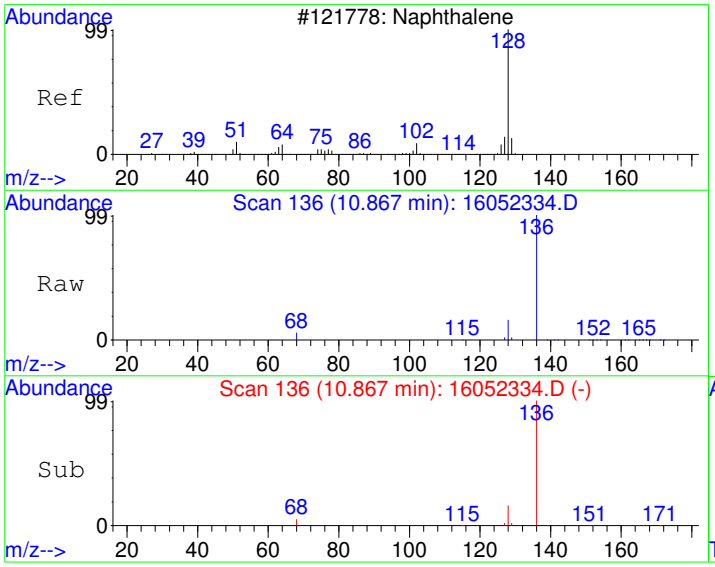
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052334.D Vial: 27
Acq On : 24 May 2016 6:14 am Operator:
Sample : 1605121-24A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:08 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

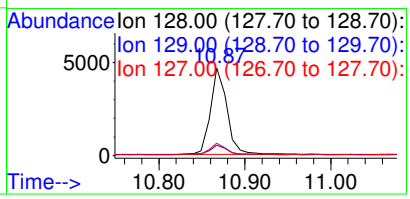


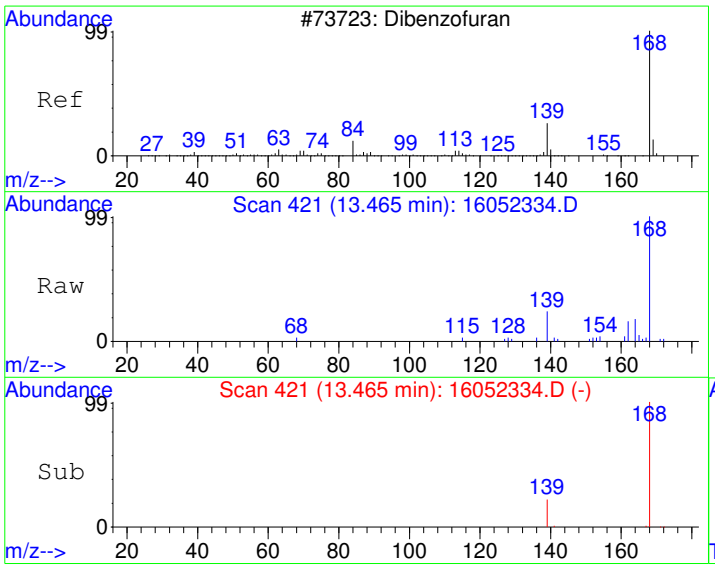



#2
Naphthalene
Concen: 21.06 ug/kg
RT: 10.87 min Scan# 136
Delta R.T. -0.01 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:128 Resp: 6172

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 10.9 | 0.0 | 41.1 |
| 127 | 13.2 | 0.0 | 42.4 |

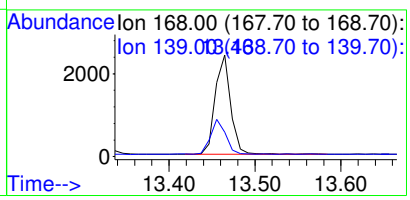


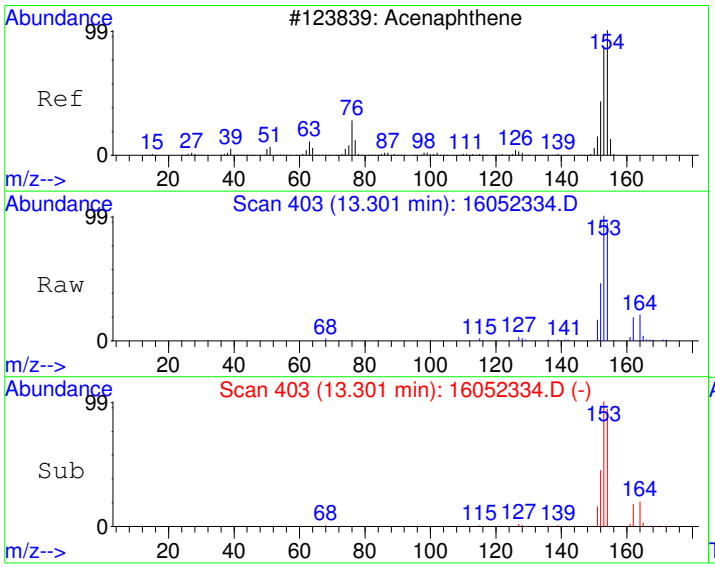




#6
Dibenzofuran
Concen: 9.18 ug/kg
RT: 13.46 min Scan# 421
Delta R.T. -0.01 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:168 Resp: 3005

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 36.5 | 27.0 | 40.4 |

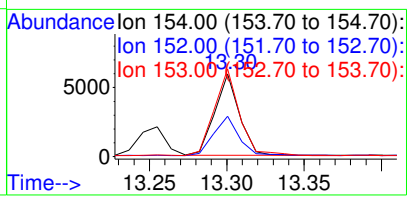


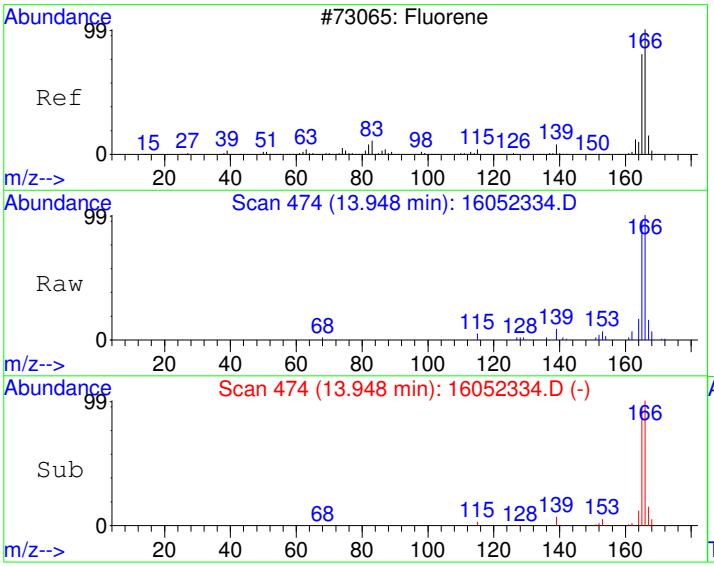




#9
Acenaphthene
Concen: 27.56 ug/kg
RT: 13.30 min Scan# 403
Delta R.T. -0.02 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:154 Resp: 6436

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 48.4 | 18.9 | 78.9 |
| 153 | 106.4 | 75.2 | 135.2 |

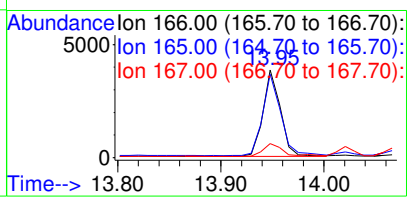


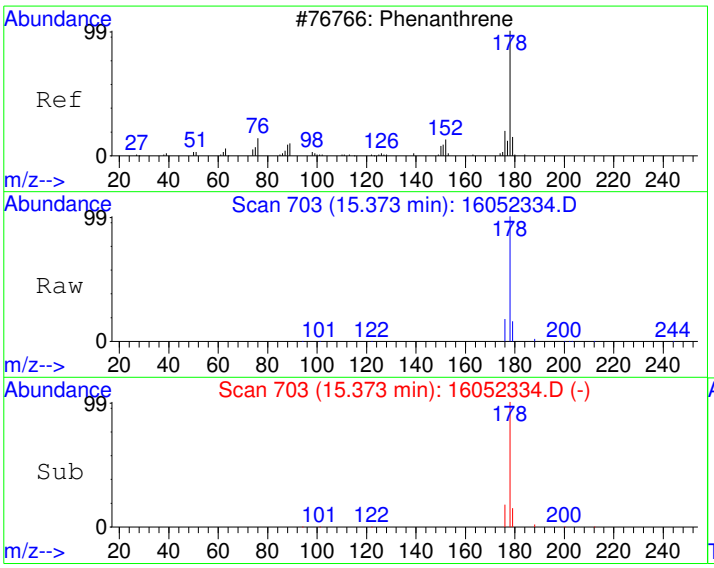



#10
Fluorene
Concen: 15.73 ug/kg
RT: 13.95 min Scan# 474
Delta R.T. -0.02 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:166 Resp: 4459

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 94.3 | 61.8 | 121.8 |
| 167 | 14.5 | 0.0 | 43.6 |

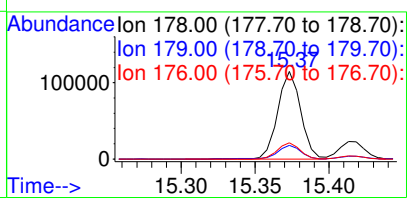


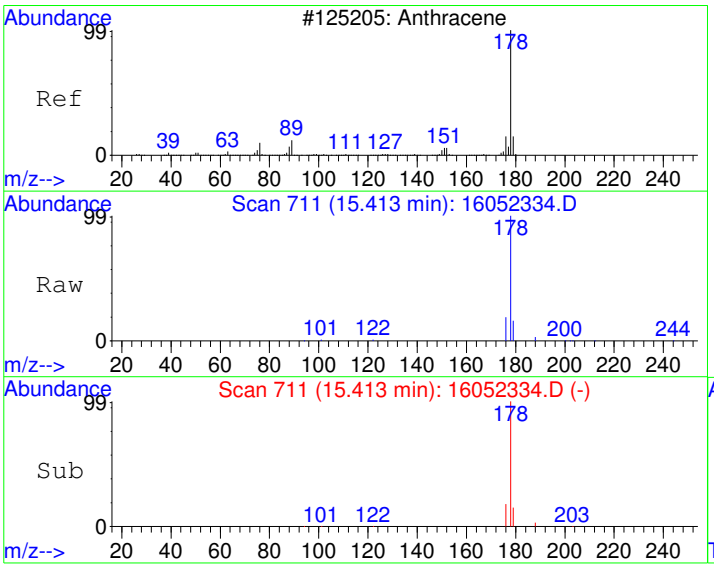




#12
Phenanthrene
Concen: 335.63 ug/kg
RT: 15.37 min Scan# 703
Delta R.T. -0.02 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:178 Resp: 124433

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.5 | 0.0 | 45.9 |
| 176 | 18.4 | 0.0 | 48.5 |

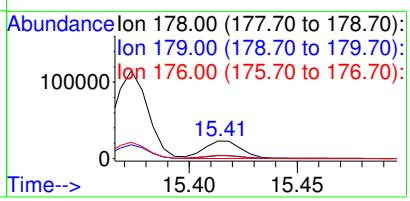


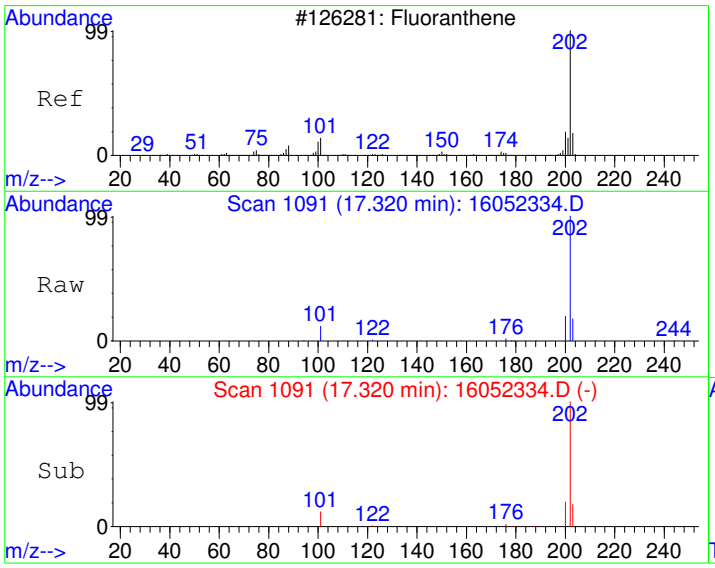




#13
Anthracene
Concen: 76.46 ug/kg
RT: 15.41 min Scan# 711
Delta R.T. -0.02 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:178 Resp: 26831

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.2 | 0.0 | 45.9 |
| 176 | 18.3 | 0.0 | 48.2 |

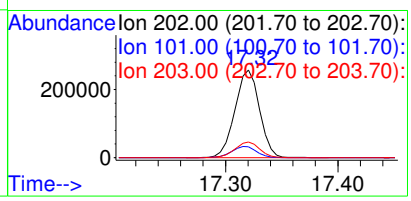


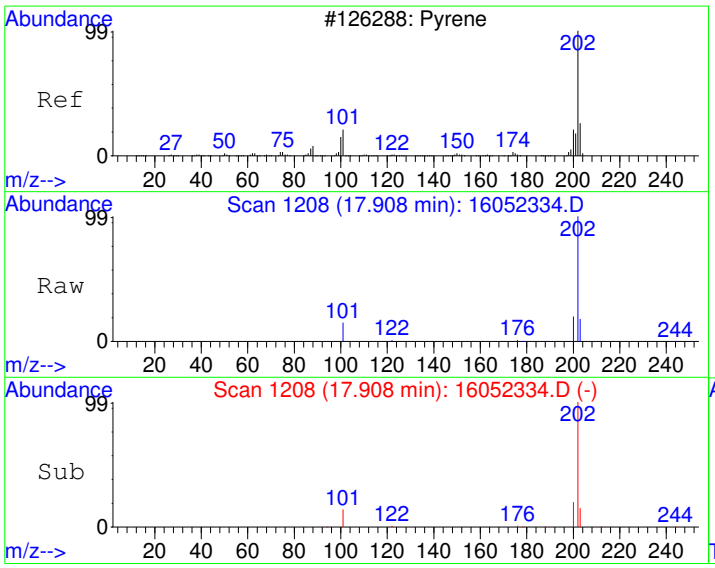



#14
Fluoranthene
Concen: 1014.07 ug/kg
RT: 17.32 min Scan# 1091
Delta R.T. -0.02 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:202 Resp: 389058

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 12.2 | 0.0 | 43.0 |
| 203 | 17.7 | 0.0 | 47.9 |

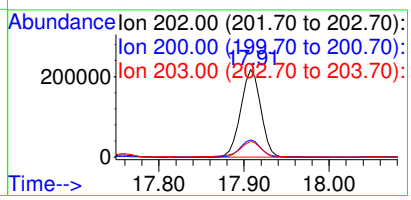


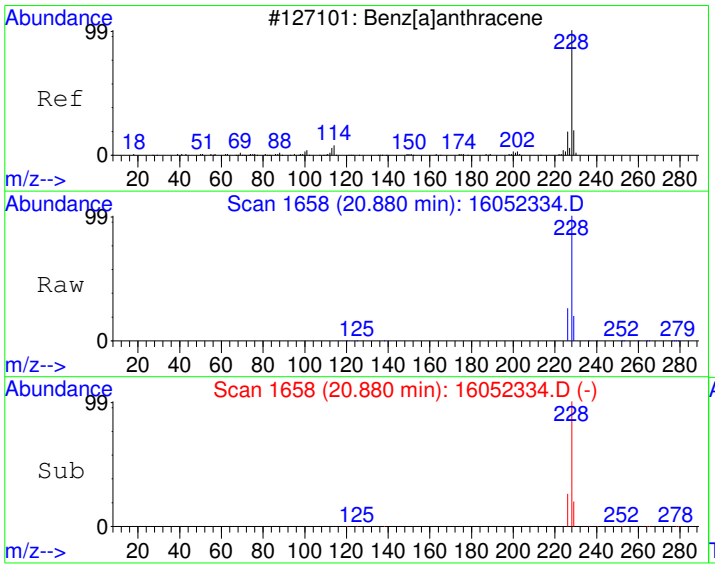




#15
Pyrene
Concen: 889.56 ug/kg
RT: 17.91 min Scan# 1208
Delta R.T. -0.03 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:202 Resp: 354526

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 200 | 19.8 | 0.0 | 50.0 |
| 203 | 17.7 | 0.0 | 48.0 |

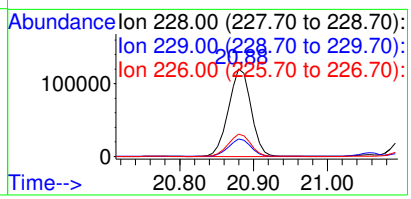


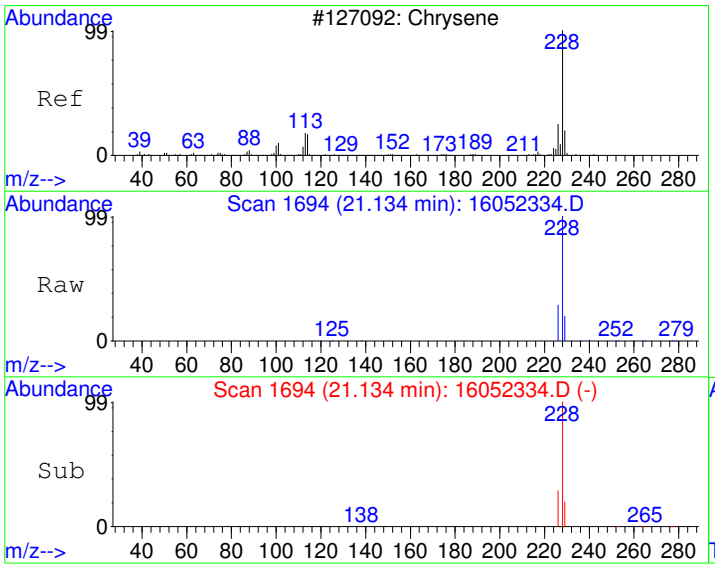




#18
Benzo[a]anthracene
Concen: 662.15 ug/kg
RT: 20.88 min Scan# 1658
Delta R.T. -0.04 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:228 Resp: 255565

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.8 | 0.0 | 50.1 |
| 226 | 25.5 | 0.0 | 55.2 |

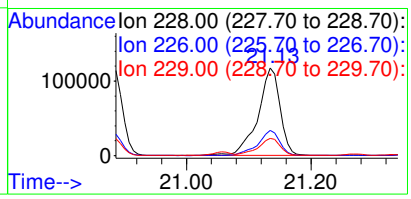


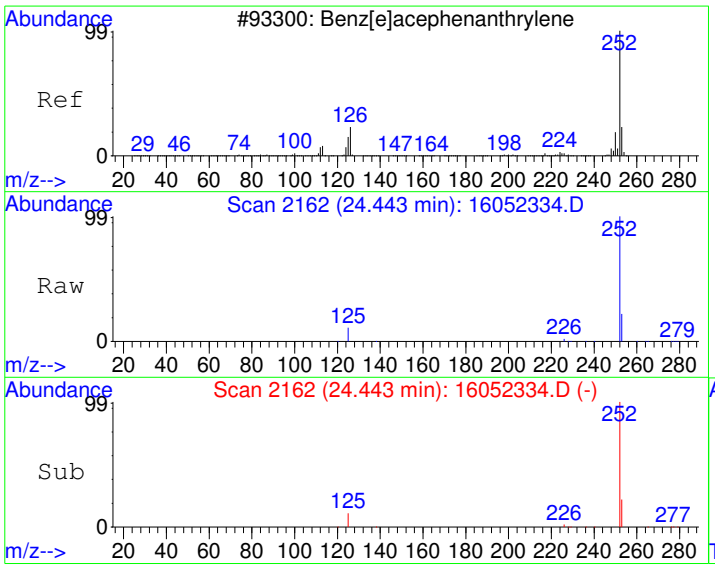



#19
Chrysene
Concen: 775.34 ug/kg
RT: 21.13 min Scan# 1694
Delta R.T. -0.04 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:228 Resp: 289138

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.8 | 0.0 | 58.1 |
| 229 | 19.7 | 0.0 | 50.1 |

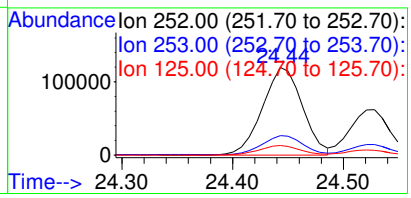


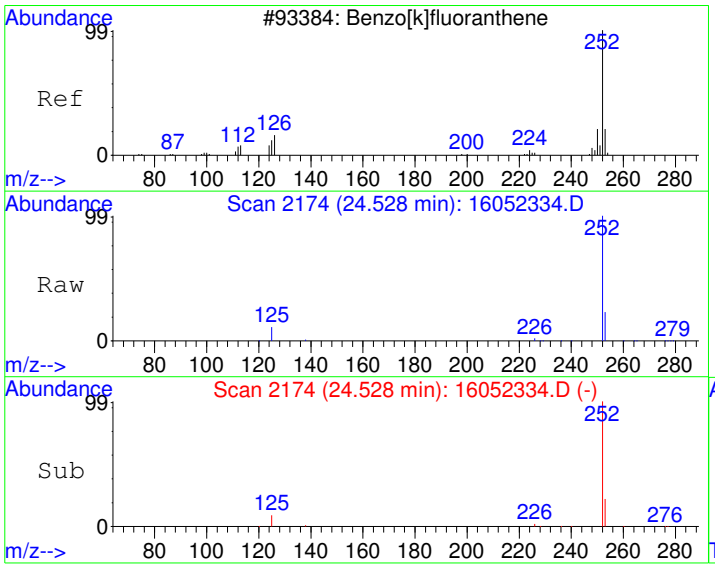




#21
Benzo[b]fluoranthene
Concen: 772.88 ug/kg
RT: 24.44 min Scan# 2162
Delta R.T. -0.04 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:252 Resp: 298792

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.9 | 0.0 | 52.2 |
| 125 | 10.7 | 0.0 | 41.0 |

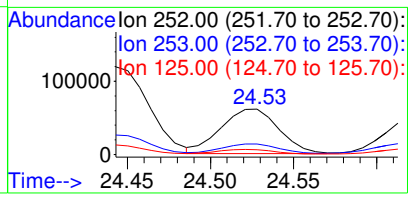


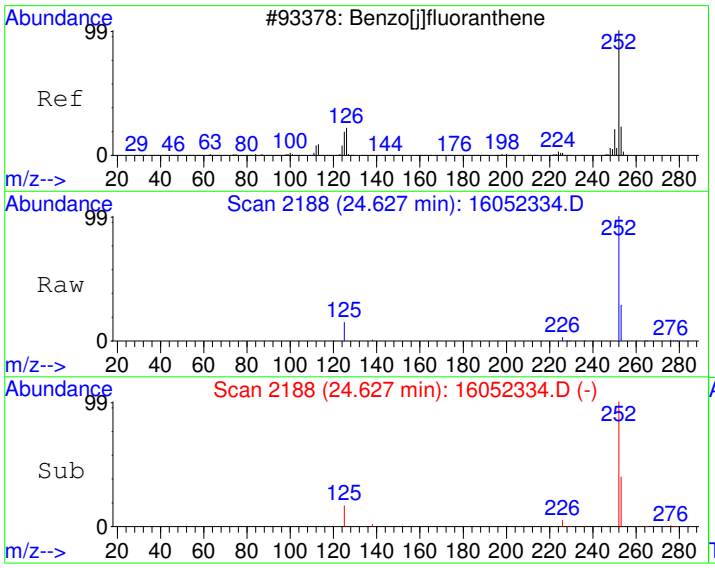




#22
Benzo[k]fluoranthene
Concen: 406.93 ug/kg
RT: 24.53 min Scan# 2174
Delta R.T. -0.04 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:252 Resp: 147579

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.1 | 2.1 | 42.1 |
| 125 | 10.0 | 0.0 | 31.3 |

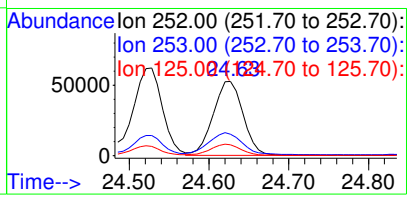


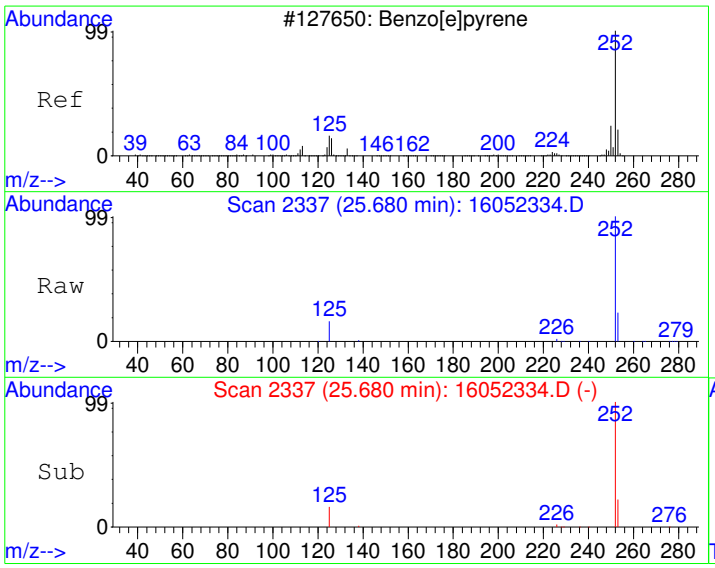



#23
Benzo(j)fluoranthene
Concen: 421.53 ug/kg
RT: 24.63 min Scan# 2188
Delta R.T. -0.04 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:252 Resp: 136177

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 27.7 | 2.1 | 42.1 |
| 125 | 14.4 | 0.0 | 34.4 |

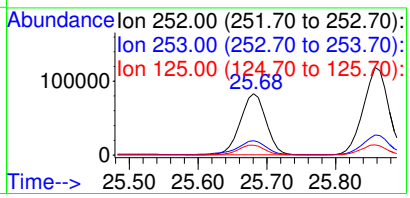


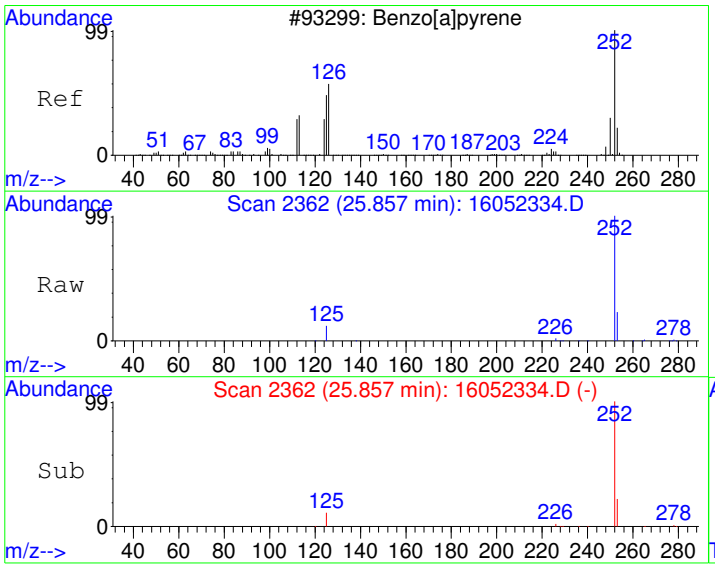




#24
Benzo[e]pyrene
Concen: 625.20 ug/kg
RT: 25.68 min Scan# 2337
Delta R.T. -0.04 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:252 Resp: 216454

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.2 | 2.2 | 42.2 |
| 125 | 16.0 | 0.0 | 36.1 |

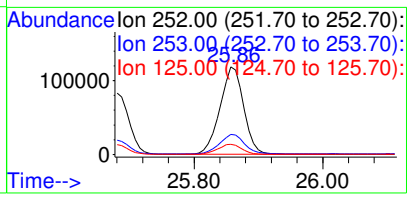


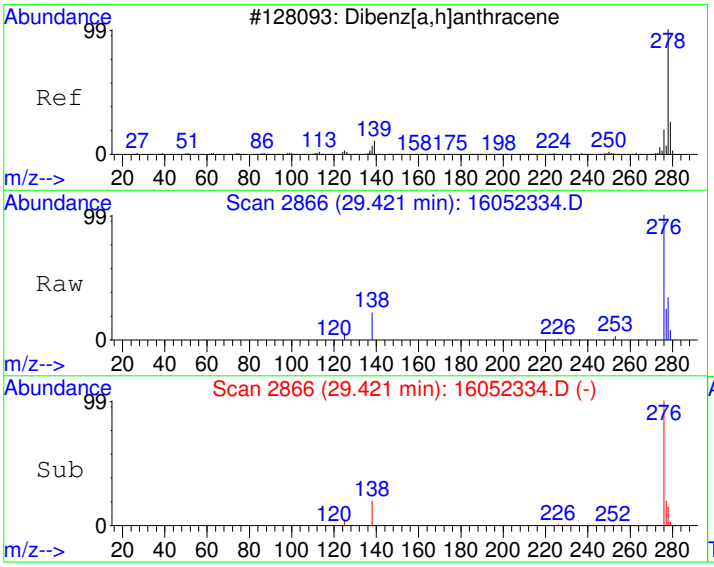




#25
Benzo[a]pyrene
Concen: 853.12 ug/kg
RT: 25.86 min Scan# 2362
Delta R.T. -0.04 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:252 Resp: 301826

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.2 | 1.9 | 41.9 |
| 125 | 11.6 | 0.0 | 31.7 |

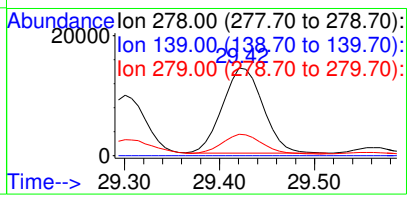


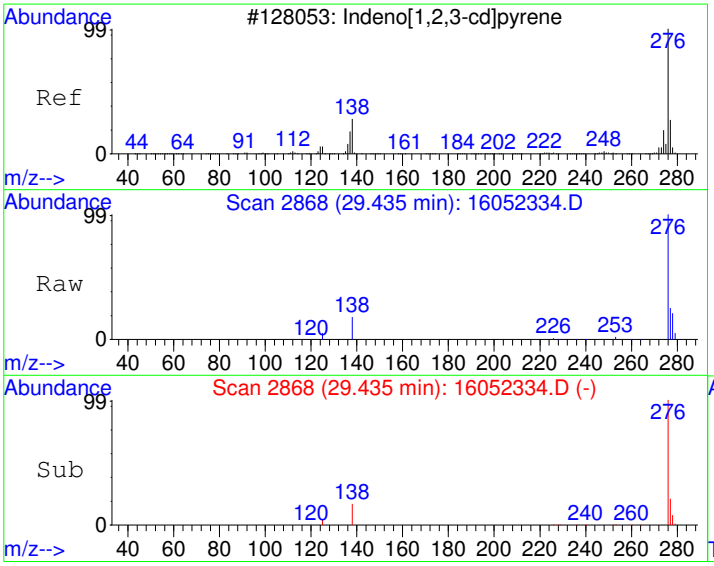



#26
Dibenz[a,h]anthracene
Concen: 130.01 ug/kg
RT: 29.42 min Scan# 2866
Delta R.T. -0.06 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:278 Resp: 41889

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 0.0 | 0.0 | 20.0 |
| 279 | 23.2 | 4.2 | 44.2 |

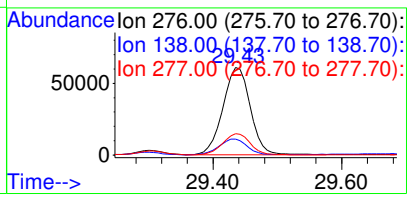


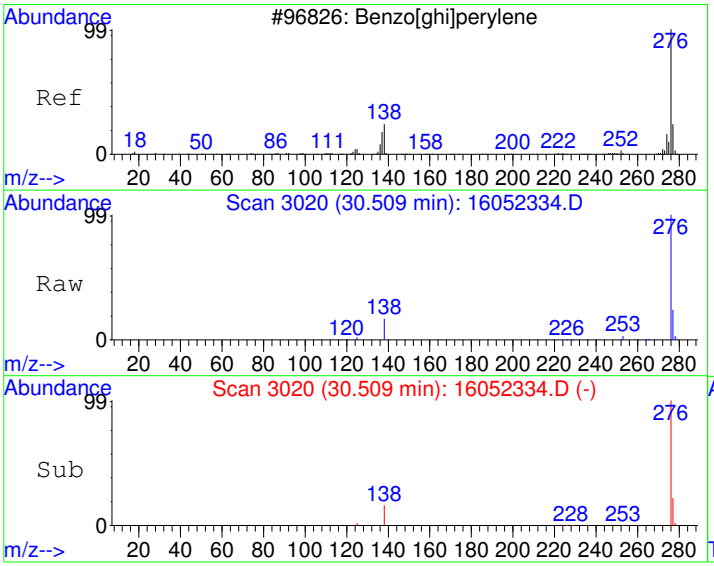




#27
Indeno[1,2,3-cd]pyrene
Concen: 466.16 ug/kg
RT: 29.43 min Scan# 2868
Delta R.T. -0.04 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:276 Resp: 179182

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 17.9 | 6.7 | 46.7 |
| 277 | 24.2 | 5.8 | 45.8 |

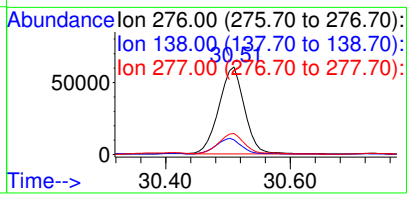



#28
Benzo[g,h,i]perylene
Concen: 570.95 ug/kg
RT: 30.51 min Scan# 3020
Delta R.T. -0.04 min
Lab File: 16052334.D
Acq: 24 May 2016 6:14 am

Tgt Ion:276 Resp: 171132

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 16.4 | 0.0 | 39.1 |
| 277 | 23.7 | 4.0 | 44.0 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052335.D Vial: 28
Acq On : 24 May 2016 6:54 am Operator:
Sample : 1605121-25A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:08 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

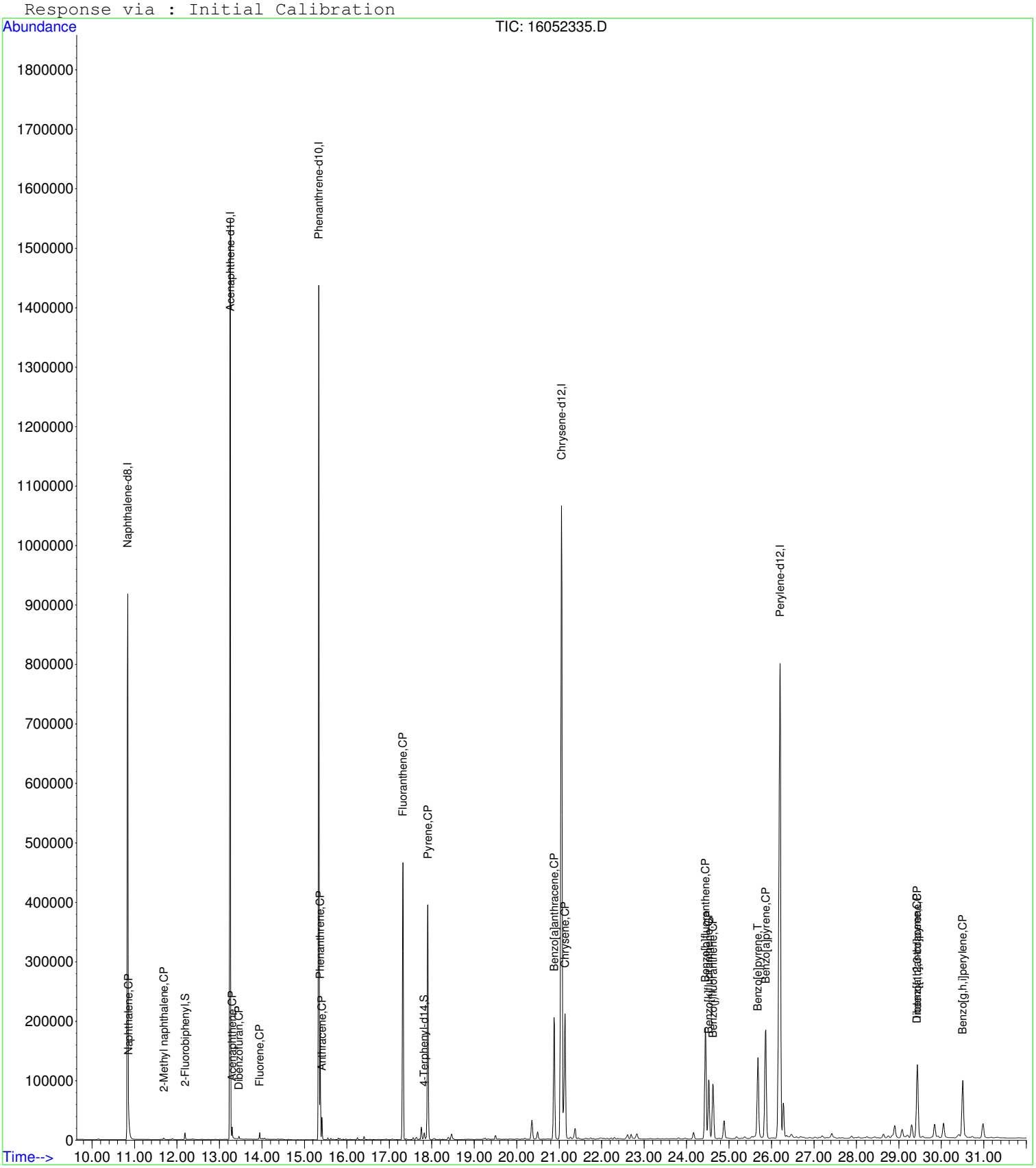
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1209950 | 4000.00 | ug/kg | 104 |
| 5) Acenaphthene-d10 | 13.26 | 164 | 941736 | 4000.00 | ug/kg | 82 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1517319 | 4000.00 | ug/kg | 74 |
| 17) Chrysene-d12 | 21.06 | 240 | 1796819 | 4000.00 | ug/kg | 79 |
| 20) Perylene-d12 | 26.20 | 264 | 1619447 | 4000.00 | ug/kg | 79 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 10251 | 37.32 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.93%# | | |
| 16) 4-Terphenyl-d14 | 17.83 | 244 | 13854 | 35.29 | ug/kg | -0.03 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.88%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 8160 | 26.96 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.69 | 142 | 1704 | 6.37 | ug/kg | 99 |
| 6) Dibenzofuran | 13.47 | 168 | 4396 | 12.45 | ug/kg | 98 |
| 9) Acenaphthene | 13.30 | 154 | 7636 | 30.33 | ug/kg | 99 |
| 10) Fluorene | 13.95 | 166 | 5111 | 16.72 | ug/kg | 98 |
| 12) Phenanthrene | 15.37 | 178 | 154781 | 387.89 | ug/kg | 99 |
| 13) Anthracene | 15.41 | 178 | 31686 | 83.90 | ug/kg | 99 |
| 14) Fluoranthene | 17.32 | 202 | 467357 | 1131.81 | ug/kg | 99 |
| 15) Pyrene | 17.91 | 202 | 423987 | 988.45 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.88 | 228 | 301541 | 716.33 | ug/kg | 99 |
| 19) Chrysene | 21.13 | 228 | 340646 | 837.54 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.44 | 252 | 343662 | 805.15 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.52 | 252 | 169547 | 423.44 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.62 | 252 | 156826 | 439.68 | ug/kg | 90 |
| 24) Benzo[e]pyrene | 25.68 | 252 | 248102 | 649.06 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.86 | 252 | 345569 | 884.68 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.42 | 278 | 48087 | 135.17 | ug/kg | 97 |
| 27) Indeno[1,2,3-cd]pyrene | 29.43 | 276 | 202860 | 478.00 | ug/kg | 90 |
| 28) Benzo[g,h,i]perylene | 30.51 | 276 | 189969 | 574.05 | ug/kg | 97 |

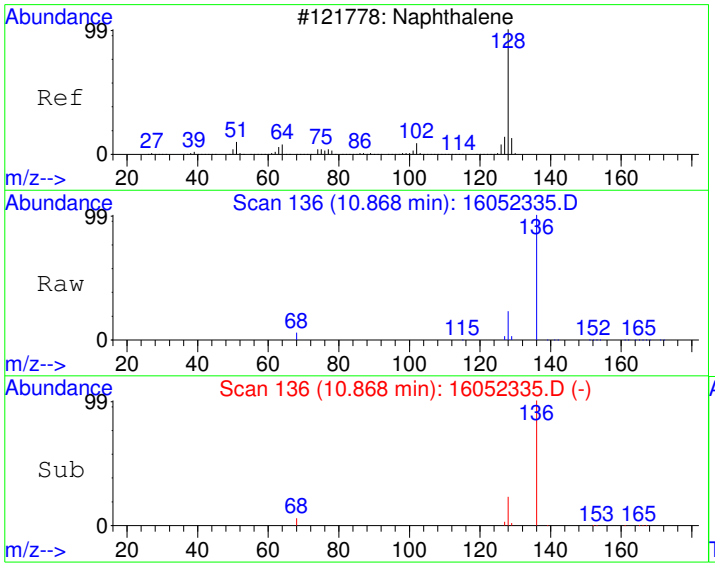
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052335.D Vial: 28
Acq On : 24 May 2016 6:54 am Operator:
Sample : 1605121-25A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:08 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

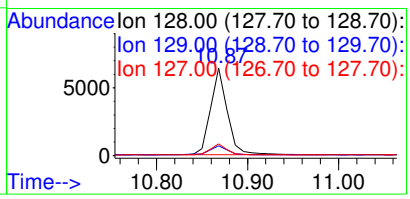


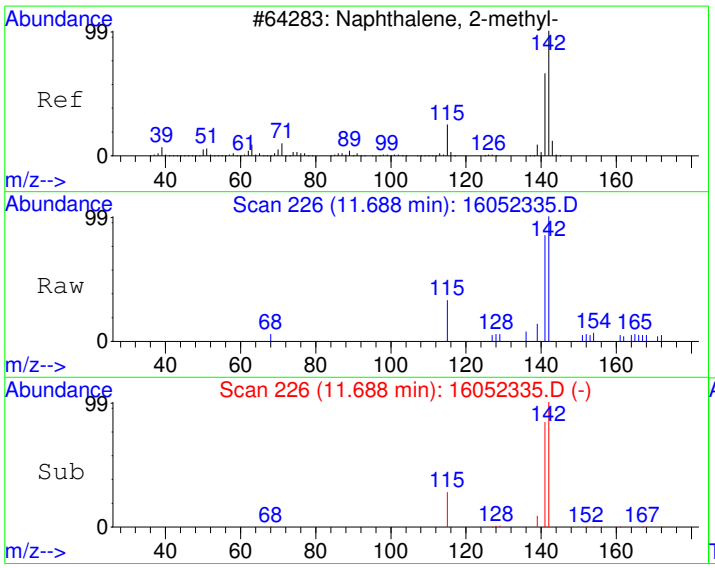



#2
Naphthalene
Concen: 26.96 ug/kg
RT: 10.87 min Scan# 136
Delta R.T. -0.01 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:128 Resp: 8160

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 10.6 | 0.0 | 41.1 |
| 127 | 12.7 | 0.0 | 42.4 |

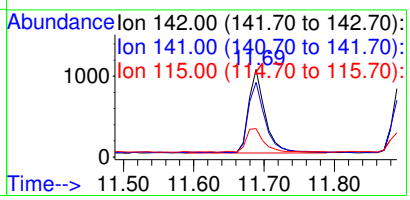


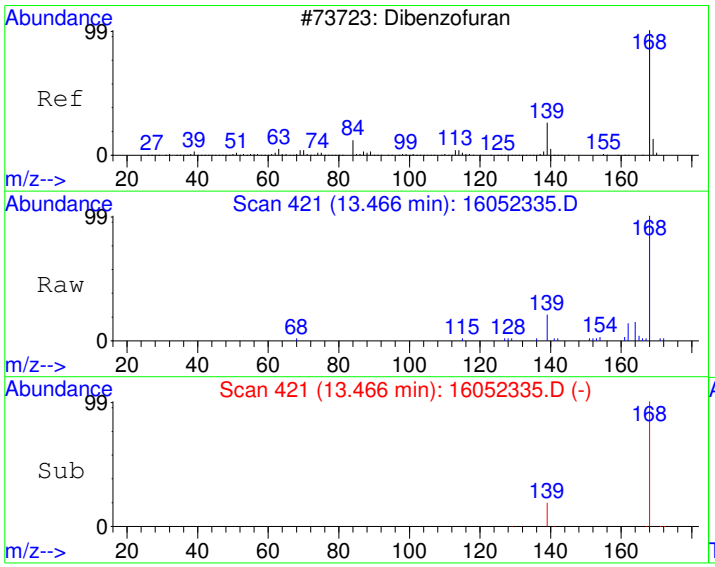




#3
2-Methyl naphthalene
Concen: 6.37 ug/kg
RT: 11.69 min Scan# 226
Delta R.T. -0.01 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:142 Resp: 1704

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 83.7 | 54.4 | 114.4 |
| 115 | 27.4 | 0.0 | 56.0 |

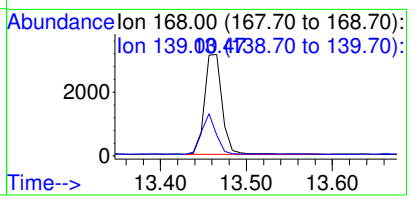


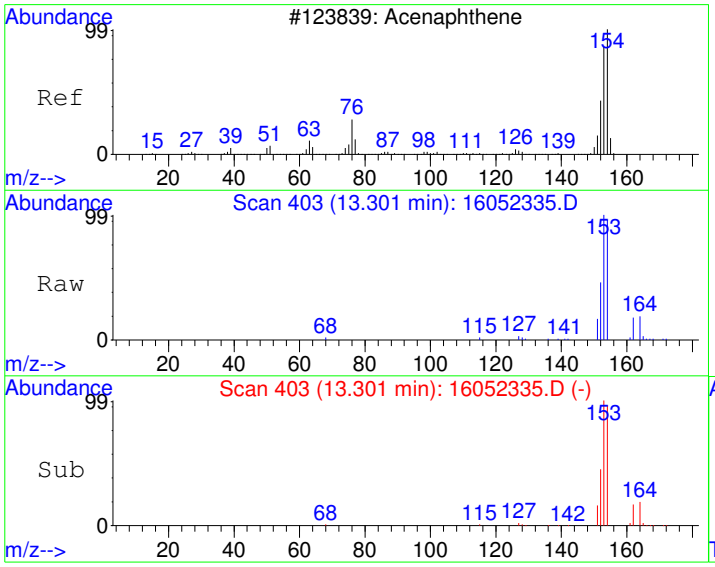




#6
Dibenzofuran
Concen: 12.45 ug/kg
RT: 13.47 min Scan# 421
Delta R.T. -0.01 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:168 Resp: 4396

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 34.8 | 27.0 | 40.4 |

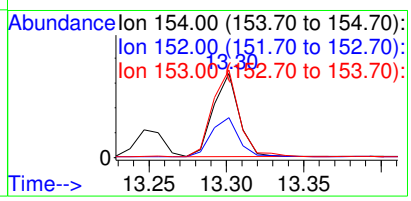


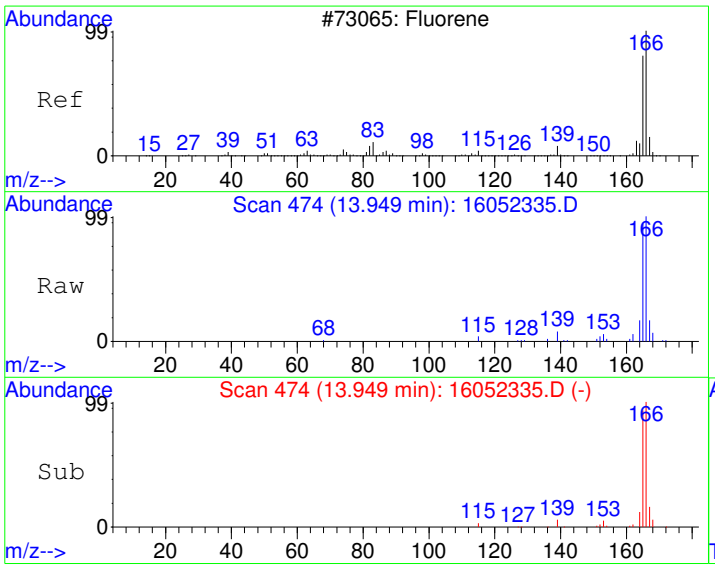



#9
Acenaphthene
Concen: 30.33 ug/kg
RT: 13.30 min Scan# 403
Delta R.T. -0.02 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:154 Resp: 7636

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 47.1 | 18.9 | 78.9 |
| 153 | 104.3 | 75.2 | 135.2 |

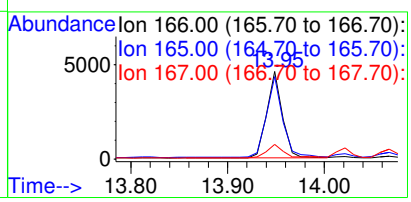


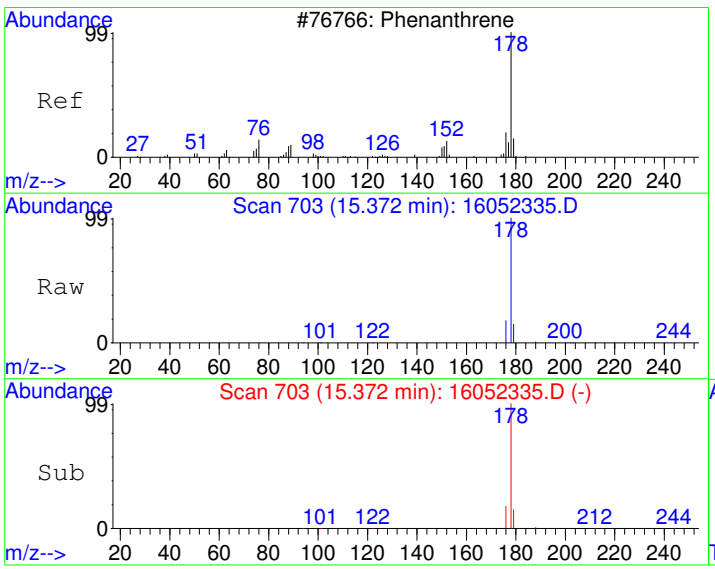




#10
Fluorene
Concen: 16.72 ug/kg
RT: 13.95 min Scan# 474
Delta R.T. -0.02 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:166 Resp: 5111

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 93.3 | 61.8 | 121.8 |
| 167 | 15.6 | 0.0 | 43.6 |

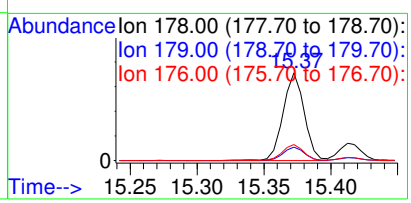


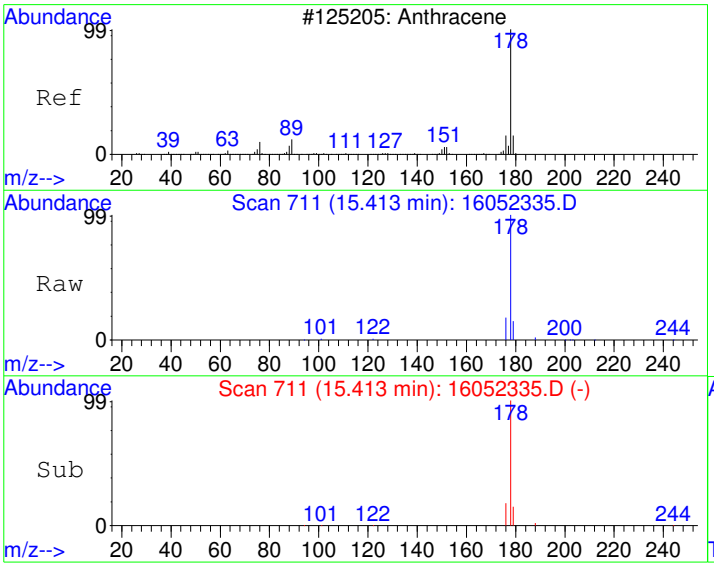




#12
Phenanthrene
Concen: 387.89 ug/kg
RT: 15.37 min Scan# 703
Delta R.T. -0.02 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:178 Resp: 154781

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.4 | 0.0 | 45.9 |
| 176 | 18.3 | 0.0 | 48.5 |

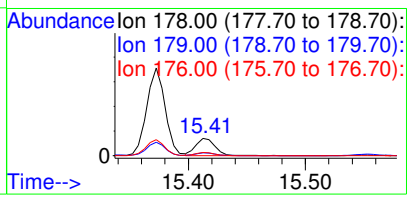


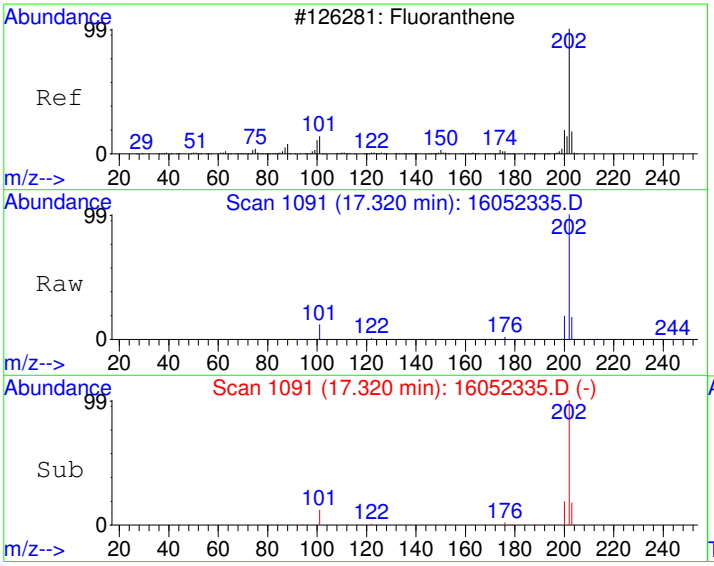



#13
Anthracene
Concen: 83.90 ug/kg
RT: 15.41 min Scan# 711
Delta R.T. -0.02 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:178 Resp: 31686

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.0 | 0.0 | 45.9 |
| 176 | 18.1 | 0.0 | 48.2 |

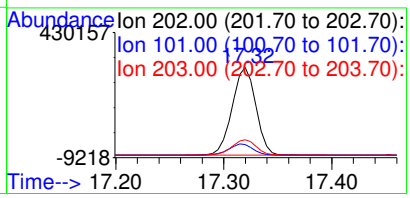


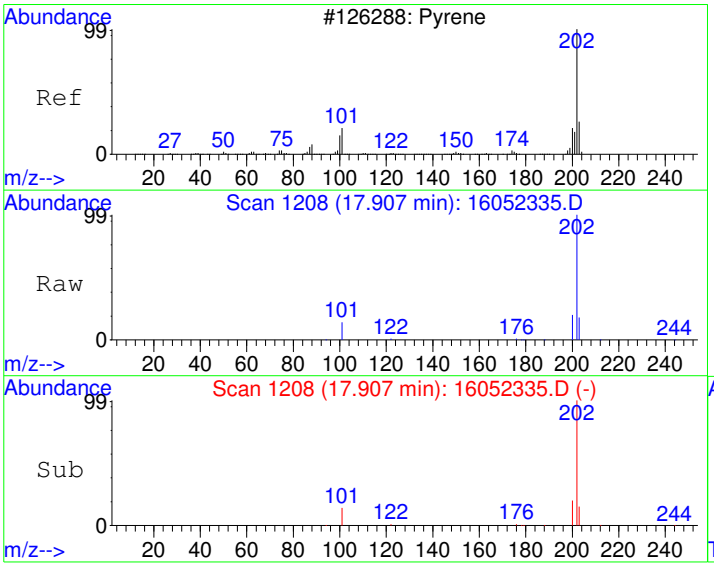




#14
Fluoranthene
Concen: 1131.81 ug/kg
RT: 17.32 min Scan# 1091
Delta R.T. -0.02 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:202 Resp: 467357

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 12.1 | 0.0 | 43.0 |
| 203 | 17.6 | 0.0 | 47.9 |

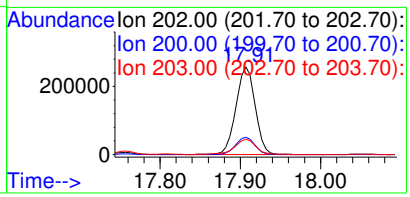


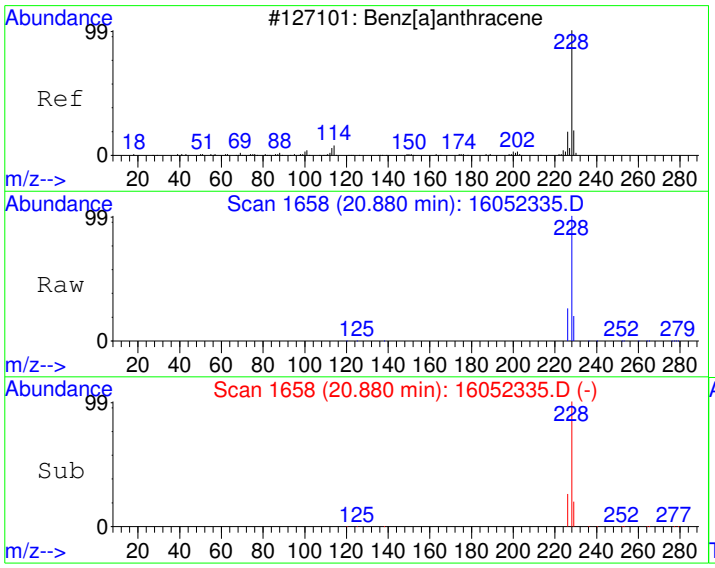




#15
Pyrene
Concen: 988.45 ug/kg
RT: 17.91 min Scan# 1208
Delta R.T. -0.03 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:202 Resp: 423987

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 200 | 19.8 | 0.0 | 50.0 |
| 203 | 17.6 | 0.0 | 48.0 |

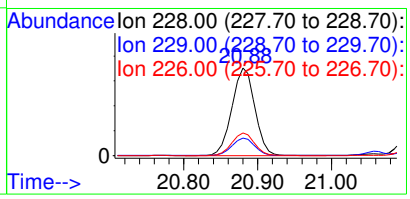


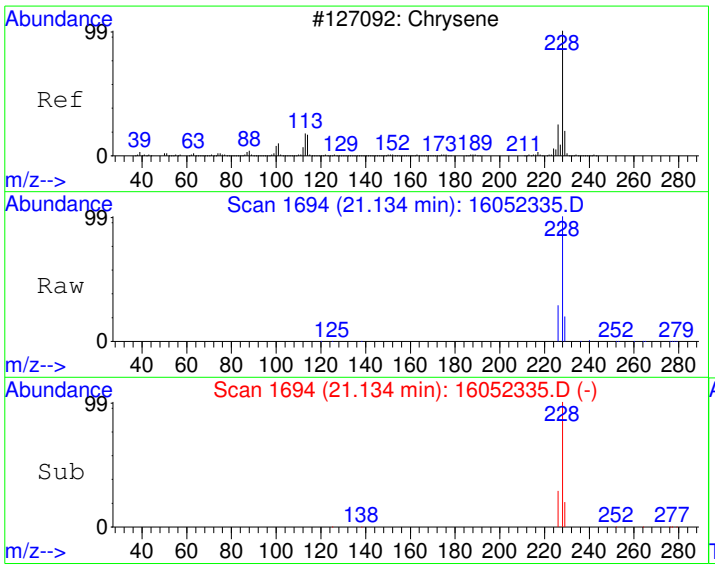



#18
Benzo[a]anthracene
Concen: 716.33 ug/kg
RT: 20.88 min Scan# 1658
Delta R.T. -0.03 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:228 Resp: 301541

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.9 | 0.0 | 50.1 |
| 226 | 25.7 | 0.0 | 55.2 |

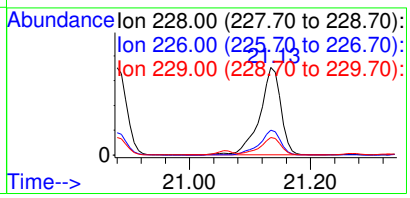


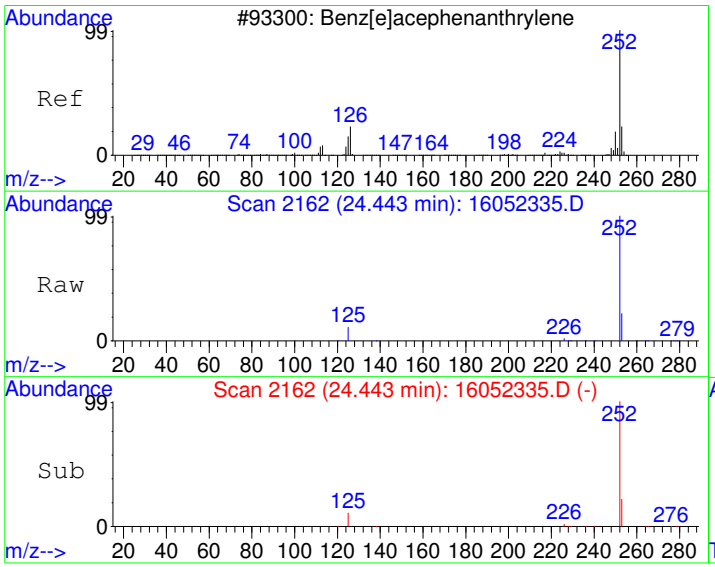




#19
Chrysene
Concen: 837.54 ug/kg
RT: 21.13 min Scan# 1694
Delta R.T. -0.03 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:228 Resp: 340646

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.6 | 0.0 | 58.1 |
| 229 | 19.8 | 0.0 | 50.1 |

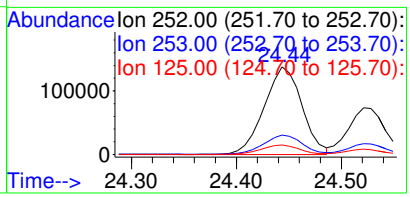


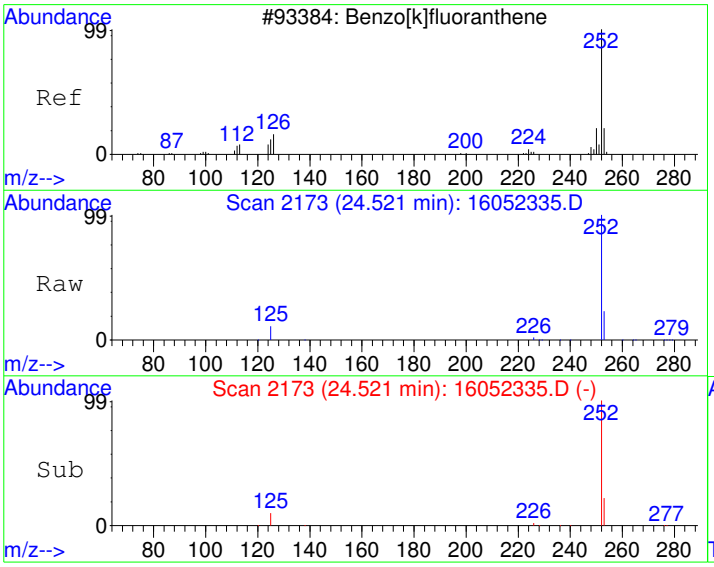




#21
Benzo[b]fluoranthene
Concen: 805.15 ug/kg
RT: 24.44 min Scan# 2162
Delta R.T. -0.04 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:252 Resp: 343662

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.9 | 0.0 | 52.2 |
| 125 | 10.8 | 0.0 | 41.0 |

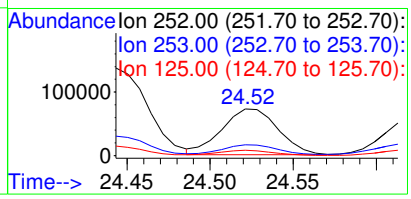


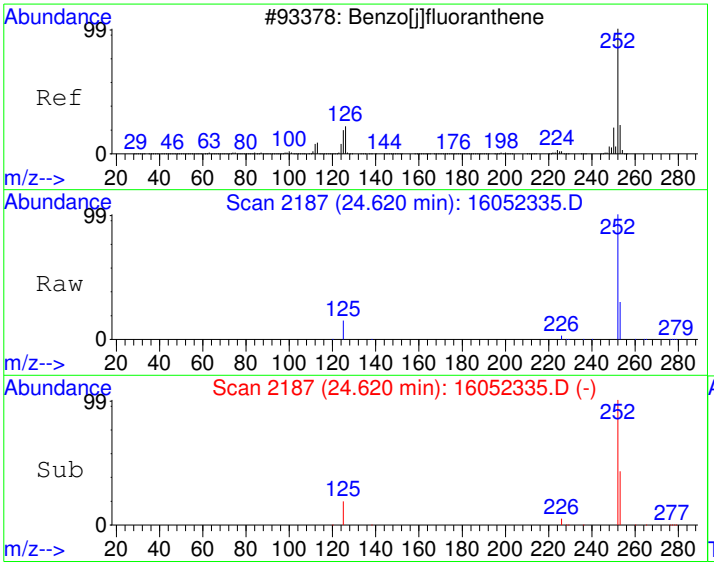



#22
Benzo[k]fluoranthene
Concen: 423.44 ug/kg
RT: 24.52 min Scan# 2173
Delta R.T. -0.05 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:252 Resp: 169547

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.3 | 2.1 | 42.1 |
| 125 | 11.1 | 0.0 | 31.3 |

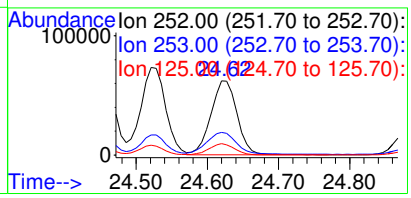


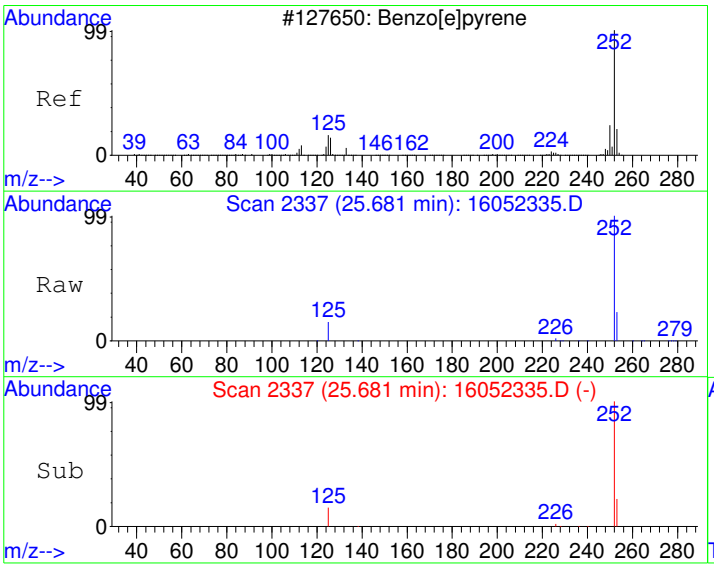




#23
Benzo(j)fluoranthene
Concen: 439.68 ug/kg
RT: 24.62 min Scan# 2187
Delta R.T. -0.05 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:252 Resp: 156826

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 29.5 | 2.1 | 42.1 |
| 125 | 15.2 | 0.0 | 34.4 |

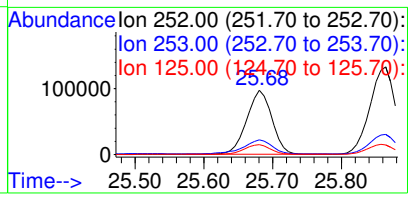


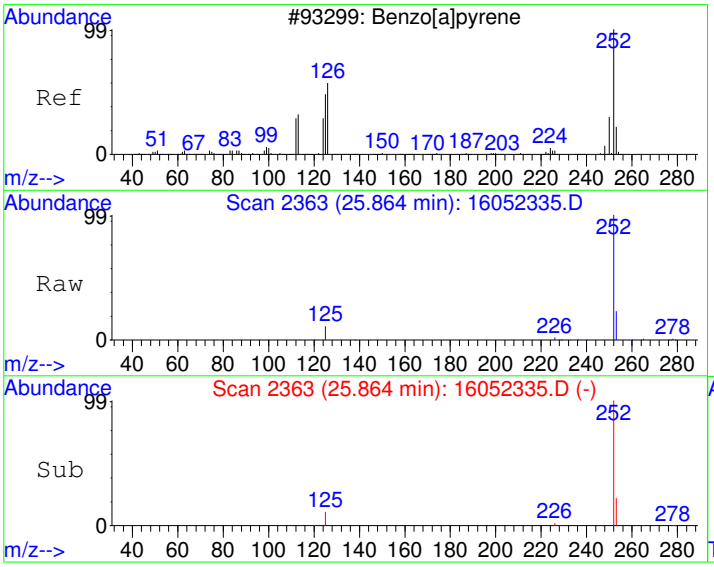




#24
Benzo[e]pyrene
Concen: 649.06 ug/kg
RT: 25.68 min Scan# 2337
Delta R.T. -0.04 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:252 Resp: 248102

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.3 | 2.2 | 42.2 |
| 125 | 15.1 | 0.0 | 36.1 |

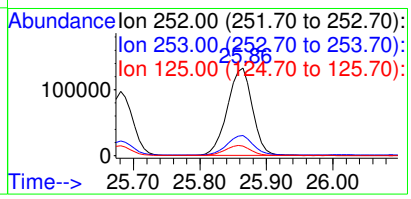


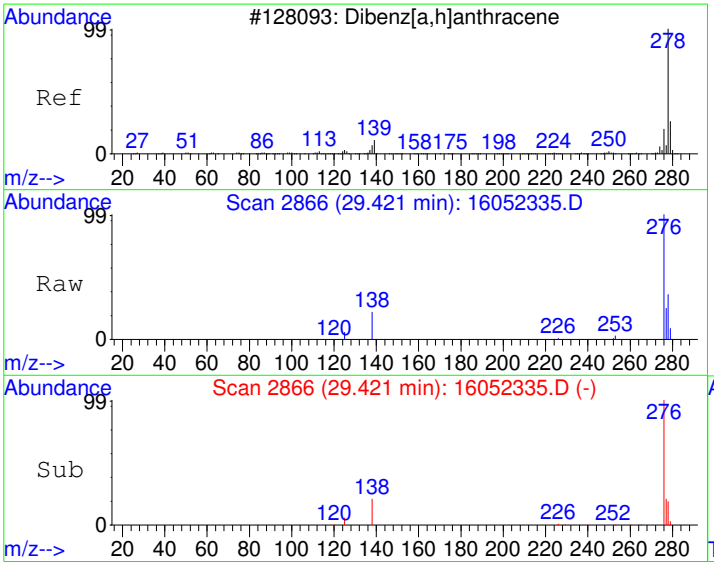



#25
Benzo[a]pyrene
Concen: 884.68 ug/kg
RT: 25.86 min Scan# 2363
Delta R.T. -0.03 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:252 Resp: 345569

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.4 | 1.9 | 41.9 |
| 125 | 10.9 | 0.0 | 31.7 |

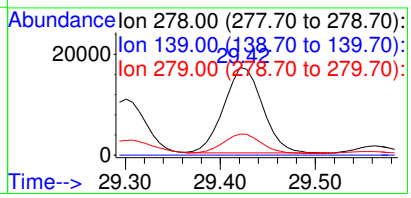


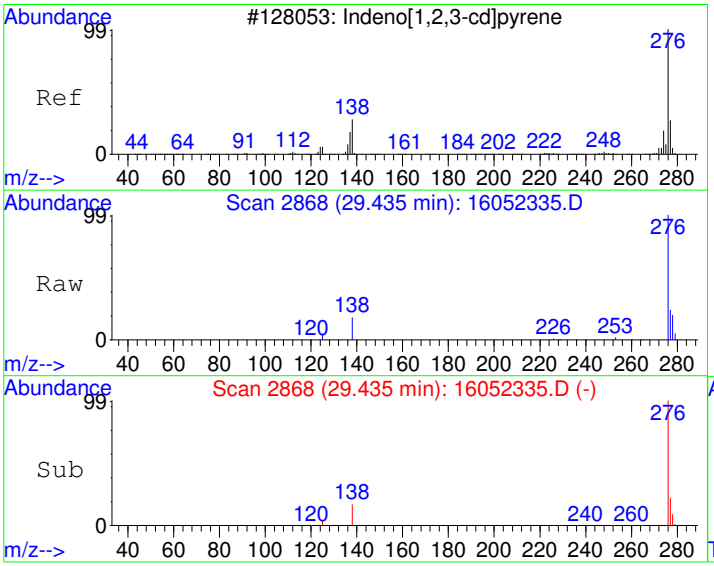




#26
Dibenz[a,h]anthracene
Concen: 135.17 ug/kg
RT: 29.42 min Scan# 2866
Delta R.T. -0.06 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:278 Resp: 48087

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 0.0 | 0.0 | 20.0 |
| 279 | 22.8 | 4.2 | 44.2 |

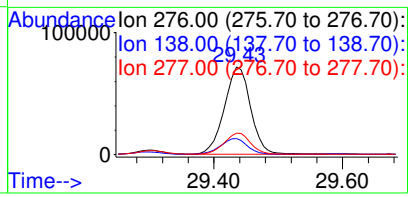


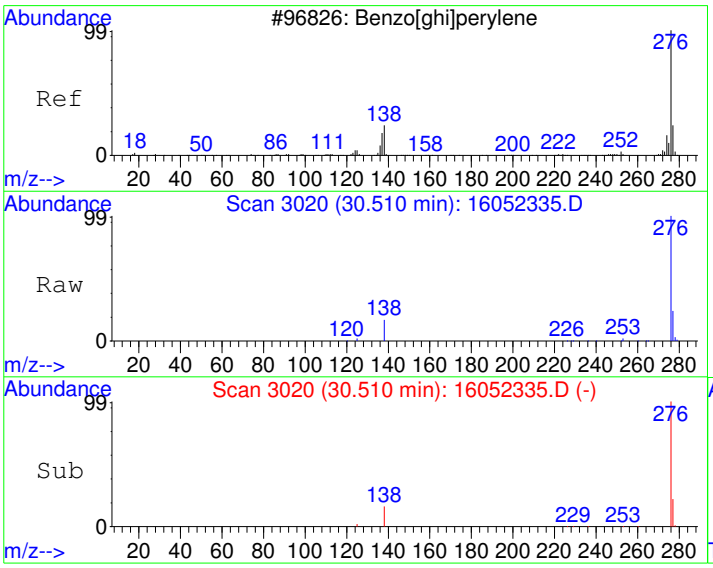




#27
Indeno[1,2,3-cd]pyrene
Concen: 478.00 ug/kg
RT: 29.43 min Scan# 2868
Delta R.T. -0.04 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:276 Resp: 202860

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 18.0 | 6.7 | 46.7 |
| 277 | 24.1 | 5.8 | 45.8 |

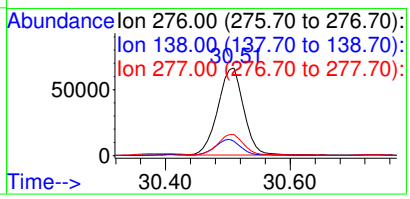





#28
Benzo[g,h,i]perylene
Concen: 574.05 ug/kg
RT: 30.51 min Scan# 3020
Delta R.T. -0.04 min
Lab File: 16052335.D
Acq: 24 May 2016 6:54 am

Tgt Ion:276 Resp: 189969

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 16.3 | 0.0 | 39.1 |
| 277 | 24.0 | 4.0 | 44.0 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052336.D Vial: 29
Acq On : 24 May 2016 7:33 am Operator:
Sample : 1605121-26A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:09 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

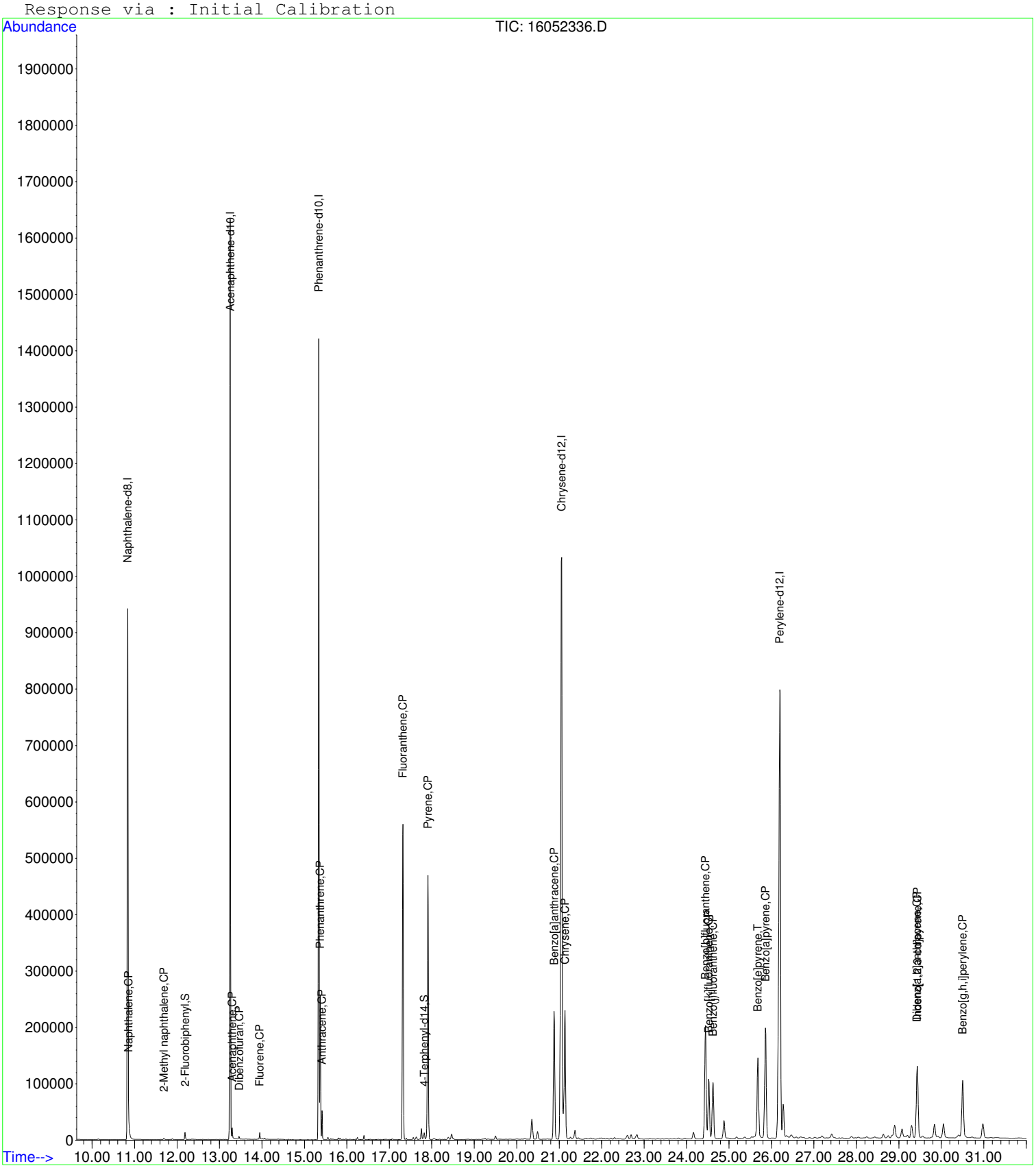
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.84 | 136 | 1228339 | 4000.00 | ug/kg | 106 |
| 5) Acenaphthene-d10 | 13.25 | 164 | 925033 | 4000.00 | ug/kg | 80 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1494779 | 4000.00 | ug/kg | 73 |
| 17) Chrysene-d12 | 21.06 | 240 | 1762411 | 4000.00 | ug/kg | 78 |
| 20) Perylene-d12 | 26.20 | 264 | 1587403 | 4000.00 | ug/kg | 77 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.19 | 172 | 10876 | 40.31 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.01%# | | |
| 16) 4-Terphenyl-d14 | 17.82 | 244 | 14175 | 36.65 | ug/kg | -0.03 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.92%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 6286 | 20.46 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.69 | 142 | 1534 | 5.65 | ug/kg | 96 |
| 6) Dibenzofuran | 13.46 | 168 | 4572 | 13.19 | ug/kg | 98 |
| 9) Acenaphthene | 13.30 | 154 | 7443 | 30.10 | ug/kg | 97 |
| 10) Fluorene | 13.95 | 166 | 5551 | 18.49 | ug/kg | 99 |
| 12) Phenanthrene | 15.37 | 178 | 210820 | 536.30 | ug/kg | 99 |
| 13) Anthracene | 15.41 | 178 | 44351 | 119.20 | ug/kg | 99 |
| 14) Fluoranthene | 17.32 | 202 | 563489 | 1385.20 | ug/kg | 98 |
| 15) Pyrene | 17.91 | 202 | 497657 | 1177.69 | ug/kg | 100 |
| 18) Benzo[a]anthracene | 20.88 | 228 | 331601 | 803.12 | ug/kg | 99 |
| 19) Chrysene | 21.13 | 228 | 366155 | 917.83 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.44 | 252 | 369304 | 882.69 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.52 | 252 | 182832 | 465.83 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.62 | 252 | 167868 | 480.14 | ug/kg | 90 |
| 24) Benzo[e]pyrene | 25.68 | 252 | 262559 | 700.74 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.86 | 252 | 365172 | 953.74 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.42 | 278 | 50941 | 146.09 | ug/kg | 97 |
| 27) Indeno[1,2,3-cd]pyrene | 29.44 | 276 | 218115 | 524.33 | ug/kg | 90 |
| 28) Benzo[g,h,i]perylene | 30.50 | 276 | 201788 | 622.07 | ug/kg | 99 |

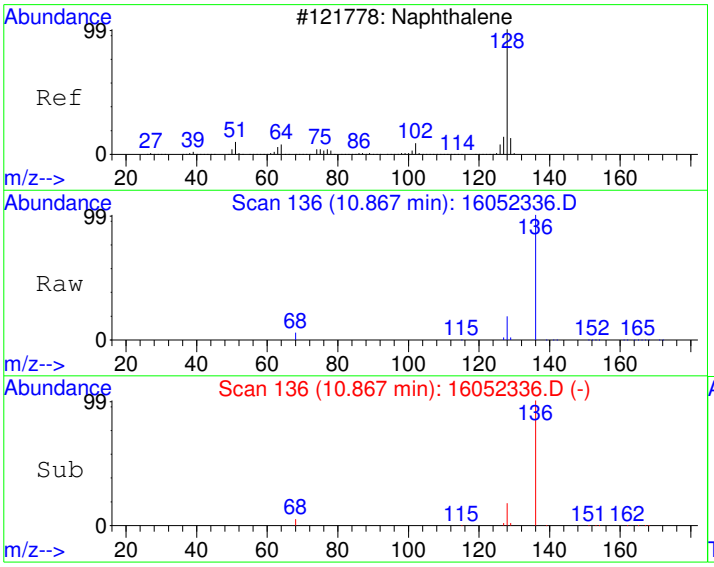
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052336.D Vial: 29
Acq On : 24 May 2016 7:33 am Operator:
Sample : 1605121-26A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:09 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

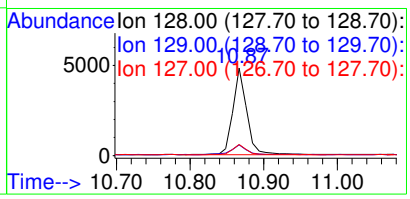


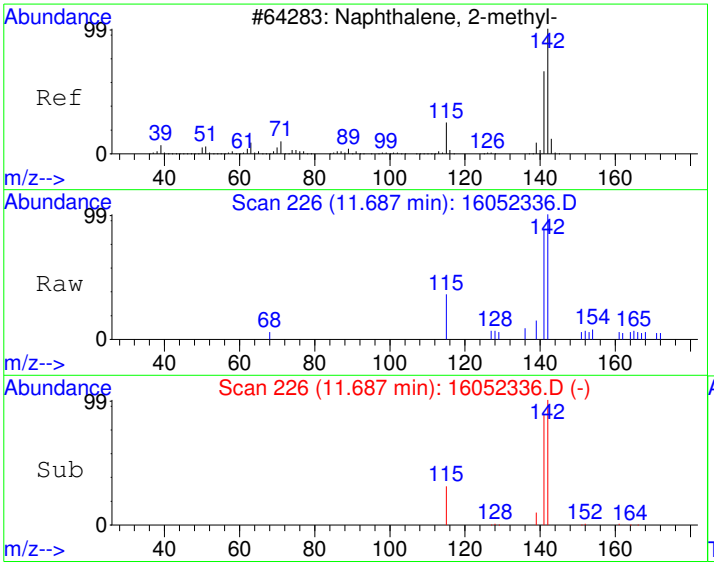



#2
Naphthalene
Concen: 20.46 ug/kg
RT: 10.87 min Scan# 136
Delta R.T. -0.01 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:128 Resp: 6286

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 11.3 | 0.0 | 41.1 |
| 127 | 11.8 | 0.0 | 42.4 |

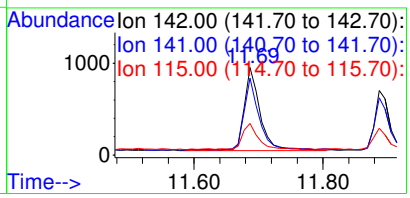


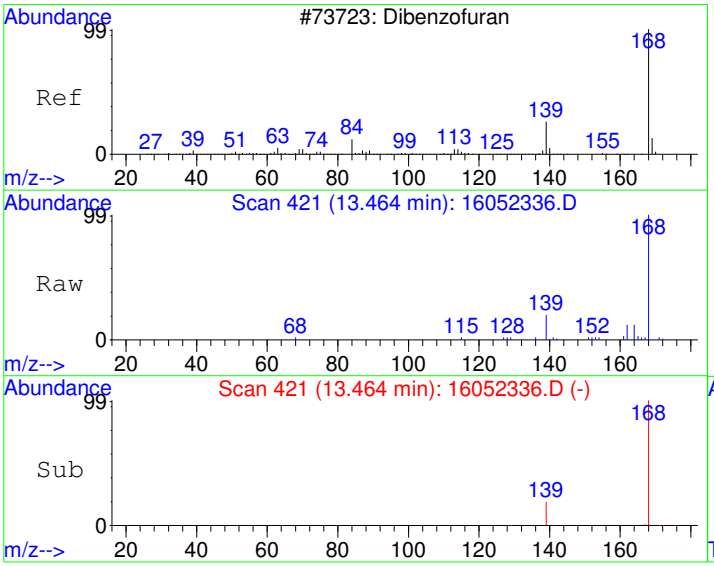




#3
2-Methyl naphthalene
Concen: 5.65 ug/kg
RT: 11.69 min Scan# 226
Delta R.T. -0.01 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:142 Resp: 1534

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 86.6 | 54.4 | 114.4 |
| 115 | 31.6 | 0.0 | 56.0 |

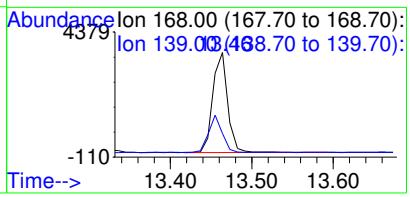


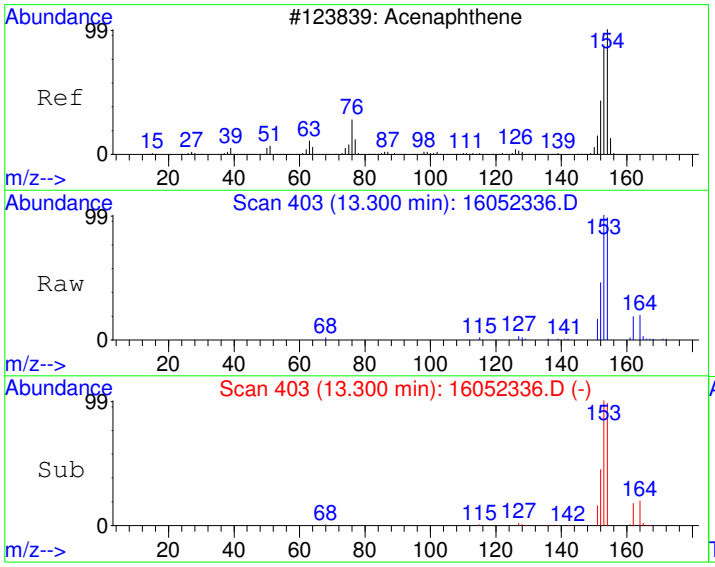




#6
Dibenzofuran
Concen: 13.19 ug/kg
RT: 13.46 min Scan# 421
Delta R.T. -0.01 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:168 Resp: 4572

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 35.0 | 27.0 | 40.4 |

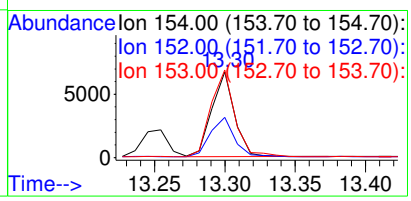


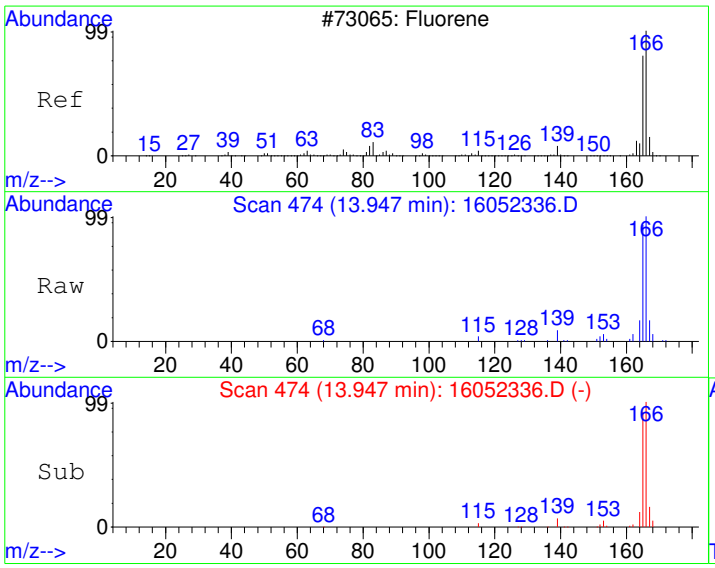



#9
Acenaphthene
Concen: 30.10 ug/kg
RT: 13.30 min Scan# 403
Delta R.T. -0.02 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:154 Resp: 7443

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 46.6 | 18.9 | 78.9 |
| 153 | 102.5 | 75.2 | 135.2 |

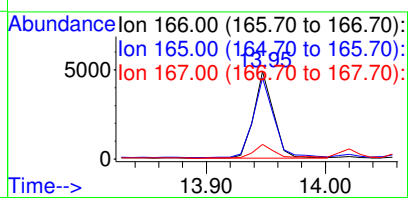


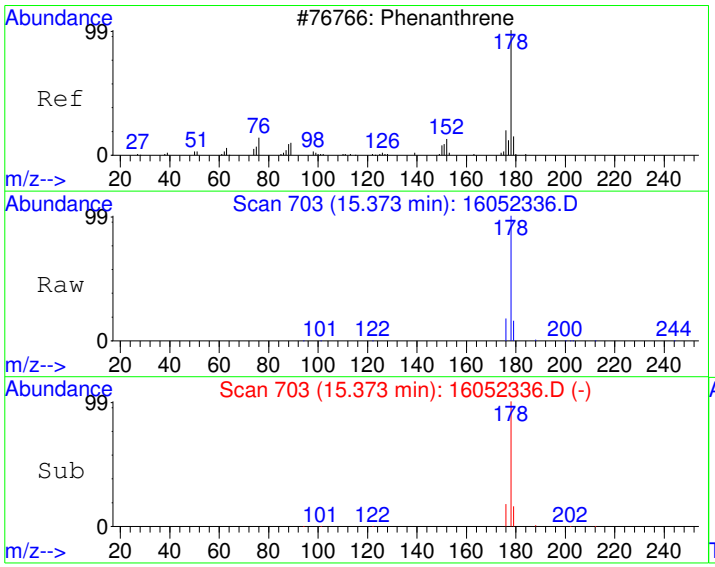




#10
Fluorene
Concen: 18.49 ug/kg
RT: 13.95 min Scan# 474
Delta R.T. -0.02 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:166 Resp: 5551

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 91.9 | 61.8 | 121.8 |
| 167 | 15.5 | 0.0 | 43.6 |

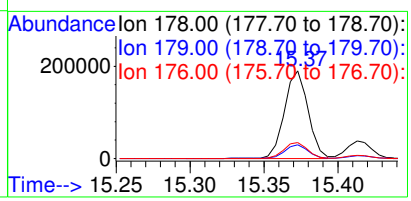


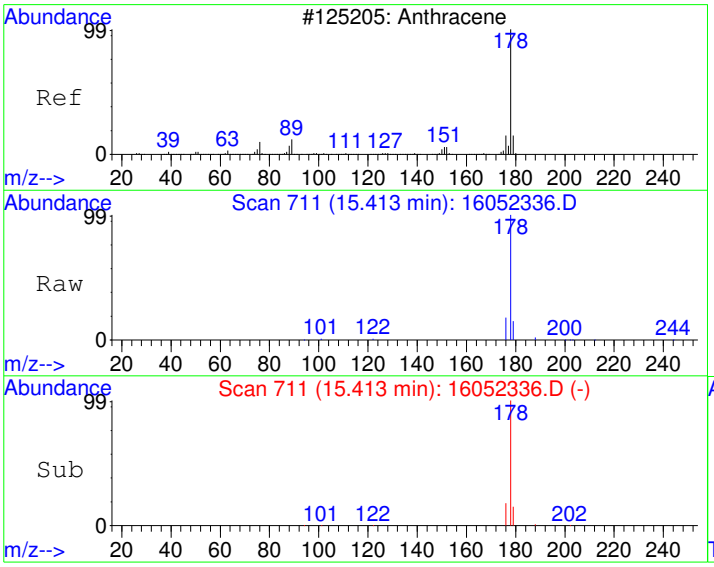




#12
Phenanthrene
Concen: 536.30 ug/kg
RT: 15.37 min Scan# 703
Delta R.T. -0.02 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:178 Resp: 210820

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.5 | 0.0 | 45.9 |
| 176 | 18.2 | 0.0 | 48.5 |

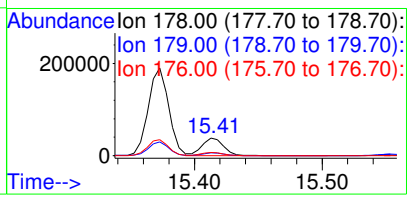


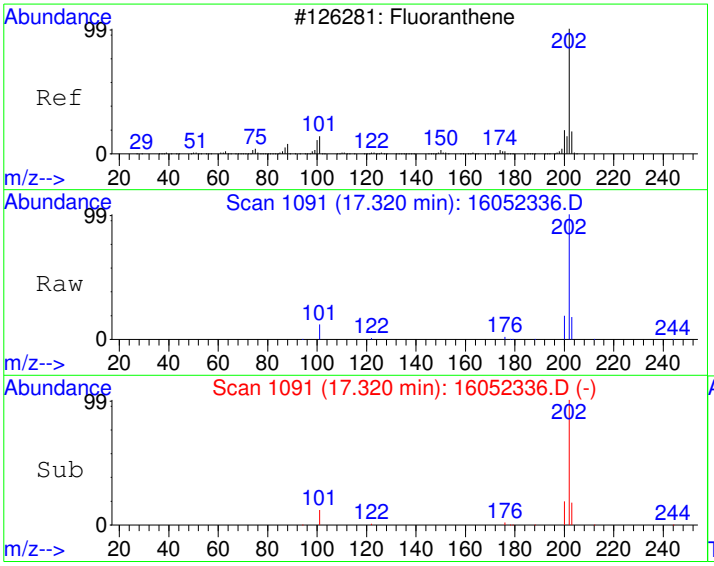



#13
Anthracene
Concen: 119.20 ug/kg
RT: 15.41 min Scan# 711
Delta R.T. -0.02 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:178 Resp: 44351

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.1 | 0.0 | 45.9 |
| 176 | 18.1 | 0.0 | 48.2 |

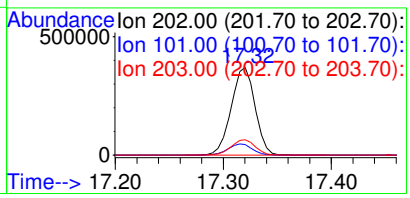


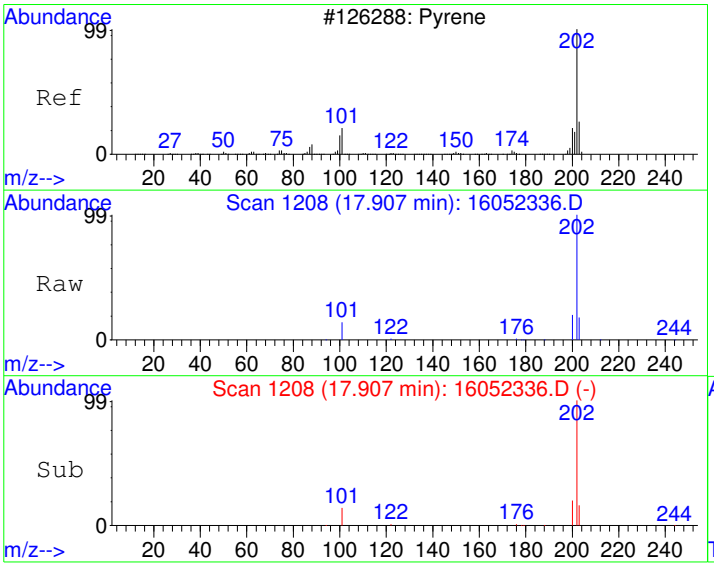




#14
Fluoranthene
Concen: 1385.20 ug/kg
RT: 17.32 min Scan# 1091
Delta R.T. -0.02 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:202 Resp: 563489

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 11.9 | 0.0 | 43.0 |
| 203 | 17.5 | 0.0 | 47.9 |

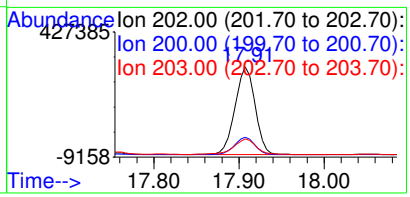


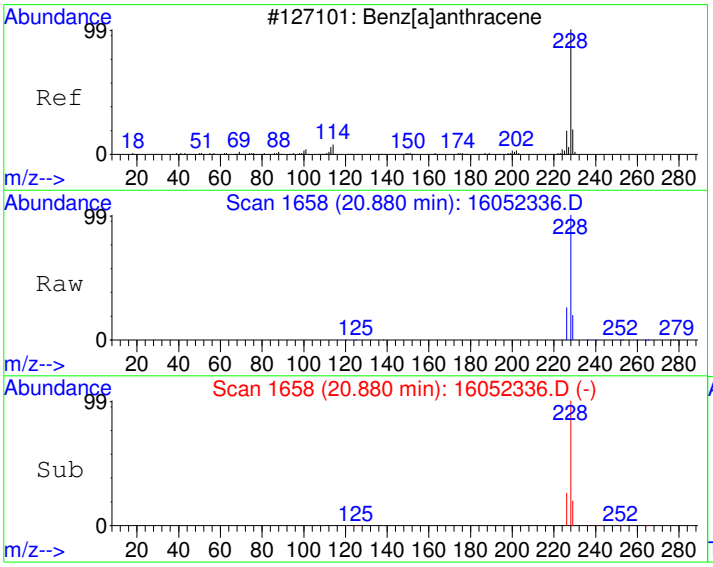




#15
Pyrene
Concen: 1177.69 ug/kg
RT: 17.91 min Scan# 1208
Delta R.T. -0.03 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:202 Resp: 497657

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 200 | 19.8 | 0.0 | 50.0 |
| 203 | 17.8 | 0.0 | 48.0 |

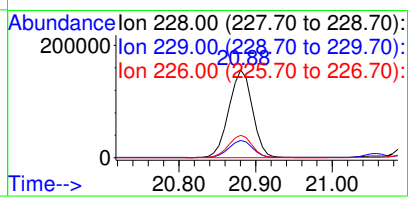


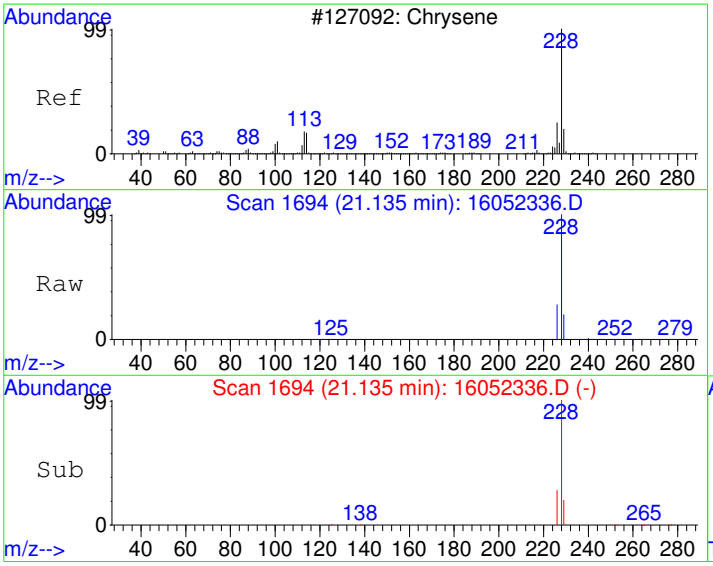



#18
Benzo[a]anthracene
Concen: 803.12 ug/kg
RT: 20.88 min Scan# 1658
Delta R.T. -0.03 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:228 Resp: 331601

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.7 | 0.0 | 50.1 |
| 226 | 25.6 | 0.0 | 55.2 |

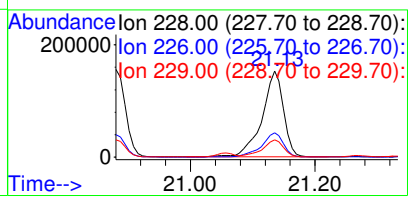


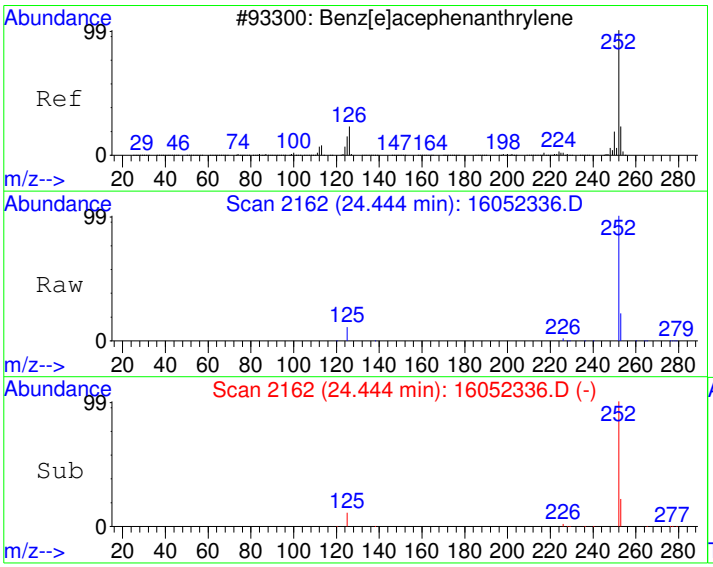




#19
Chrysene
Concen: 917.83 ug/kg
RT: 21.13 min Scan# 1694
Delta R.T. -0.03 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:228 Resp: 366155

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.3 | 0.0 | 58.1 |
| 229 | 19.8 | 0.0 | 50.1 |

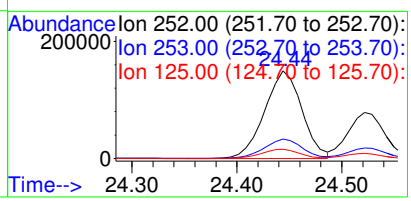


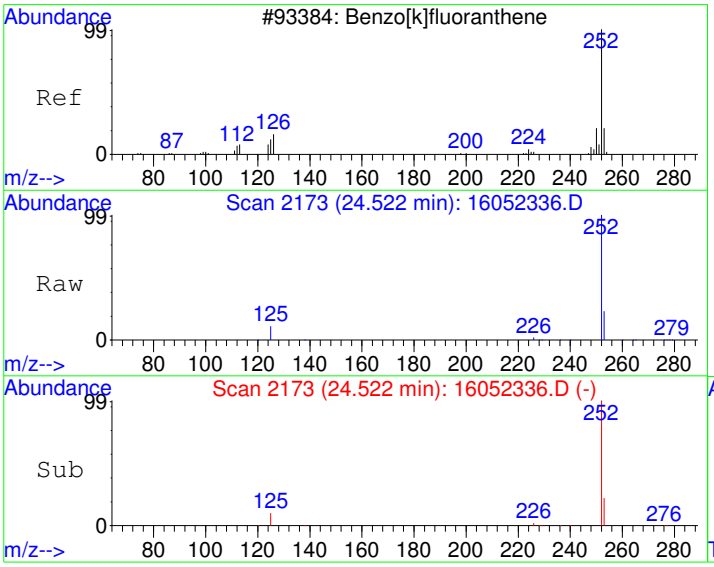




#21
Benzo[b]fluoranthene
Concen: 882.69 ug/kg
RT: 24.44 min Scan# 2162
Delta R.T. -0.04 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:252 Resp: 369304

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.0 | 0.0 | 52.2 |
| 125 | 10.6 | 0.0 | 41.0 |

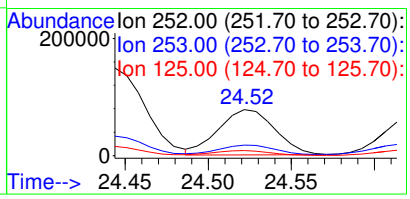


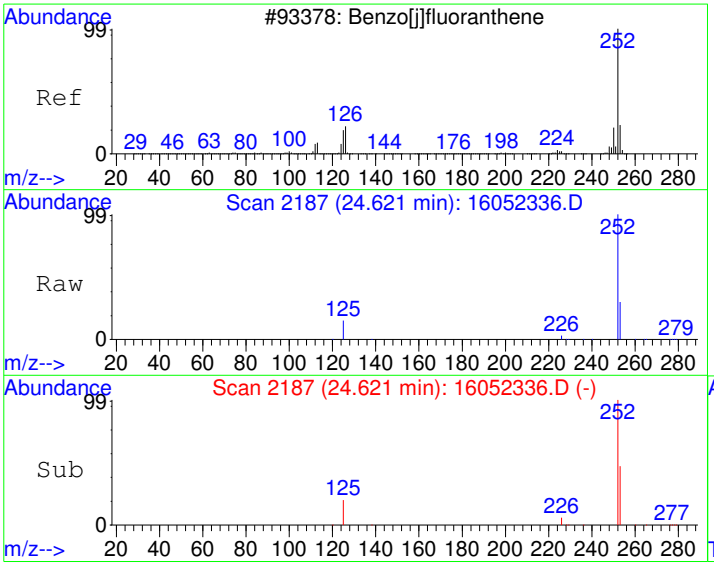



#22
Benzo[k]fluoranthene
Concen: 465.83 ug/kg
RT: 24.52 min Scan# 2173
Delta R.T. -0.05 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:252 Resp: 182832

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.1 | 2.1 | 42.1 |
| 125 | 10.6 | 0.0 | 31.3 |

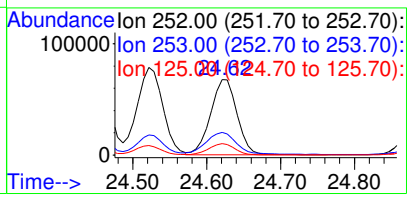


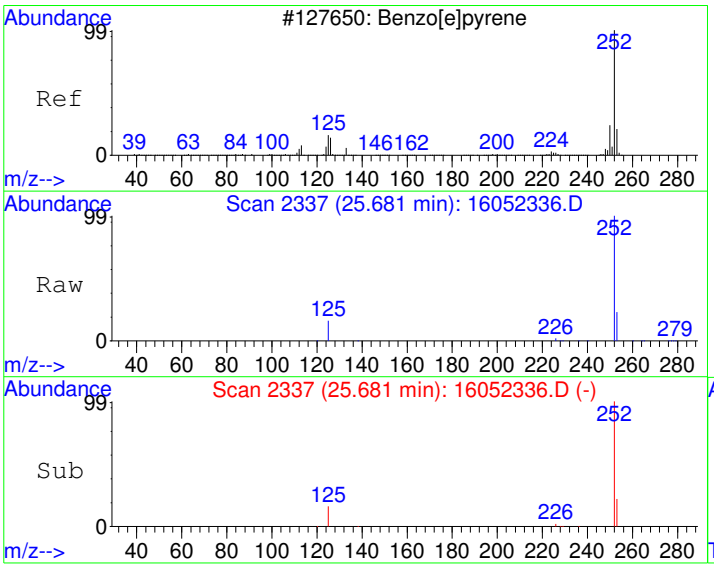




#23
Benzo(j)fluoranthene
Concen: 480.14 ug/kg
RT: 24.62 min Scan# 2187
Delta R.T. -0.05 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:252 Resp: 167868

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 29.3 | 2.1 | 42.1 |
| 125 | 14.9 | 0.0 | 34.4 |

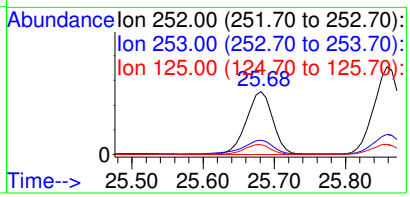


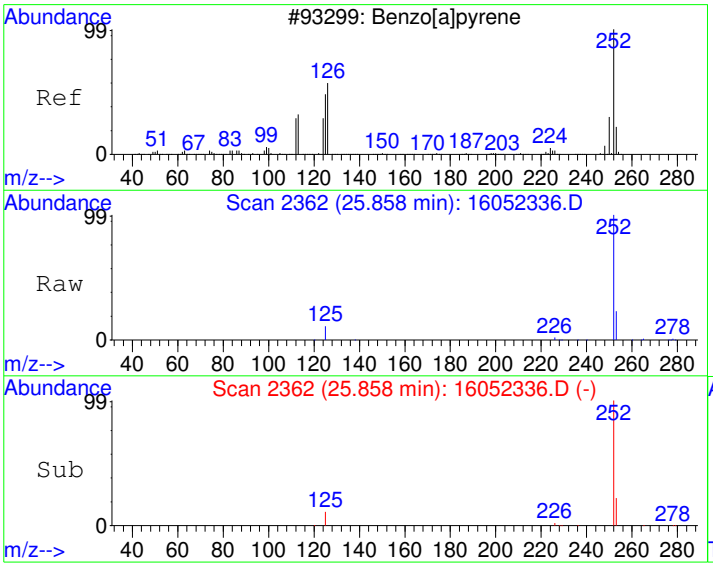




#24
Benzo[e]pyrene
Concen: 700.74 ug/kg
RT: 25.68 min Scan# 2337
Delta R.T. -0.04 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:252 Resp: 262559

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.3 | 2.2 | 42.2 |
| 125 | 15.6 | 0.0 | 36.1 |

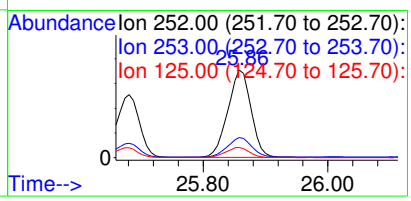


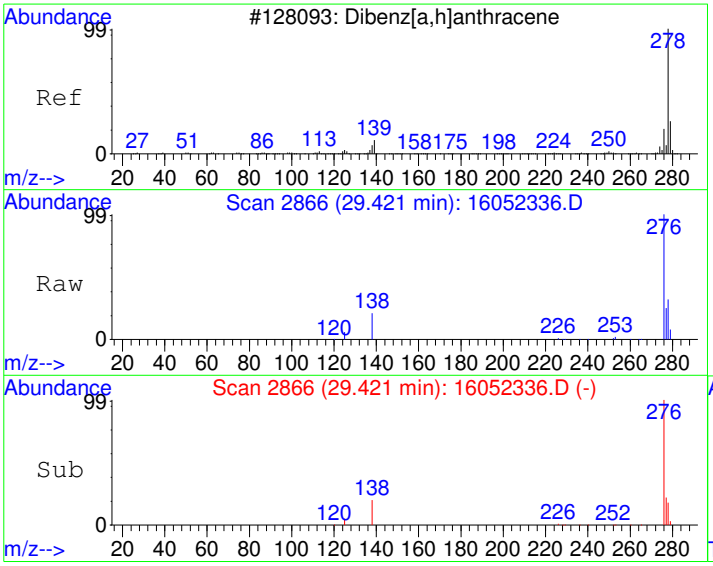



#25
Benzo[a]pyrene
Concen: 953.74 ug/kg
RT: 25.86 min Scan# 2362
Delta R.T. -0.04 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:252 Resp: 365172

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.3 | 1.9 | 41.9 |
| 125 | 11.4 | 0.0 | 31.7 |

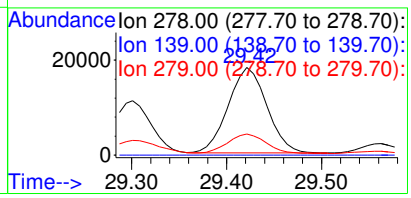


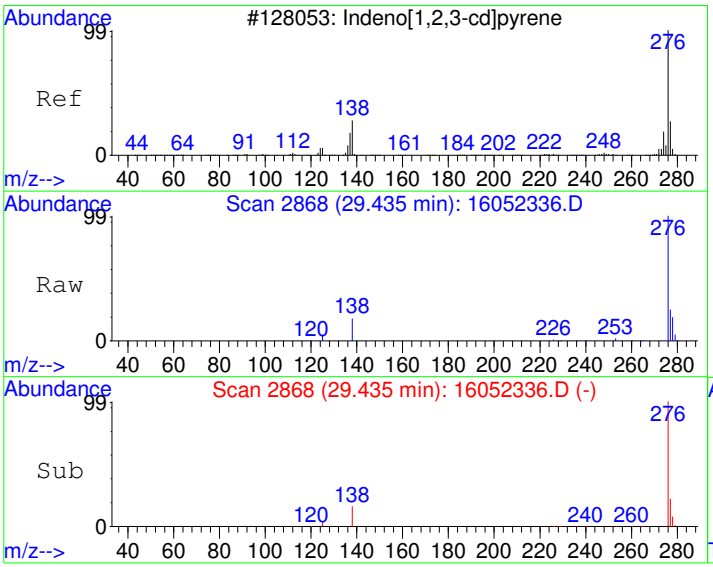




#26
Dibenz[a,h]anthracene
Concen: 146.09 ug/kg
RT: 29.42 min Scan# 2866
Delta R.T. -0.06 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:278 Resp: 50941

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 0.0 | 0.0 | 20.0 |
| 279 | 22.9 | 4.2 | 44.2 |

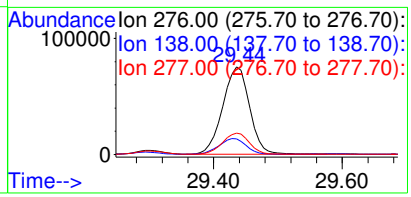


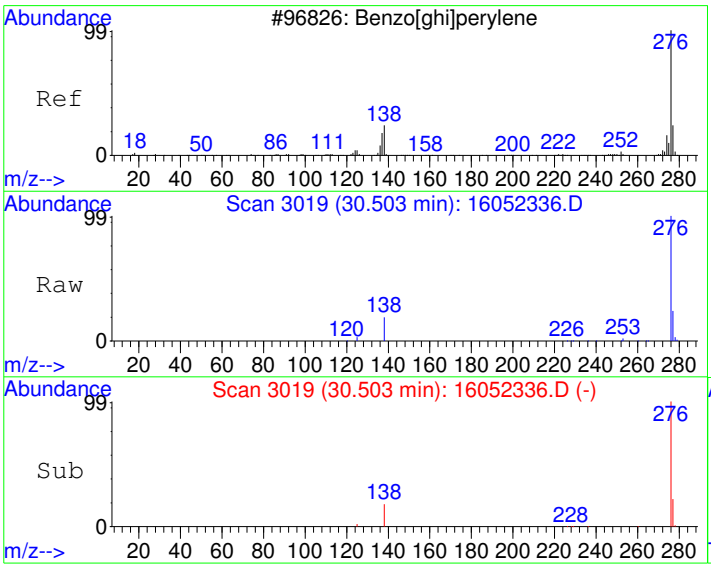




#27
Indeno[1,2,3-cd]pyrene
Concen: 524.33 ug/kg
RT: 29.44 min Scan# 2868
Delta R.T. -0.04 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:276 Resp: 218115

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 17.5 | 6.7 | 46.7 |
| 277 | 24.3 | 5.8 | 45.8 |

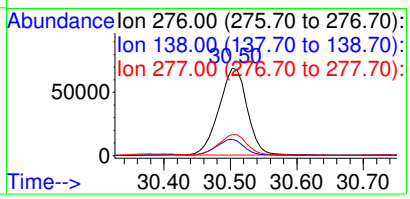





#28
Benzo[g,h,i]perylene
Concen: 622.07 ug/kg
RT: 30.50 min Scan# 3019
Delta R.T. -0.05 min
Lab File: 16052336.D
Acq: 24 May 2016 7:33 am

Tgt Ion:276 Resp: 201788

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 18.4 | 0.0 | 39.1 |
| 277 | 23.9 | 4.0 | 44.0 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052337.D Vial: 30
Acq On : 24 May 2016 8:13 am Operator:
Sample : 1605121-27A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:09 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

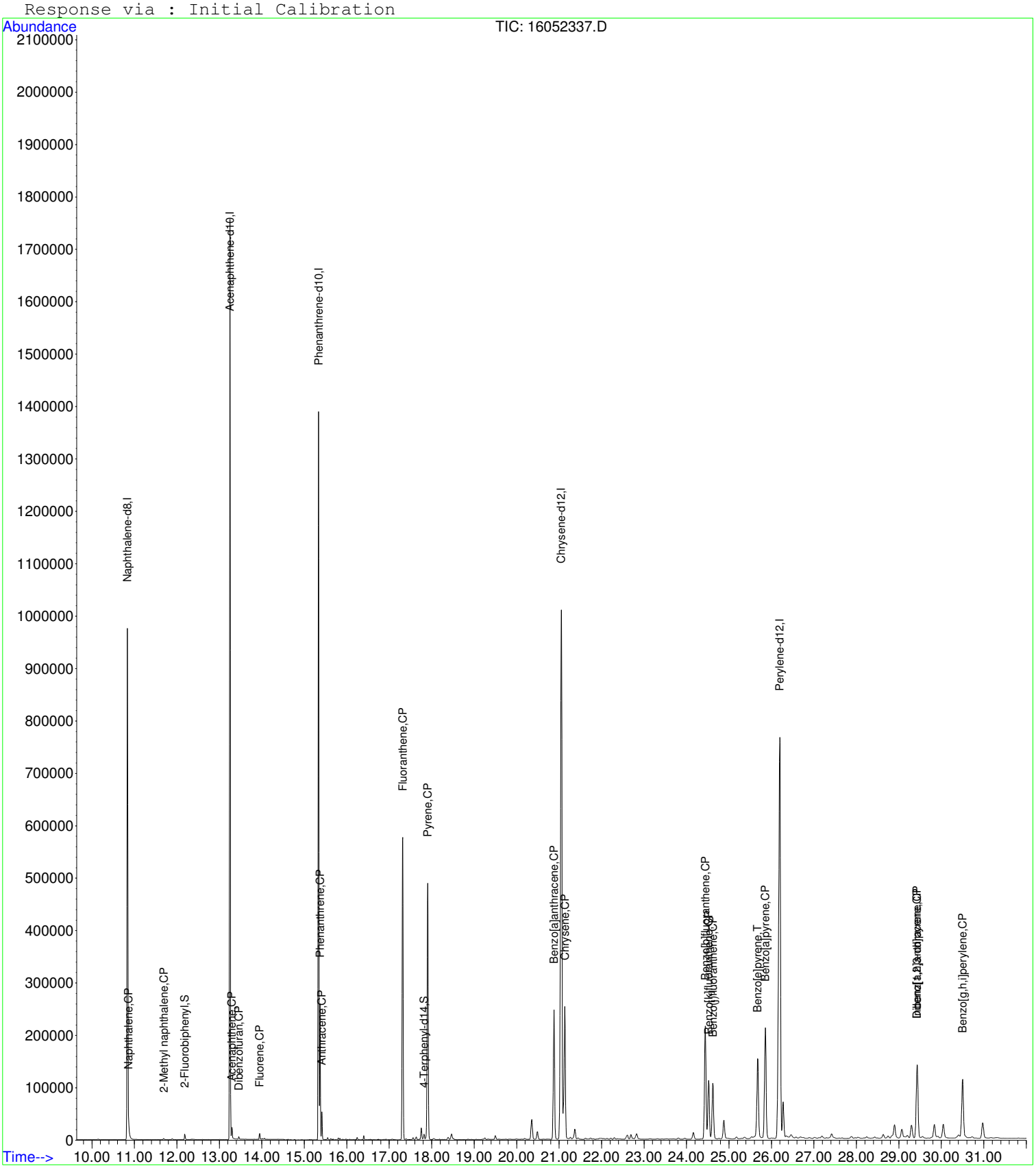
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.83 | 136 | 1223577 | 4000.00 | ug/kg | 106 |
| 5) Acenaphthene-d10 | 13.25 | 164 | 912301 | 4000.00 | ug/kg | 79 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1495944 | 4000.00 | ug/kg | 73 |
| 17) Chrysene-d12 | 21.06 | 240 | 1769308 | 4000.00 | ug/kg | 78 |
| 20) Perylene-d12 | 26.20 | 264 | 1582214 | 4000.00 | ug/kg | 77 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.18 | 172 | 9765 | 36.69 | ug/kg | -0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.92%# | | |
| 16) 4-Terphenyl-d14 | 17.82 | 244 | 12686 | 32.78 | ug/kg | -0.03 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.82%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 7563 | 24.71 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.69 | 142 | 1538 | 5.69 | ug/kg | 97 |
| 6) Dibenzofuran | 13.46 | 168 | 4458 | 13.04 | ug/kg | 100 |
| 9) Acenaphthene | 13.29 | 154 | 8514 | 34.91 | ug/kg | 97 |
| 10) Fluorene | 13.95 | 166 | 5874 | 19.83 | ug/kg | 98 |
| 12) Phenanthrene | 15.37 | 178 | 208614 | 530.27 | ug/kg | 99 |
| 13) Anthracene | 15.41 | 178 | 45005 | 120.86 | ug/kg | 99 |
| 14) Fluoranthene | 17.32 | 202 | 589574 | 1448.19 | ug/kg | 98 |
| 15) Pyrene | 17.91 | 202 | 524714 | 1240.75 | ug/kg | 100 |
| 18) Benzo[a]anthracene | 20.88 | 228 | 353511 | 852.85 | ug/kg | 99 |
| 19) Chrysene | 21.13 | 228 | 394388 | 984.75 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.44 | 252 | 404583 | 970.18 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.52 | 252 | 195776 | 500.45 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.62 | 252 | 181654 | 521.28 | ug/kg | 91 |
| 24) Benzo[e]pyrene | 25.68 | 252 | 286567 | 767.33 | ug/kg | 98 |
| 25) Benzo[a]pyrene | 25.86 | 252 | 399688 | 1047.31 | ug/kg | 100 |
| 26) Dibenz[a,h]anthracene | 29.42 | 278 | 55716 | 160.30 | ug/kg | 97 |
| 27) Indeno[1,2,3-cd]pyrene | 29.43 | 276 | 237101 | 571.83 | ug/kg | 89 |
| 28) Benzo[g,h,i]perylene | 30.50 | 276 | 221546 | 685.22 | ug/kg | 98 |

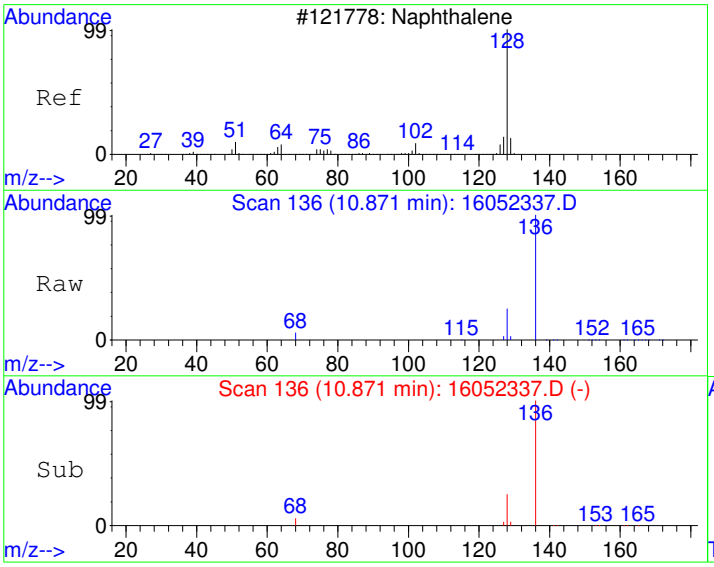
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052337.D Vial: 30
Acq On : 24 May 2016 8:13 am Operator:
Sample : 1605121-27A Inst : GC/MS #6
Misc : SAMP Multiplr: 20.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:09 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration

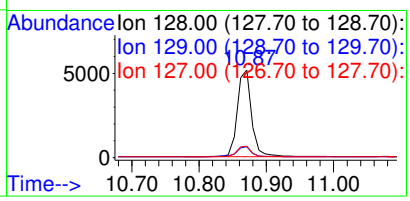


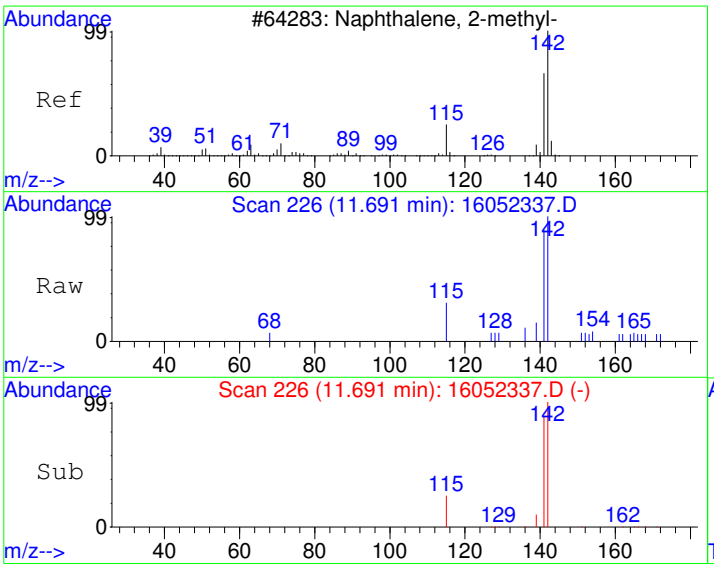



#2
Naphthalene
Concen: 24.71 ug/kg
RT: 10.87 min Scan# 136
Delta R.T. -0.01 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:128 Resp: 7563

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 11.3 | 0.0 | 41.1 |
| 127 | 12.0 | 0.0 | 42.4 |

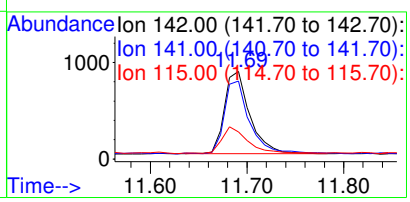


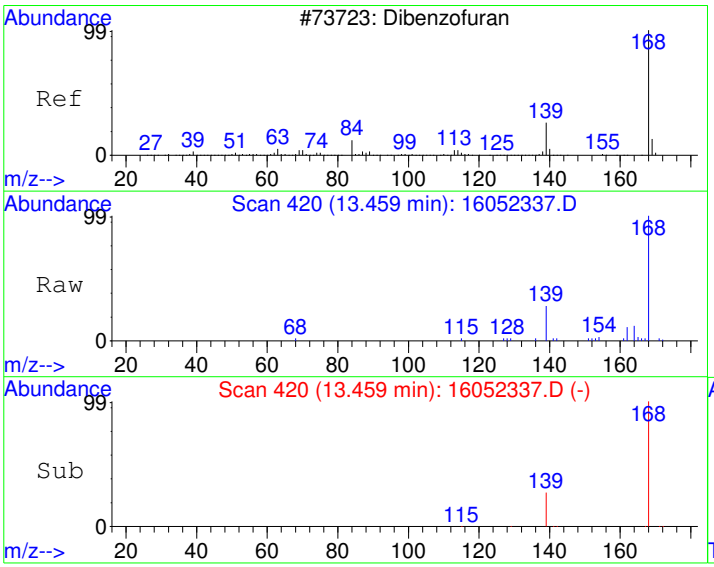




#3
2-Methyl naphthalene
Concen: 5.69 ug/kg
RT: 11.69 min Scan# 226
Delta R.T. -0.01 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:142 Resp: 1538

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 88.0 | 54.4 | 114.4 |
| 115 | 26.0 | 0.0 | 56.0 |

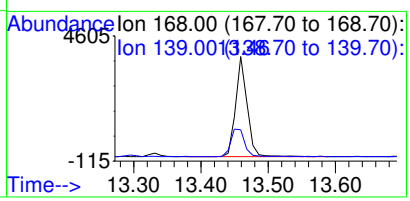


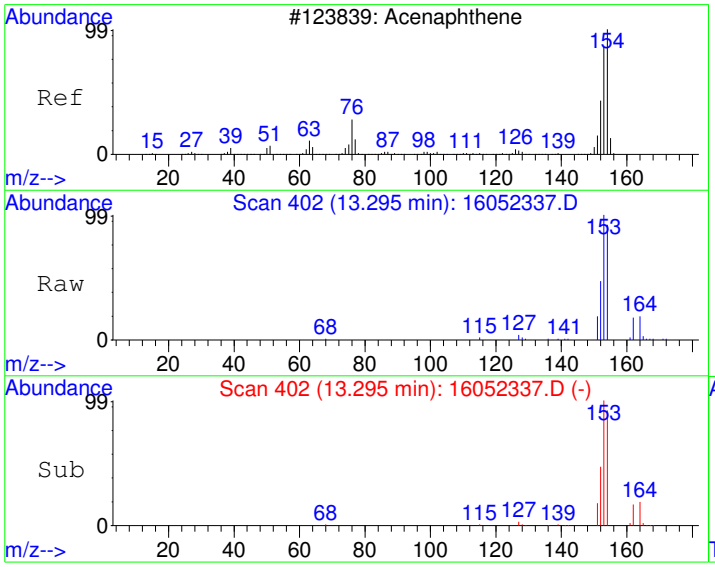




#6
Dibenzofuran
Concen: 13.04 ug/kg
RT: 13.46 min Scan# 420
Delta R.T. -0.02 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:168 Resp: 4458

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 33.9 | 27.0 | 40.4 |

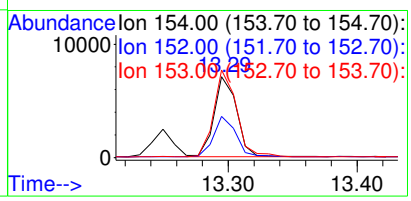


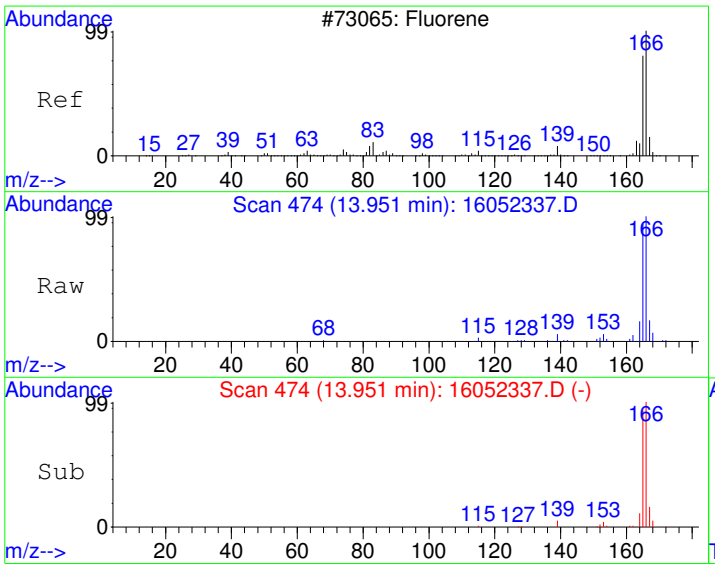



#9
Acenaphthene
Concen: 34.91 ug/kg
RT: 13.29 min Scan# 402
Delta R.T. -0.03 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:154 Resp: 8514

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 154 | 100 | | |
| 152 | 50.8 | 18.9 | 78.9 |
| 153 | 108.7 | 75.2 | 135.2 |

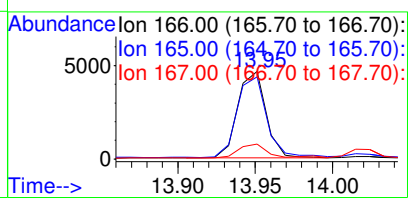


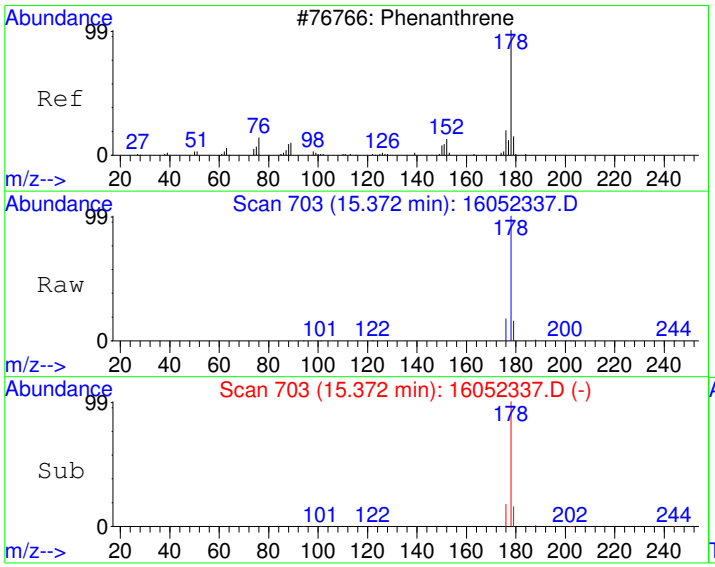




#10
Fluorene
Concen: 19.83 ug/kg
RT: 13.95 min Scan# 474
Delta R.T. -0.02 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:166 Resp: 5874

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 93.1 | 61.8 | 121.8 |
| 167 | 16.0 | 0.0 | 43.6 |

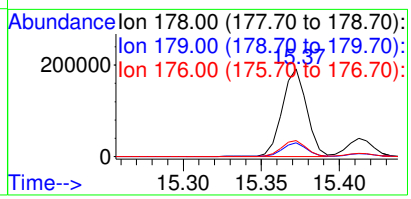


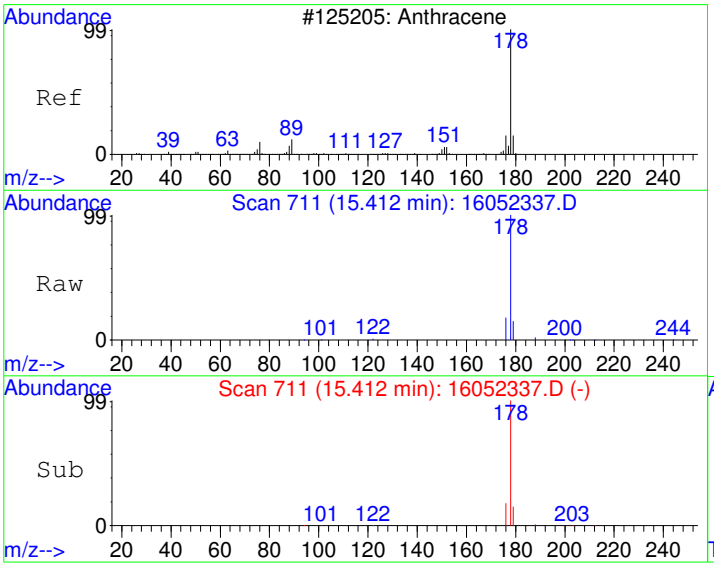




#12
Phenanthrene
Concen: 530.27 ug/kg
RT: 15.37 min Scan# 703
Delta R.T. -0.02 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:178 Resp: 208614

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.6 | 0.0 | 45.9 |
| 176 | 18.1 | 0.0 | 48.5 |

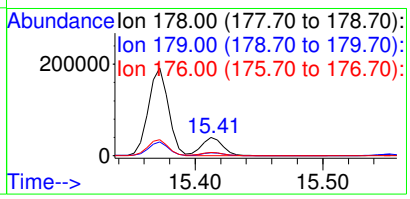


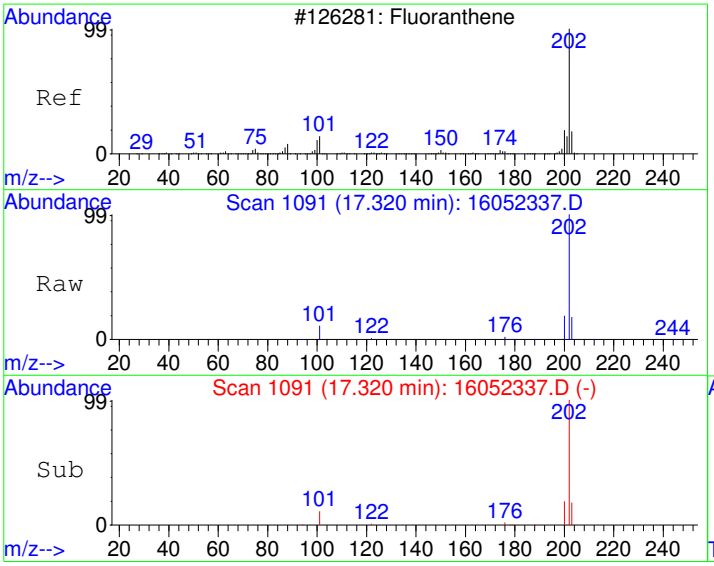



#13
Anthracene
Concen: 120.86 ug/kg
RT: 15.41 min Scan# 711
Delta R.T. -0.02 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:178 Resp: 45005

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.2 | 0.0 | 45.9 |
| 176 | 17.8 | 0.0 | 48.2 |

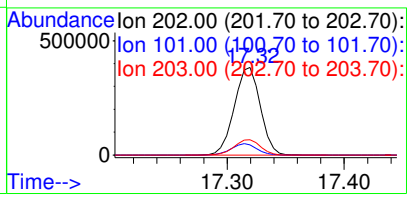


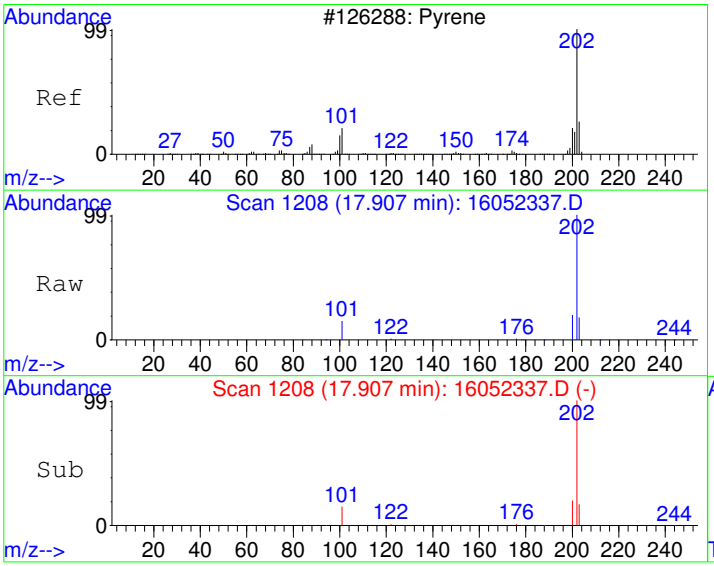




#14
Fluoranthene
Concen: 1448.19 ug/kg
RT: 17.32 min Scan# 1091
Delta R.T. -0.02 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:202 Resp: 589574

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 11.5 | 0.0 | 43.0 |
| 203 | 17.6 | 0.0 | 47.9 |

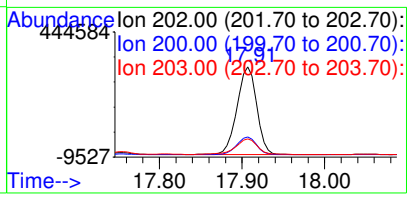


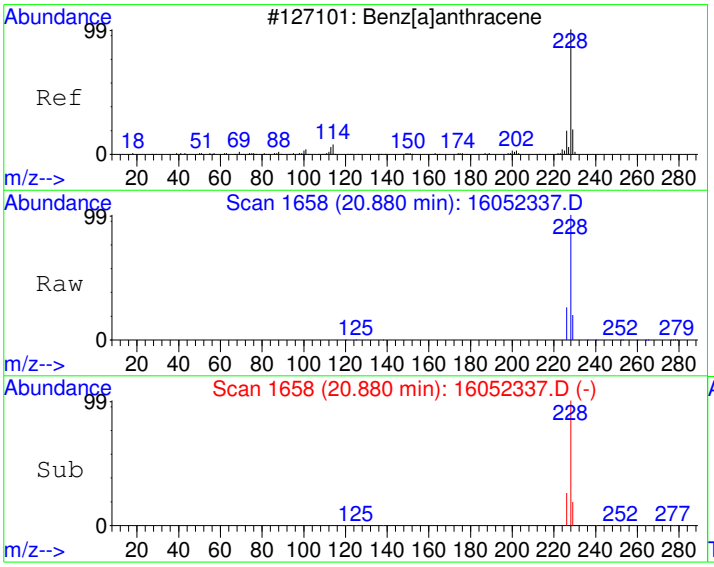




#15
Pyrene
Concen: 1240.75 ug/kg
RT: 17.91 min Scan# 1208
Delta R.T. -0.03 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:202 Resp: 524714

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 200 | 19.9 | 0.0 | 50.0 |
| 203 | 17.7 | 0.0 | 48.0 |

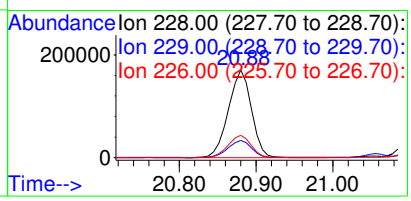


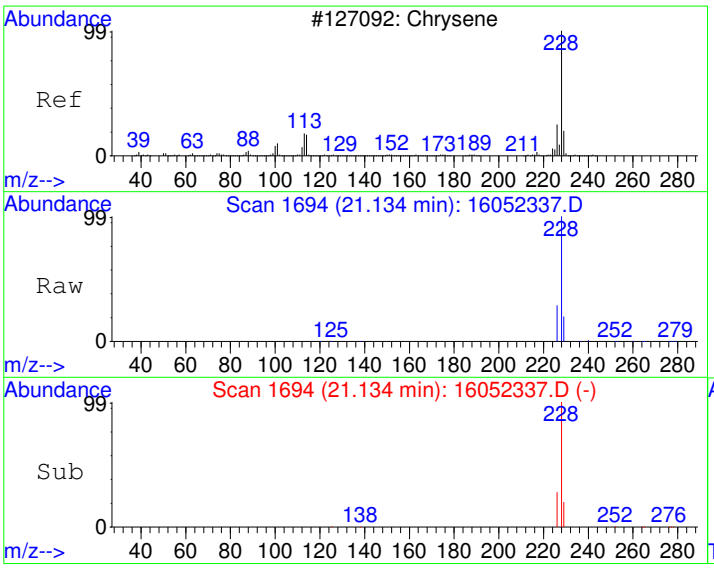



#18
Benzo[a]anthracene
Concen: 852.85 ug/kg
RT: 20.88 min Scan# 1658
Delta R.T. -0.04 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:228 Resp: 353511

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.6 | 0.0 | 50.1 |
| 226 | 25.6 | 0.0 | 55.2 |

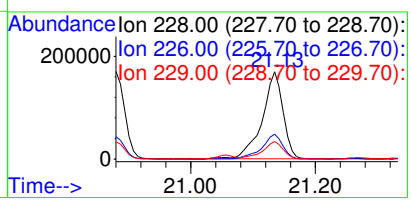


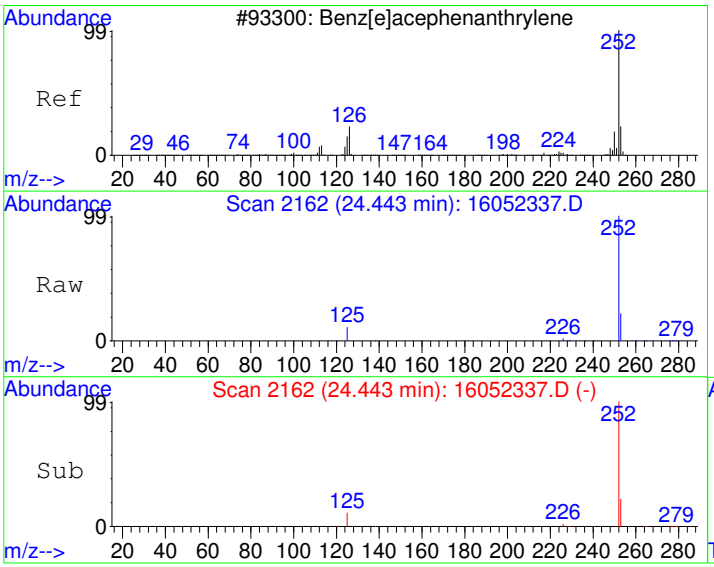




#19
Chrysene
Concen: 984.75 ug/kg
RT: 21.13 min Scan# 1694
Delta R.T. -0.04 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:228 Resp: 394388

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.5 | 0.0 | 58.1 |
| 229 | 19.9 | 0.0 | 50.1 |

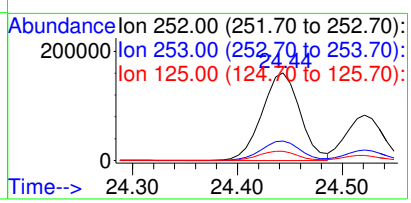


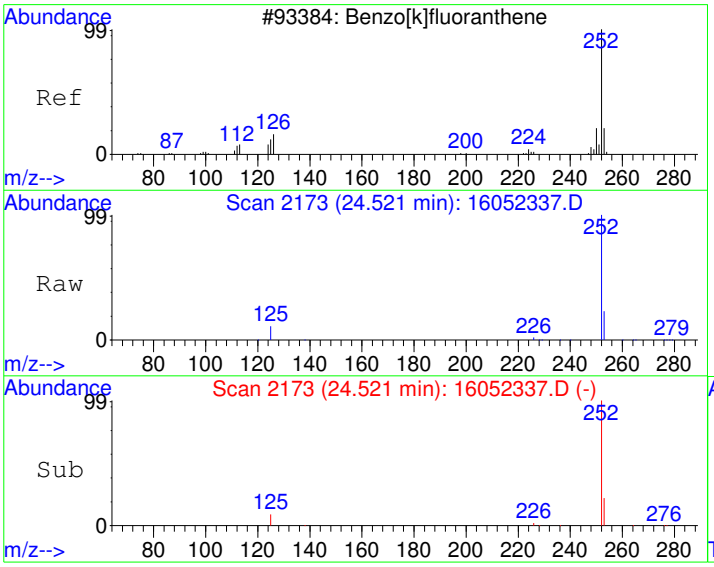




#21
Benzo[b]fluoranthene
Concen: 970.18 ug/kg
RT: 24.44 min Scan# 2162
Delta R.T. -0.04 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:252 Resp: 404583

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.9 | 0.0 | 52.2 |
| 125 | 10.5 | 0.0 | 41.0 |

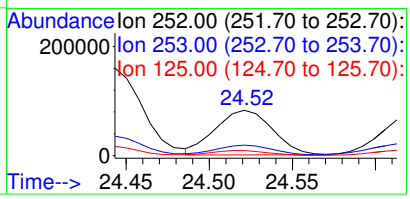


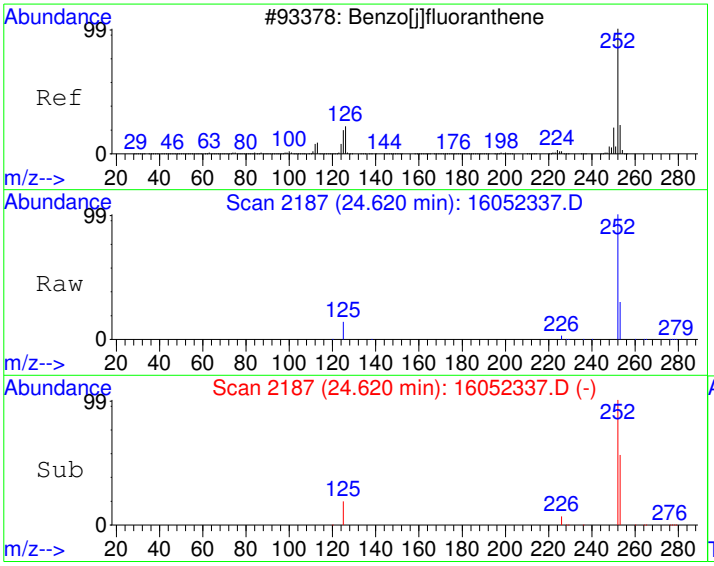



#22
Benzo[k]fluoranthene
Concen: 500.45 ug/kg
RT: 24.52 min Scan# 2173
Delta R.T. -0.05 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:252 Resp: 195776

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.0 | 2.1 | 42.1 |
| 125 | 10.7 | 0.0 | 31.3 |

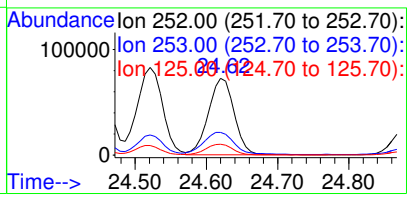


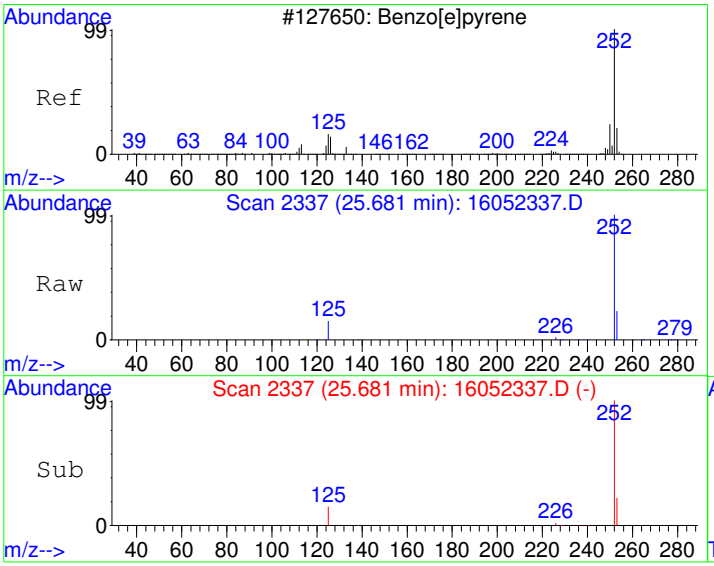




#23
Benzo(j)fluoranthene
Concen: 521.28 ug/kg
RT: 24.62 min Scan# 2187
Delta R.T. -0.05 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:252 Resp: 181654

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 28.8 | 2.1 | 42.1 |
| 125 | 14.0 | 0.0 | 34.4 |

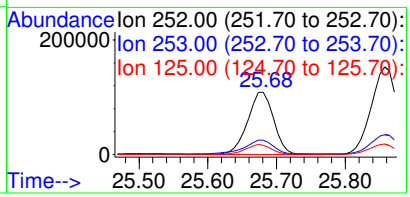


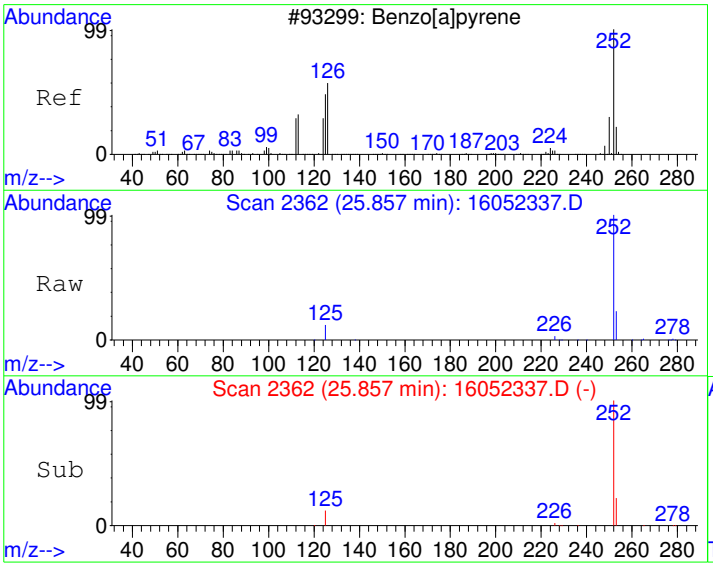




#24
Benzo[e]pyrene
Concen: 767.33 ug/kg
RT: 25.68 min Scan# 2337
Delta R.T. -0.04 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:252 Resp: 286567

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.4 | 2.2 | 42.2 |
| 125 | 14.7 | 0.0 | 36.1 |

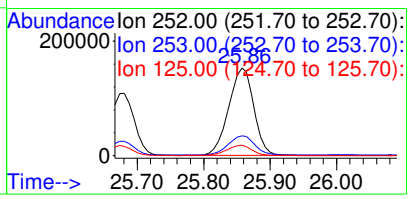


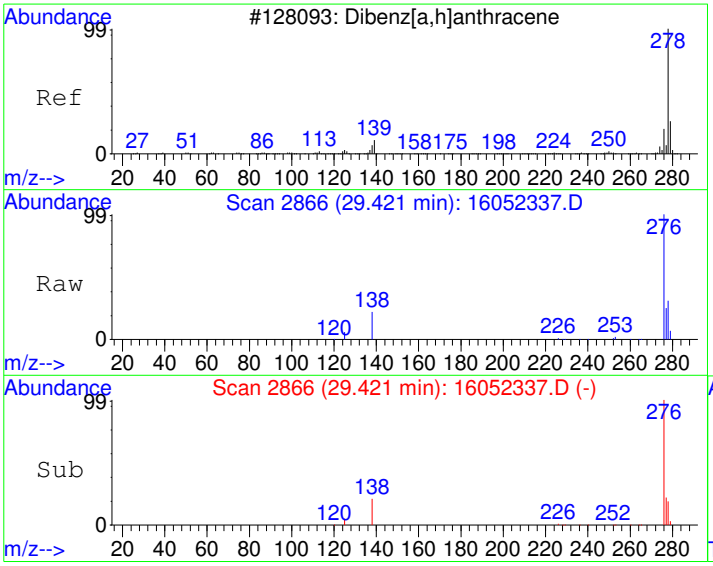



#25
Benzo[a]pyrene
Concen: 1047.31 ug/kg
RT: 25.86 min Scan# 2362
Delta R.T. -0.04 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:252 Resp: 399688

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.1 | 1.9 | 41.9 |
| 125 | 11.9 | 0.0 | 31.7 |

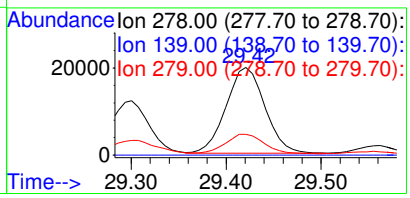


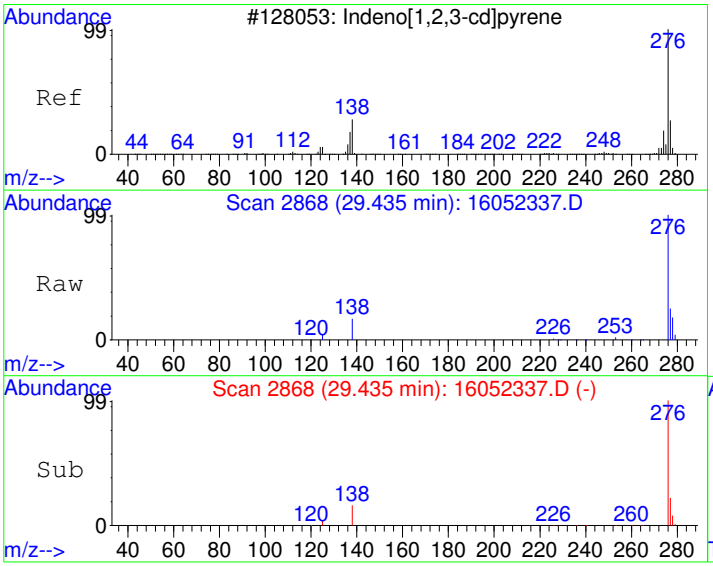




#26
Dibenz[a,h]anthracene
Concen: 160.30 ug/kg
RT: 29.42 min Scan# 2866
Delta R.T. -0.06 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:278 Resp: 55716

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 0.0 | 0.0 | 20.0 |
| 279 | 22.6 | 4.2 | 44.2 |

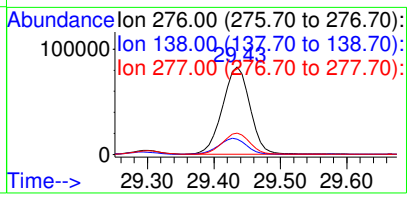


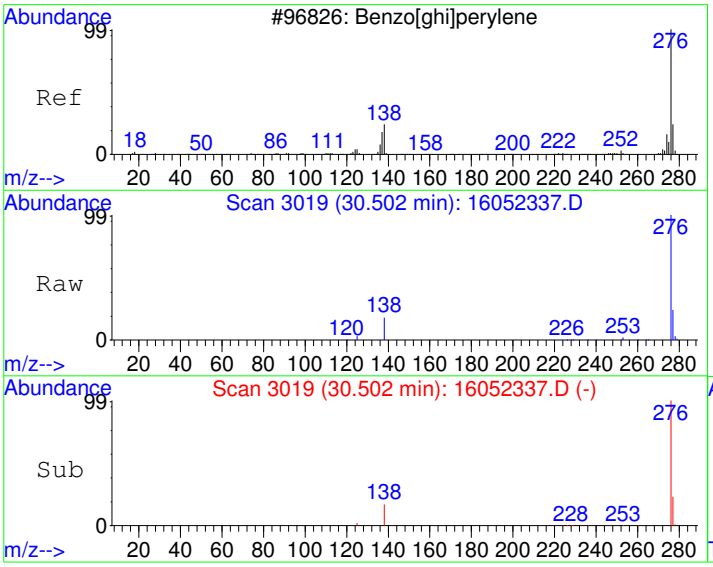




#27
Indeno[1,2,3-cd]pyrene
Concen: 571.83 ug/kg
RT: 29.43 min Scan# 2868
Delta R.T. -0.04 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:276 Resp: 237101

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 17.2 | 6.7 | 46.7 |
| 277 | 24.3 | 5.8 | 45.8 |

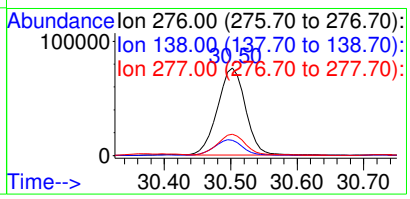





#28
Benzo[g,h,i]perylene
Concen: 685.22 ug/kg
RT: 30.50 min Scan# 3019
Delta R.T. -0.05 min
Lab File: 16052337.D
Acq: 24 May 2016 8:13 am

Tgt Ion:276 Resp: 221546

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 17.3 | 0.0 | 39.1 |
| 277 | 24.3 | 4.0 | 44.0 |



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160523\16052338.D Vial: 31
Acq On : 24 May 2016 8:53 am Operator:
Sample : CCV1-160523 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:02 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration
DataAcq Meth : PP160421

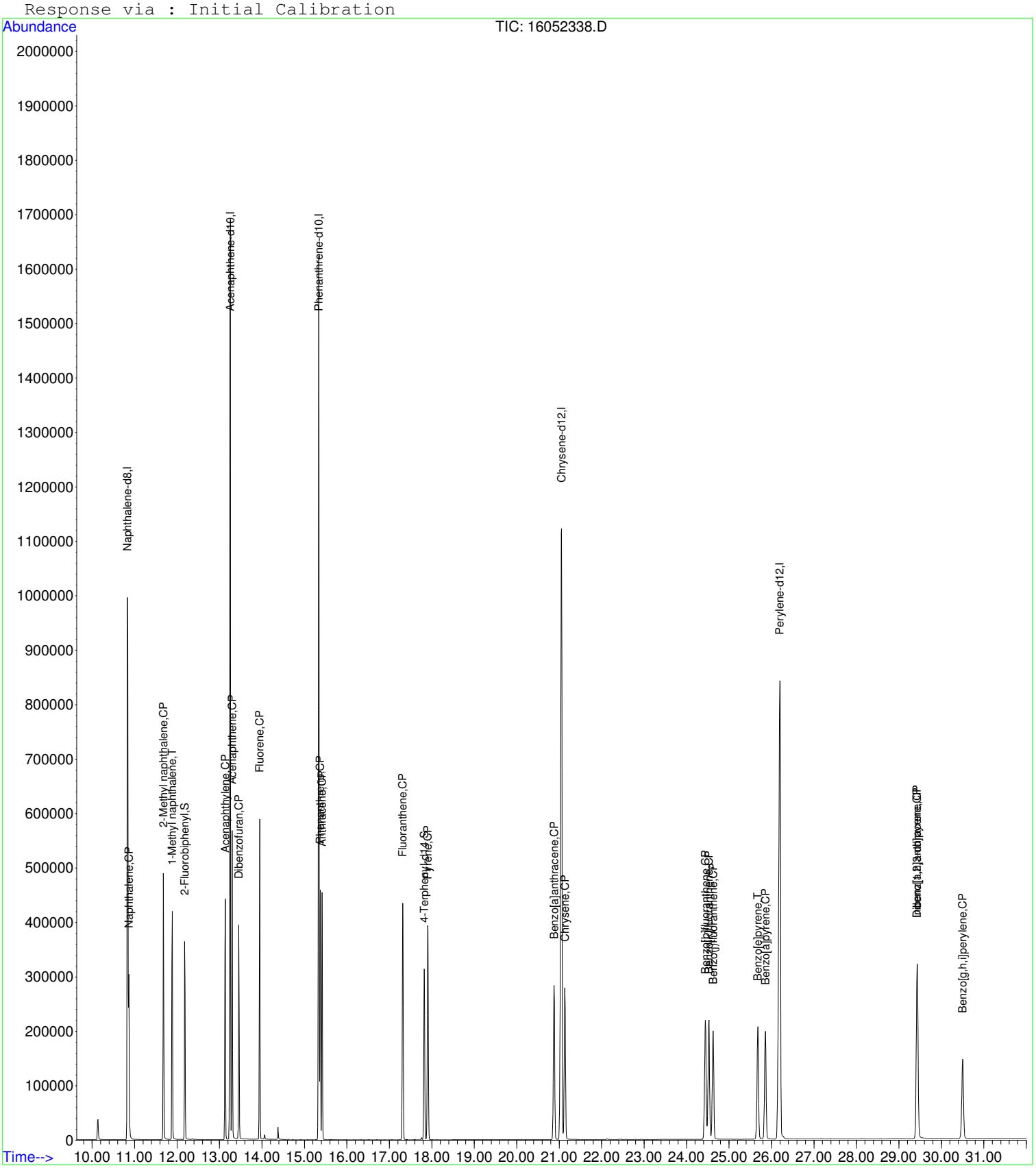
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.83 | 136 | 1348217 | 4000.00 | ug/kg | 116 |
| 5) Acenaphthene-d10 | 13.25 | 164 | 1021323 | 4000.00 | ug/kg | 89 |
| 11) Phenanthrene-d10 | 15.34 | 188 | 1714109 | 4000.00 | ug/kg | 84 |
| 17) Chrysene-d12 | 21.06 | 240 | 1943571 | 4000.00 | ug/kg | 86 |
| 20) Perylene-d12 | 26.20 | 264 | 1724811 | 4000.00 | ug/kg | 84 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.18 | 172 | 297025 | 996.97 | ug/kg | -0.02 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 24.92%# | | | |
| 16) 4-Terphenyl-d14 | 17.82 | 244 | 393560 | 887.46 | ug/kg | -0.03 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 22.19%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.87 | 128 | 291684 | 864.92 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.68 | 142 | 247304 | 830.18 | ug/kg | 97 |
| 4) 1-Methyl naphthalene | 11.89 | 142 | 225259 | 825.64 | ug/kg | 99 |
| 6) Dibenzofuran | 13.46 | 168 | 332337 | 868.22 | ug/kg | 98 |
| 8) Acenaphthylene | 13.14 | 152 | 401291 | 912.35 | ug/kg | 99 |
| 9) Acenaphthene | 13.30 | 154 | 231697 | 848.69 | ug/kg | 99 |
| 10) Fluorene | 13.95 | 166 | 276492 | 833.93 | ug/kg | 100 |
| 12) Phenanthrene | 15.37 | 178 | 380003 | 842.99 | ug/kg | 99 |
| 13) Anthracene | 15.41 | 178 | 378282 | 886.59 | ug/kg | 99 |
| 14) Fluoranthene | 17.32 | 202 | 423197 | 907.21 | ug/kg | 99 |
| 15) Pyrene | 17.90 | 202 | 423381 | 873.72 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.88 | 228 | 413940 | 909.10 | ug/kg | 99 |
| 19) Chrysene | 21.13 | 228 | 377279 | 857.57 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.44 | 252 | 414937 | 912.75 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.53 | 252 | 385927 | 904.96 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.63 | 252 | 355668 | 936.25 | ug/kg | 100 |
| 24) Benzo[e]pyrene | 25.68 | 252 | 374089 | 918.87 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.86 | 252 | 368086 | 884.76 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.43 | 278 | 311106 | 821.10 | ug/kg | 99 |
| 27) Indeno[1,2,3-cd]pyrene | 29.43 | 276 | 360564 | 797.71 | ug/kg | 96 |
| 28) Benzo[g,h,i]perylene | 30.50 | 276 | 285465 | 809.92 | ug/kg | 98 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160523\16052338.D Vial: 31
Acq On : 24 May 2016 8:53 am Operator:
Sample : CCV1-160523 Inst : GC/MS #6
Misc : CCV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: May 24 10:02 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Mon May 16 11:20:24 2016
Response via : Initial Calibration



# GCMS6
# Calibration Curve
# For

# DHL Work Order
# 1605121

CAL ID: 651

# Method 8270 PAH Calibration Curve Sheet

**Instrument ID:** GCMS #6 **Calibration File Name:** PP160421.CAL

| Target Concentration | Solvent Amount mL | Standard Preparation Stocks and Surrogate (µL/mL) | Final Volume mL |
|---|---|---|---|
| 5 ppb | 0.999 | 0.001 mL of 5000 ppb | 1 |
| 10 ppb | 0.998 | 0.002 mL of 5000 ppb | 1 |
| 50 ppb | 0.990 | 0.01 mL of 5000 ppb | 1 |
| 100 ppb | 0.980 | 0.02 mL of 5000 ppb | 1 |
| 500 ppb | 0.900 | 0.10 mL of 5000 ppb | 1 |
| 1000 ppb | 0.800 | 0.20 mL of 5000 ppb | 1 |
| 2000 ppb | 0.600 | 0.40 mL of 5000 ppb | 1 |
| 5000 ppb | ---- | PAHCAL160421 | 10 |
| SSCV 2500 ppb | 0.500 | 0.50 mL of PAHSSCV160317-1 | 1 |
| SSCV 2500 ppb | ---- | PAHSSCV160322-2 | 1 |

## Standards Used for the Calibration Curve

| Primary Stock STDs | DHL Standard ID | Second Source (SS) Stock STDs | DHL Standard ID |
|---|---|---|---|
| 5 PPM (5000 PPB) PAH CAL STD | **PAHCAL160421** | 5PPM (5000PPB) PAH SSCV STD | **PAHSSCV160317-1** |
| | | 5PPM (5000PPB) PAH SSCV STD | **PAHSSCV160322-2** |

| Review Item | Acceptance Criteria | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|---|
| 1. Are all standards within expiration dates? | Primary Stocks = 1 year<br>Intermediate Standards = 6 months | X | | | X |
| 2. Are all manual integrations listed on MI tracking form? **(DoD Projects only)** | Manual Integration Tracking Form | | | X | X |
| 3. Does the tune and resolution check meet criteria? | Benzo(b) / Benzo(k)phenanthrene Valley > 50%<br>See Tune Eval Report | X | | | X |
| 4. Does the ICAL curve meet criteria? Use average CF only if %RSD < 15% | %RSD < 15%<br>COD ≥ 0.990 | X | | | X |
| 5. Has the low point been reprocessed under the new ICAL curve and meets criteria? | 70-130% recovery | X | | | X |
| 6. Has the SSCV been analyzed and meets criteria? | 80-120% recovery | X | | | X |

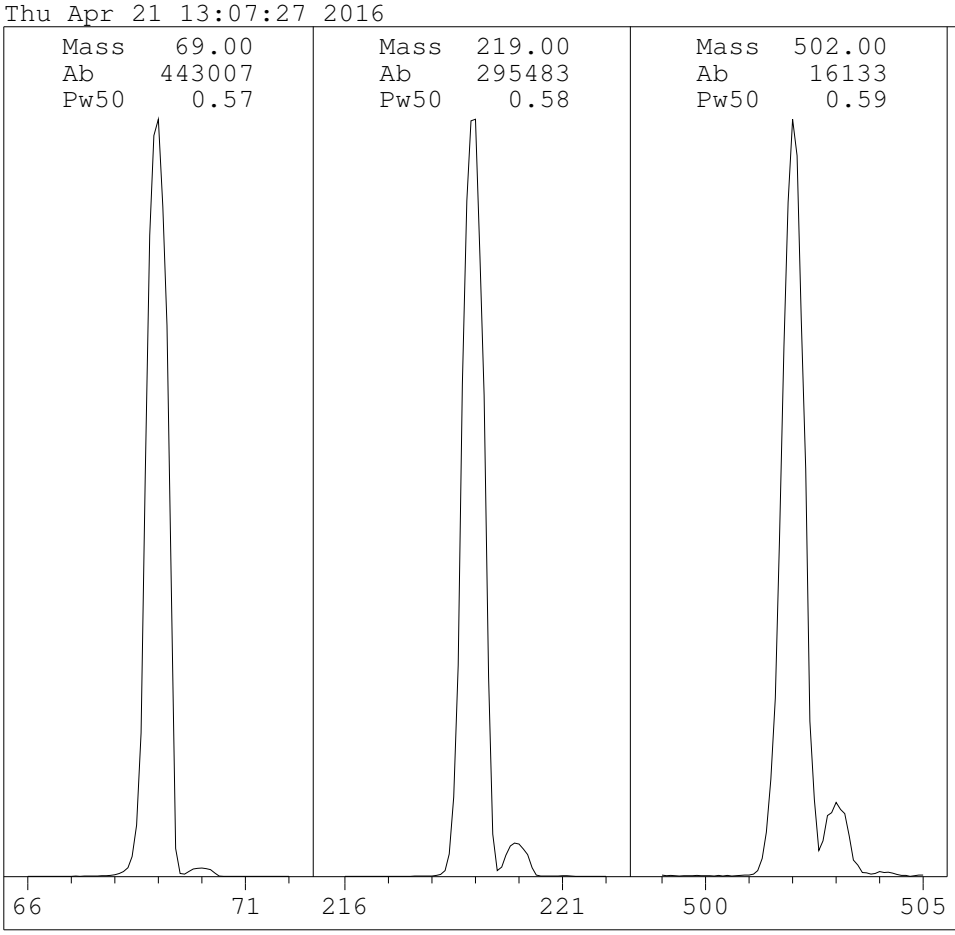
Analyst: Karyn Lane Date: 04/22/16

Second-Level Review: Date: 04/22/2016

HP5973

Instrument: GC/MS #6

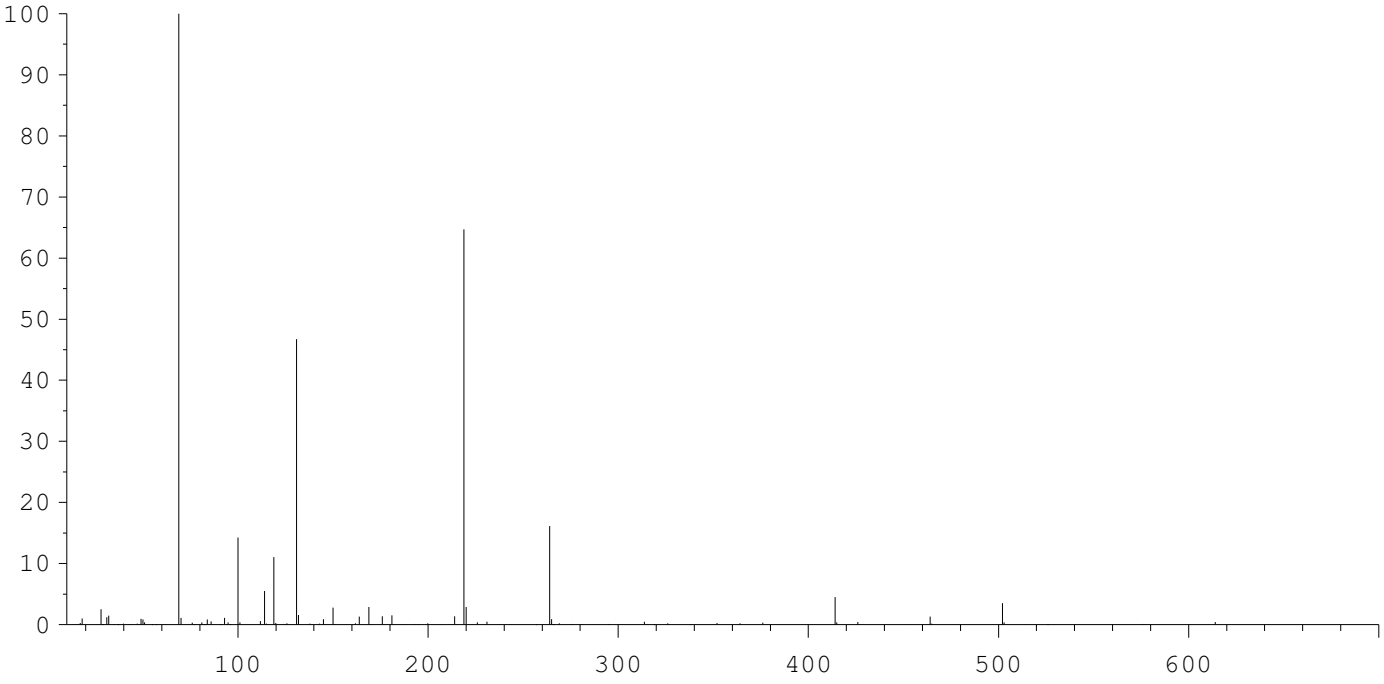
Thu Apr 21 13:07:27 2016 C:\HPCHEM\1\5973\ATUNE.U




| | | | |
|---|---|---|---|
| Ion Pol | POS | MassGain | 7 |
| | | MassOffs | -14 |
| Emission | 34.6 | AmuGain | 2195 |
| EleEnergy | 69.9 | AmuOffs | 127 |
| Filament | 2 | Wid219 | 0.011 |
| | | DC Pol | POS |
| Repeller | 19.90 | | |
| IonFocus | 80.7 | HED | ON |
| EntLens | 14.0 | EMVolts | 1424 |
| EntOffs | 16.06 | | |
| | | Samples | 8 |
| PFTBA | OPEN | Averages | 3 |
| | | StepSize | 0.10 |
| Zones: | | | |
| MS Source | 230 | Foreline | 71 |
| MS Quad | 150 | | |

Scan: 10.00 - 700.00 Samples: 8 Thresh: 100

125 peaks Base: 69.00 Abundance: 394176




| Mass | Abund | Rel Abund | Iso Mass | Iso Abund | Iso Ratio |
|---|---|---|---|---|---|
| 69.00 | 394176 | 100.00 | 70.00 | 4405 | 1.12 |
| 218.90 | 254912 | 64.67 | 220.00 | 11307 | 4.44 |
| 502.00 | 13826 | 3.51 | 503.00 | 1441 | 10.42 |

| TARGET MASS: | 50 | 69 | 131 | 219 | 414 | 502 |
|---|---|---|---|---|---|---|
| TARGET ABUND(%): | 1.0 | 100.0 | 55.0 | 45.0 | 3.5 | 2.5 |
| ACTUAL TUNE ABUND(%): | 0.9 | 100.0 | 46.7 | 38.7 | 4.5 | 3.5 |

**DHL Analytical, Inc.**

**Run ID:** GCMS6_160421A **Run No.:** 85382

**Analytical Run Date:** 4/21/2016 **InstrumentID:** GCMS6

**Analyst:** Karyn Lane **Column:** Agilent (J&W) DB-EUPAH (20m x 0.18mmI

**Calibration ID:** 651 **Column ID:** 0.18mm

**Column Length:** 20m

| SampID | DF | TestCode | SampType | Batch ID | Analysis Date/Time | Q | Comments |
|---|---|---|---|---|---|---|---|
| DFTPP-160421 | 1 | PAH_ALL_W | TUNE | R85382 | 4/21/2016 1:12:00 PM | | |
| PCAL-160421 (5 ppb) | 1 | PAH_ALL_W | CAL1 | R85382 | 4/21/2016 2:30:00 PM | | |
| PCAL-160421 (10 ppb) | 1 | PAH_ALL_W | CAL | R85382 | 4/21/2016 3:10:00 PM | | |
| PCAL-160421 (50 ppb) | 1 | PAH_ALL_W | CAL | R85382 | 4/21/2016 3:51:00 PM | | |
| PCAL-160421 (100 ppb | 1 | PAH_ALL_W | CAL | R85382 | 4/21/2016 4:31:00 PM | | |
| PCAL-160421 (500 ppb | 1 | PAH_ALL_W | CAL | R85382 | 4/21/2016 5:11:00 PM | | |
| PCAL-160421 (1000 pp | 1 | PAH_ALL_W | CAL | R85382 | 4/21/2016 5:50:00 PM | | |
| PCAL-160421 (2000 pp | 1 | PAH_ALL_W | CAL | R85382 | 4/21/2016 6:30:00 PM | | |
| PCAL-160421 (5000 pp | 1 | PAH_ALL_W | CAL | R85382 | 4/21/2016 7:10:00 PM | | |
| PSSCV-160421 (2500 p | 1 | PAH_ALL_W | ICV | R85382 | 4/21/2016 8:30:00 PM | | |
| PSSCV-160421 (2500 p | 1 | PAH_ALL_W | ICV | R85382 | 4/21/2016 9:10:00 PM | | |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 9:42:32 AM, 4/28/2016*

# Response Factor Report GC/MS #6

Method Path : F:\IC\GCMS#6\
Method File : PP160421.M
Title : PAH Calibration
Last Update : Fri Apr 22 09:12:07 2016
Response Via : Initial Calibration

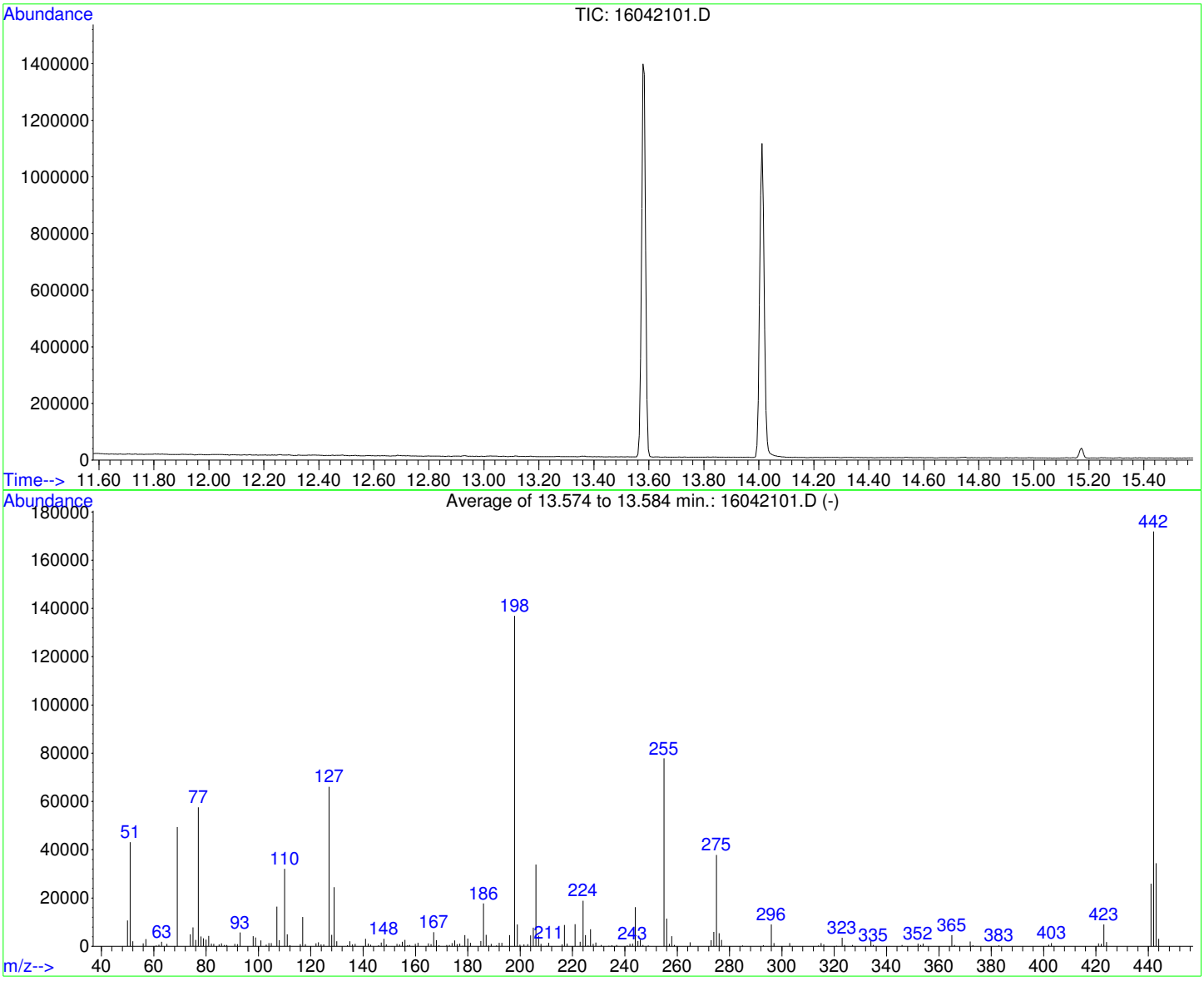
REVIEWED/APPROVED
By Sherri Herschmann at 9:42:37 AM, 4/28/2016

Calibration Files
1 =16042103.D 2 =16042104.D 3 =16042105.D 4 =16042106.D 5 =16042107.D 6 =16042108.D 7 =16042109.D
8 =16042110.D

| | | Compound | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Avg | %RSD | Fit | RSD/CF | Constant | Linear | Quad |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | I | Naphthalene-d8 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 2) | CP | Naphthalene | 1.072 | 1.056 | 1.009 | 0.988 | 1.009 | 0.977 | 0.968 | 0.925 | 1.001 | 4.73 | A | 0.0473 | 0.0000 | 1.0005 | 0.0000 |
| 3) | CP | 2-Methyl napht... | 0.953 | 0.908 | 0.902 | 0.917 | 0.935 | 0.832 | 0.831 | 0.792 | 0.884 | 6.55 | A | 0.0655 | 0.0000 | 0.8838 | 0.0000 |
| 4) | T | 1-Methyl napht... | 0.853 | 0.833 | 0.826 | 0.836 | 0.861 | 0.767 | 0.766 | 0.734 | 0.809 | 5.82 | A | 0.0582 | 0.0000 | 0.8094 | 0.0000 |
| 5) | I | Acenaphthene-d10 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 6) | CP | Dibenzofuran | 1.545 | 1.518 | 1.528 | 1.405 | 1.512 | 1.565 | 1.518 | 1.402 | 1.499 | 4.09# | A | 0.0409 | 0.0000 | 1.4992 | 0.0000 |
| 7) | S | 2-Fluorobiphenyl | 1.227 | 1.249 | 1.171 | 1.271 | 1.202 | 1.091 | 1.074 | 1.049 | 1.167 | 7.28 | A | 0.0728 | 0.0000 | 1.1668 | 0.0000 |
| 8) | CP | Acenaphthylene | 1.674 | 1.692 | 1.669 | 1.714 | 1.816 | 1.765 | 1.778 | 1.672 | 1.723 | 3.28 | A | 0.0328 | 0.0000 | 1.7226 | 0.0000 |
| 9) | CP | Acenaphthene | 1.098 | 1.076 | 1.079 | 1.061 | 1.086 | 1.068 | 1.068 | 1.019 | 1.069 | 2.19 | A | 0.0219 | 0.0000 | 1.0692 | 0.0000 |
| 10) | CP | Fluorene | 1.289 | 1.261 | 1.290 | 1.183 | 1.319 | 1.395 | 1.381 | 1.270 | 1.299 | 5.23 | A | 0.0523 | 0.0000 | 1.2985 | 0.0000 |
| 11) | I | Phenanthrene-d10 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 12) | CP | Phenanthrene | 1.112 | 1.104 | 1.033 | 1.056 | 1.077 | 1.042 | 1.021 | 0.970 | 1.052 | 4.44 | A | 0.0444 | 0.0000 | 1.0519 | 0.0000 |
| 13) | CP | Anthracene | 0.994 | 1.001 | 0.984 | 0.995 | 1.044 | 1.012 | 0.997 | 0.939 | 0.996 | 2.94 | A | 0.0294 | 0.0000 | 0.9957 | 0.0000 |
| 14) | CP | Fluoranthene | 1.097 | 1.126 | 1.050 | 1.113 | 1.130 | 1.091 | 1.082 | 1.033 | 1.090 | 3.18 | A | 0.0318 | 0.0000 | 1.0903 | 0.0000 |
| 15) | CP | Pyrene | 1.164 | 1.208 | 1.085 | 1.158 | 1.154 | 1.114 | 1.100 | 1.065 | 1.131 | 4.23 | A | 0.0423 | 0.0000 | 1.1308 | 0.0000 |
| 16) | S | 4-Terphenyl-d14 | 1.290 | 1.174 | 0.947 | 1.015 | 0.997 | 0.964 | 0.956 | 0.937 | 1.035 | 12.39 | A | 0.1239 | 0.0000 | 1.0349 | 0.0000 |
| 17) | I | Chrysene-d12 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 18) | CP | Benzo[a]anthra... | 0.905 | 0.905 | 0.896 | 0.905 | 0.987 | 0.967 | 0.978 | 0.953 | 0.937 | 4.04 | A | 0.0404 | 0.0000 | 0.9371 | 0.0000 |
| 19) | CP | Chrysene | 0.917 | 0.912 | 0.890 | 0.892 | 0.939 | 0.912 | 0.909 | 0.873 | 0.905 | 2.24 | A | 0.0224 | 0.0000 | 0.9054 | 0.0000 |
| 20) | I | Perylene-d12 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 21) | CP | Benzo[b]fluora... | 1.031 | 1.068 | 1.042 | 1.021 | 1.084 | 1.075 | 1.080 | 1.033 | 1.054 | 2.37 | A | 0.0237 | 0.0000 | 1.0543 | 0.0000 |
| 22) | CP | Benzo[k]fluora... | 0.949 | 0.988 | 0.978 | 0.973 | 1.045 | 1.016 | 1.004 | 0.961 | 0.989 | 3.18 | A | 0.0318 | 0.0000 | 0.9890 | 0.0000 |
| 23) | CP | Benzo(j)fluora... | 0.840 | 0.858 | 0.868 | 0.867 | 0.923 | 0.906 | 0.907 | 0.878 | 0.881 | 3.23 | A | 0.0323 | 0.0000 | 0.8810 | 0.0000 |
| 24) | T | Benzo[e]pyrene | 0.931 | 0.957 | 0.942 | 0.931 | 0.974 | 0.953 | 0.956 | 0.909 | 0.944 | 2.13 | A | 0.0213 | 0.0000 | 0.9442 | 0.0000 |
| 25) | CP | Benzo[a]pyrene | 0.955 | 0.941 | 0.944 | 0.932 | 0.997 | 0.991 | 0.998 | 0.962 | 0.965 | 2.76 | A | 0.0276 | 0.0000 | 0.9648 | 0.0000 |
| 26) | CP | Dibenz[a,h]ant... | 0.881 | 0.820 | 0.849 | 0.840 | 0.906 | 0.908 | 0.913 | 0.911 | 0.879 | 4.22 | A | 0.0422 | 0.0000 | 0.8787 | 0.0000 |
| 27) | CP | Indeno[1,2,3-c... | 1.037 | 0.991 | 1.024 | 1.016 | 1.084 | 1.078 | 1.084 | 1.071 | 1.048 | 3.43 | A | 0.0343 | 0.0000 | 1.0482 | 0.0000 |
| 28) | CP | Benzo[g,h,i]pe... | 0.797 | 0.782 | 0.792 | 0.796 | 0.842 | 0.843 | 0.852 | 0.834 | 0.817 | 3.44 | A | 0.0344 | 0.0000 | 0.8174 | 0.0000 |

(#) = Out of Range

Data File : C:\HPCHEM\1\DATA\160421\16042101.D Vial: 1
Acq On : 21 Apr 2016 1:12 pm Operator:
Sample : DFTPP-160421 Inst : GC/MS #6
Misc : TUNE Multiplr: 1.00
MS Integration Params: RTEINT.P
Method : C:\HPCHEM\1\METHODS\DFTPPPAH.M (RTE Integrator)
Title : PAH Calibration




AutoFind: Scans 1592, 1593, 1594; Background Corrected with Scan 1586

| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 51 | 198 | 10 | 80 | 31.5 | 43141 | PASS |
| 68 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 69 | 198 | 0.00 | 100 | 36.1 | 49451 | PASS |
| 70 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 127 | 198 | 10 | 80 | 48.3 | 66112 | PASS |
| 197 | 198 | 0.00 | 2 | 0.0 | 0 | PASS |
| 198 | 198 | 100 | 100 | 100.0 | 136896 | PASS |
| 199 | 198 | 5 | 9 | 6.6 | 9062 | PASS |
| 275 | 198 | 10 | 60 | 27.7 | 37883 | PASS |
| 365 | 198 | 1 | 200 | 3.4 | 4588 | PASS |
| 441 | 442 | 0.01 | 24 | 15.1 | 25970 | PASS |
| 442 | 198 | 50 | 400 | 125.6 | 171901 | PASS |
| 443 | 442 | 15 | 24 | 20.0 | 34379 | PASS |

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160421\16042103.D Vial: 3
Acq On : 21 Apr 2016 2:30 pm Operator:
Sample : PCAL-160421 (5 ppb) Inst : GC/MS #6
Misc : CAL1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:45 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration
DataAcq Meth : PP160322

Reprocessed low point.

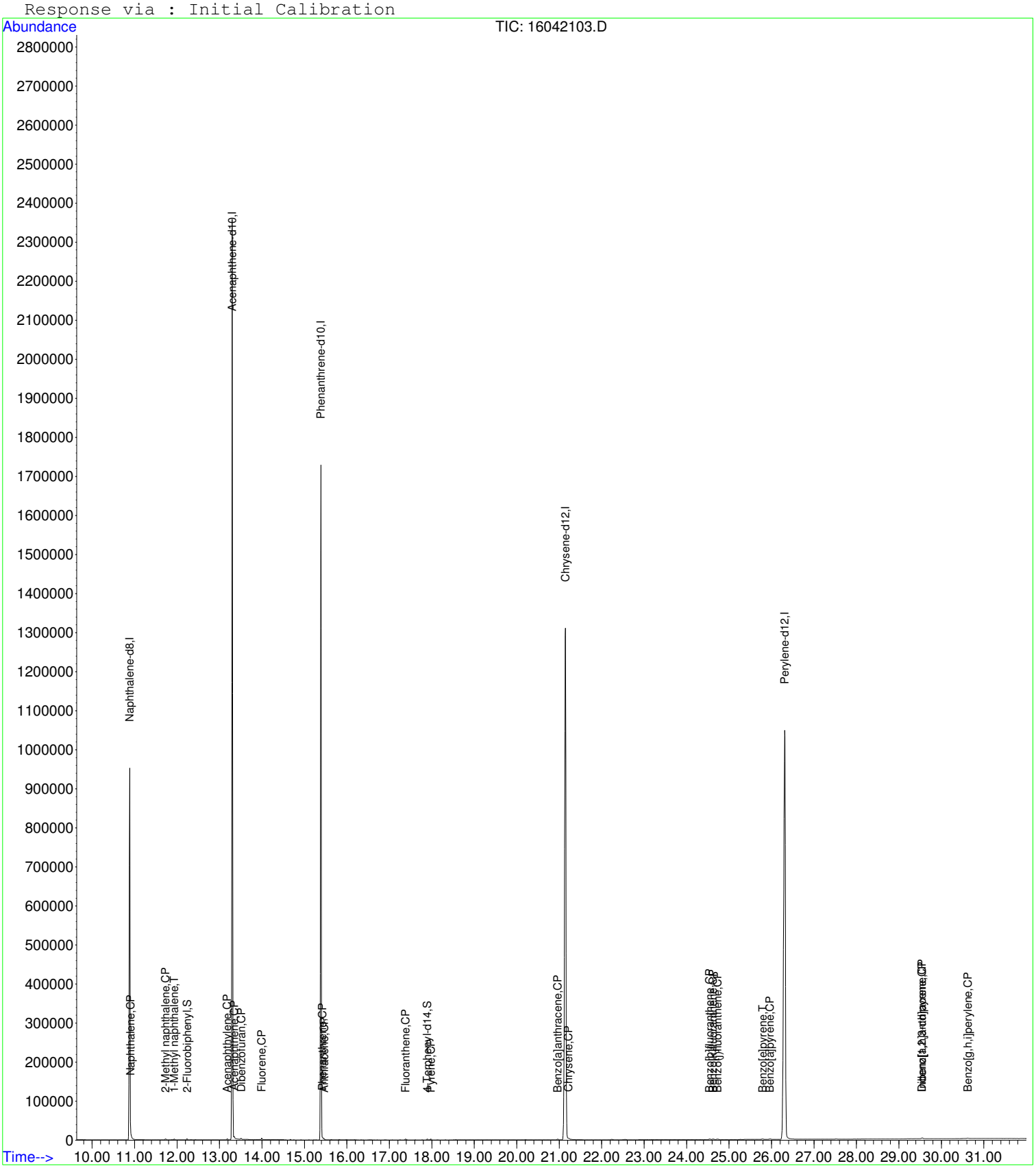
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.88 | 136 | 1142778 | 4000.00 | ug/kg | 99 |
| 5) Acenaphthene-d10 | 13.30 | 164 | 1244911 | 4000.00 | ug/kg | 108 |
| 11) Phenanthrene-d10 | 15.39 | 188 | 1877690 | 4000.00 | ug/kg | 92 |
| 17) Chrysene-d12 | 21.15 | 240 | 2186100 | 4000.00 | ug/kg | 96 |
| 20) Perylene-d12 | 26.31 | 264 | 2056958 | 4000.00 | ug/kg | 100 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.23 | 172 | 1910 | 5.26 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.13%# | | |
| 16) 4-Terphenyl-d14 | 17.89 | 244 | 3028 | 6.23 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.16%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.91 | 128 | 1531 | 5.36 | ug/kg | 98 |
| 3) 2-Methyl naphthalene | 11.73 | 142 | 1362 | 5.39 | ug/kg | 98 |
| 4) 1-Methyl naphthalene | 11.93 | 142 | 1218 | 5.27 | ug/kg | 92 |
| 6) Dibenzofuran | 13.51 | 168 | 2405 | 5.15 | ug/kg | 100 |
| 8) Acenaphthylene | 13.18 | 152 | 2605 | 4.86 | ug/kg | 99 |
| 9) Acenaphthene | 13.35 | 154 | 1708 | 5.13 | ug/kg | 99 |
| 10) Fluorene | 13.99 | 166 | 2006 | 4.96 | ug/kg | 100 |
| 12) Phenanthrene | 15.42 | 178 | 2611 | 5.29 | ug/kg | 98 |
| 13) Anthracene | 15.46 | 178 | 2334 | 4.99 | ug/kg | 97 |
| 14) Fluoranthene | 17.38 | 202 | 2574 | 5.04 | ug/kg | 97 |
| 15) Pyrene | 17.98 | 202 | 2731 | 5.14 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.96 | 228 | 2474 | 4.83 | ug/kg | 98 |
| 19) Chrysene | 21.23 | 228 | 2506 | 5.06 | ug/kg | 98 |
| 21) Benzo[b]fluoranthene | 24.54 | 252 | 2650 | 4.89 | ug/kg | 95 |
| 22) Benzo[k]fluoranthene | 24.62 | 252 | 2439 | 4.80 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.73 | 252 | 2160 | 4.77 | ug/kg | 98 |
| 24) Benzo[e]pyrene | 25.79 | 252 | 2395 | 4.93 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.96 | 252 | 2456 | 4.95 | ug/kg | 98 |
| 26) Dibenz[a,h]anthracene | 29.54 | 278 | 2266 | 5.01 | ug/kg | 100 |
| 27) Indeno[1,2,3-cd]pyrene | 29.55 | 276 | 2667 | 4.95 | ug/kg | 94 |
| 28) Benzo[g,h,i]perylene | 30.62 | 276 | 2050 | 4.88 | ug/kg | 98 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160421\16042103.D Vial: 3
Acq On : 21 Apr 2016 2:30 pm Operator:
Sample : PCAL-160421 (5 ppb) Inst : GC/MS #6
Misc : CAL1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:45 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160421\16042104.D Vial: 4
Acq On : 21 Apr 2016 3:10 pm Operator:
Sample : PCAL-160421 (10 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:45 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration
DataAcq Meth : PP160322

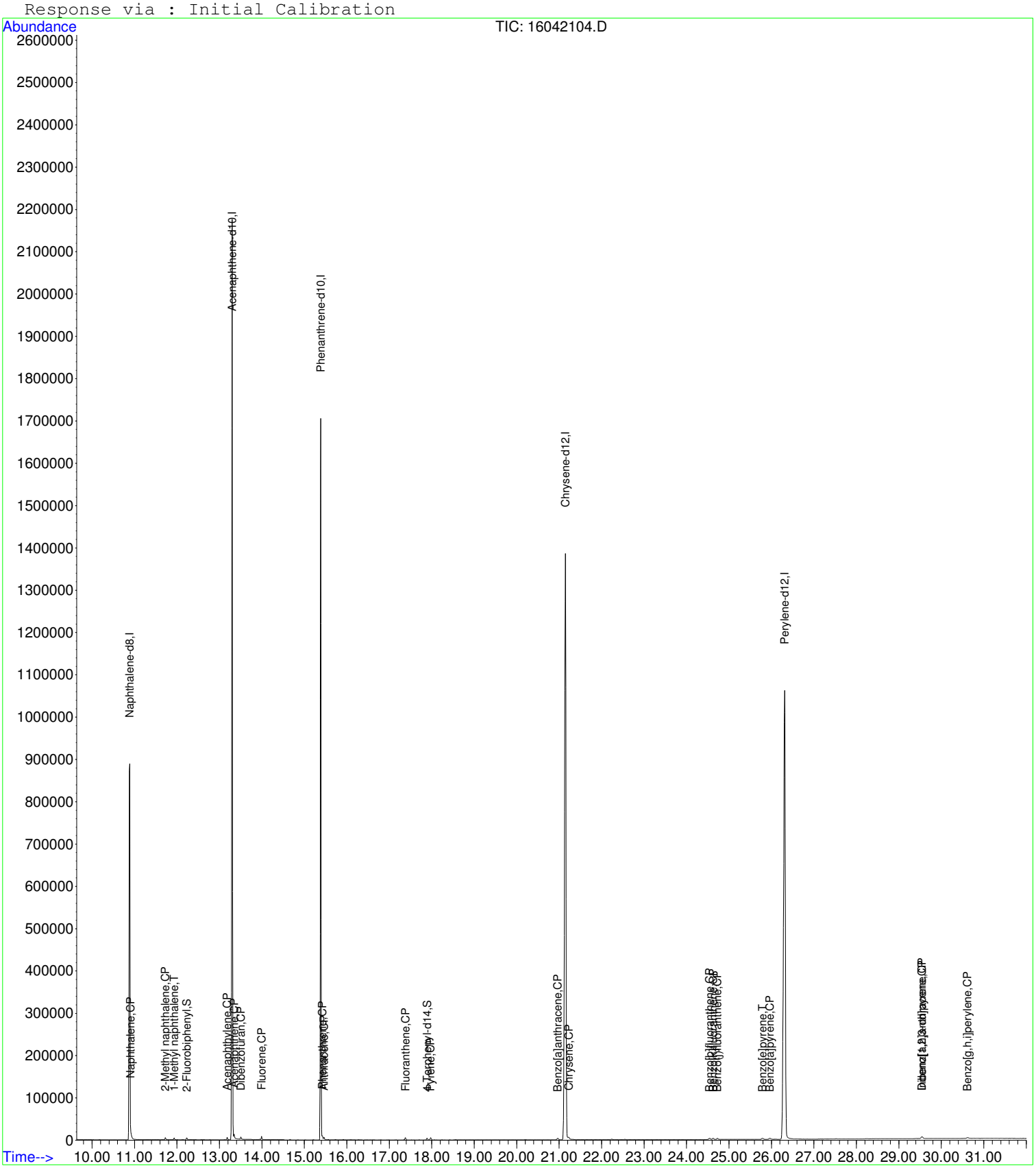
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.89 | 136 | 1199002 | 4000.00 | ug/kg | 103 |
| 5) Acenaphthene-d10 | 13.30 | 164 | 1222079 | 4000.00 | ug/kg | 106 |
| 11) Phenanthrene-d10 | 15.39 | 188 | 1882400 | 4000.00 | ug/kg | 92 |
| 17) Chrysene-d12 | 21.15 | 240 | 2305426 | 4000.00 | ug/kg | 101 |
| 20) Perylene-d12 | 26.31 | 264 | 2097207 | 4000.00 | ug/kg | 102 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.24 | 172 | 3816 | 10.70 | ug/kg | 0.01 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.27%# | | |
| 16) 4-Terphenyl-d14 | 17.89 | 244 | 5525 | 11.34 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.28%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.91 | 128 | 3165 | 10.55 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.72 | 142 | 2722 | 10.27 | ug/kg | 96 |
| 4) 1-Methyl naphthalene | 11.93 | 142 | 2498 | 10.30 | ug/kg | 98 |
| 6) Dibenzofuran | 13.50 | 168 | 4637 | 10.12 | ug/kg | 97 |
| 8) Acenaphthylene | 13.18 | 152 | 5169 | 9.82 | ug/kg | 99 |
| 9) Acenaphthene | 13.35 | 154 | 3288 | 10.07 | ug/kg | 99 |
| 10) Fluorene | 13.99 | 166 | 3853 | 9.71 | ug/kg | 100 |
| 12) Phenanthrene | 15.42 | 178 | 5197 | 10.50 | ug/kg | 100 |
| 13) Anthracene | 15.46 | 178 | 4709 | 10.05 | ug/kg | 99 |
| 14) Fluoranthene | 17.38 | 202 | 5273 | 10.29 | ug/kg | 98 |
| 15) Pyrene | 17.97 | 202 | 5684 | 10.68 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.96 | 228 | 5216 | 9.66 | ug/kg | 99 |
| 19) Chrysene | 21.23 | 228 | 5255 | 10.07 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.54 | 252 | 5597 | 10.13 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.63 | 252 | 5178 | 9.99 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.73 | 252 | 4498 | 9.74 | ug/kg | 97 |
| 24) Benzo[e]pyrene | 25.79 | 252 | 5016 | 10.13 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.96 | 252 | 4933 | 9.75 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.55 | 278 | 4301 | 9.34 | ug/kg | 99 |
| 27) Indeno[1,2,3-cd]pyrene | 29.55 | 276 | 5196 | 9.45 | ug/kg | 97 |
| 28) Benzo[g,h,i]perylene | 30.62 | 276 | 4100 | 9.57 | ug/kg | 98 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160421\16042104.D Vial: 4
Acq On : 21 Apr 2016 3:10 pm Operator:
Sample : PCAL-160421 (10 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:45 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160421\16042105.D Vial: 5
Acq On : 21 Apr 2016 3:51 pm Operator:
Sample : PCAL-160421 (50 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:45 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration
DataAcq Meth : PP160322

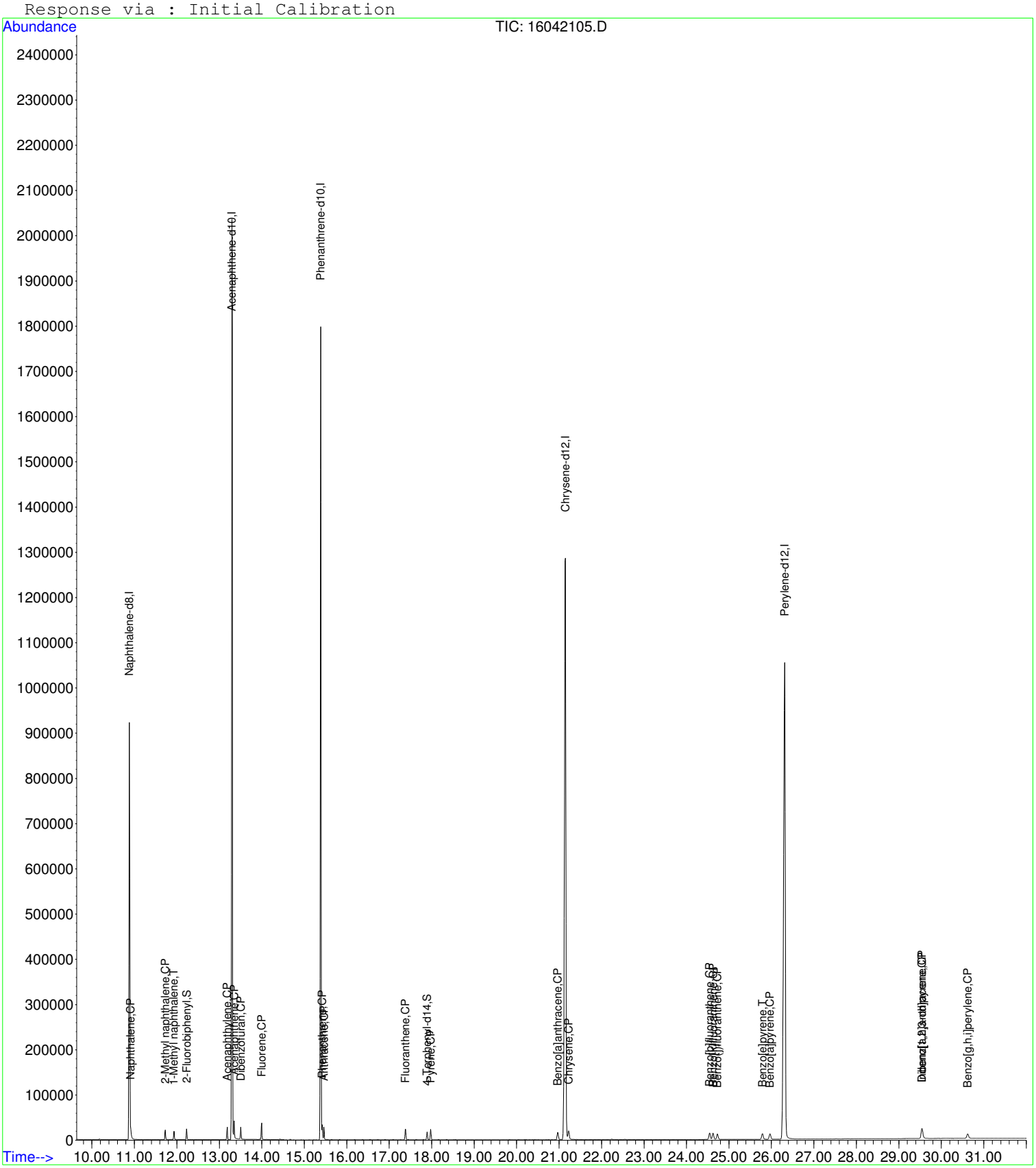
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.88 | 136 | 1080570 | 4000.00 | ug/kg | 93 |
| 5) Acenaphthene-d10 | 13.30 | 164 | 1201613 | 4000.00 | ug/kg | 104 |
| 11) Phenanthrene-d10 | 15.39 | 188 | 1885707 | 4000.00 | ug/kg | 92 |
| 17) Chrysene-d12 | 21.15 | 240 | 2199366 | 4000.00 | ug/kg | 97 |
| 20) Perylene-d12 | 26.31 | 264 | 2036632 | 4000.00 | ug/kg | 99 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.23 | 172 | 17592 | 50.19 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.25%# | | |
| 16) 4-Terphenyl-d14 | 17.89 | 244 | 22329 | 45.77 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 1.14%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.92 | 128 | 13632 | 50.43 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.73 | 142 | 12186 | 51.04 | ug/kg | 97 |
| 4) 1-Methyl naphthalene | 11.94 | 142 | 11156 | 51.02 | ug/kg | 99 |
| 6) Dibenzofuran | 13.51 | 168 | 22945 | 50.95 | ug/kg | 99 |
| 8) Acenaphthylene | 13.19 | 152 | 25071 | 48.45 | ug/kg | 98 |
| 9) Acenaphthene | 13.35 | 154 | 16206 | 50.45 | ug/kg | 98 |
| 10) Fluorene | 14.00 | 166 | 19379 | 49.68 | ug/kg | 98 |
| 12) Phenanthrene | 15.42 | 178 | 24341 | 49.08 | ug/kg | 98 |
| 13) Anthracene | 15.46 | 178 | 23196 | 49.42 | ug/kg | 99 |
| 14) Fluoranthene | 17.38 | 202 | 24647 | 48.03 | ug/kg | 99 |
| 15) Pyrene | 17.98 | 202 | 25571 | 47.97 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.96 | 228 | 24646 | 47.83 | ug/kg | 100 |
| 19) Chrysene | 21.23 | 228 | 24465 | 49.14 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.54 | 252 | 26529 | 49.42 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.63 | 252 | 24886 | 49.42 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.73 | 252 | 22107 | 49.28 | ug/kg | 98 |
| 24) Benzo[e]pyrene | 25.79 | 252 | 23989 | 49.90 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.96 | 252 | 24021 | 48.90 | ug/kg | 100 |
| 26) Dibenz[a,h]anthracene | 29.54 | 278 | 21621 | 48.33 | ug/kg | 97 |
| 27) Indeno[1,2,3-cd]pyrene | 29.55 | 276 | 26066 | 48.84 | ug/kg | 95 |
| 28) Benzo[g,h,i]perylene | 30.62 | 276 | 20164 | 48.45 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160421\16042105.D Vial: 5
Acq On : 21 Apr 2016 3:51 pm Operator:
Sample : PCAL-160421 (50 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:45 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160421\16042106.D Vial: 6
Acq On : 21 Apr 2016 4:31 pm Operator:
Sample : PCAL-160421 (100 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:45 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration
DataAcq Meth : PP160322

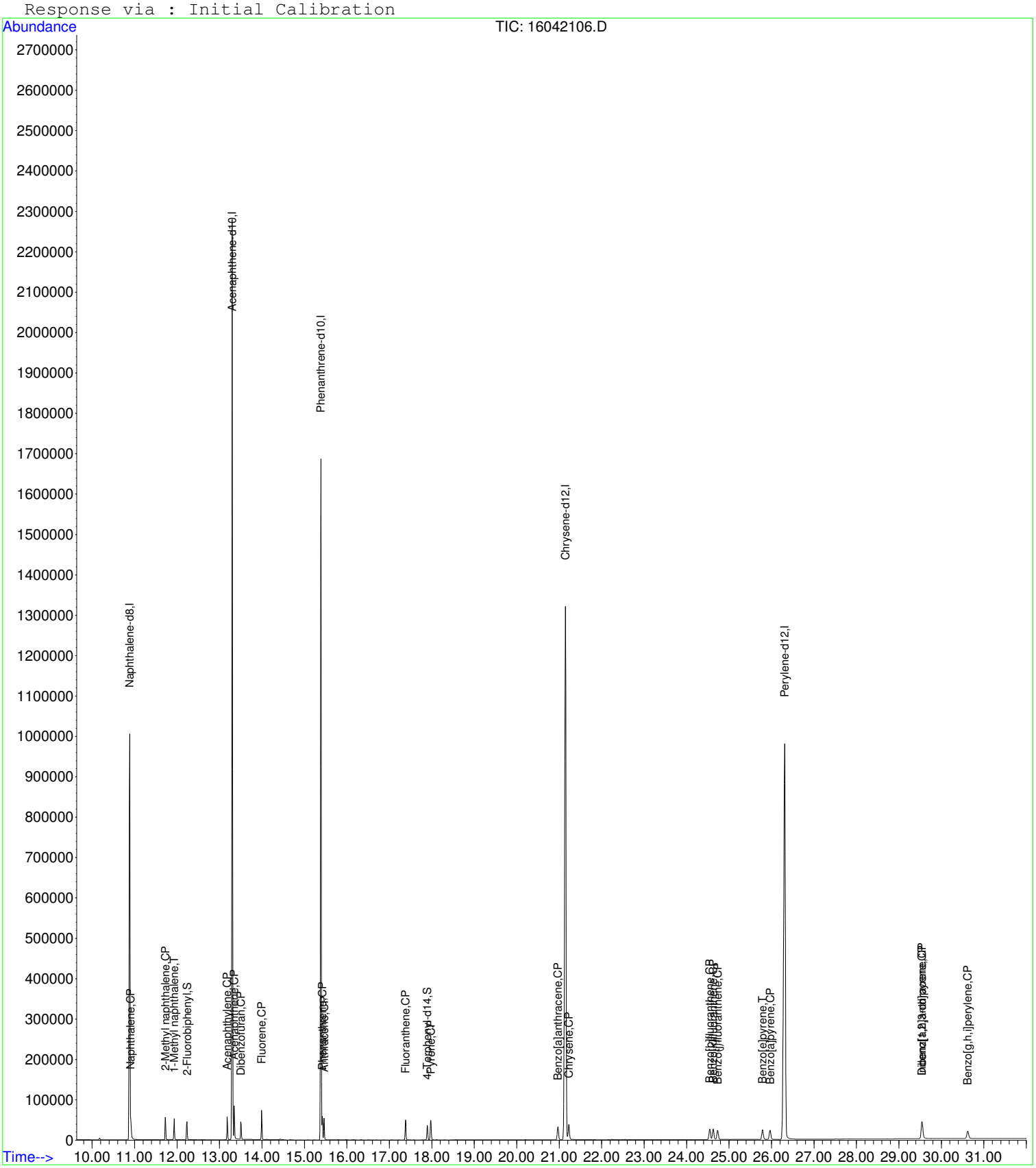
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.89 | 136 | 1270878 | 4000.00 | ug/kg | 110 |
| 5) Acenaphthene-d10 | 13.30 | 164 | 1176698 | 4000.00 | ug/kg | 102 |
| 11) Phenanthrene-d10 | 15.39 | 188 | 1800254 | 4000.00 | ug/kg | 88 |
| 17) Chrysene-d12 | 21.15 | 240 | 2173217 | 4000.00 | ug/kg | 96 |
| 20) Perylene-d12 | 26.31 | 264 | 1915994 | 4000.00 | ug/kg | 93 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.23 | 172 | 37379 | 108.90 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 2.72%# | | |
| 16) 4-Terphenyl-d14 | 17.89 | 244 | 45660 | 98.03 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 2.45%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.91 | 128 | 31387 | 98.73 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.72 | 142 | 29129 | 103.73 | ug/kg | 96 |
| 4) 1-Methyl naphthalene | 11.93 | 142 | 26563 | 103.29 | ug/kg | 97 |
| 6) Dibenzofuran | 13.51 | 168 | 41336 | 93.73 | ug/kg | 98 |
| 8) Acenaphthylene | 13.18 | 152 | 50435 | 99.53 | ug/kg | 99 |
| 9) Acenaphthene | 13.35 | 154 | 31207 | 99.22 | ug/kg | 98 |
| 10) Fluorene | 13.99 | 166 | 34802 | 91.11 | ug/kg | 100 |
| 12) Phenanthrene | 15.42 | 178 | 47518 | 100.37 | ug/kg | 98 |
| 13) Anthracene | 15.46 | 178 | 44798 | 99.97 | ug/kg | 99 |
| 14) Fluoranthene | 17.38 | 202 | 50045 | 102.15 | ug/kg | 99 |
| 15) Pyrene | 17.98 | 202 | 52116 | 102.40 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.97 | 228 | 49179 | 96.59 | ug/kg | 100 |
| 19) Chrysene | 21.23 | 228 | 48443 | 98.48 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.55 | 252 | 48925 | 96.88 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.63 | 252 | 46589 | 98.35 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.73 | 252 | 41528 | 98.41 | ug/kg | 99 |
| 24) Benzo[e]pyrene | 25.79 | 252 | 44578 | 98.57 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.97 | 252 | 44648 | 96.61 | ug/kg | 100 |
| 26) Dibenz[a,h]anthracene | 29.54 | 278 | 40242 | 95.61 | ug/kg | 99 |
| 27) Indeno[1,2,3-cd]pyrene | 29.55 | 276 | 48662 | 96.92 | ug/kg | 95 |
| 28) Benzo[g,h,i]perylene | 30.62 | 276 | 38139 | 97.41 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160421\16042106.D Vial: 6
Acq On : 21 Apr 2016 4:31 pm Operator:
Sample : PCAL-160421 (100 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:45 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160421\16042107.D Vial: 7
Acq On : 21 Apr 2016 5:11 pm Operator:
Sample : PCAL-160421 (500 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:45 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration
DataAcq Meth : PP160322

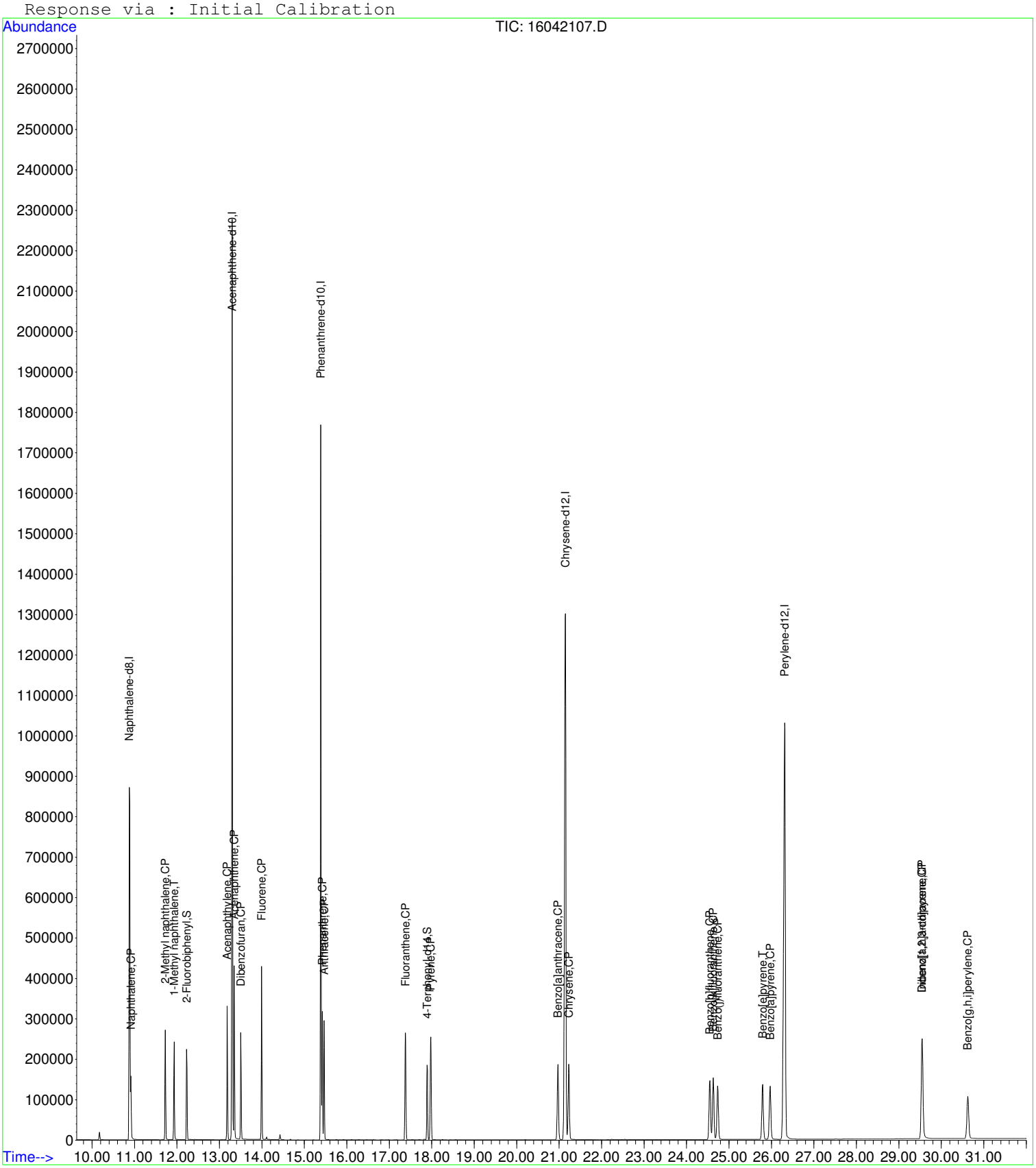
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.88 | 136 | 1148191 | 4000.00 | ug/kg | 99 |
| 5) Acenaphthene-d10 | 13.30 | 164 | 1212423 | 4000.00 | ug/kg | 105 |
| 11) Phenanthrene-d10 | 15.39 | 188 | 1918468 | 4000.00 | ug/kg | 94 |
| 17) Chrysene-d12 | 21.15 | 240 | 2190661 | 4000.00 | ug/kg | 96 |
| 20) Perylene-d12 | 26.31 | 264 | 2019677 | 4000.00 | ug/kg | 98 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.23 | 172 | 182135 | 514.98 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 12.87%# | | | |
| 16) 4-Terphenyl-d14 | 17.89 | 244 | 239044 | 481.61 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 12.04%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.91 | 128 | 144814 | 504.22 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.72 | 142 | 134217 | 529.05 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.93 | 142 | 123573 | 531.84 | ug/kg | 99 |
| 6) Dibenzofuran | 13.50 | 168 | 229182 | 504.36 | ug/kg | 99 |
| 8) Acenaphthylene | 13.18 | 152 | 275195 | 527.05 | ug/kg | 99 |
| 9) Acenaphthene | 13.35 | 154 | 164525 | 507.66 | ug/kg | 99 |
| 10) Fluorene | 13.99 | 166 | 199871 | 507.82 | ug/kg | 99 |
| 12) Phenanthrene | 15.42 | 178 | 258354 | 512.07 | ug/kg | 99 |
| 13) Anthracene | 15.46 | 178 | 250282 | 524.11 | ug/kg | 99 |
| 14) Fluoranthene | 17.38 | 202 | 270526 | 518.15 | ug/kg | 99 |
| 15) Pyrene | 17.98 | 202 | 276662 | 510.12 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.97 | 228 | 270207 | 526.50 | ug/kg | 100 |
| 19) Chrysene | 21.23 | 228 | 257223 | 518.73 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.55 | 252 | 273668 | 514.11 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.63 | 252 | 263925 | 528.52 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.73 | 252 | 233097 | 524.02 | ug/kg | 99 |
| 24) Benzo[e]pyrene | 25.79 | 252 | 245920 | 515.86 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.97 | 252 | 251605 | 516.48 | ug/kg | 100 |
| 26) Dibenz[a,h]anthracene | 29.55 | 278 | 228786 | 515.68 | ug/kg | 99 |
| 27) Indeno[1,2,3-cd]pyrene | 29.55 | 276 | 273714 | 517.15 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.62 | 276 | 212686 | 515.34 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160421\16042107.D Vial: 7
Acq On : 21 Apr 2016 5:11 pm Operator:
Sample : PCAL-160421 (500 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:45 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160421\16042108.D Vial: 8
Acq On : 21 Apr 2016 5:50 pm Operator:
Sample : PCAL-160421 (1000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:46 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration
DataAcq Meth : PP160322

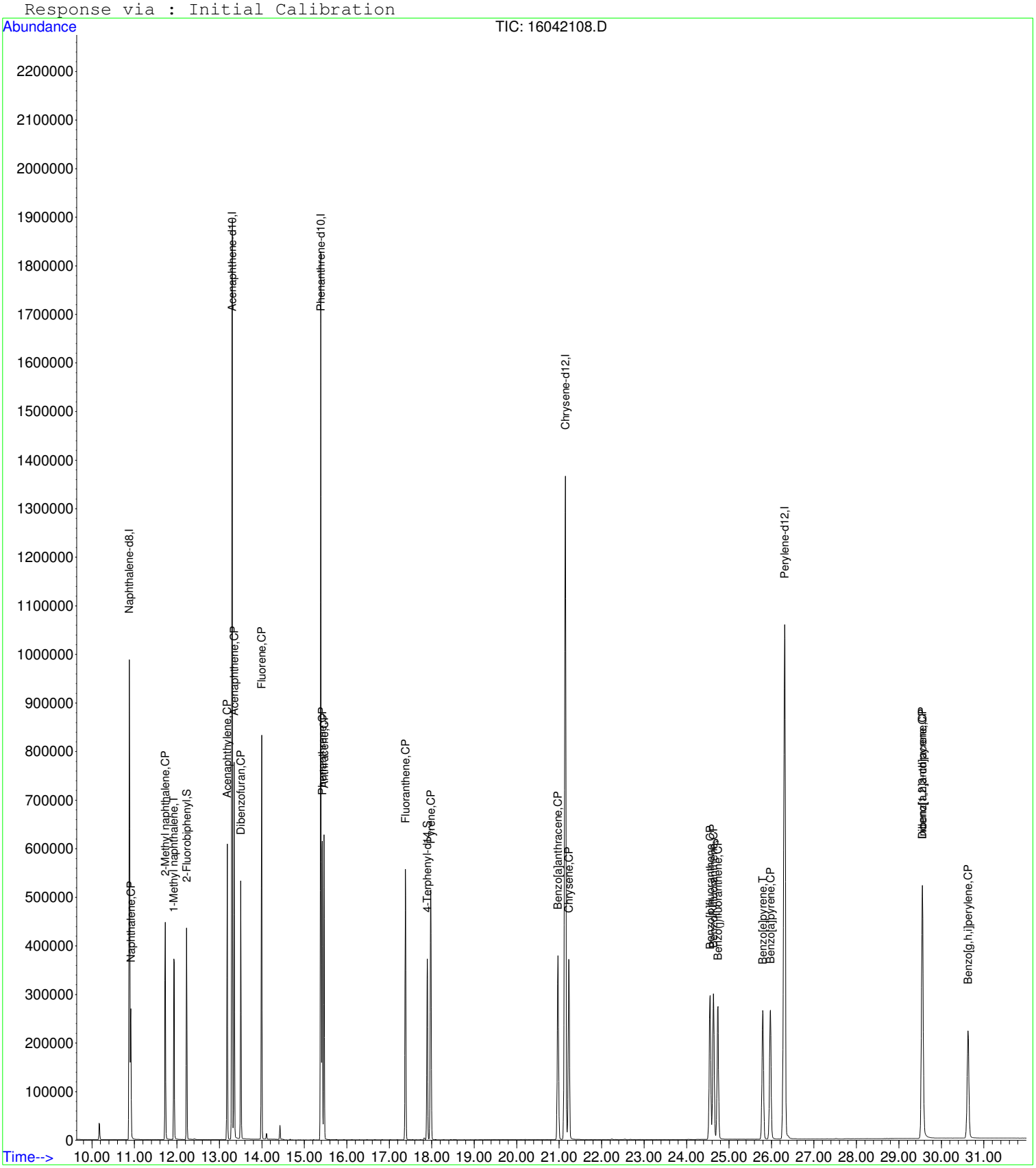
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.88 | 136 | 1136496 | 4000.00 | ug/kg | 98 |
| 5) Acenaphthene-d10 | 13.30 | 164 | 1155470 | 4000.00 | ug/kg | 100 |
| 11) Phenanthrene-d10 | 15.39 | 188 | 2018968 | 4000.00 | ug/kg | 99 |
| 17) Chrysene-d12 | 21.15 | 240 | 2284860 | 4000.00 | ug/kg | 101 |
| 20) Perylene-d12 | 26.31 | 264 | 2095808 | 4000.00 | ug/kg | 102 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.23 | 172 | 315163 | 935.04 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 23.38%# | | |
| 16) 4-Terphenyl-d14 | 17.89 | 244 | 486503 | 931.39 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 23.28%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.92 | 128 | 277677 | 976.77 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.73 | 142 | 236454 | 941.63 | ug/kg | 97 |
| 4) 1-Methyl naphthalene | 11.94 | 142 | 218047 | 948.10 | ug/kg | 98 |
| 6) Dibenzofuran | 13.50 | 168 | 452065 | 1043.89 | ug/kg | 99 |
| 8) Acenaphthylene | 13.18 | 152 | 509913 | 1024.72 | ug/kg | 99 |
| 9) Acenaphthene | 13.35 | 154 | 308489 | 998.79 | ug/kg | 98 |
| 10) Fluorene | 14.00 | 166 | 402991 | 1074.35 | ug/kg | 97 |
| 12) Phenanthrene | 15.42 | 178 | 526173 | 990.99 | ug/kg | 99 |
| 13) Anthracene | 15.46 | 178 | 510658 | 1016.12 | ug/kg | 99 |
| 14) Fluoranthene | 17.38 | 202 | 550773 | 1002.41 | ug/kg | 99 |
| 15) Pyrene | 17.98 | 202 | 562050 | 984.74 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.97 | 228 | 552303 | 1031.79 | ug/kg | 100 |
| 19) Chrysene | 21.23 | 228 | 520856 | 1007.08 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.56 | 252 | 563310 | 1019.78 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.63 | 252 | 532095 | 1026.84 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.74 | 252 | 474751 | 1028.50 | ug/kg | 99 |
| 24) Benzo[e]pyrene | 25.79 | 252 | 499171 | 1009.06 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.98 | 252 | 519265 | 1027.20 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.55 | 278 | 475543 | 1032.92 | ug/kg | 99 |
| 27) Indeno[1,2,3-cd]pyrene | 29.55 | 276 | 565012 | 1028.75 | ug/kg | 97 |
| 28) Benzo[g,h,i]perylene | 30.63 | 276 | 441808 | 1031.61 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160421\16042108.D Vial: 8
Acq On : 21 Apr 2016 5:50 pm Operator:
Sample : PCAL-160421 (1000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:46 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160421\16042109.D Vial: 9
Acq On : 21 Apr 2016 6:30 pm Operator:
Sample : PCAL-160421 (2000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:46 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration
DataAcq Meth : PP160322

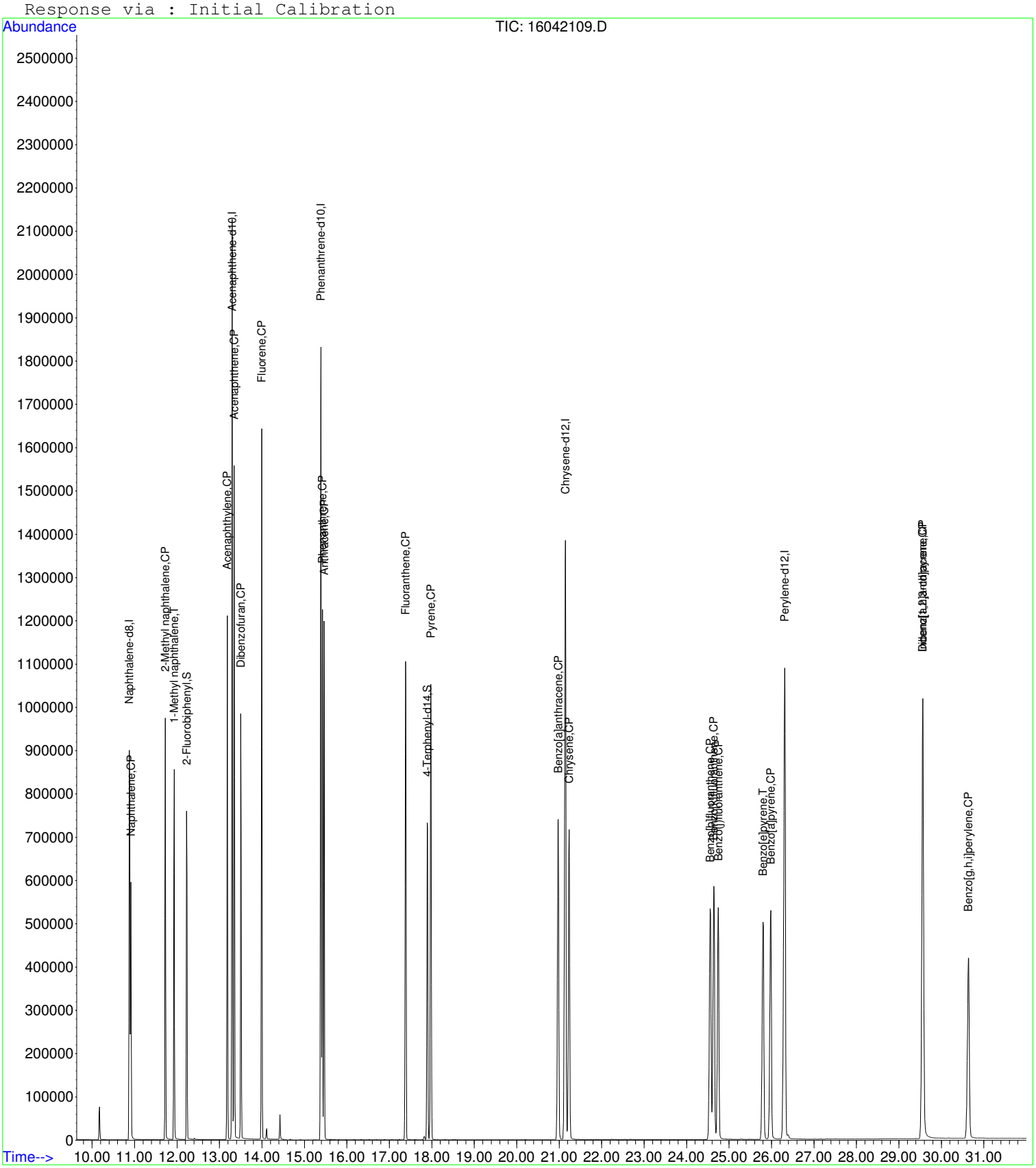
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.88 | 136 | 1159180 | 4000.00 | ug/kg | 100 |
| 5) Acenaphthene-d10 | 13.30 | 164 | 1151209 | 4000.00 | ug/kg | 100 |
| 11) Phenanthrene-d10 | 15.39 | 188 | 2042352 | 4000.00 | ug/kg | 100 |
| 17) Chrysene-d12 | 21.15 | 240 | 2271514 | 4000.00 | ug/kg | 100 |
| 20) Perylene-d12 | 26.31 | 264 | 2059792 | 4000.00 | ug/kg | 100 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.23 | 172 | 618262 | 1841.07 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 46.03% | | |
| 16) 4-Terphenyl-d14 | 17.90 | 244 | 975941 | 1847.00 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 46.17% | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.91 | 128 | 561019 | 1934.86 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.72 | 142 | 481530 | 1880.07 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.93 | 142 | 443761 | 1891.77 | ug/kg | 100 |
| 6) Dibenzofuran | 13.50 | 168 | 873590 | 2024.72 | ug/kg | 100 |
| 8) Acenaphthylene | 13.18 | 152 | 1023648 | 2064.73 | ug/kg | 100 |
| 9) Acenaphthene | 13.35 | 154 | 614677 | 1997.49 | ug/kg | 100 |
| 10) Fluorene | 13.99 | 166 | 794927 | 2127.08 | ug/kg | 100 |
| 12) Phenanthrene | 15.42 | 178 | 1042190 | 1940.39 | ug/kg | 100 |
| 13) Anthracene | 15.46 | 178 | 1017931 | 2002.32 | ug/kg | 100 |
| 14) Fluoranthene | 17.38 | 202 | 1104168 | 1986.59 | ug/kg | 100 |
| 15) Pyrene | 17.98 | 202 | 1123696 | 1946.24 | ug/kg | 100 |
| 18) Benzo[a]anthracene | 20.98 | 228 | 1111322 | 2088.32 | ug/kg | 100 |
| 19) Chrysene | 21.23 | 228 | 1032491 | 2008.06 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.56 | 252 | 1112314 | 2048.87 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.64 | 252 | 1033820 | 2029.96 | ug/kg | 100 |
| 23) Benzo(j)fluoranthene | 24.75 | 252 | 933880 | 2058.53 | ug/kg | 100 |
| 24) Benzo[e]pyrene | 25.80 | 252 | 984667 | 2025.28 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.98 | 252 | 1027353 | 2067.83 | ug/kg | 100 |
| 26) Dibenz[a,h]anthracene | 29.56 | 278 | 940656 | 2078.92 | ug/kg | 100 |
| 27) Indeno[1,2,3-cd]pyrene | 29.56 | 276 | 1116484 | 2068.39 | ug/kg | 100 |
| 28) Benzo[g,h,i]perylene | 30.64 | 276 | 877689 | 2085.21 | ug/kg | 100 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160421\16042109.D Vial: 9
Acq On : 21 Apr 2016 6:30 pm Operator:
Sample : PCAL-160421 (2000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:46 2016 Quant Results File: PP160421.RES

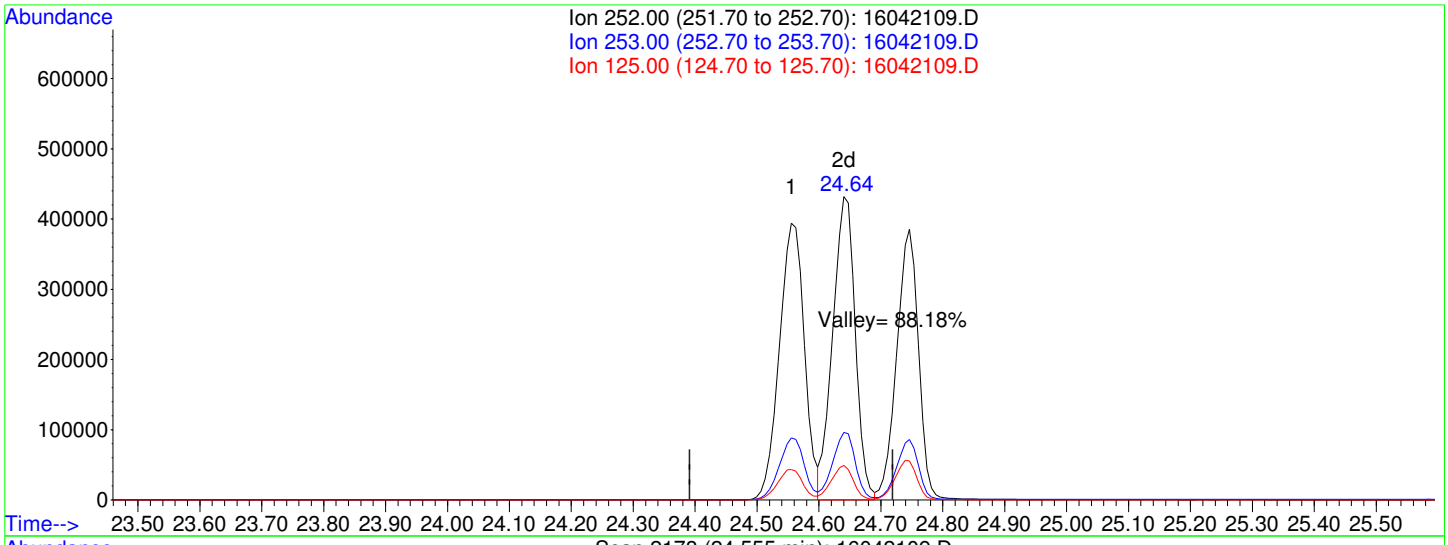
Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration

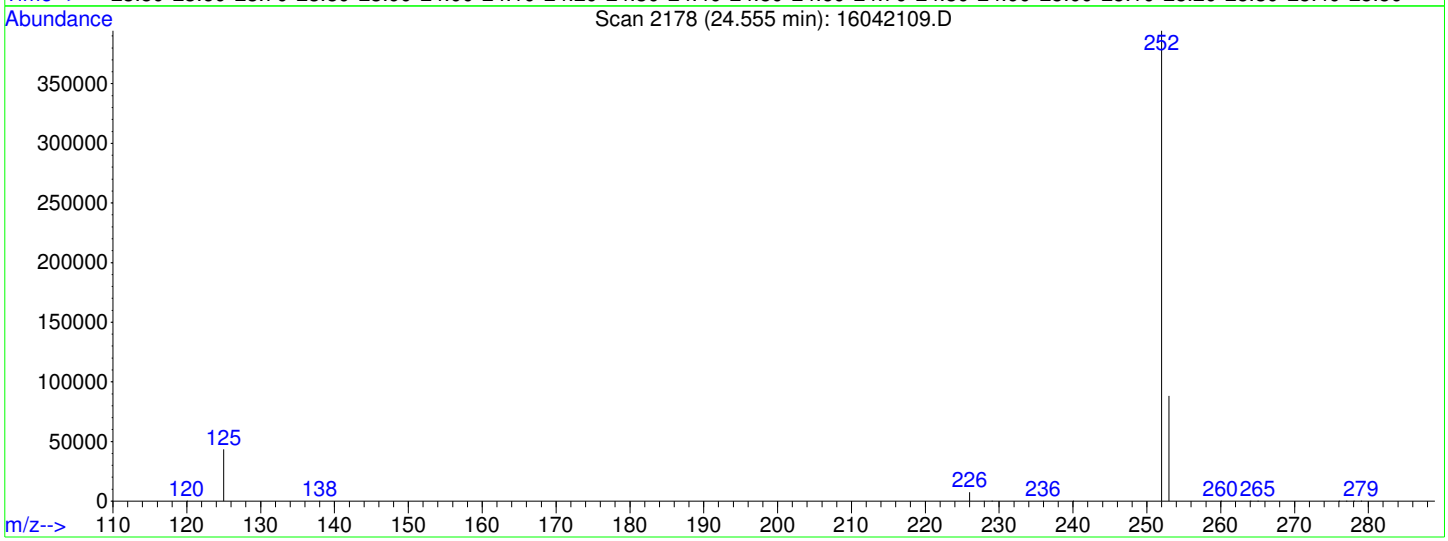


Quantitation Report (Qedit)

Data File : C:\HPCHEM\1\DATA\160421\16042109.D Vial: 9
Acq On : 21 Apr 2016 6:30 pm Operator:
Sample : PCAL-160421 (2000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 9:10 2016 Quant Results File: temp.res

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 09:12:07 2016
Response via : Multiple Level Calibration




TIC: 16042109.D

(21) Benzo[b]fluoranthene (CP)

24.56min 1892.05ug/kg

response 1112314

| Ion | Exp% | Act% |
|---|---|---|
| 252.00 | 100 | 100 |
| 253.00 | 22.10 | 22.23 |
| 125.00 | 10.50 | 11.00 |
| 0.00 | 0.00 | 0.00 |

Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160421\16042110.D Vial: 10
Acq On : 21 Apr 2016 7:10 pm Operator:
Sample : PCAL-160421 (5000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:46 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration
DataAcq Meth : PP160322

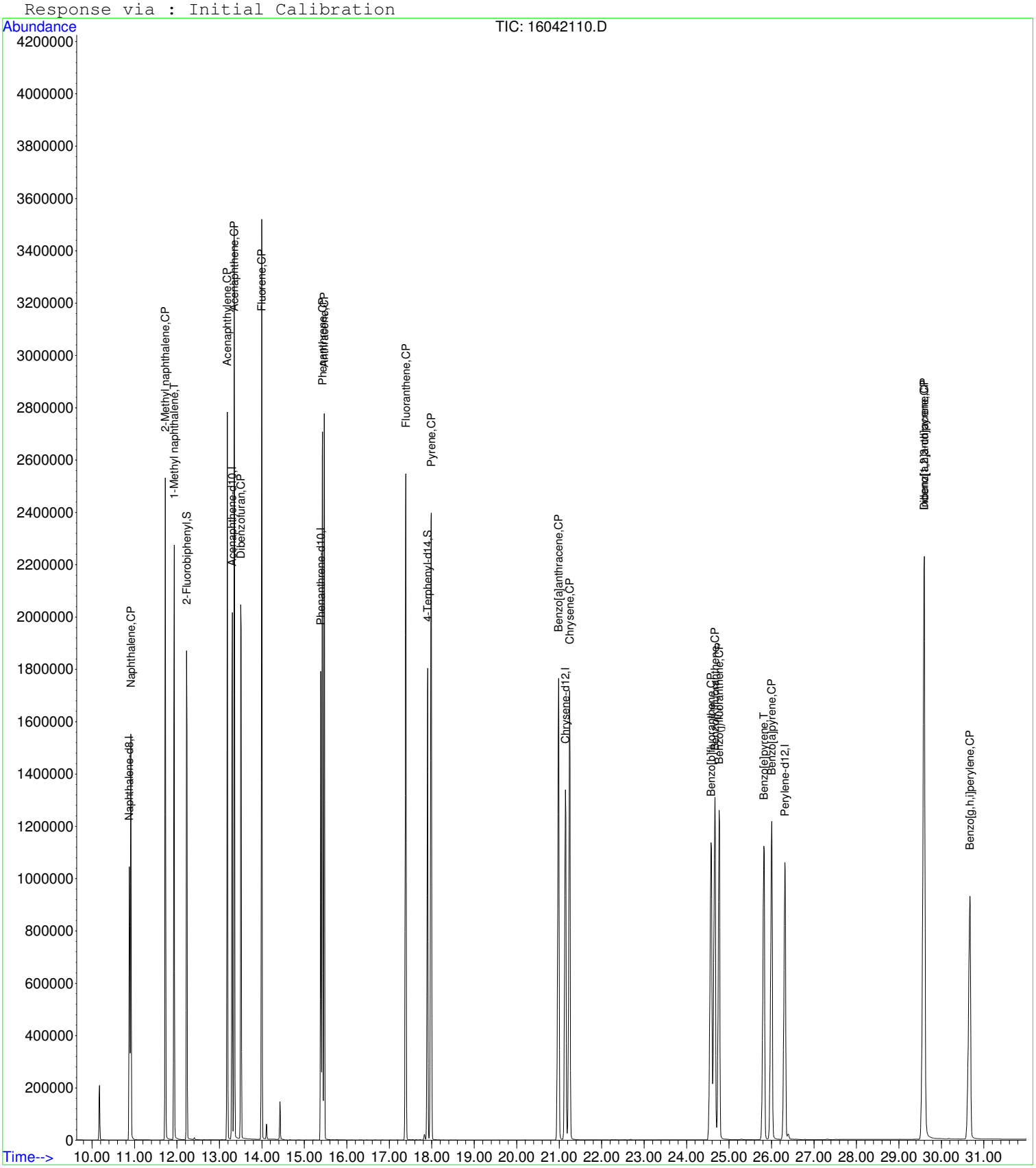
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.88 | 136 | 1267887 | 4000.00 | ug/kg | 109 |
| 5) Acenaphthene-d10 | 13.30 | 164 | 1170622 | 4000.00 | ug/kg | 102 |
| 11) Phenanthrene-d10 | 15.39 | 188 | 2026803 | 4000.00 | ug/kg | 99 |
| 17) Chrysene-d12 | 21.15 | 240 | 2321115 | 4000.00 | ug/kg | 102 |
| 20) Perylene-d12 | 26.32 | 264 | 2077450 | 4000.00 | ug/kg | 101 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.23 | 172 | 1535636 | 4497.00 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 112.43% | | | |
| 16) 4-Terphenyl-d14 | 17.90 | 244 | 2372972 | 4525.38 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 113.13% | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.91 | 128 | 1466551 | 4624.22 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.73 | 142 | 1254770 | 4479.04 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.94 | 142 | 1162503 | 4530.90 | ug/kg | 99 |
| 6) Dibenzofuran | 13.51 | 168 | 2052094 | 4677.28 | ug/kg | 99 |
| 8) Acenaphthylene | 13.18 | 152 | 2446851 | 4853.52 | ug/kg | 98 |
| 9) Acenaphthene | 13.35 | 154 | 1490789 | 4764.22 | ug/kg | 98 |
| 10) Fluorene | 14.00 | 166 | 1858069 | 4889.40 | ug/kg | 100 |
| 12) Phenanthrene | 15.43 | 178 | 2457176 | 4609.95 | ug/kg | 99 |
| 13) Anthracene | 15.47 | 178 | 2377979 | 4713.49 | ug/kg | 98 |
| 14) Fluoranthene | 17.39 | 202 | 2617800 | 4746.00 | ug/kg | 98 |
| 15) Pyrene | 17.99 | 202 | 2697026 | 4707.07 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.99 | 228 | 2764069 | 5083.06 | ug/kg | 99 |
| 19) Chrysene | 21.25 | 228 | 2532342 | 4819.83 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.58 | 252 | 2683309 | 4900.63 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.67 | 252 | 2495150 | 4857.71 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.77 | 252 | 2281068 | 4985.37 | ug/kg | 99 |
| 24) Benzo[e]pyrene | 25.82 | 252 | 2361015 | 4814.90 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 26.00 | 252 | 2496967 | 4983.10 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.60 | 278 | 2366235 | 5185.10 | ug/kg | 99 |
| 27) Indeno[1,2,3-cd]pyrene | 29.60 | 276 | 2781552 | 5109.27 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.67 | 276 | 2164787 | 5099.38 | ug/kg | 98 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160421\16042110.D Vial: 10
Acq On : 21 Apr 2016 7:10 pm Operator:
Sample : PCAL-160421 (5000 ppb) Inst : GC/MS #6
Misc : CAL Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:46 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160421\16042112.D Vial: 12
Acq On : 21 Apr 2016 8:30 pm Operator:
Sample : PSSCV-160421 (2500 ppb) Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:46 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration
DataAcq Meth : PP160322

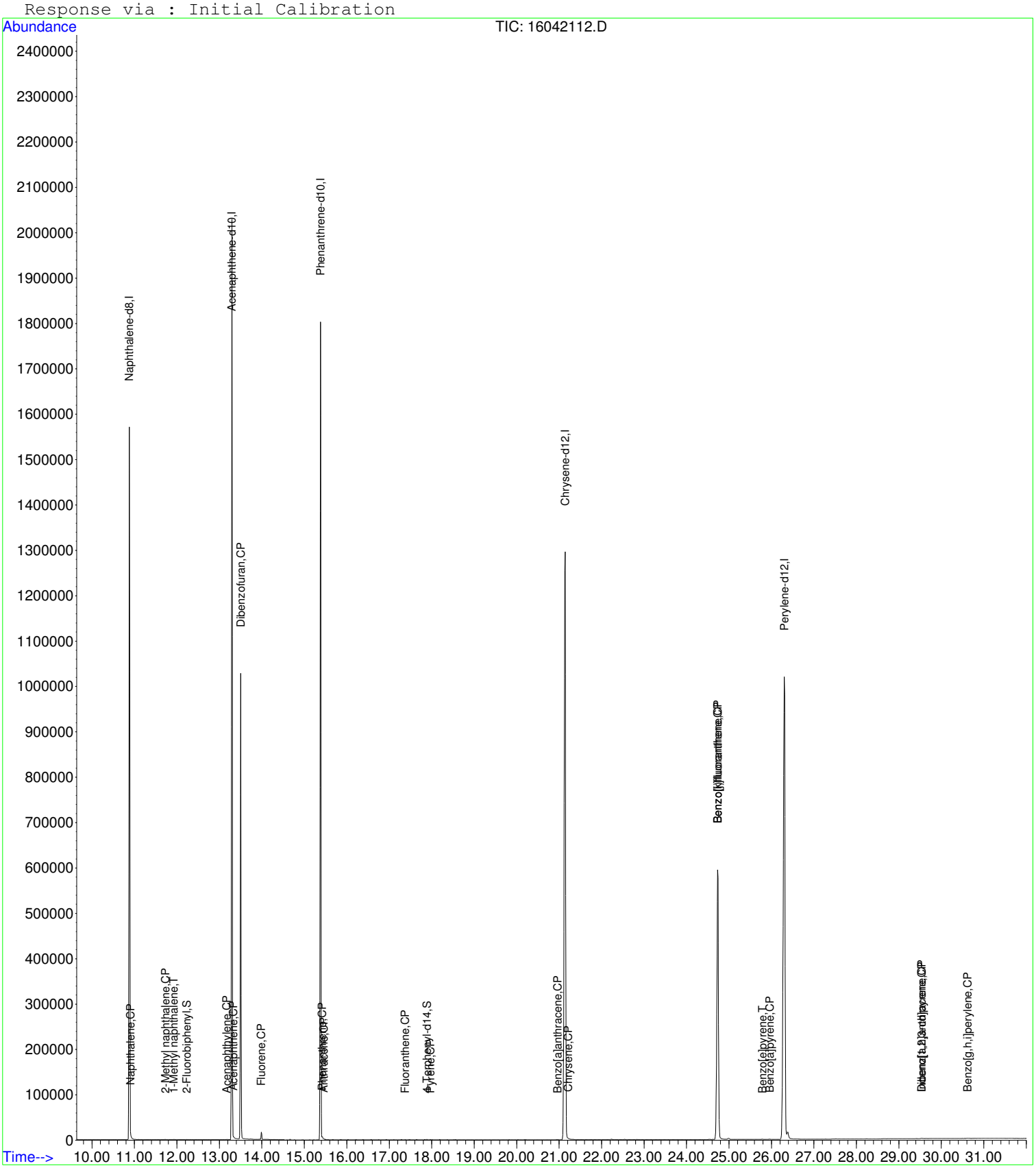
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) | |
|---|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.88 | 136 | 1773814 | 4000.00 | ug/kg | 153 | |
| 5) Acenaphthene-d10 | 13.29 | 164 | 1073271 | 4000.00 | ug/kg | 93 | |
| 11) Phenanthrene-d10 | 15.38 | 188 | 1966702 | 4000.00 | ug/kg | 96 | |
| 17) Chrysene-d12 | 21.14 | 240 | 2203847 | 4000.00 | ug/kg | 97 | |
| 20) Perylene-d12 | 26.30 | 264 | 1999501 | 4000.00 | ug/kg | 97 | |
| **System Monitoring Compounds** | | | | | | | |
| 7) 2-Fluorobiphenyl | 12.23 | 172 | 473 | 1.51 | ug/kg | 0.00 | |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.04%# | | | |
| 16) 4-Terphenyl-d14 | 17.89 | 244 | 1537 | 3.02 | ug/kg | -0.01 | |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.08%# | | | |
| **Target Compounds** | | | | | | Qvalue | |
| 2) Naphthalene | 10.92 | 128 | 667 | 1.50 | ug/kg | 98 | |
| 3) 2-Methyl naphthalene | 11.73 | 142 | 541 | 1.38 | ug/kg | 94 | |
| 4) 1-Methyl naphthalene | 11.93 | 142 | 390 | 1.09 | ug/kg | 96 | |
| 6) Dibenzofuran | 13.50 | 168 | 930384 | 2312.95 | ug/kg | 99 | 92.52% |
| 8) Acenaphthylene | 13.18 | 152 | 654 | 1.41 | ug/kg | 99 | |
| 9) Acenaphthene | 13.34 | 154 | 537 | 1.87 | ug/kg | 96 | |
| 10) Fluorene | 13.99 | 166 | 8239 | 23.65 | ug/kg | 99 | |
| 12) Phenanthrene | 15.42 | 178 | 915 | 1.77 | ug/kg | 99 | |
| 13) Anthracene | 15.46 | 178 | 904 | 1.85 | ug/kg | 96 | |
| 14) Fluoranthene | 17.37 | 202 | 754 | 1.41 | ug/kg | 97 | |
| 15) Pyrene | 17.97 | 202 | 988 | 1.78 | ug/kg | 95 | |
| 18) Benzo[a]anthracene | 20.96 | 228 | 786 | 1.52 | ug/kg | 92 | |
| 19) Chrysene | 21.22 | 228 | 862 | 1.73 | ug/kg | 97 | |
| 21) Benzo[b]fluoranthene | 0.00 | 252 | 0 | N.D. | | | |
| 22) Benzo[k]fluoranthene | 24.73 | 252 | 1073092 | 2170.60 | ug/kg | 96 | |
| 23) Benzo(j)fluoranthene | 24.73 | 252 | 1088009 | 2470.59 | ug/kg | 99 | 98.80% |
| 24) Benzo[e]pyrene | 25.79 | 252 | 711 | 1.51 | ug/kg | 85 | |
| 25) Benzo[a]pyrene | 25.96 | 252 | 776 | 1.61 | ug/kg | 86 | |
| 26) Dibenz[a,h]anthracene | 29.54 | 278 | 674 | 1.53 | ug/kg | 97 | |
| 27) Indeno[1,2,3-cd]pyrene | 29.55 | 276 | 905 | 1.73 | ug/kg | 91 | |
| 28) Benzo[g,h,i]perylene | 30.62 | 276 | 929 | 2.27 | ug/kg | 94 | |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160421\16042112.D Vial: 12
Acq On : 21 Apr 2016 8:30 pm Operator:
Sample : PSSCV-160421 (2500 ppb) Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:46 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data File : C:\HPCHEM\1\DATA\160421\16042113.D Vial: 13
Acq On : 21 Apr 2016 9:10 pm Operator:
Sample : PSSCV-160421 (2500 ppb) Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:46 2016 Quant Results File: PP160421.RES

Quant Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration
DataAcq Meth : PP160322

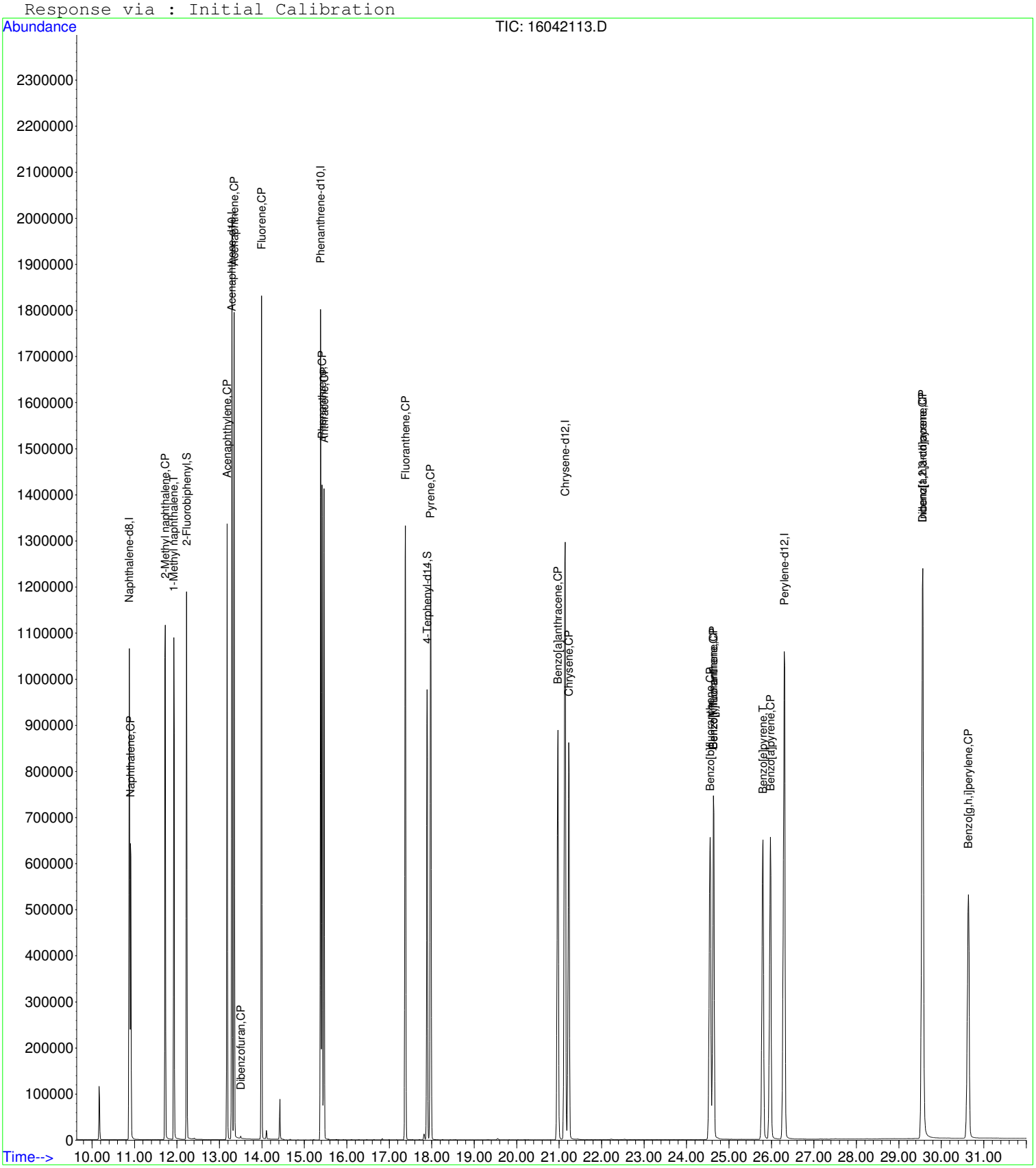
| Internal Standards | R.T. | QIon | Response | Conc | Units | Dev(Min) |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.88 | 136 | 1207407 | 4000.00 | ug/kg | 104 |
| 5) Acenaphthene-d10 | 13.29 | 164 | 1125201 | 4000.00 | ug/kg | 98 |
| 11) Phenanthrene-d10 | 15.38 | 188 | 2006052 | 4000.00 | ug/kg | 98 |
| 17) Chrysene-d12 | 21.14 | 240 | 2214439 | 4000.00 | ug/kg | 97 |
| 20) Perylene-d12 | 26.30 | 264 | 2022205 | 4000.00 | ug/kg | 98 |
| **System Monitoring Compounds** | | | | | | |
| 7) 2-Fluorobiphenyl | 12.23 | 172 | 865296 | 2636.25 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 65.91% | | |
| 16) 4-Terphenyl-d14 | 17.89 | 244 | 1276971 | 2460.44 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 61.51% | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.90 | 128 | 700486 | 2319.36 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.72 | 142 | 646154 | 2422.05 | ug/kg | 96 |
| 4) 1-Methyl naphthalene | 11.93 | 142 | 589122 | 2411.14 | ug/kg | 93 |
| 6) ~~Dibenzofuran~~ | ~~13.50~~ | ~~168~~ | ~~4477~~ | ~~10.62~~ | ~~ug/kg~~ | ~~99~~ |
| 8) Acenaphthylene | 13.18 | 152 | 1162279 | 2398.54 | ug/kg | 99 |
| 9) Acenaphthene | 13.35 | 154 | 742241 | 2467.78 | ug/kg | 98 |
| 10) Fluorene | 13.99 | 166 | 937451 | 2566.43 | ug/kg | 98 |
| 12) Phenanthrene | 15.42 | 178 | 1224975 | 2321.97 | ug/kg | 100 |
| 13) Anthracene | 15.46 | 178 | 1210391 | 2423.98 | ug/kg | 100 |
| 14) Fluoranthene | 17.38 | 202 | 1343025 | 2460.06 | ug/kg | 99 |
| 15) Pyrene | 17.98 | 202 | 1367241 | 2410.90 | ug/kg | 100 |
| 18) Benzo[a]anthracene | 20.97 | 228 | 1320521 | 2545.39 | ug/kg | 100 |
| 19) Chrysene | 21.23 | 228 | 1199457 | 2392.91 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.56 | 252 | 1332056 | 2499.24 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.63 | 252 | 1314395 | 2628.85 | ug/kg | 99 |
| 23) ~~Benzo(j)fluoranthene~~ | ~~24.63~~ | ~~252~~ | ~~1324210~~ | ~~2973.18~~ | ~~ug/kg~~ | ~~96~~ |
| 24) Benzo[e]pyrene | 25.80 | 252 | 1256065 | 2631.51 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.98 | 252 | 1257772 | 2578.66 | ug/kg | 99 |
| 26) Dibenz[a,h]anthracene | 29.56 | 278 | 1181135 | 2658.91 | ug/kg | 100 |
| 27) Indeno[1,2,3-cd]pyrene | 29.56 | 276 | 1381760 | 2607.41 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.64 | 276 | 1103924 | 2671.45 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\160421\16042113.D Vial: 13
Acq On : 21 Apr 2016 9:10 pm Operator:
Sample : PSSCV-160421 (2500 ppb) Inst : GC/MS #6
Misc : ICV Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Apr 22 11:46 2016 Quant Results File: PP160421.RES

Method : C:\HPCHEM\1\METHODS\PP160421.M (RTE Integrator)
Title : PAH Calibration
Last Update : Fri Apr 22 11:43:43 2016
Response via : Initial Calibration



# GCMS8
# For

# DHL Work Order
# 1605121

# GCMS8_160518B
# For

# DHL Work Order
# 1605121

# Lab Data Review Check List
## EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

| *SEE RUN LOG FOR ALL PROJECT AND BATCH NUMBERS AND MATRICES* | Run ID: GCMS8_160518B |
|---|---|
| Batch Number(s): See Run Log.<br>Matrix: See Run Log. | SOP: ORGANICS-PAH-01 |

| Review Item | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|
| **Data Folder Contents**<br>1. Is the Prep Batch Report included? Check and record the following:<br>***Prep Start/End Dates, Sample Amounts, Bottle #s*** | X | | | X |
| 2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date?<br>***All standard/QC sample preparations shall be documented in LIMS*** | X | | | |
| 3. Is the Run Log and instrument sequence included?<br>***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time*** | X | | | |
| 4. Is the System Verification - Tune Report included?<br>***Date/Tme of Tune starts 12-hour analysis window*** | X | | | |
| 5. Is the Evaluate Continuing Calibration Report included? | X | | | |

## Daily Demonstration of Performance

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.**

| Review Item | Frequency | Limits | Pass | Fail (List Batch/Sample) **See Run Log** | 2nd Level Review |
|---|---|---|---|---|---|
| Tune | Before ICAL<br>Every 12 hours | See Tune Eval Report | X | | X |
| Resolution Check - Benzo(b) and Benzo(k)phenanthrene | Before ICAL<br>Every 12 hours | Benzo(b) and Benzo(k) Valley > 50% | X | | |
| Initial Calibration Curve (ICAL) (minimum: 5 Standards) | Prior to samples and when ICV fails | Avg. RF - %RSD ≤ 15%<br>Curve (COD) - $R^2$ ≥ 0.990 | X | | |
| SSCV - (Second Source) | After calibration (ICAL) | 80-120% | X | | |
| ICV - (Daily Initial Cal Verification) | Every 12 hours | ISTDs Area% (50-200%)<br>Surrogates %R (See LIMS)<br>Analytes %R (80-120%) | X | | |

| Review Item | Frequency | Limits | Pass | Fail | N/A | Review |
|---|---|---|---|---|---|---|
| Method Blank (MB)<br>System Blank (SYS Blank) | Every Batch (MB) Daily (SYS BL) | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | X | | | X |
| Lab Control Sample (LCS) | Every Batch | See LIMS | X | | | |
| Lab Control Sample Dup (LCSD) | Insufficient sample Sample Matrix | See LIMS | | | X | |
| LCSD - RPD | Every LCS/LCSD | ≤ 30 (Aq/Soil/DoD) | | | X | |
| Field Samples | Up to 20 per prep batch | ISTDs Area% (50-200%)<br>Surrogates %R (See LIMS)<br>RRT ± 0.06 RRT Standard<br>Q value > 70 - check for # | X | | | |
| Matrix Spike (MS) | Every Batch/20 samples | See LIMS | | | X | |
| Matrix Spike Duplicate (MSD) (MSD is N/A for Method 625) | Every Prep Batch except Method 625 | See LIMS | | | X | |
| MSD - RPD<br>(MSD is N/A for Method 625) | Every MS/MSD except Method 625 | ≤ 30 (Aq/Soil/DoD) | | | X | |

# Lab Data Review Check List
## EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

| Review Item | Criteria | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|---|
| **Sample Analysis**<br>1. Are all sample hold times met? | 7 days (Aq) - extraction | X | | | X |
| | 14 days (Soil) - extraction | | | X | |
| | 40 days analysis | X | | | |
| 2. Are all manual integrations signed (Before & After) and printouts included ? Put in LIMS Comment Section<br>***Include MI form for DoD work*** | Before & After - signed Comment Section in LIMS MI Form - DoD only | | | X | |
| 3. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed? | > highest standard | | | X | |
| **Review Item #3 is N/A ONLY if all sample results are within Calibration range or NO if dilution is in different folder** | | | | | |
| 4. Is mass spectra reviewed/verified if Q value is <70 and/or # flag for results >MDL? | Q value <70 - All hits | X | | | X |
| **5. Are ALL reported analytes > MDL (+ J flags) circled by the analyst?** | | X | **Return to analyst if NO** | | |
| **VARIANCE REPORT** | | | | | |
| **QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.** | | | | | |
| **NON-CONFORMANCES / VARIANCE**<br>1. Are all non-conformances included and noted? | All deviations from the method and SOP that affect data quality | | | X | X |
| 2. Are all corrective actions included? | | | | X | |
| 3. Does the variance require approval by the Technical Director/General Manager/QA Manager? | | | | X | |

Approved by: Date:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

| VARIANCE ITEM | REASON | CORRECTIVE ACTION |
|---|---|---|
| ___ Hold Time exceeded (7D/14D-Ext/40D-Analysis) | ___ Sample Received out of HT | ___ Reanalyze QC to confirm |
| ___ ICV out of control (±20%) | ___ Carryover from previous run | ___ Recalibrate |
| ___ MB/SYS BL out of control (> MDL / >½ RL) | ___ Cross contamination | ___ Reprep/Reanalyze sample |
| ___ LCS __LCSD out of control (See LIMS) | ___ Lab Artifact | ___ Reprep/Reanalyze Batch |
| ___ RPD out of control for LCS/LCSD (>30) | ___ Prep Spike error (describe) | ___ Reanalyze Batch/Sample/QC |
| ___ MS ___ MSD out of control (See LIMS) | ___ High Levels of target analytes | ___ Verify H2O/reagents are clean |
| ___ RPD out of control for MS/MSD (>30) | ___ High Levels of non-targets | ___ Reanalyze sample to confirm |
| ___ Internal Standard(s) out of control | ___ Insufficient sample for QC | ___ Sample results ND w/ dilution |
| ___ Multiple Surrogates out of control | ___ Prep Error | ___ Client notified and approved |
| ___ No MS/MSD prepared - LCS/LCSD used instead | ___ Analytical Error | X Flag data / Case narrative |
| X Missing QC (other than MS/MSD) | ___ Client Request | ___ Instrument Maintenance |
| ___ QC sample(s) was mis-spiked | X Other (describe below) | ___ Accept data |
| ___ Other (describe below) | | ___ Cannot reanalyze (HT out/Lack of Sample) |

General Comments and Impact on Data: **See Run Log.**

**Equipment blanks - LCS and MB is only QC requirement.**

Analyst: Karyn Lane Date: ***REVIEWED/APPROVED*** 5/19/2016

Second-Level Review: Date: ***By Sherri Herschmann at 4:06:35 PM, 5/23/2016*** **05/23/2016**

**DHL Analytical, Inc.**

**Run ID:** GCMS8_160518B **Run No.:** 85875

**Analytical Run Date:** 5/18/2016 **InstrumentID:** GCMS8

**Analyst:** Karyn Lane **Column:** Rtx-5Sil MS (30m x 0.25mm ID x 0.5µm df)

**Calibration ID:** 660 **Column ID:** 0.18mm

**Column Length:** 20m

**Cal Comments:** PAH160517.M

| SampID | DF | TestCode | SampType | Batch ID | Analysis Date/Time | Q | Comments |
|---|---|---|---|---|---|---|---|
| DFTPP-160518 | 1 | PAH_LL_WDOD1 | TUNE | R85875 | 5/18/2016 8:58:00 AM | | |
| ICV-160518 | 1 | PAH_LL_WDOD1 | ICV | R85875 | 5/18/2016 9:35:00 AM | | Use DCS/LQV from GCMS8_160518A. |
| LCS-75146 | 1 | PAH_LL_WDOD1 | LCS | 75146 | 5/18/2016 2:03:00 PM | | Equipment blanks - LCS and MB is only QC requirement. |
| MB-75146 | 1 | PAH_LL_WDOD1 | MBLK | 75146 | 5/18/2016 2:40:00 PM | | |
| 1605074-33B | 1 | PAH_LL_WDOD1 | SAMP | 75146 | 5/18/2016 3:17:00 PM | | |
| 1605074-34B | 1 | PAH_LL_WDOD1 | SAMP | 75146 | 5/18/2016 3:53:00 PM | | |
| 1605074-35B | 1 | PAH_LL_WDOD1 | SAMP | 75146 | 5/18/2016 4:30:00 PM | | |
| 1605096-36B | 1 | PAH_LL_WDOD1 | SAMP | 75146 | 5/18/2016 5:07:00 PM | | |
| 1605096-37B | 1 | PAH_LL_WDOD1 | SAMP | 75146 | 5/18/2016 5:44:00 PM | | |
| 1605096-44B | 1 | PAH_LL_WDOD1 | SAMP | 75146 | 5/18/2016 6:21:00 PM | | |
| 1605097-27B | 1 | PAH_LL_WDOD1 | SAMP | 75146 | 5/18/2016 6:58:00 PM | | |
| 1605097-30B | 1 | PAH_LL_WDOD1 | SAMP | 75146 | 5/18/2016 7:34:00 PM | | |
| DFTPP2-160518 | 1 | PAH_LL_WDOD1 | TUNE | R85875 | 5/18/2016 8:11:00 PM | | |
| ICV2-160518 | 1 | PAH_LL_WDOD1 | ICV | R85875 | 5/18/2016 8:49:00 PM | | |
| SBLK-160518 | 1 | PAH_LL_WDOD1 | SBLK | 75146 | 5/18/2016 10:03:00 PM | | |
| 1605098-42B | 1 | PAH_LL_WDOD1 | SAMP | 75146 | 5/18/2016 10:40:00 PM | | |
| 1605121-46B | 1 | PAH_LL_WDOD1 | SAMP | 75146 | 5/18/2016 11:17:00 PM | | |
| 1605121-47B | 1 | PAH_LL_WDOD1 | SAMP | 75146 | 5/18/2016 11:54:00 PM | | |
| 1605135-46B | 1 | PAH_LL_WDOD1 | SAMP | 75146 | 5/19/2016 12:31:00 AM | | |
| 1605144-16B | 1 | PAH_LL_WDOD1 | SAMP | 75146 | 5/19/2016 1:08:00 AM | | |
| CCV-160520 | 1 | PAH_LL_WDOD1 | CCV | R85875 | 5/19/2016 2:59:00 AM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| DFTPP160509 | 2.5 PPM 525 TUNE STD. | TUNE | 05/07/2017 |
| PAHCCV-160509 | 1 PPM PAH CCV STANDARD | CCV | 08/07/2016 |
| PAHICV160509 | 2 PPM PAH ICV | ICV | 08/07/2016 |
| SVI150810-08 | 4000 PPM INTERNAL STANDAR | ALL | 07/21/2016 |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 4:07:08 PM, 5/23/2016*

Sequence Name: C:\msdchem\1\sequence\160518.S
Comment:
Operator:
Data Path: C:\MSDCHEM\1\DATA\160518\
Instrument Name: GCMS #8
Instrument Control Pre-Seq Cmd:
Data Analysis Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

| Line | | Sample Name/Misc Info | | |
|---|---|---|---|---|
| 1) | Sample | 1 | 16051801 DFTPPPAH | DFTPP-160518 |
| 2) | Sample | 2 | 16051802 PAH160517 | ICV-160518 |
| 3) | Sample | 3 | 16051803 PAH160517 | DCS-75209 |
| 4) | Sample | 4 | 16051804 PAH160517 | LQV-75209 |
| 5) | Sample | 5 | 16051805 PAH160517 | LCS-75209 |
| 6) | Sample | 6 | 16051806 PAH160517 | LCSD-75209 |
| 7) | Sample | 7 | 16051807 PAH160517 | MB-75209 |
| 8) | Sample | 8 | 16051808 PAH160517 | 1605142-01E |
| 9) | Sample | 9 | 16051809 PAH160517 | LCS-75146 |
| 10) | Sample | 10 | 16051810 PAH160517 | MB-75146 |
| 11) | Sample | 11 | 16051811 PAH160517 | 1605074-33B |
| 12) | Sample | 12 | 16051812 PAH160517 | 1605074-34B |
| 13) | Sample | 13 | 16051813 PAH160517 | 1605074-35B |
| 14) | Sample | 14 | 16051814 PAH160517 | 1605096-36B |
| 15) | Sample | 15 | 16051815 PAH160517 | 1605096-37B |
| 16) | Sample | 16 | 16051816 PAH160517 | 1605096-44B |
| 17) | Sample | 17 | 16051817 PAH160517 | 1605097-27B |
| 18) | Sample | 18 | 16051818 PAH160517 | 1605097-30B |
| 19) | Sample | 19 | 16051819 DFTPPPAH | DFTPP2-160518 |
| 20) | Sample | 20 | 16051820 PAH160517 | ICV2-160518 |
| 21) | Sample | 21 | 16051821 PAH160517 | SBLK |
| 22) | Sample | 22 | 16051822 PAH160517 | SBLK-160518 |
| 23) | Sample | 23 | 16051823 PAH160517 | 1605098-42B |
| 24) | Sample | 24 | 16051824 PAH160517 | 1605121-46B |
| 25) | Sample | 25 | 16051825 PAH160517 | 1605121-47B |
| 26) | Sample | 26 | 16051826 PAH160517 | 1605135-46B |
| 27) | Sample | 27 | 16051827 PAH160517 | 1605144-16B |
| 28) | Sample | 28 | 16051828 PAH160517 | 1605071-38A |
| 29) | Sample | 29 | 16051829 PAH160517 | 1605071-32A |
| 30) | Sample | 30 | 16051830 PAH160517 | CCV-160520 |

# DHL Analytical, Inc.

# PREP BATCH REPORT

Prep Start Date: **5/13/2016 8:48:47 AM**
Digestion:
Prep End Date: 5/13/16 11:35AM

Prep Batch **75146** Prep Code: **3510_PAHDOD** Technician: **Duston Bezner**

Prep Factor Units: **mL/mL**

| Equipment List |
|---|
| Turbo-Vap #1,2,3 |
| Balance # 25, 29 |

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605074-33B | Equip Blank | 6 | 500 | 1 | 0.002 | 1 of 1 | 532.2 - 212.6 = 319.6 |
| 1605074-34B | Equip Blank | | 500 | 1 | 0.002 | 1 of 1 | 535.8 - 213.4 = 322.4 |
| 1605074-35B | Equip Blank | | 500 | 1 | 0.002 | 1 of 1 | ~~358.0~~ 538.0 - 214.4 = 323.6 |
| 1605096-36B | Equip Blank | | 500 | 1 | 0.002 | 1 of | 543.3 - 213.4 = 329.9 |
| 1605096-37B | Equip Blank | | 500 | 1 | 0.002 | 1 of 1 | 538.9 - 213.6 = 318.4 |
| 1605096-44B | Equip Blank | | 500 | 1 | 0.002 | 1 of 1 | 531.6 - 212.5 = 319.1 |
| 1605097-27B | Equip Blank | | 500 | 1 | 0.002 | 1 of 1 | 536.8 - 212.2 = 324.6 |
| 1605097-30B | Equip Blank | | 500 | 1 | 0.002 | 1 of 1 | 537.3 - 213.3 = 324.0 |
| 1605098-42B | Equip Blank | | 500 | 1 | 0.002 | 1 of 1 | 537.9 - 212.9 = ~~325.1~~ 325 |
| 1605121-46B | Equip Blank | | 500 | 1 | 0.002 | 1 of 1 | 526.8 - 213.4 = 313.4 |
| 1605121-47B | Equip Blank | | 500 | 1 | 0.002 | 1 of 1 | 528.7 - 212.3 = ~~308.7~~ 316.4 |
| 1605135-46B | Equip Blank | | 500 | 1 | 0.002 | 1 of 1 | 534.2 - 212.8 = 321.4 |
| LCS-75146 | Aqueous | | 500 | 1 | 0.002 | of | 738.3 - 238.3 = 500.0 |
| ~~LCSD-75146~~ 5/13/16 | Aqueous | | 500 | 1 | 0.002 | of | Insufficient Sample for MS/D 5/13/16 |
| MB-75146 | Aqueous | | 500 | 1 | 0.002 | of | 777.4 - 277.4 = 500.0 |

1605144-16B 6

536.0 - 214.7 = 321.3

Added @ 1:00PM 5/13/16.

**REVIEWED/APPROVED**
By Sherri Herschmann at 4:12:07 PM, 5/23/2016

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 7509 | pH paper 0-14 | 1 | paper | 10/15/2025 |
| 9927 | Purified Sodium Sulfate | 10 | g | 07/04/2016 |
| 10169 | Methylene Chloride | 120 | ml | 03/15/2026 |
| 10214 | Whatman 41 Filter | 1 | filter | 03/30/2026 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| PAHPREP160509 | 200 PPM PAH Spike Mix | LCS/LCSD | 0.01 | 11/07/2016 |
| SVPREP160510 | 40 PPM Surrogate Standard | ALL | 0.1 | 08/08/2016 |

5/13/16 AR 5/13/16

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/13/2016 8:48:47 AM**
Digestion:
Prep End Date: **5/13/2016 2:10:17 PM**

Prep Batch **75146** Prep Code: **3510_PAHDOD** Technician: **Duston Bezner**

Prep Factor Units: **mL/mL**

**Equipment List**

Turbo-Vap #1,2,3
Balance # 25, 29

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605074-33B | Equip Blank | 6 | 319.6 | 1 | 0.003 | 1 of 1 | |
| 1605074-34B | Equip Blank | 6 | 322.4 | 1 | 0.003 | 1 of 1 | |
| 1605074-35B | Equip Blank | 6 | 323.6 | 1 | 0.003 | 1 of 1 | |
| 1605096-36B | Equip Blank | 6 | 329.9 | 1 | 0.003 | 1 of 1 | |
| 1605096-37B | Equip Blank | 6 | 318.4 | 1 | 0.003 | 1 of 1 | |
| 1605096-44B | Equip Blank | 6 | 319.1 | 1 | 0.003 | 1 of 1 | |
| 1605097-27B | Equip Blank | 6 | 324.6 | 1 | 0.003 | 1 of 1 | |
| 1605097-30B | Equip Blank | 6 | 324 | 1 | 0.003 | 1 of 1 | |
| 1605098-42B | Equip Blank | 6 | ~~315.1~~ **325** | 1 | 0.003 | 1 of 1 | |
| 1605121-46B | Equip Blank | 6 | 313.4 | 1 | 0.003 | 1 of 1 | |
| 1605121-47B | Equip Blank | 6 | ~~308.7~~ **316.4** | 1 | 0.003 | 1 of 1 | |
| 1605135-46B | Equip Blank | 6 | 321.4 | 1 | 0.003 | 1 of 1 | |
| 1605144-16B | Equip Blank | 6 | 321.3 | 1 | 0.003 | 1 of 1 | |
| LCS-75146 | Aqueous | 6 | 500 | 1 | 0.002 | of | |
| MB-75146 | Aqueous | 6 | 500 | 1 | 0.002 | of | |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 4:15:47 PM, 5/23/2016*

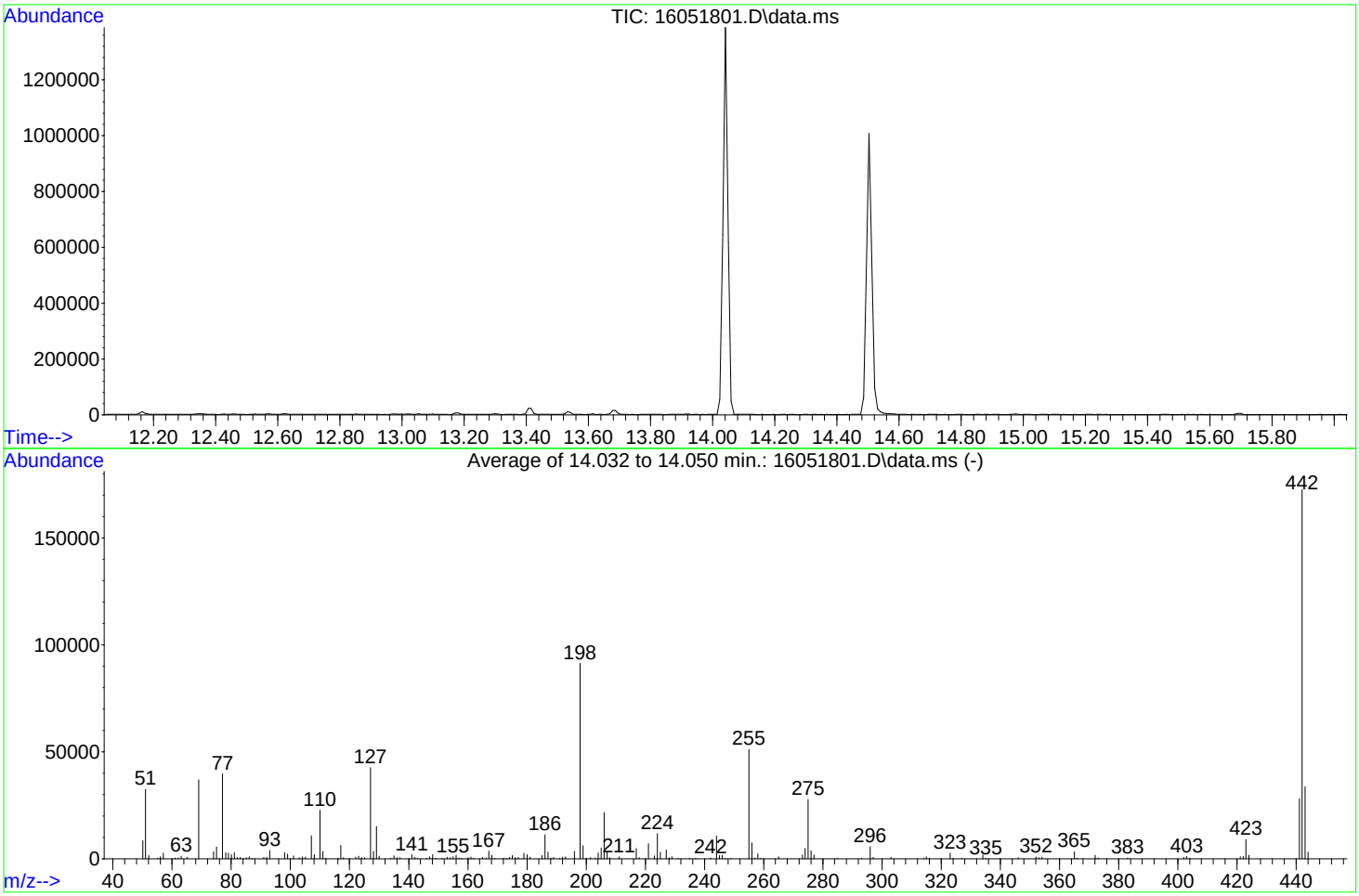
| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 7509 | pH paper 0-14 | 1 | paper | 10/15/2025 |
| 9927 | Purified Sodium Sulfate | 10 | g | 07/04/2016 |
| 10169 | Methylene Chloride | 120 | ml | 03/15/2026 |
| 10214 | Whatman 41 Filter | 1 | filter | 03/30/2026 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| PAHPREP160509 | 200 PPM PAH Spike Mix | LCS/LCSD | 0.01 | 11/07/2016 |
| SVPREP160510 | 40 PPM Surrogate Standard | ALL | 0.1 | 08/08/2016 |

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051801.D
Acq On : 18 May 2016 8:58 am
Operator :
Sample : DFTPP-160518
Misc : TUNE
ALS Vial : 1 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : CLP BNA Calibration - Large Volume Injection
Last Update : Thu Aug 27 07:24:43 2015




AutoFind: Scans 435, 436, 437; Background Corrected with Scan 431

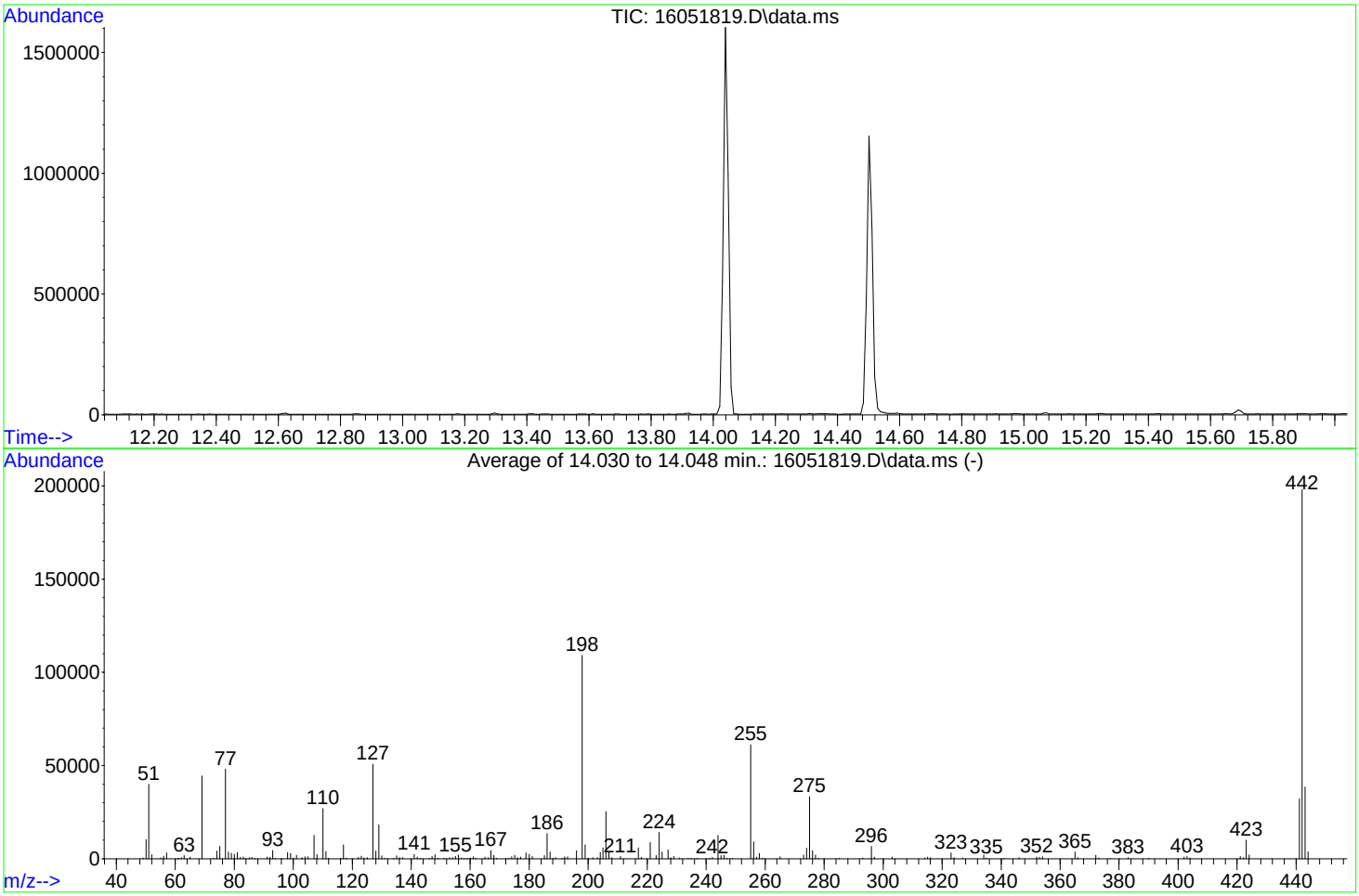
| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 51 | 198 | 10 | 80 | 35.6 | 32471 | PASS |
| 68 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 69 | 198 | 0.00 | 100 | 40.5 | 36940 | PASS |
| 70 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 127 | 198 | 10 | 80 | 46.7 | 42606 | PASS |
| 197 | 198 | 0.00 | 2 | 0.0 | 0 | PASS |
| 198 | 198 | 100 | 100 | 100.0 | 91320 | PASS |
| 199 | 198 | 5 | 9 | 6.7 | 6088 | PASS |
| 275 | 198 | 10 | 60 | 30.3 | 27688 | PASS |
| 365 | 198 | 1 | 200 | 3.6 | 3268 | PASS |
| 441 | 442 | 0.01 | 24 | 16.3 | 28059 | PASS |
| 442 | 198 | 50 | 400 | 189.0 | 172605 | PASS |
| 443 | 442 | 15 | 24 | 19.6 | 33763 | PASS |

REVIEWED BY
By Janice Whitt at 2:34:46 PM, 5/19/2016

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051819.D
Acq On : 18 May 2016 8:11 pm
Operator :
Sample : DFTPP2-160518
Misc : TUNE
ALS Vial : 19 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : CLP BNA Calibration - Large Volume Injection
Last Update : Thu Aug 27 07:24:43 2015




AutoFind: Scans 435, 436, 437; Background Corrected with Scan 431

| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 51 | 198 | 10 | 80 | 36.6 | 39974 | PASS |
| 68 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 69 | 198 | 0.00 | 100 | 40.8 | 44482 | PASS |
| 70 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 127 | 198 | 10 | 80 | 46.4 | 50616 | PASS |
| 197 | 198 | 0.00 | 2 | 0.0 | 0 | PASS |
| 198 | 198 | 100 | 100 | 100.0 | 109152 | PASS |
| 199 | 198 | 5 | 9 | 6.8 | 7381 | PASS |
| 275 | 198 | 10 | 60 | 30.5 | 33283 | PASS |
| 365 | 198 | 1 | 200 | 3.4 | 3666 | PASS |
| 441 | 442 | 0.01 | 24 | 16.2 | 32122 | PASS |
| 442 | 198 | 50 | 400 | 181.4 | 197986 | PASS |
| 443 | 442 | 15 | 24 | 19.5 | 38521 | PASS |

REVIEWED BY
By Janice Whitt at 12:56:17 PM, 5/23/2016

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051802.D
Acq On : 18 May 2016 9:35 am
Operator :
Sample : ICV-160518
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 18 11:42:31 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.263 | 136 | 1439270 | 4000.00 | ug/kg | 88 |
| 6) Acenaphthene-d10 | 12.851 | 164 | 1096742 | 4000.00 | ug/kg | 87 |
| 11) Phenanthrene-d10 | 14.976 | 188 | 2537779 | 4000.00 | ug/kg | 87 |
| 16) Chrysene-d12 | 20.981 | 240 | 2403266 | 4000.00 | ug/kg | 89 |
| 20) Perylene-d12 | 26.247 | 264 | 2183143 | 4000.00 | ug/kg | 88 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.752 | 172 | 613046 | 1913.04 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 47.83% | | | |
| 17) 4-Terphenyl-d14 | 17.584 | 244 | 1035464 | 2035.60 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 50.89%# | | | |

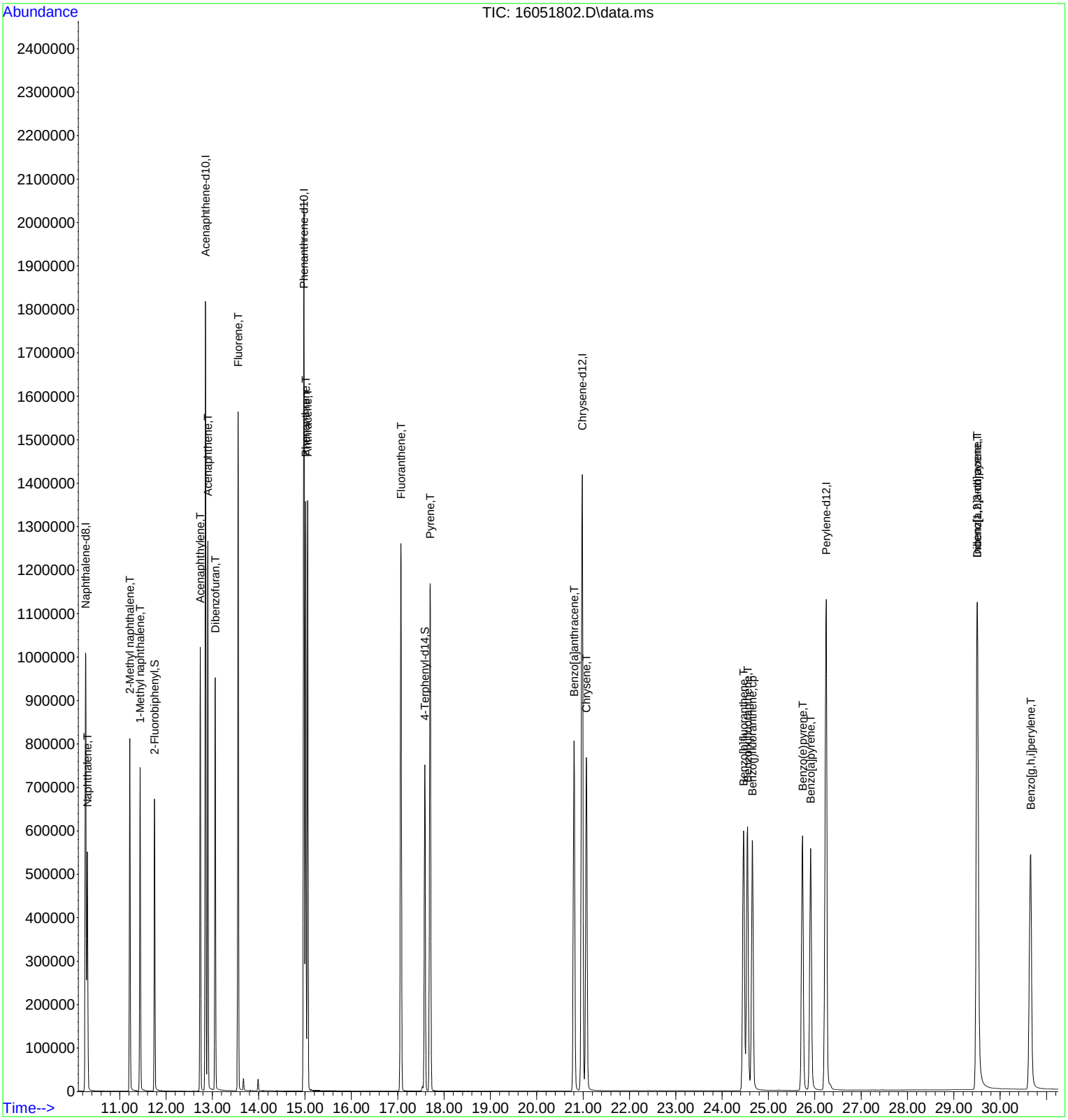
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.300 | 128 | 645598 | 2002.26 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.217 | 142 | 500194 | 1995.54 | ug/kg | 98 |
| 4) 1-Methyl naphthalene | 11.444 | 142 | 460727 | 1942.42 | ug/kg | 99 |
| 7) Acenaphthylene | 12.738 | 152 | 964211 | 2011.33 | ug/kg | 100 |
| 8) Acenaphthene | 12.905 | 153 | 609340 | 2014.36 | ug/kg | 100 |
| 9) Dibenzofuran | 13.062 | 168 | 927693 | 2013.19 | ug/kg | 99 |
| 10) Fluorene | 13.553 | 166 | 845853 | 2023.03 | ug/kg | 100 |
| 12) Phenanthrene | 15.014 | 178 | 1313221 | 1880.65 | ug/kg | 100 |
| 13) Anthracene | 15.056 | 178 | 1326462 | 1877.33 | ug/kg | 100 |
| 14) Fluoranthene | 17.068 | 202 | 1419444 | 2135.93 | ug/kg | 100 |
| 15) Pyrene | 17.701 | 202 | 1398615 | 2140.87 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.805 | 228 | 1261556 | 2123.30 | ug/kg | 100 |
| 19) Chrysene | 21.069 | 228 | 1160852 | 2112.58 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.460 | 252 | 1189531 | 2127.79 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.548 | 252 | 1074594 | 2120.12 | ug/kg | 100 |
| 23) Benzo(j)fluoranthene | 24.651 | 252 | 1026600 | 2124.35 | ug/kg | 100 |
| 24) Benzo(e)pyrene | 25.735 | 252 | 1119451 | 2121.93 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.910 | 252 | 1107058 | 2114.72 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.514 | 276 | 1344214 | 2098.92 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.500 | 278 | 1122117 | 2109.02 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.657 | 276 | 1164995 | 2108.28 | ug/kg | 100 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051802.D
Acq On : 18 May 2016 9:35 am
Operator :
Sample : ICV-160518
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

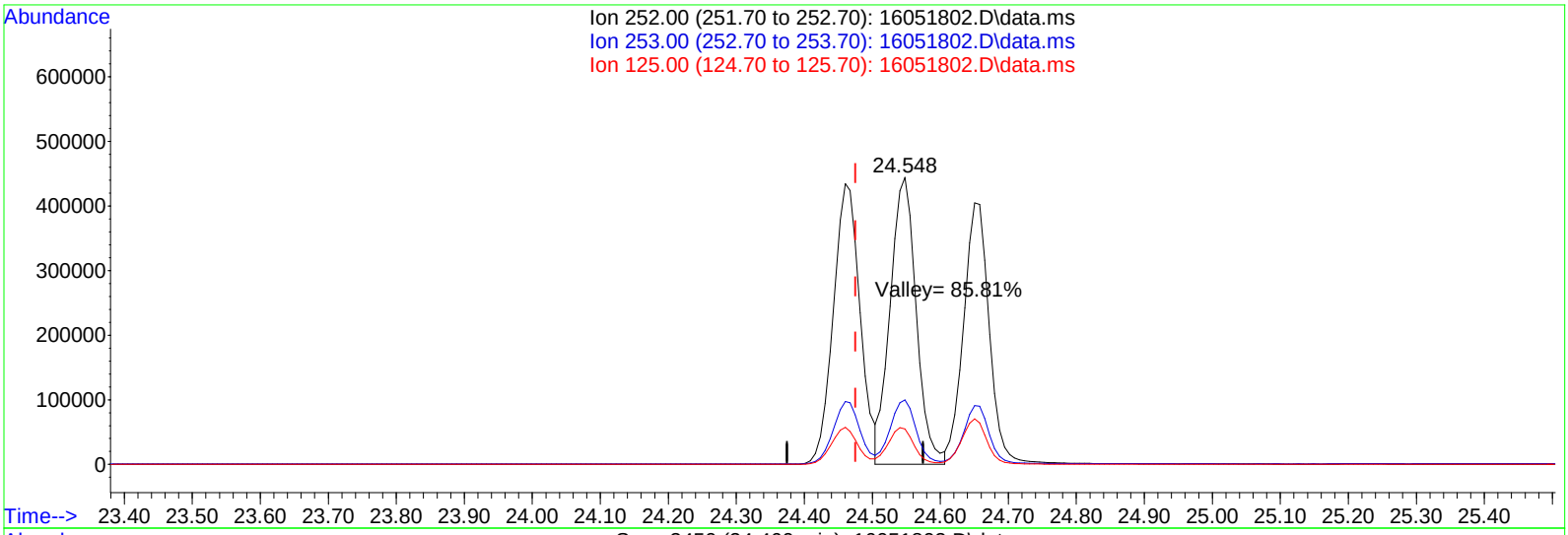
Quant Time: May 18 11:42:31 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

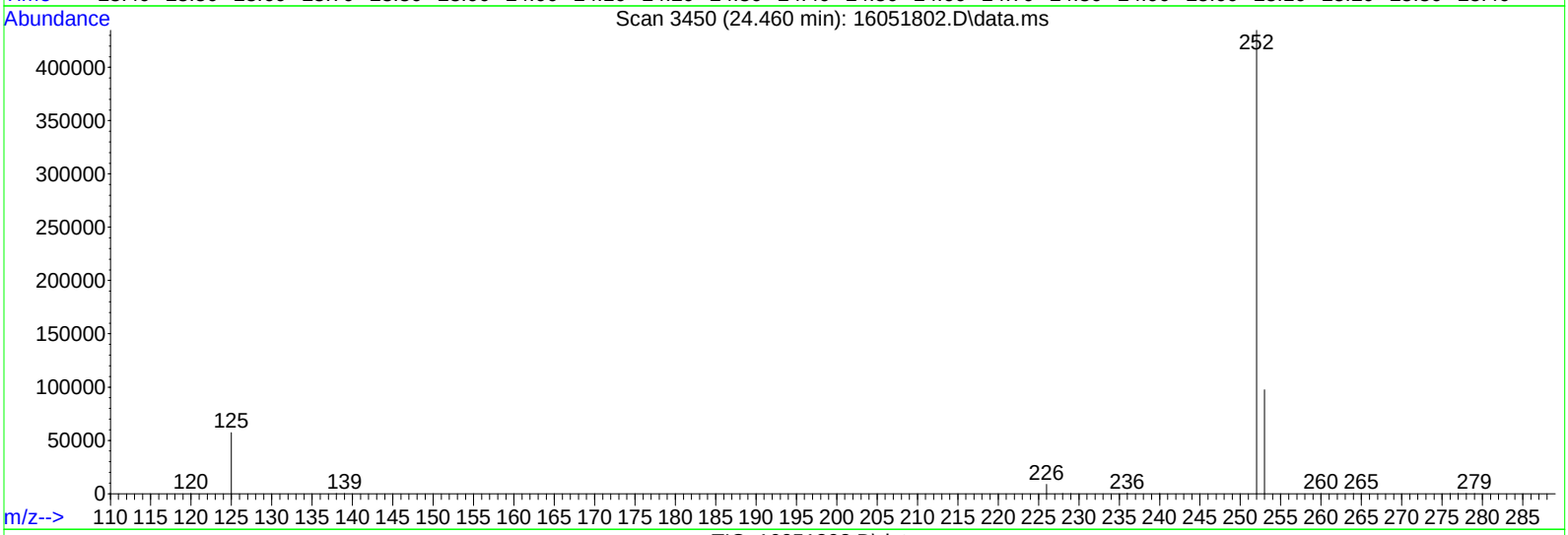


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051802.D
Acq On : 18 May 2016 9:35 am
Operator :
Sample : ICV-160518
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 18 11:42:31 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration




TIC: 16051802.D\data.ms

(21) Benzo[b]fluoranthene (T)

24.460min (-0.015) 2127.79ug/kg

response 1189531

| Ion | Exp% | Act% |
|---|---|---|
| 252.00 | 100 | 100 |
| 253.00 | 22.30 | 22.26 |
| 125.00 | 12.20 | 13.16 |
| 0.00 | 0.00 | 0.00 |

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051809.D
Acq On : 18 May 2016 2:03 pm
Operator :
Sample : LCS-75146
Misc : LCS
ALS Vial : 9 Sample Multiplier: 1

Quant Time: May 19 09:16:19 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

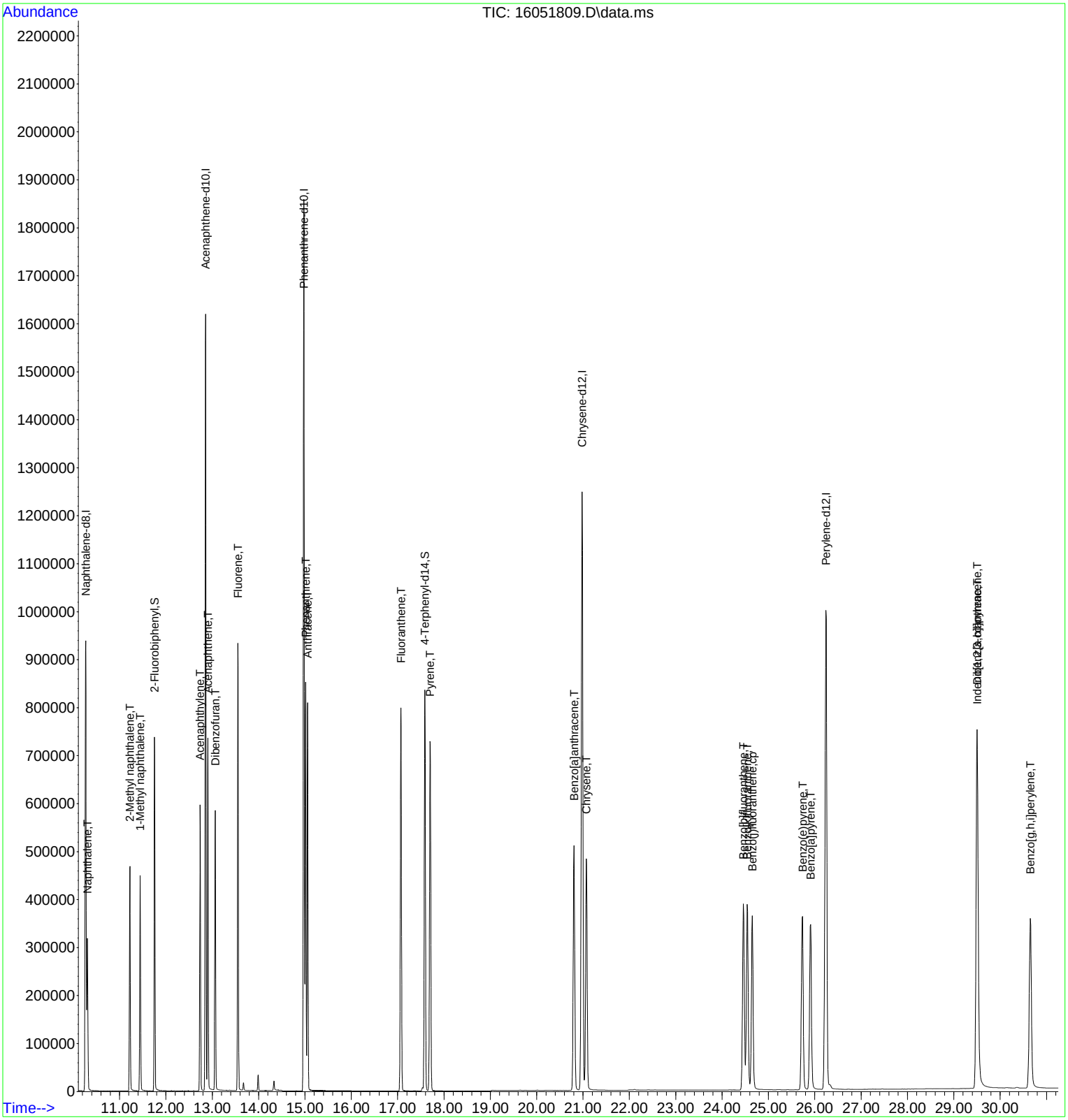
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.269 | 136 | 1319910 | 4000.00 | ug/kg | 81 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 979132 | 4000.00 | ug/kg | 78 |
| 11) Phenanthrene-d10 | 14.977 | 188 | 2285148 | 4000.00 | ug/kg | 78 |
| 16) Chrysene-d12 | 20.981 | 240 | 2110098 | 4000.00 | ug/kg | 78 |
| 20) Perylene-d12 | 26.241 | 264 | 1904087 | 4000.00 | ug/kg | 77 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.754 | 172 | 657780 | 2238.26 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 55.96% | | | |
| 17) 4-Terphenyl-d14 | 17.586 | 244 | 1177981 | 2637.52 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 65.94% | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.306 | 128 | 366938 | 1240.93 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.224 | 142 | 288325 | 1254.30 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.446 | 142 | 267309 | 1228.89 | ug/kg | 99 |
| 7) Acenaphthylene | 12.739 | 152 | 559567 | 1307.45 | ug/kg | 99 |
| 8) Acenaphthene | 12.906 | 153 | 353590 | 1309.30 | ug/kg | 99 |
| 9) Dibenzofuran | 13.063 | 168 | 539351 | 1311.04 | ug/kg | 99 |
| 10) Fluorene | 13.554 | 166 | 507450 | 1359.45 | ug/kg | 100 |
| 12) Phenanthrene | 15.015 | 178 | 815126 | 1296.39 | ug/kg | 99 |
| 13) Anthracene | 15.057 | 178 | 785637 | 1234.83 | ug/kg | 99 |
| 14) Fluoranthene | 17.070 | 202 | 887651 | 1454.69 | ug/kg | 99 |
| 15) Pyrene | 17.700 | 202 | 872881 | 1459.82 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.805 | 228 | 787235 | 1485.78 | ug/kg | 100 |
| 19) Chrysene | 21.069 | 228 | 729981 | 1491.09 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.461 | 252 | 762202 | 1545.20 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.541 | 252 | 688207 | 1542.68 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.651 | 252 | 630685 | 1475.70 | ug/kg | 100 |
| 24) Benzo(e)pyrene | 25.735 | 252 | 687368 | 1472.95 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.911 | 252 | 693028 | 1503.32 | ug/kg | 100 |
| 26) Indeno[1,2,3-cd]pyrene | 29.515 | 276 | 848810 | 1500.32 | ug/kg | 98 |
| 27) Dibenz[a,h]anthracene | 29.500 | 278 | 709881 | 1508.82 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.650 | 276 | 731582 | 1498.98 | ug/kg | 98 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051809.D
Acq On : 18 May 2016 2:03 pm
Operator :
Sample : LCS-75146
Misc : LCS
ALS Vial : 9 Sample Multiplier: 1

Quant Time: May 19 09:16:19 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051810.D
Acq On : 18 May 2016 2:40 pm
Operator :
Sample : MB-75146
Misc : MBLK
ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 19 09:16:22 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.270 | 136 | 1390449 | 4000.00 | ug/kg | 85 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1037657 | 4000.00 | ug/kg | 83 |
| 11) Phenanthrene-d10 | 14.977 | 188 | 2466155 | 4000.00 | ug/kg | 84 |
| 16) Chrysene-d12 | 20.981 | 240 | 2313139 | 4000.00 | ug/kg | 85 |
| 20) Perylene-d12 | 26.248 | 264 | 2116938 | 4000.00 | ug/kg | 85 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.755 | 172 | 713716 | 2305.39 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 57.63% | | |
| 17) 4-Terphenyl-d14 | 17.590 | 244 | 1305557 | 2666.57 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 66.66% | | |

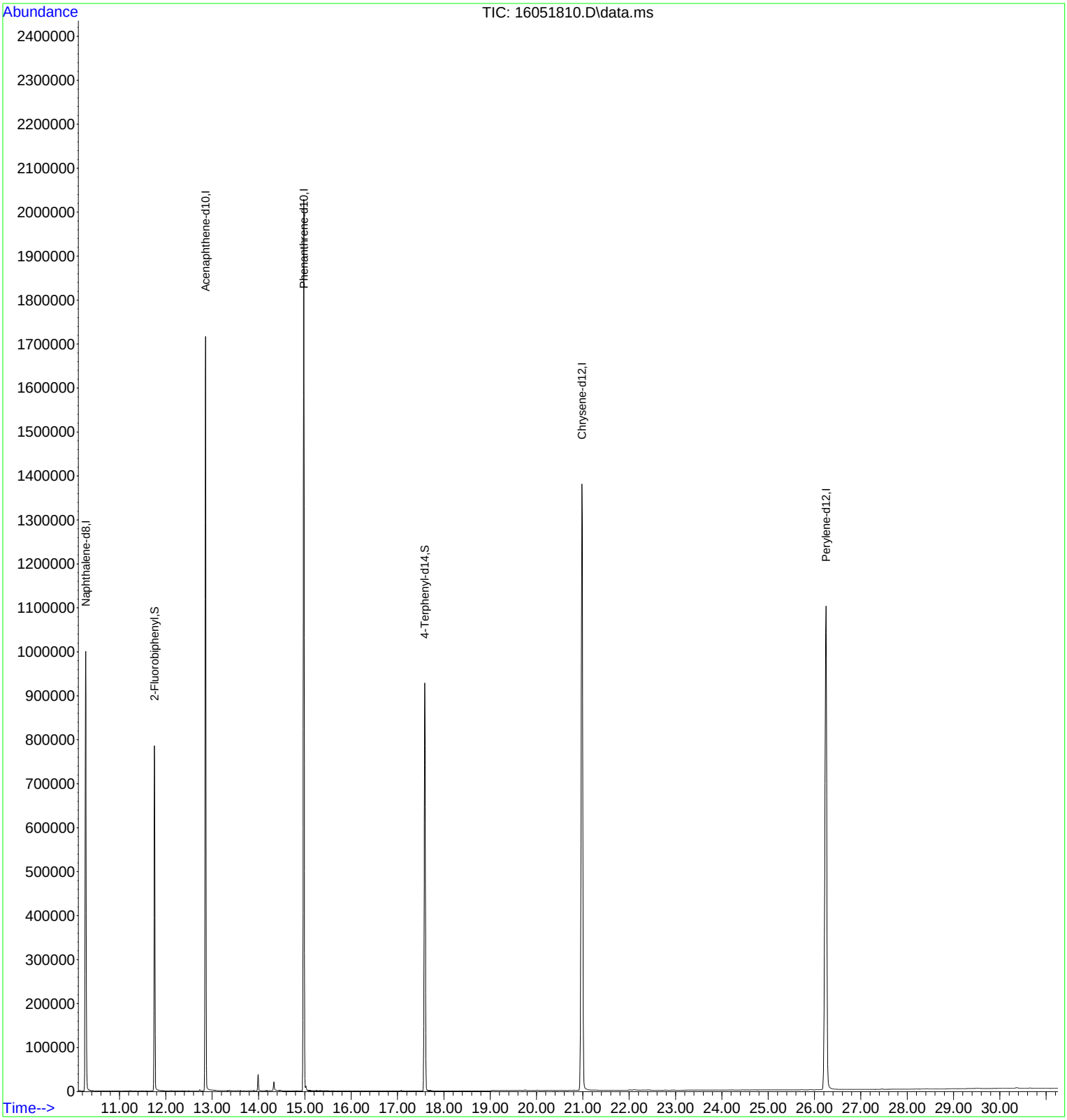
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051810.D
Acq On : 18 May 2016 2:40 pm
Operator :
Sample : MB-75146
Misc : MBLK
ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 19 09:16:22 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051820.D
Acq On : 18 May 2016 8:49 pm
Operator :
Sample : ICV2-160518
Misc : ICV
ALS Vial : 20 Sample Multiplier: 1

Quant Time: May 19 09:16:25 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

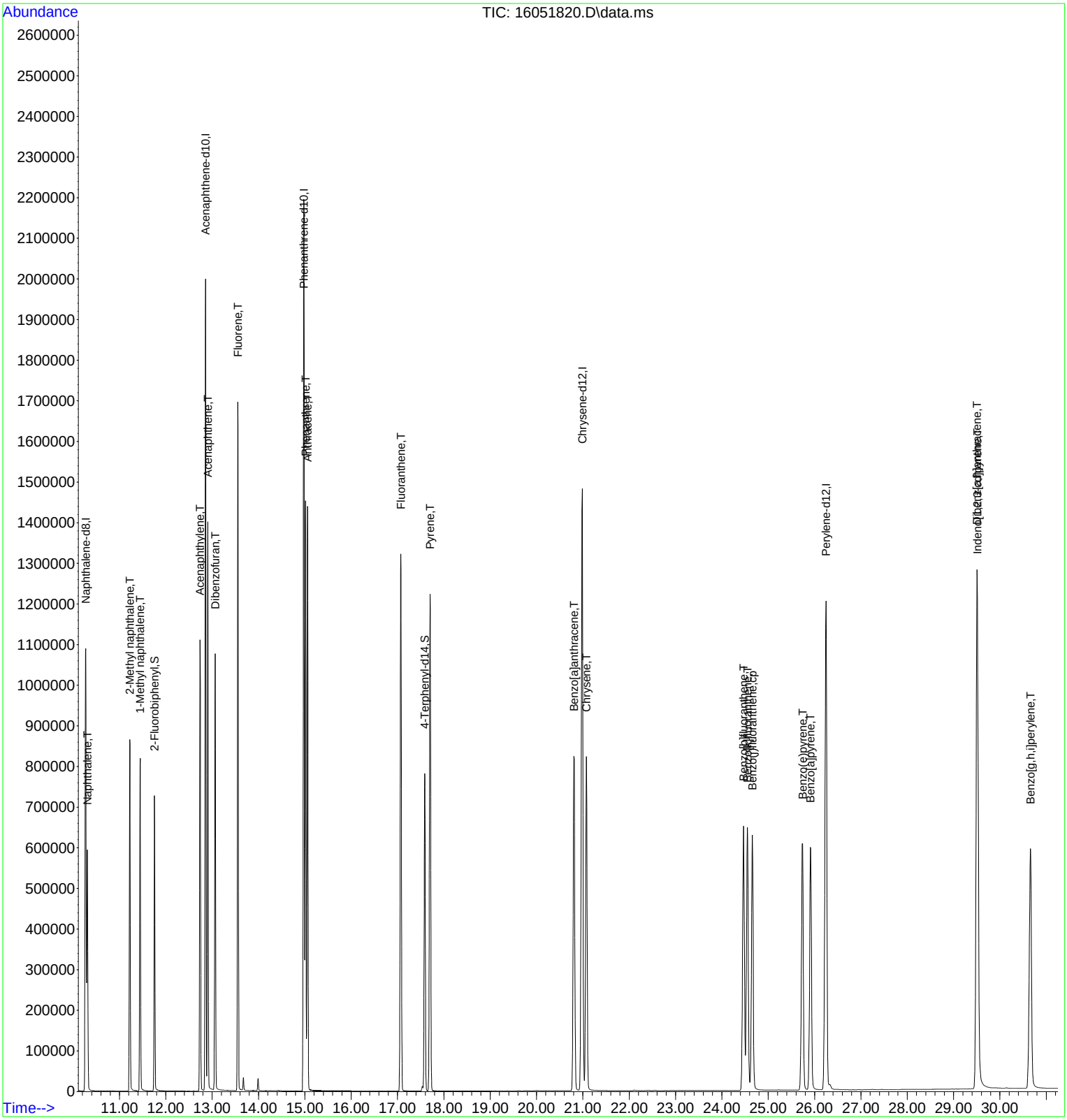
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.270 | 136 | 1541947 | 4000.00 | ug/kg | 95 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1207997 | 4000.00 | ug/kg | 96 |
| 11) Phenanthrene-d10 | 14.979 | 188 | 2731012 | 4000.00 | ug/kg | 93 |
| 16) Chrysene-d12 | 20.989 | 240 | 2535151 | 4000.00 | ug/kg | 94 |
| 20) Perylene-d12 | 26.248 | 264 | 2319324 | 4000.00 | ug/kg | 93 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.755 | 172 | 660318 | 1923.35 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 48.08% | | | |
| 17) 4-Terphenyl-d14 | 17.587 | 244 | 1090974 | 2033.15 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 50.83%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.303 | 128 | 692653 | 2005.15 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.224 | 142 | 543376 | 2023.46 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.446 | 142 | 498034 | 1959.89 | ug/kg | 99 |
| 7) Acenaphthylene | 12.739 | 152 | 1052817 | 1993.89 | ug/kg | 100 |
| 8) Acenaphthene | 12.906 | 153 | 669198 | 2008.49 | ug/kg | 100 |
| 9) Dibenzofuran | 13.064 | 168 | 1014806 | 1999.41 | ug/kg | 98 |
| 10) Fluorene | 13.555 | 166 | 927758 | 2014.57 | ug/kg | 100 |
| 12) Phenanthrene | 15.015 | 178 | 1399624 | 1862.57 | ug/kg | 100 |
| 13) Anthracene | 15.059 | 178 | 1414791 | 1860.66 | ug/kg | 99 |
| 14) Fluoranthene | 17.071 | 202 | 1484668 | 2072.21 | ug/kg | 99 |
| 15) Pyrene | 17.704 | 202 | 1458241 | 2070.73 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.805 | 228 | 1322898 | 2110.03 | ug/kg | 100 |
| 19) Chrysene | 21.076 | 228 | 1217225 | 2099.27 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.468 | 252 | 1259735 | 2120.76 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.549 | 252 | 1175849 | 2185.94 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.658 | 252 | 1091106 | 2125.31 | ug/kg | 100 |
| 24) Benzo(e)pyrene | 25.742 | 252 | 1183382 | 2110.90 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.918 | 252 | 1185414 | 2132.02 | ug/kg | 100 |
| 26) Indeno[1,2,3-cd]pyrene | 29.522 | 276 | 1433865 | 2107.85 | ug/kg | 98 |
| 27) Dibenz[a,h]anthracene | 29.508 | 278 | 1204388 | 2131.84 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.658 | 276 | 1254977 | 2139.12 | ug/kg | 98 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051820.D
Acq On : 18 May 2016 8:49 pm
Operator :
Sample : ICV2-160518
Misc : ICV
ALS Vial : 20 Sample Multiplier: 1

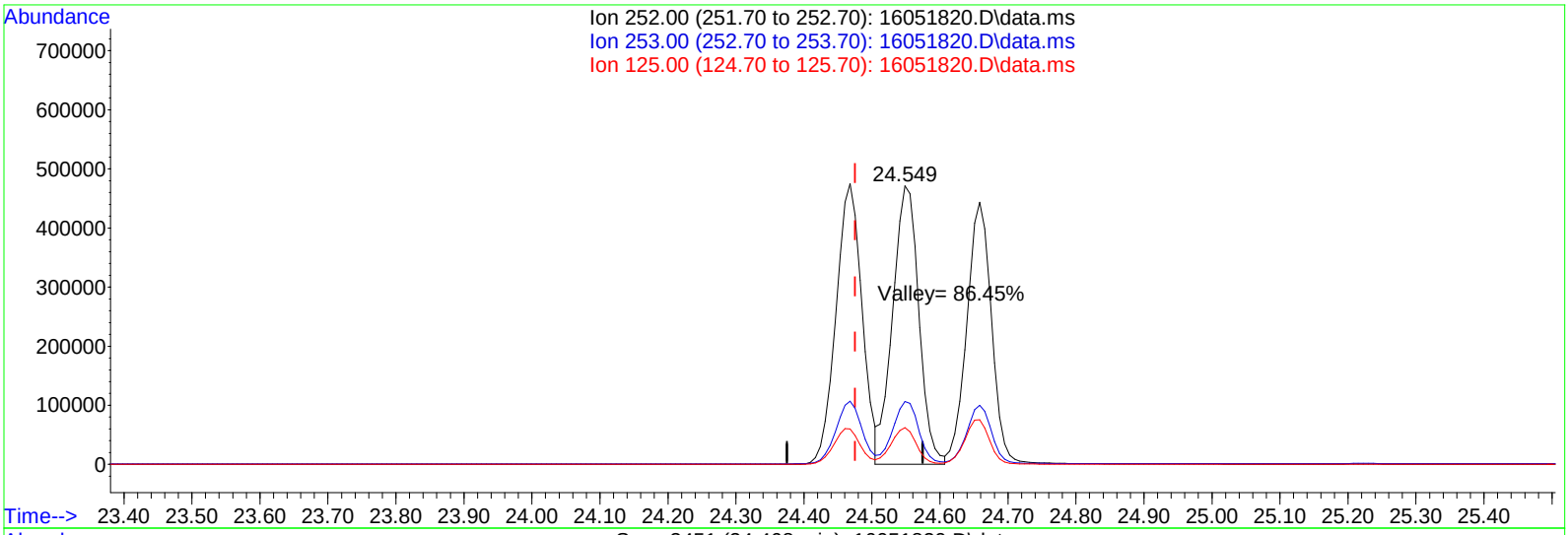
Quant Time: May 19 09:16:25 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

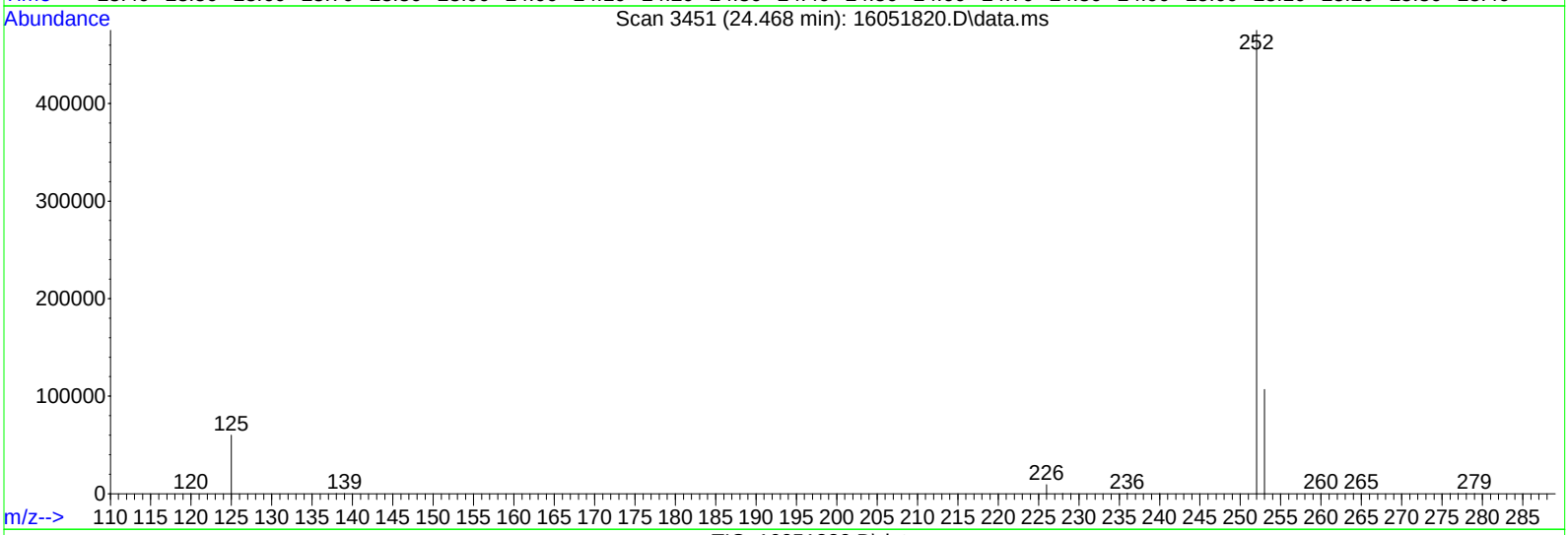


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051820.D
Acq On : 18 May 2016 8:49 pm
Operator :
Sample : ICV2-160518
Misc : ICV
ALS Vial : 20 Sample Multiplier: 1

Quant Time: May 18 21:20:24 2016
Quant Method : C:\MSDCHEM\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration




TIC: 16051820.D\data.ms

(21) Benzo[b]fluoranthene (T)

24.468min (-0.007) 2120.76ug/kg

response 1259735

| Ion | Exp% | Act% |
|---|---|---|
| 252.00 | 100 | 100 |
| 253.00 | 22.30 | 22.27 |
| 125.00 | 12.20 | 12.57 |
| 0.00 | 0.00 | 0.00 |

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051822.D
Acq On : 18 May 2016 10:03 pm
Operator :
Sample : SBLK-160518
Misc : SBLK
ALS Vial : 22 Sample Multiplier: 1

Quant Time: May 19 09:16:28 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.268 | 136 | 1648675 | 4000.00 | ug/kg | 101 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1399121 | 4000.00 | ug/kg | 112 |
| 11) Phenanthrene-d10 | 14.977 | 188 | 2780441 | 4000.00 | ug/kg | 95 |
| 16) Chrysene-d12 | 20.980 | 240 | 2664039 | 4000.00 | ug/kg | 98 |
| 20) Perylene-d12 | 26.247 | 264 | 2504352 | 4000.00 | ug/kg | 101 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.761 | 172 | 70 | 0.19 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 0.00%# | | | |
| 17) 4-Terphenyl-d14 | 17.592 | 244 | 276 | 0.49 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 0.01%# | | | |

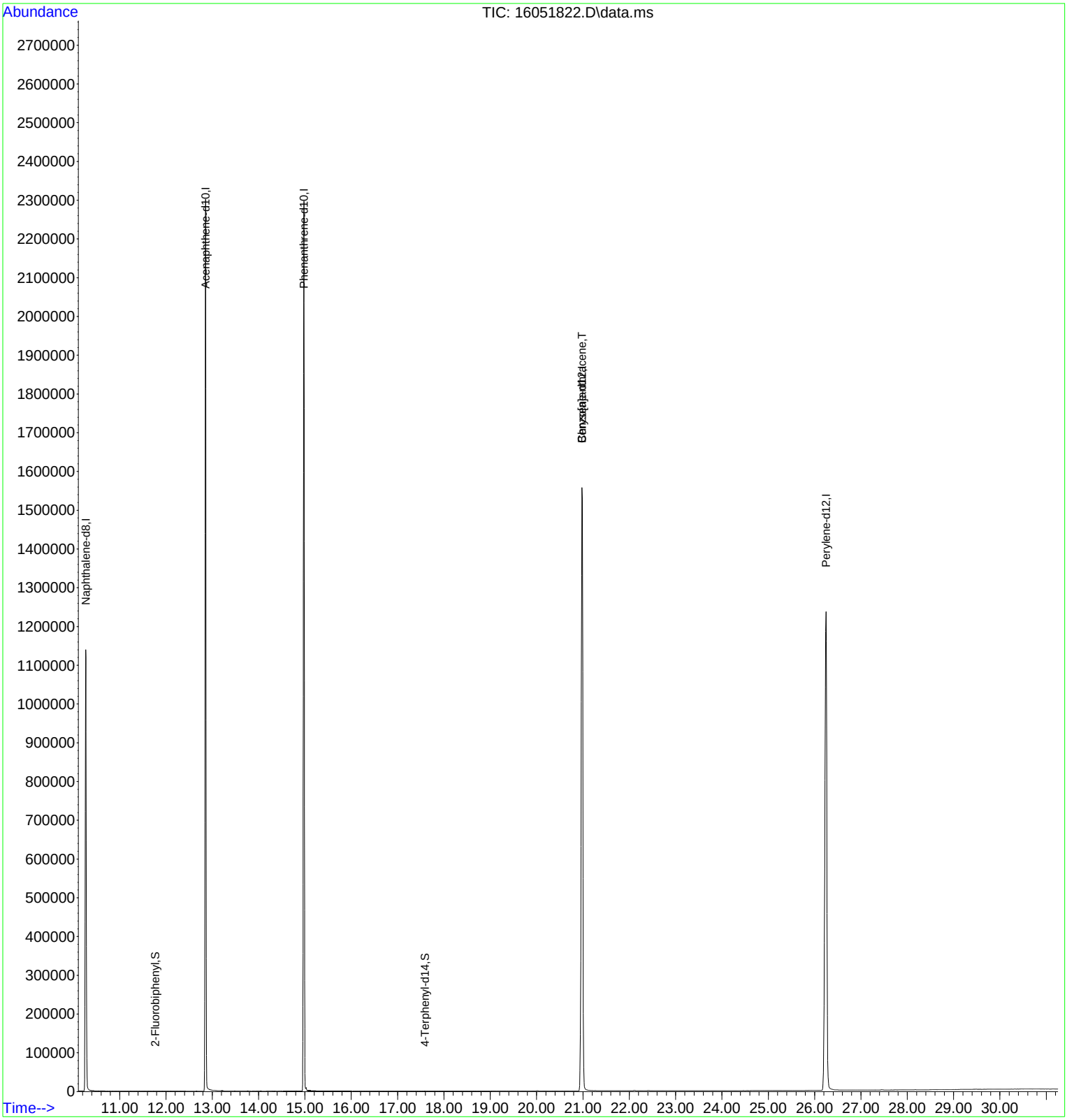
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 18) Benzo[a]anthracene | 20.980 | 228 | 6062 | 6.97 | ug/kg | 77 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051822.D
Acq On : 18 May 2016 10:03 pm
Operator :
Sample : SBLK-160518
Misc : SBLK
ALS Vial : 22 Sample Multiplier: 1

Quant Time: May 19 09:16:28 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051824.D
Acq On : 18 May 2016 11:17 pm
Operator :
Sample : 1605121-46B
Misc : SAMP
ALS Vial : 24 Sample Multiplier: 1

Quant Time: May 19 09:18:43 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.267 | 136 | 1401023 | 4000.00 | ug/kg | 86 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1095303 | 4000.00 | ug/kg | 87 |
| 11) Phenanthrene-d10 | 14.976 | 188 | 2466681 | 4000.00 | ug/kg | 84 |
| 16) Chrysene-d12 | 20.981 | 240 | 2353249 | 4000.00 | ug/kg | 87 |
| 20) Perylene-d12 | 26.248 | 264 | 2137839 | 4000.00 | ug/kg | 86 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.756 | 172 | 757066 | 2426.96 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 60.67% | | |
| 17) 4-Terphenyl-d14 | 17.590 | 244 | 1389895 | 2790.45 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 69.76% | | |

| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.304 | 128 | 4504 | 14.35 | ug/kg | 97 |
| 12) Phenanthrene | 15.012 | 178 | 7145 | 10.53 | ug/kg | 97 |
| 14) Fluoranthene | 17.068 | 202 | 46271 | 65.69 | ug/kg | 99 |
| 15) Pyrene | 17.701 | 202 | 42417 | 61.50 | ug/kg | 96 |
| 18) Benzo[a]anthracene | 20.805 | 228 | 42707 | 68.22 | ug/kg | 99 |
| 19) Chrysene | 21.069 | 228 | 55842 | 96.62 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.460 | 252 | 60088 | 103.97 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.541 | 252 | 27717 | 53.03 | ug/kg | 97 |
| 23) Benzo(j)fluoranthene | 24.651 | 252 | 26381 | 50.37 | ug/kg | 87 |
| 24) Benzo(e)pyrene | 25.727 | 252 | 43047 | 77.49 | ug/kg | 92 |
| 25) Benzo[a]pyrene | 25.903 | 252 | 52842 | 98.00 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.507 | 276 | 44613 | 65.51 | ug/kg | 91 |
| 27) Dibenz[a,h]anthracene | 29.493 | 278 | 10838 | 15.44 | ug/kg | 96 |
| 28) Benzo[g,h,i]perylene | 30.643 | 276 | 42270 | 72.17 | ug/kg | 99 |

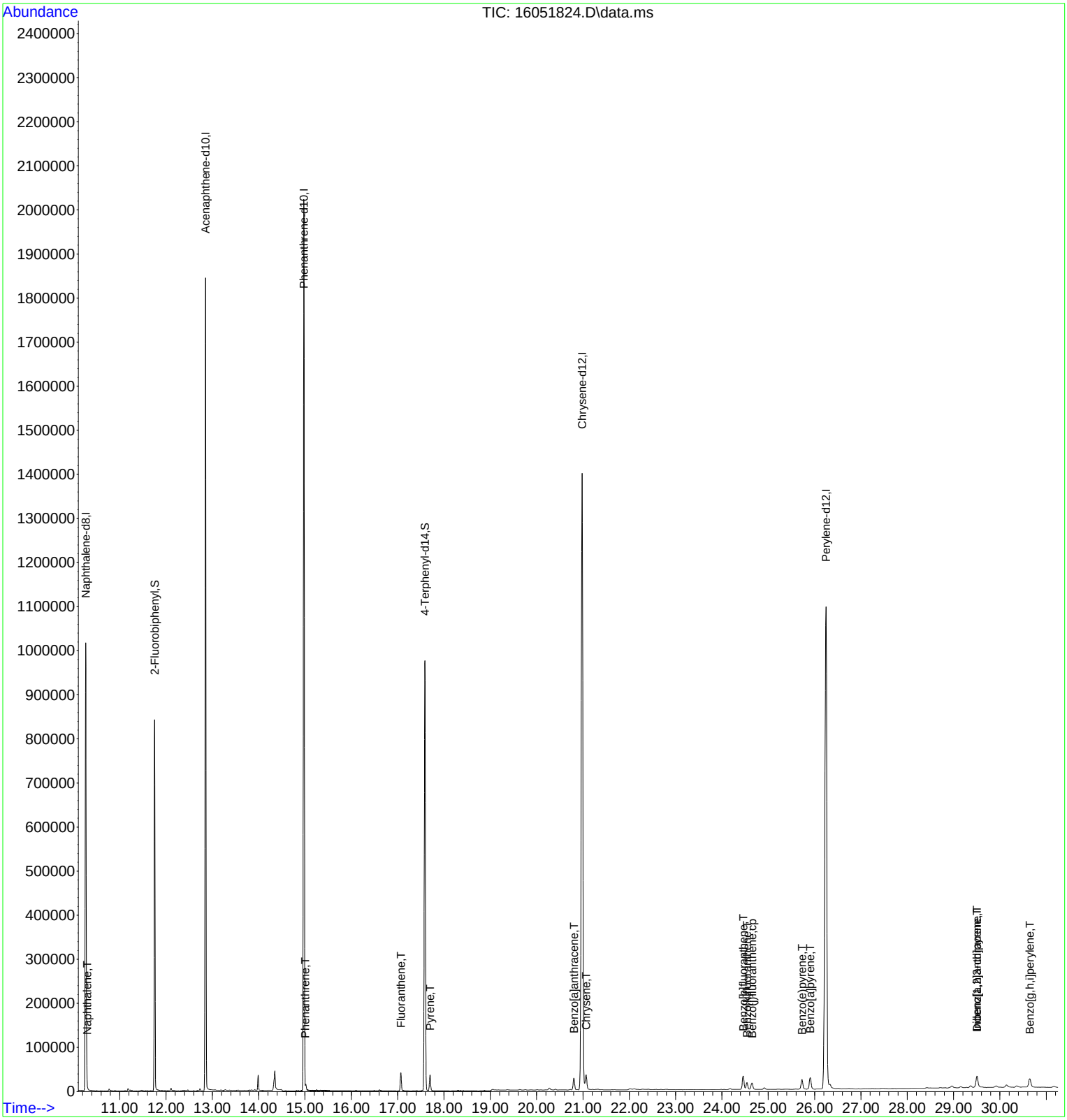
CONFIRMED
By Sherri Herschmann at 4:20:21 PM, 5/23/2016

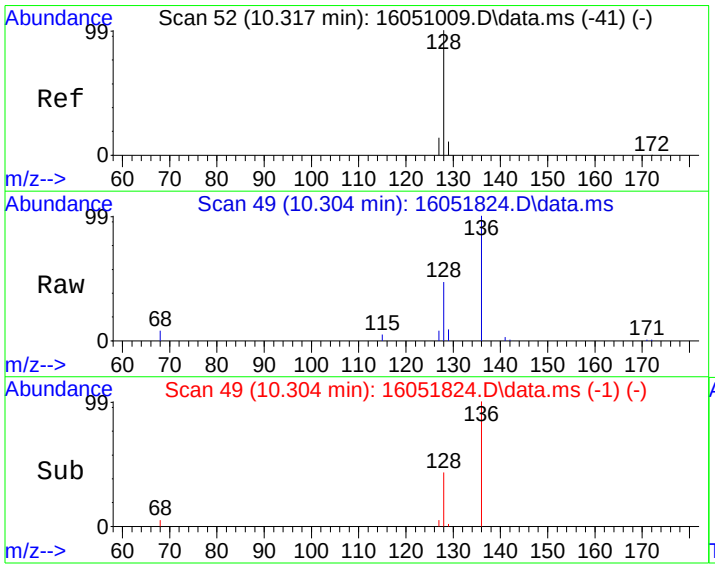
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051824.D
Acq On : 18 May 2016 11:17 pm
Operator :
Sample : 1605121-46B
Misc : SAMP
ALS Vial : 24 Sample Multiplier: 1

Quant Time: May 19 09:18:43 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

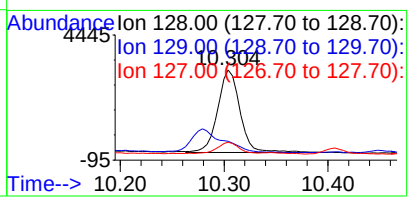


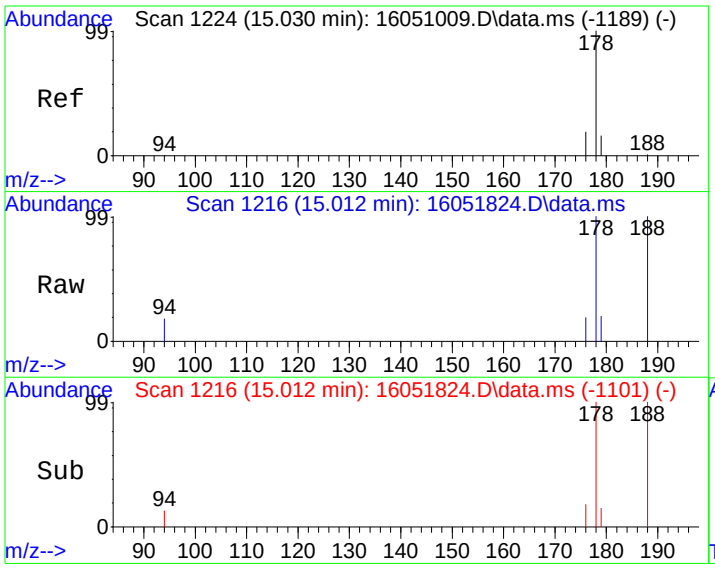



#2
Naphthalene
Concen: 14.35 ug/kg
RT: 10.304 min Scan# 49
Delta R.T. -0.006 min
Lab File: 16051824.D
Acq: 18 May 2016 11:17 pm

Tgt Ion:128 Resp: 4504

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 13.3 | 0.0 | 31.3 |
| 127 | 13.4 | 0.0 | 33.6 |

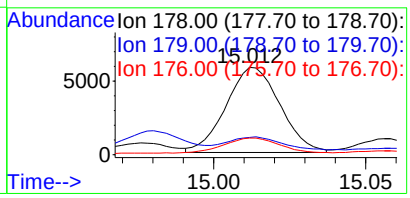


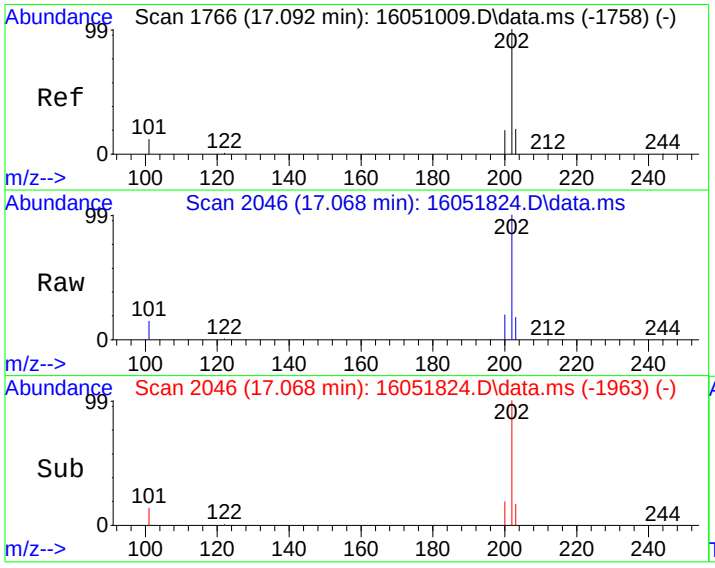




#12
Phenanthrene
Concen: 10.53 ug/kg
RT: 15.012 min Scan# 1216
Delta R.T. -0.007 min
Lab File: 16051824.D
Acq: 18 May 2016 11:17 pm

Tgt Ion:178 Resp: 7145

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.1 | 0.0 | 36.4 |
| 176 | 17.4 | 0.0 | 39.0 |

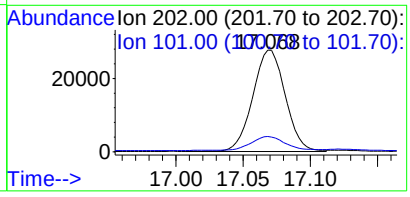


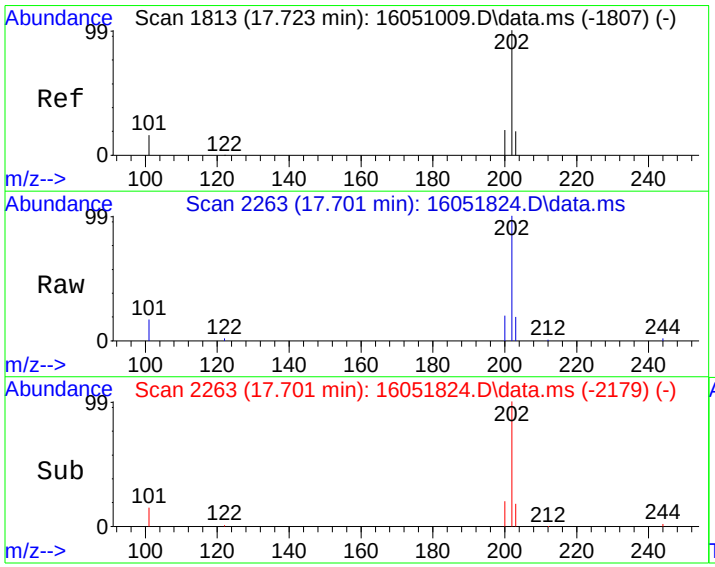




#14
Fluoranthene
Concen: 65.69 ug/kg
RT: 17.068 min Scan# 2046
Delta R.T. -0.008 min
Lab File: 16051824.D
Acq: 18 May 2016 11:17 pm

Tgt Ion:202 Resp: 46271

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 14.0 | 0.0 | 34.4 |

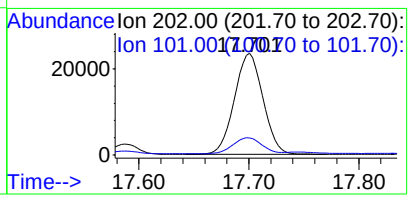


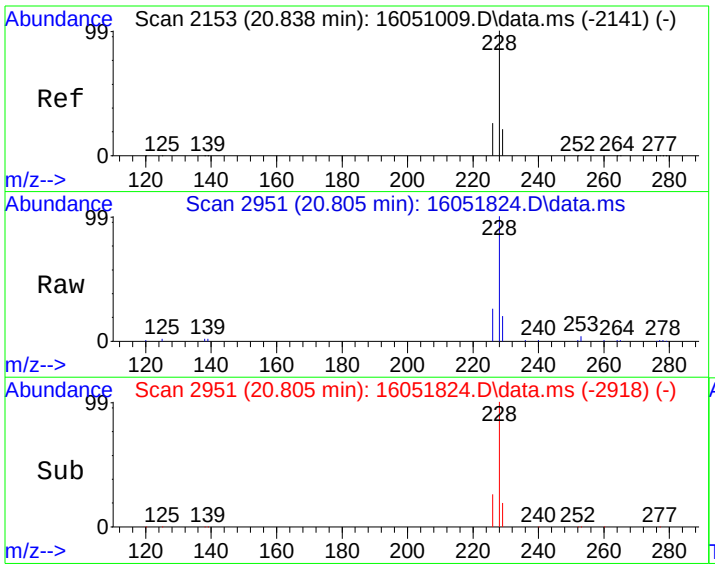



#15
Pyrene
Concen: 61.50 ug/kg
RT: 17.701 min Scan# 2263
Delta R.T. -0.005 min
Lab File: 16051824.D
Acq: 18 May 2016 11:17 pm

Tgt Ion:202 Resp: 42417

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 15.6 | 0.0 | 37.3 |

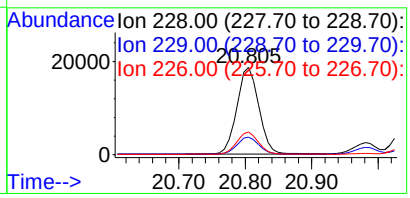


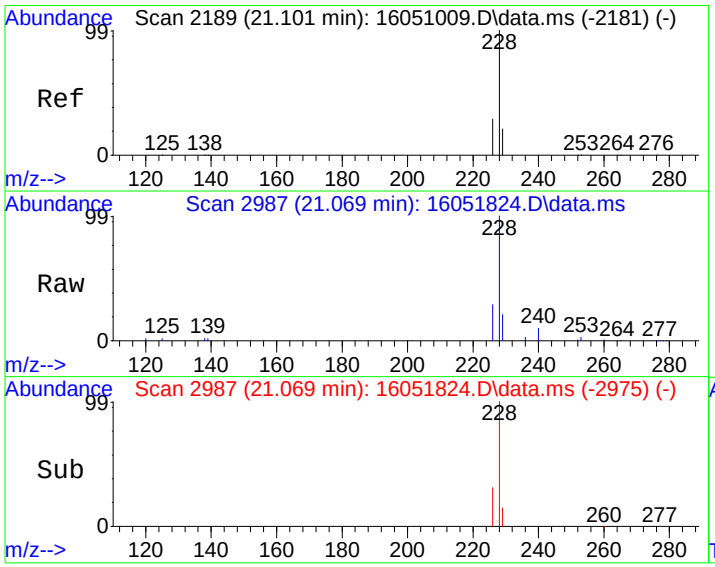




#18
Benzo[a]anthracene
Concen: 68.22 ug/kg
RT: 20.805 min Scan# 2951
Delta R.T. -0.007 min
Lab File: 16051824.D
Acq: 18 May 2016 11:17 pm

Tgt Ion:228 Resp: 42707

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.7 | 0.3 | 40.3 |
| 226 | 25.6 | 5.7 | 45.7 |

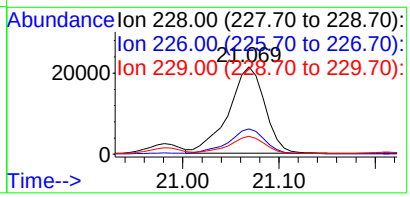


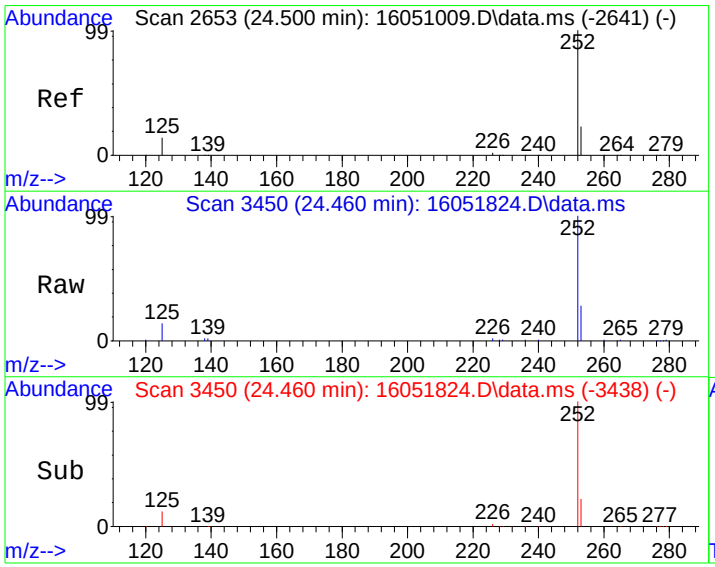




#19
Chrysene
Concen: 96.62 ug/kg
RT: 21.069 min Scan# 2987
Delta R.T. -0.014 min
Lab File: 16051824.D
Acq: 18 May 2016 11:17 pm

Tgt Ion:228 Resp: 55842

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.7 | 8.2 | 48.2 |
| 229 | 20.1 | 0.3 | 40.3 |

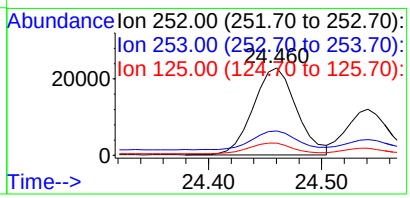


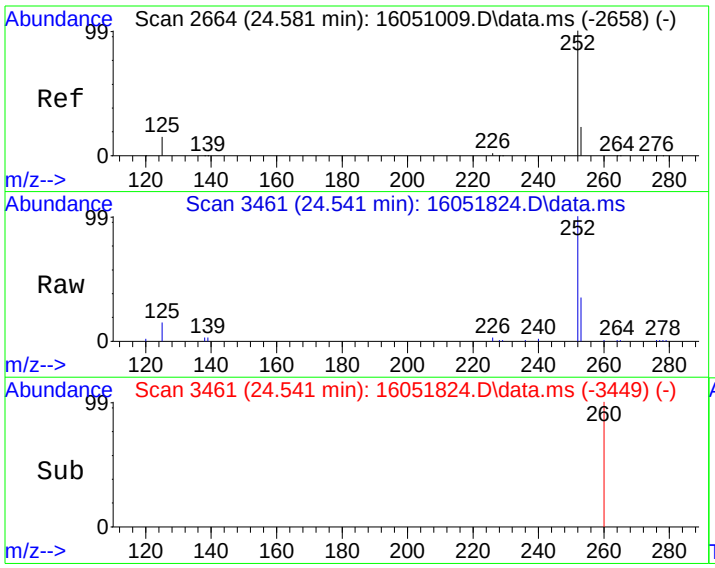



#21
Benzo[b]fluoranthene
Concen: 103.97 ug/kg
RT: 24.460 min Scan# 3450
Delta R.T. -0.015 min
Lab File: 16051824.D
Acq: 18 May 2016 11:17 pm

Tgt Ion:252 Resp: 60088

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.7 | 2.3 | 42.3 |
| 125 | 12.0 | 0.0 | 32.2 |

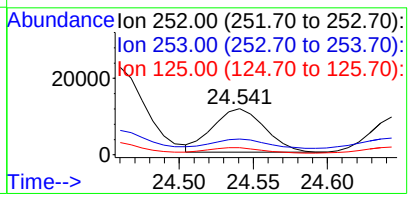


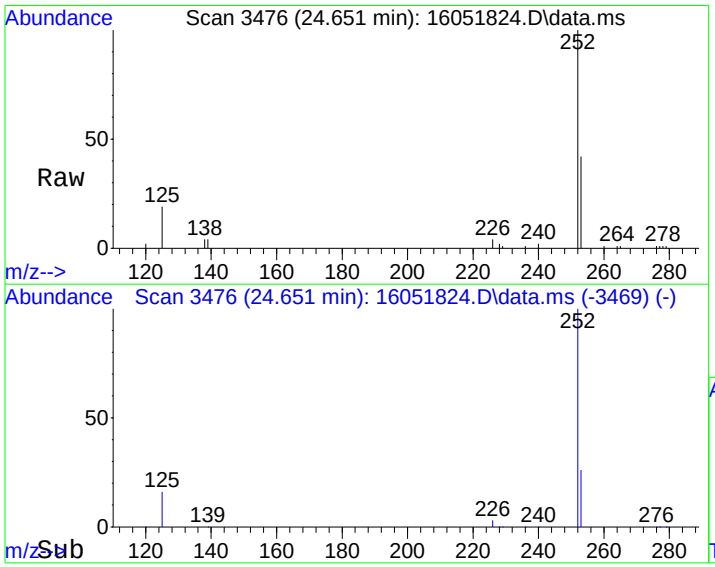




#22
Benzo[k]fluoranthene
Concen: 53.03 ug/kg
RT: 24.541 min Scan# 3461
Delta R.T. -0.014 min
Lab File: 16051824.D
Acq: 18 May 2016 11:17 pm

Tgt Ion:252 Resp: 27717

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 20.6 | 2.5 | 42.5 |
| 125 | 11.7 | 0.0 | 32.6 |

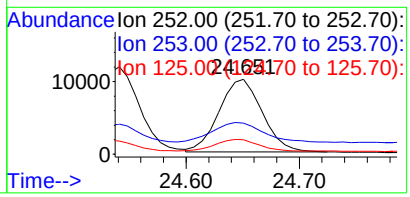


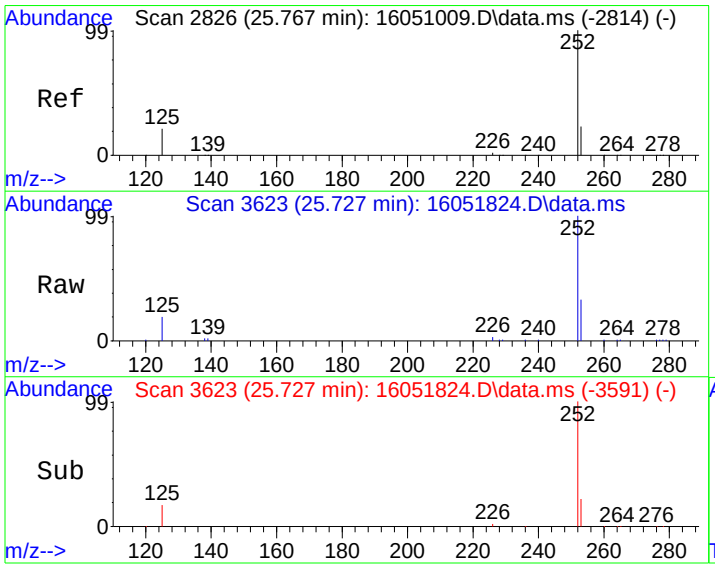




#23
Benzo(j)fluoranthene
Concen: 50.37 ug/kg
RT: 24.651 min Scan# 3476
Delta R.T. -0.014 min
Lab File: 16051824.D
Acq: 18 May 2016 11:17 pm

Tgt Ion:252 Resp: 26381

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 31.8 | 2.2 | 42.2 |
| 125 | 16.0 | 0.0 | 37.3 |

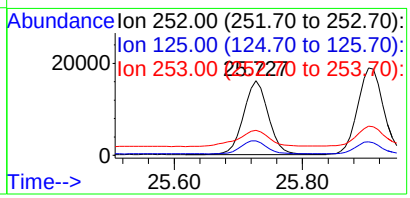


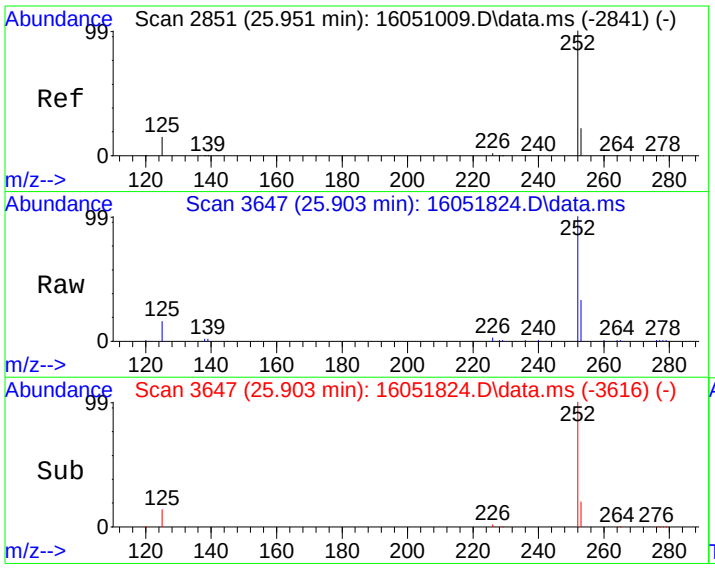



#24
Benzo(e)pyrene
Concen: 77.49 ug/kg
RT: 25.727 min Scan# 3623
Delta R.T. -0.015 min
Lab File: 16051824.D
Acq: 18 May 2016 11:17 pm

Tgt Ion:252 Resp: 43047

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 125 | 18.2 | 0.0 | 38.7 |
| 253 | 29.0 | 2.3 | 42.3 |

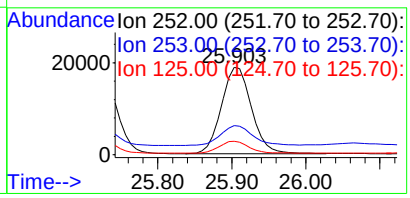


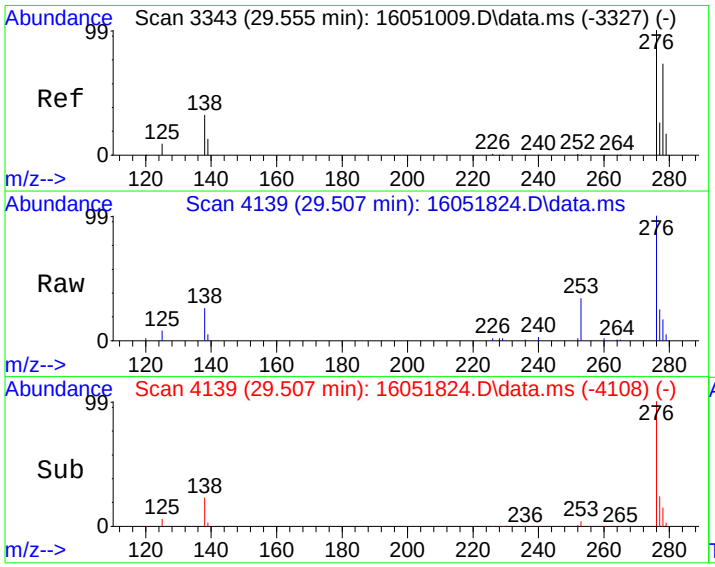




#25
Benzo[a]pyrene
Concen: 98.00 ug/kg
RT: 25.903 min Scan# 3647
Delta R.T. -0.022 min
Lab File: 16051824.D
Acq: 18 May 2016 11:17 pm

Tgt Ion:252 Resp: 52842

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.9 | 2.3 | 42.3 |
| 125 | 14.0 | 0.0 | 33.5 |

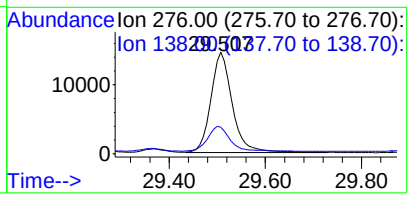


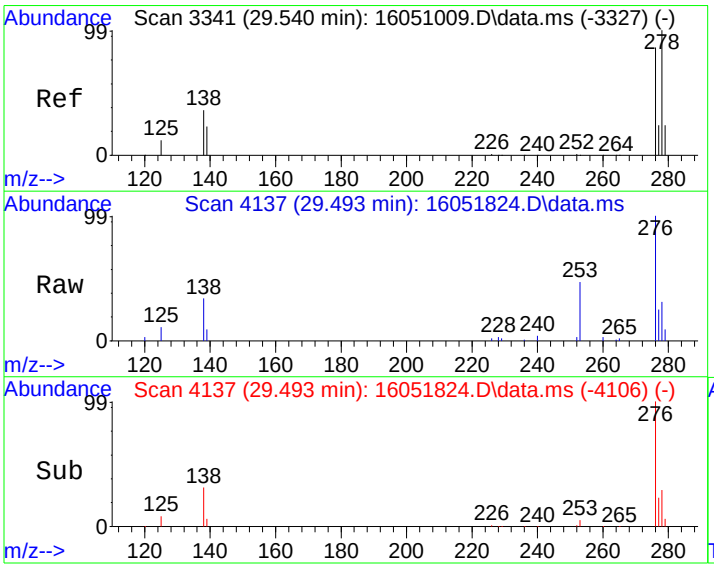




#26
Indeno[1,2,3-cd]pyrene
Concen: 65.51 ug/kg
RT: 29.507 min Scan# 4139
Delta R.T. -0.022 min
Lab File: 16051824.D
Acq: 18 May 2016 11:17 pm

Tgt Ion:276 Resp: 44613

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 23.7 | 8.3 | 48.3 |

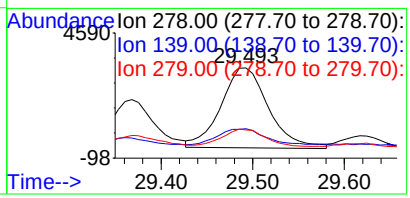


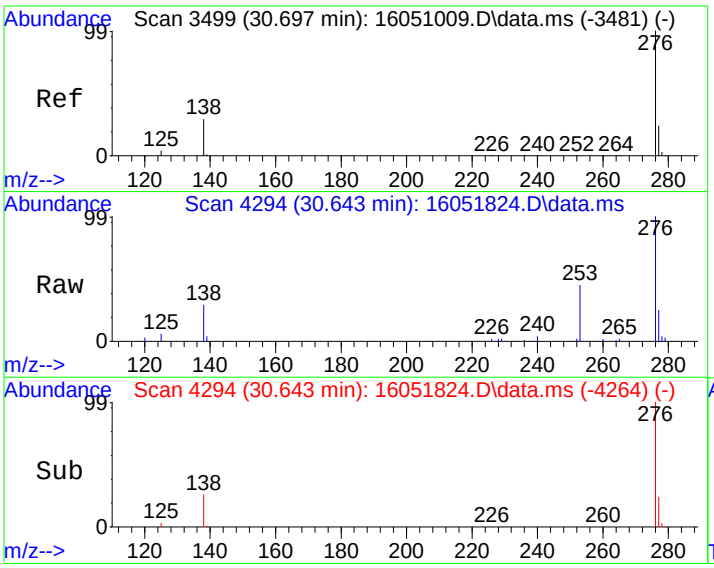



#27
Dibenz[a,h]anthracene
Concen: 15.44 ug/kg
RT: 29.493 min Scan# 4137
Delta R.T. -0.021 min
Lab File: 16051824.D
Acq: 18 May 2016 11:17 pm

Tgt Ion:278 Resp: 10838

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 20.5 | 0.0 | 40.0 |
| 279 | 20.9 | 4.2 | 44.2 |

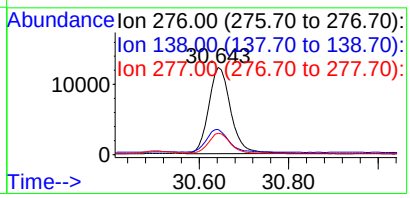



#28
Benzo[g,h,i]perylene
Concen: 72.17 ug/kg
RT: 30.643 min Scan# 4294
Delta R.T. -0.029 min
Lab File: 16051824.D
Acq: 18 May 2016 11:17 pm

Tgt Ion:276 Resp: 42270

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 26.4 | 5.8 | 45.8 |
| 277 | 23.7 | 4.4 | 44.4 |



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051825.D
Acq On : 18 May 2016 11:54 pm
Operator :
Sample : 1605121-47B
Misc : SAMP
ALS Vial : 25 Sample Multiplier: 1

Quant Time: May 19 09:18:51 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.270 | 136 | 1507608 | 4000.00 | ug/kg | 92 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1160828 | 4000.00 | ug/kg | 93 |
| 11) Phenanthrene-d10 | 14.977 | 188 | 2610923 | 4000.00 | ug/kg | 89 |
| 16) Chrysene-d12 | 20.981 | 240 | 2481354 | 4000.00 | ug/kg | 92 |
| 20) Perylene-d12 | 26.247 | 264 | 2301610 | 4000.00 | ug/kg | 93 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.755 | 172 | 864220 | 2574.60 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 64.36% | | |
| 17) 4-Terphenyl-d14 | 17.590 | 244 | 1455142 | 2770.62 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 69.27% | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.303 | 128 | 5005 | 14.82 | ug/kg | 95 |
| 12) Phenanthrene | 15.013 | 178 | 14139 | 19.68 | ug/kg | 97 |
| 14) Fluoranthene | 17.068 | 202 | 83475 | 113.55 | ug/kg | 99 |
| 15) Pyrene | 17.700 | 202 | 82364 | 114.85 | ug/kg | 96 |
| 18) Benzo[a]anthracene | 20.805 | 228 | 91337 | 140.45 | ug/kg | 99 |
| 19) Chrysene | 21.069 | 228 | 119407 | 199.20 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.460 | 252 | 147152 | 239.30 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.541 | 252 | 66113 | 118.95 | ug/kg | 97 |
| 23) Benzo(j)fluoranthene | 24.643 | 252 | 61637 | 113.17 | ug/kg | 91 |
| 24) Benzo(e)pyrene | 25.727 | 252 | 102672 | 175.05 | ug/kg | 97 |
| 25) Benzo[a]pyrene | 25.903 | 252 | 131593 | 229.93 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.507 | 276 | 109924 | 153.90 | ug/kg | 92 |
| 27) Dibenz[a,h]anthracene | 29.492 | 278 | 26510 | 40.83 | ug/kg | 96 |
| 28) Benzo[g,h,i]perylene | 30.642 | 276 | 102294 | 166.30 | ug/kg | 99 |

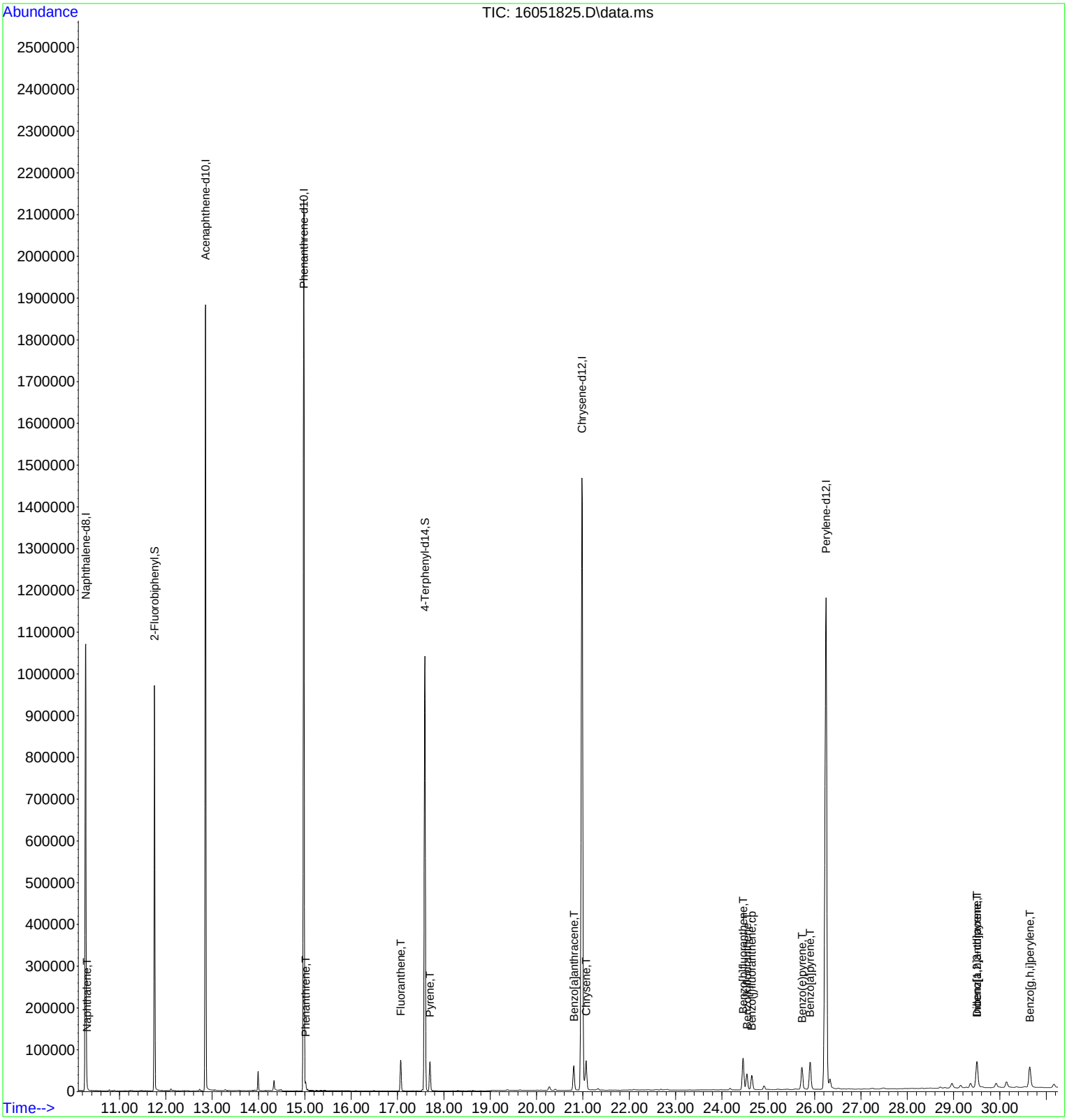
CONFIRMED
By Sherri Herschmann at 4:20:55 PM, 5/23/2016

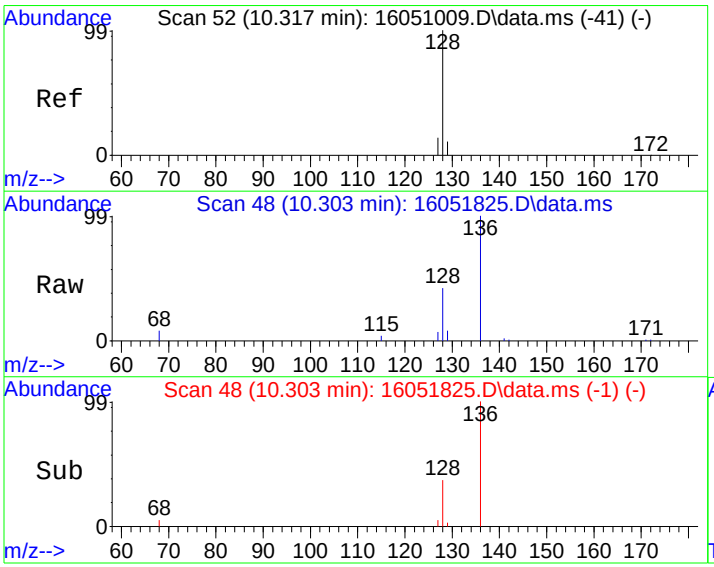
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051825.D
Acq On : 18 May 2016 11:54 pm
Operator :
Sample : 1605121-47B
Misc : SAMP
ALS Vial : 25 Sample Multiplier: 1

Quant Time: May 19 09:18:51 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

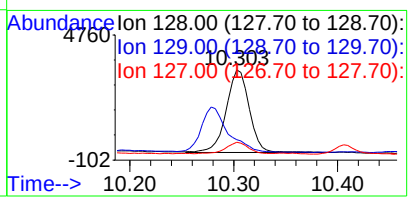


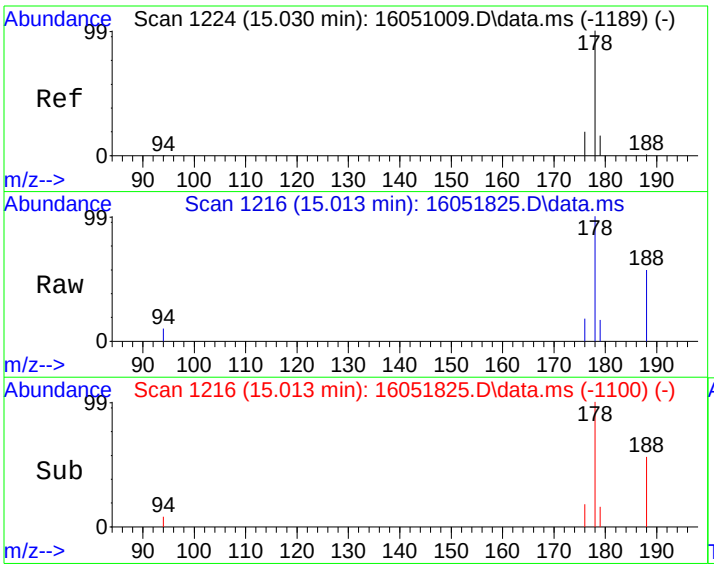



#2
Naphthalene
Concen: 14.82 ug/kg
RT: 10.303 min Scan# 48
Delta R.T. -0.007 min
Lab File: 16051825.D
Acq: 18 May 2016 11:54 pm

Tgt Ion:128 Resp: 5005

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 15.1 | 0.0 | 31.3 |
| 127 | 13.7 | 0.0 | 33.6 |

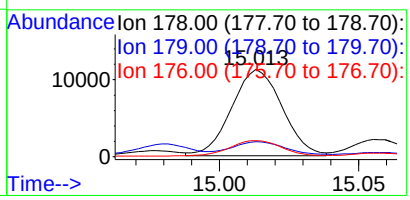


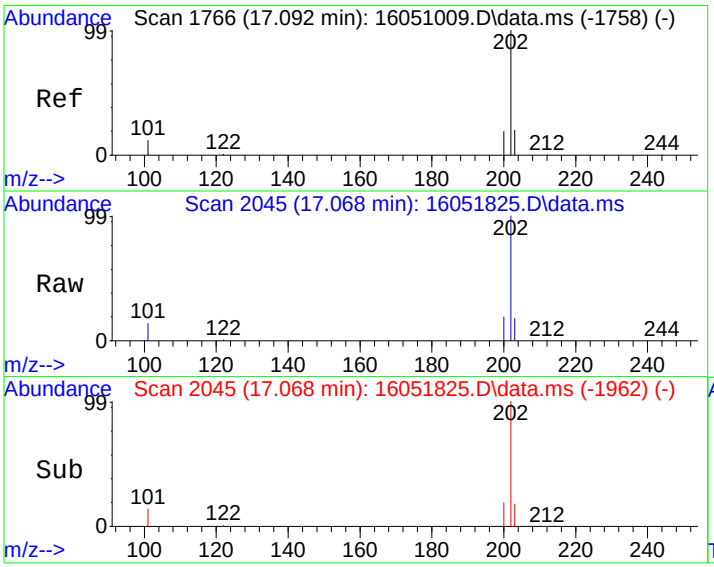




#12
Phenanthrene
Concen: 19.68 ug/kg
RT: 15.013 min Scan# 1216
Delta R.T. -0.006 min
Lab File: 16051825.D
Acq: 18 May 2016 11:54 pm

Tgt Ion:178 Resp: 14139

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 14.9 | 0.0 | 36.4 |
| 176 | 18.0 | 0.0 | 39.0 |

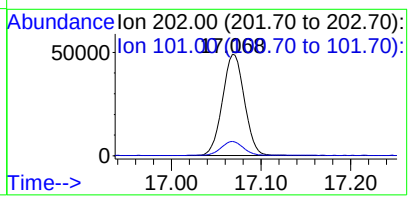


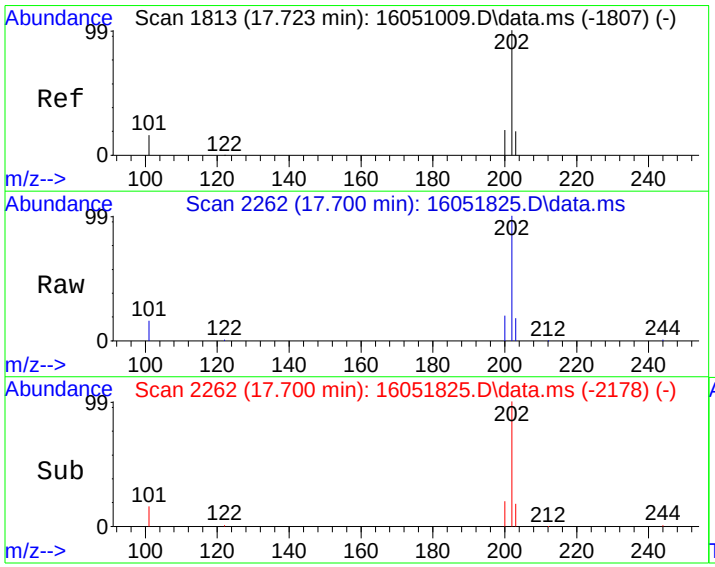




#14
Fluoranthene
Concen: 113.55 ug/kg
RT: 17.068 min Scan# 2045
Delta R.T. -0.008 min
Lab File: 16051825.D
Acq: 18 May 2016 11:54 pm

Tgt Ion:202 Resp: 83475

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 13.8 | 0.0 | 34.4 |

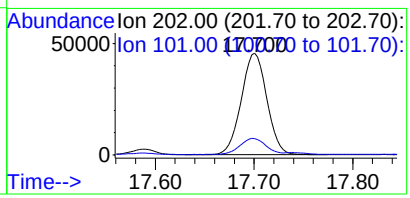


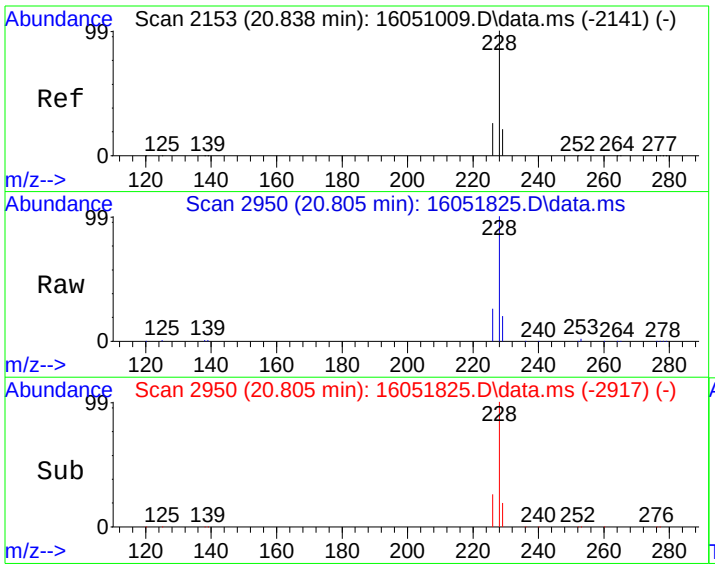



#15
Pyrene
Concen: 114.85 ug/kg
RT: 17.700 min Scan# 2262
Delta R.T. -0.006 min
Lab File: 16051825.D
Acq: 18 May 2016 11:54 pm

Tgt Ion:202 Resp: 82364

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 15.7 | 0.0 | 37.3 |

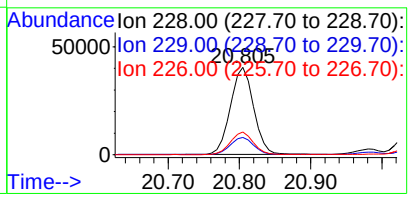


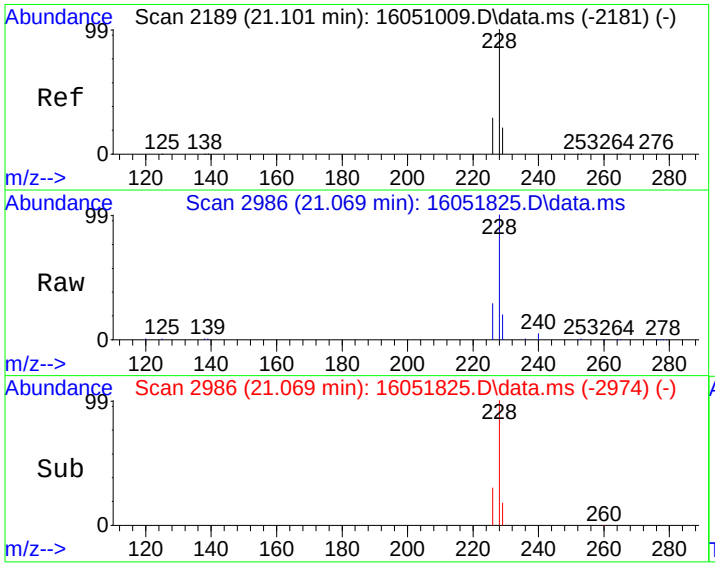




#18
Benzo[a]anthracene
Concen: 140.45 ug/kg
RT: 20.805 min Scan# 2950
Delta R.T. -0.007 min
Lab File: 16051825.D
Acq: 18 May 2016 11:54 pm

Tgt Ion:228 Resp: 91337

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.5 | 0.3 | 40.3 |
| 226 | 25.7 | 5.7 | 45.7 |

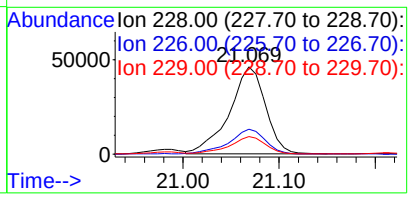


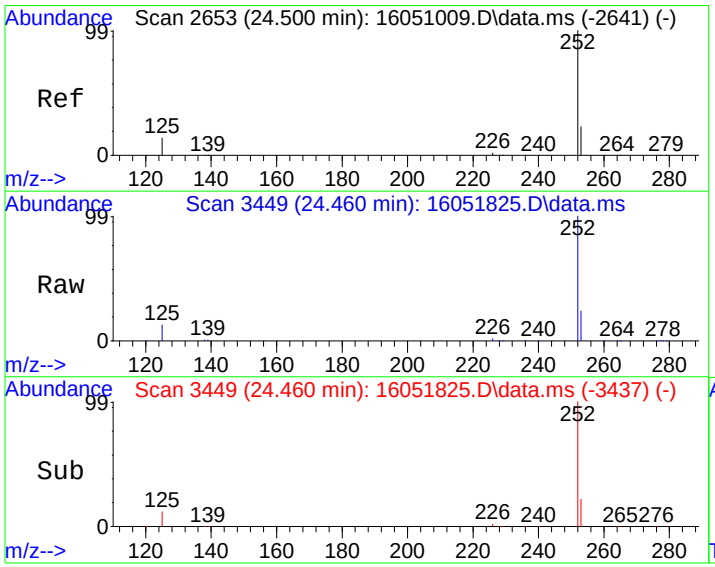




#19
Chrysene
Concen: 199.20 ug/kg
RT: 21.069 min Scan# 2986
Delta R.T. -0.014 min
Lab File: 16051825.D
Acq: 18 May 2016 11:54 pm

Tgt Ion:228 Resp: 119407

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.6 | 8.2 | 48.2 |
| 229 | 19.9 | 0.3 | 40.3 |

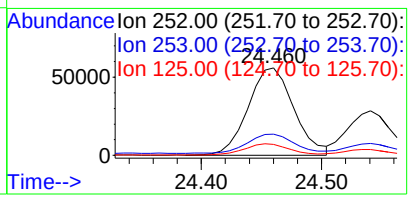


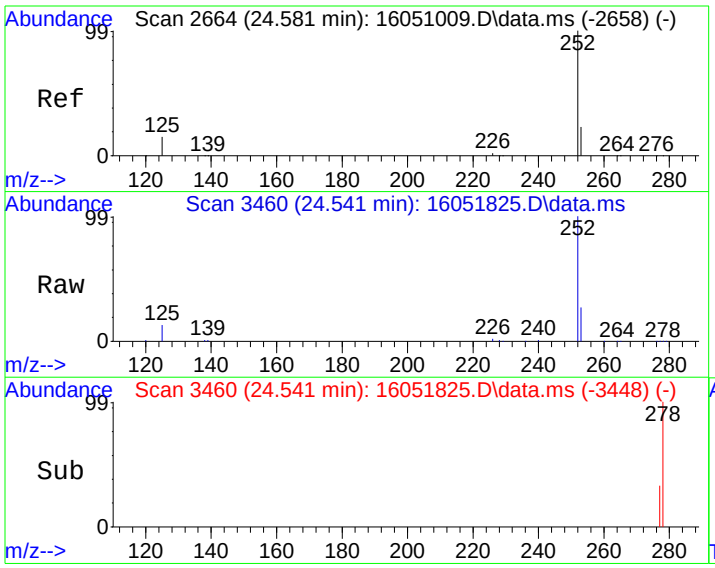



#21
Benzo[b]fluoranthene
Concen: 239.30 ug/kg
RT: 24.460 min Scan# 3449
Delta R.T. -0.015 min
Lab File: 16051825.D
Acq: 18 May 2016 11:54 pm

Tgt Ion:252 Resp: 147152

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.9 | 2.3 | 42.3 |
| 125 | 12.2 | 0.0 | 32.2 |

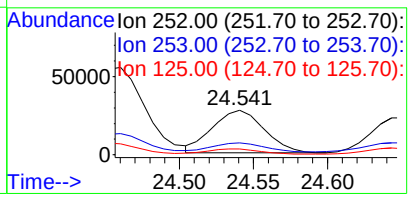


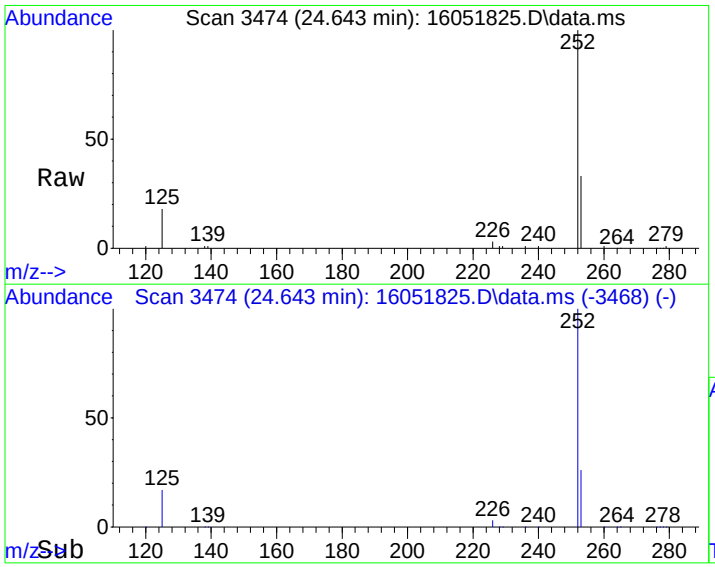




#22
Benzo[k]fluoranthene
Concen: 118.95 ug/kg
RT: 24.541 min Scan# 3460
Delta R.T. -0.014 min
Lab File: 16051825.D
Acq: 18 May 2016 11:54 pm

Tgt Ion:252 Resp: 66113

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 20.6 | 2.5 | 42.5 |
| 125 | 12.0 | 0.0 | 32.6 |

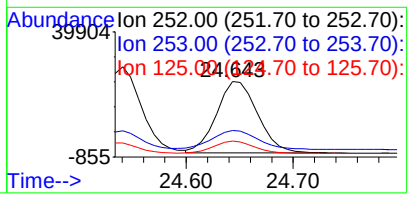


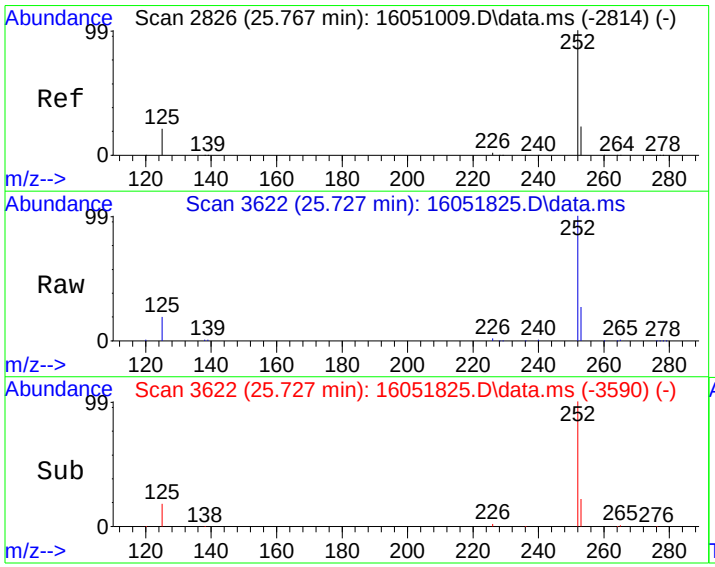




#23
Benzo(j)fluoranthene
Concen: 113.17 ug/kg
RT: 24.643 min Scan# 3474
Delta R.T. -0.022 min
Lab File: 16051825.D
Acq: 18 May 2016 11:54 pm

Tgt Ion:252 Resp: 61637

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 29.9 | 2.2 | 42.2 |
| 125 | 17.1 | 0.0 | 37.3 |

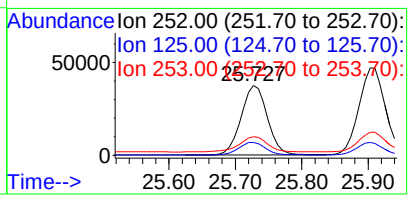


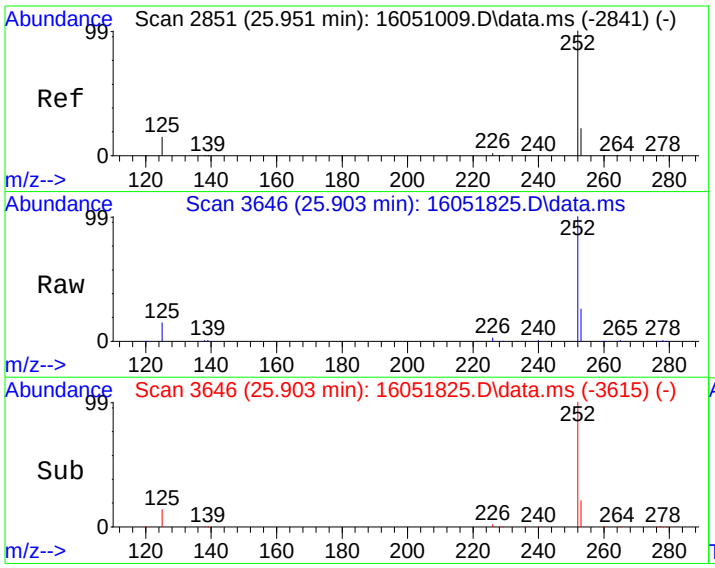



#24
Benzo(e)pyrene
Concen: 175.05 ug/kg
RT: 25.727 min Scan# 3622
Delta R.T. -0.015 min
Lab File: 16051825.D
Acq: 18 May 2016 11:54 pm

Tgt Ion:252 Resp: 102672

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 125 | 18.2 | 0.0 | 38.7 |
| 253 | 24.2 | 2.3 | 42.3 |

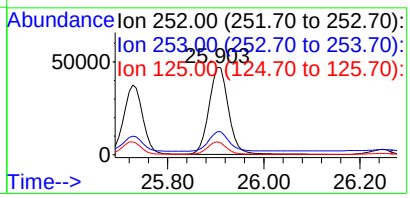


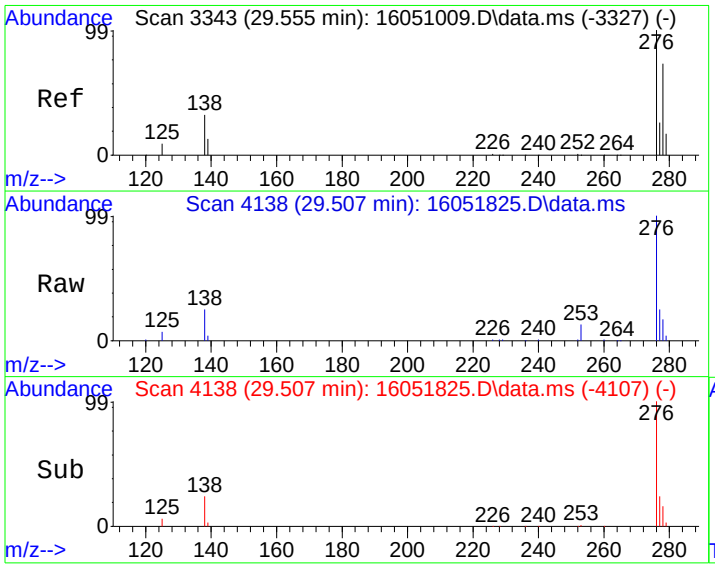




#25
Benzo[a]pyrene
Concen: 229.93 ug/kg
RT: 25.903 min Scan# 3646
Delta R.T. -0.022 min
Lab File: 16051825.D
Acq: 18 May 2016 11:54 pm

Tgt Ion:252 Resp: 131593

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.2 | 2.3 | 42.3 |
| 125 | 14.1 | 0.0 | 33.5 |

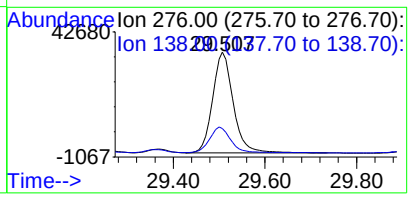


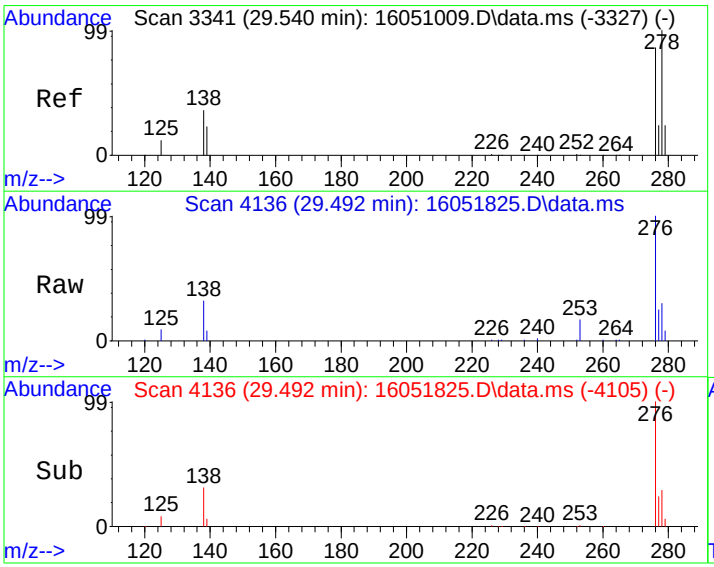




#26
Indeno[1,2,3-cd]pyrene
Concen: 153.90 ug/kg
RT: 29.507 min Scan# 4138
Delta R.T. -0.022 min
Lab File: 16051825.D
Acq: 18 May 2016 11:54 pm

Tgt Ion:276 Resp: 109924

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 24.2 | 8.3 | 48.3 |

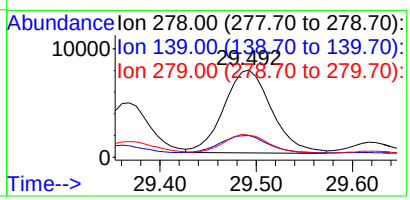


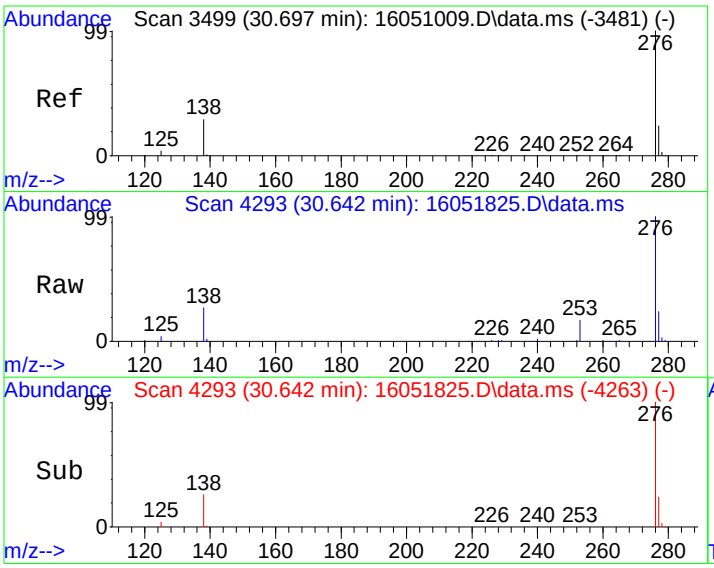



#27
Dibenz[a,h]anthracene
Concen: 40.83 ug/kg
RT: 29.492 min Scan# 4136
Delta R.T. -0.022 min
Lab File: 16051825.D
Acq: 18 May 2016 11:54 pm

Tgt Ion:278 Resp: 26510

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 21.4 | 0.0 | 40.0 |
| 279 | 22.2 | 4.2 | 44.2 |

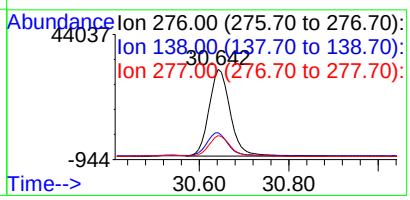



#28
Benzo[g,h,i]perylene
Concen: 166.30 ug/kg
RT: 30.642 min Scan# 4293
Delta R.T. -0.030 min
Lab File: 16051825.D
Acq: 18 May 2016 11:54 pm

Tgt Ion:276 Resp: 102294

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 26.4 | 5.8 | 45.8 |
| 277 | 23.9 | 4.4 | 44.4 |



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051830.D
Acq On : 19 May 2016 2:59 am
Operator :
Sample : CCV-160520
Misc : CCV
ALS Vial : 30 Sample Multiplier: 1

Quant Time: May 19 09:16:31 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.270 | 136 | 1631750 | 4000.00 | ug/kg | 100 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1319311 | 4000.00 | ug/kg | 105 |
| 11) Phenanthrene-d10 | 14.979 | 188 | 2784459 | 4000.00 | ug/kg | 95 |
| 16) Chrysene-d12 | 20.987 | 240 | 2573498 | 4000.00 | ug/kg | 95 |
| 20) Perylene-d12 | 26.254 | 264 | 2394128 | 4000.00 | ug/kg | 96 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.759 | 172 | 363303 | 999.98 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 25.00%# | | | |
| 17) 4-Terphenyl-d14 | 17.589 | 244 | 544298 | 999.25 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 24.98%# | | | |

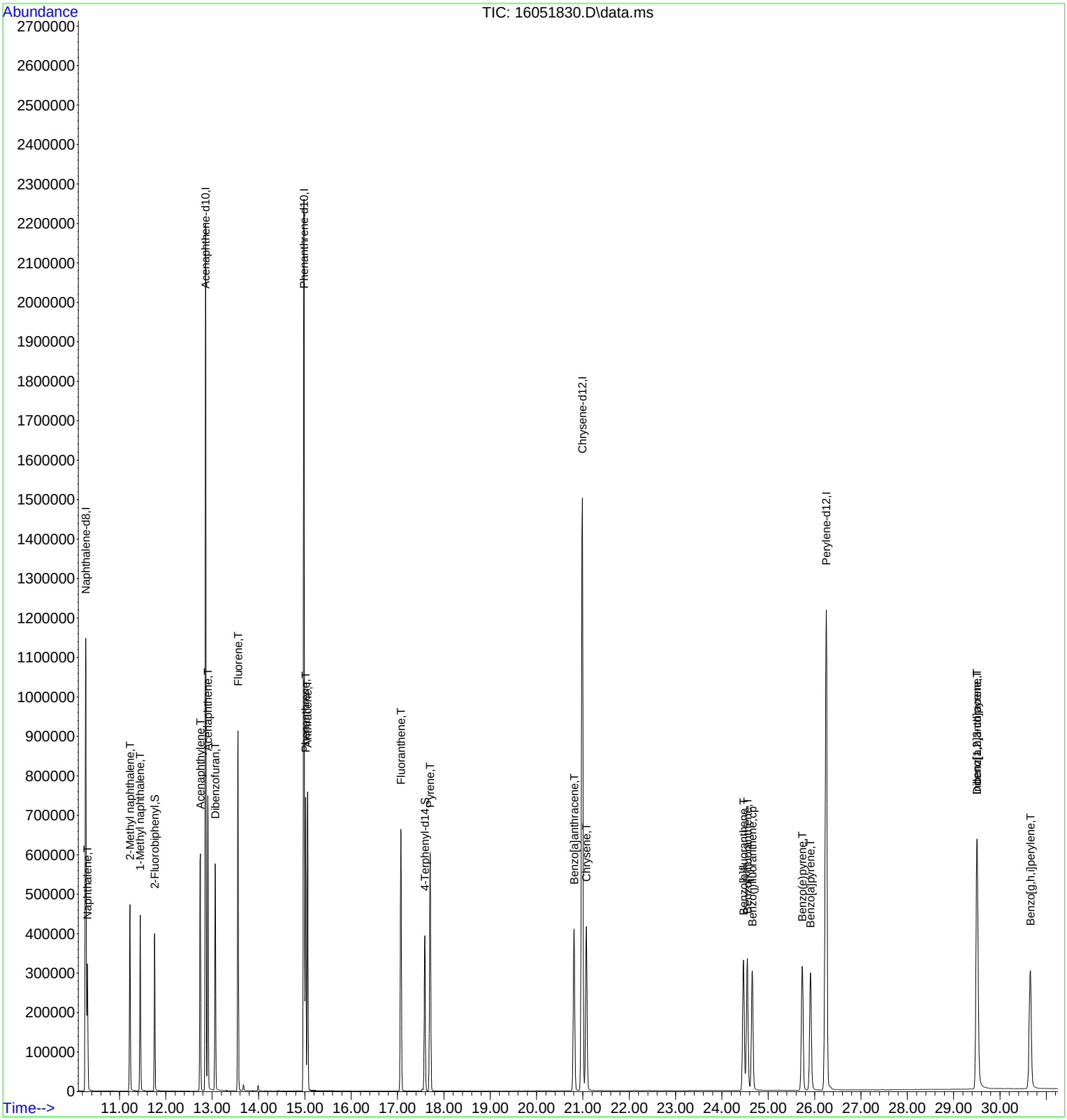
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.307 | 128 | 357903 | 979.07 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.224 | 142 | 290768 | 1023.19 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.446 | 142 | 267657 | 995.33 | ug/kg | 100 |
| 7) Acenaphthylene | 12.744 | 152 | 575333 | 997.67 | ug/kg | 99 |
| 8) Acenaphthene | 12.906 | 153 | 360034 | 989.41 | ug/kg | 98 |
| 9) Dibenzofuran | 13.063 | 168 | 545327 | 983.77 | ug/kg | 91 |
| 10) Fluorene | 13.559 | 166 | 492027 | 978.26 | ug/kg | 100 |
| 12) Phenanthrene | 15.015 | 178 | 720203 | 940.02 | ug/kg | 99 |
| 13) Anthracene | 15.059 | 178 | 727233 | 938.06 | ug/kg | 99 |
| 14) Fluoranthene | 17.071 | 202 | 741258 | 983.41 | ug/kg | 100 |
| 15) Pyrene | 17.703 | 202 | 725670 | 984.46 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.811 | 228 | 655624 | 1002.53 | ug/kg | 99 |
| 19) Chrysene | 21.075 | 228 | 607054 | 1004.84 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.466 | 252 | 630356 | 1005.29 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.547 | 252 | 586004 | 1036.28 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.657 | 252 | 547475 | 1008.23 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.734 | 252 | 600311 | 1012.62 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.909 | 252 | 592256 | 1013.62 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.513 | 276 | 732052 | 1018.20 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.499 | 278 | 612851 | 1023.88 | ug/kg | 100 |
| 28) Benzo[g,h,i]perylene | 30.656 | 276 | 630506 | 1016.87 | ug/kg | 100 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160518\
Data File : 16051830.D
Acq On : 19 May 2016 2:59 am
Operator :
Sample : CCV-160520
Misc : CCV
ALS Vial : 30 Sample Multiplier: 1

Quant Time: May 19 09:16:31 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



# GCMS8_160519B
# For

# DHL Work Order
# 1605121

# Lab Data Review Check List
## EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

| | |
|---|---|
| **Project Number(s): SEE RUN LOG.** | **Run ID: GCMS8_160519B** |
| **Batch Number(s): SEE RUN LOG.** | **SOP:** ORGANICS-PAH-01 |
| **Matrix: SEE RUN LOG.** | |

| Review Item | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|
| **Data Folder Contents**<br>1. Is the Prep Batch Report included? Check and record the following:<br>***Prep Start/End Dates, Sample Amounts, Bottle #s*** | X | | | x |
| 2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date?<br>***All standard/QC sample preparations shall be documented in LIMS*** | X | | | |
| 3. Is the Run Log and instrument sequence included?<br>***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time*** | X | | | |
| 4. Is the System Verification - Tune Report included?<br>***Date/Tme of Tune starts 12-hour analysis window*** | X | | | |
| 5. Is the Evaluate Continuing Calibration Report included? | X | | | |

## Daily Demonstration of Performance

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.**

| Review Item | Frequency | Limits | Pass | Fail (List Batch/Sample) **See Run Log** | 2nd Level Review |
|---|---|---|---|---|---|
| Tune | Before ICAL<br>Every 12 hours | See Tune Eval Report | X | | x |
| Resolution Check - Benzo(b) and Benzo(k)phenanthrene | Before ICAL<br>Every 12 hours | Benzo(b) and Benzo(k)<br>Valley > 50% | X | | |
| Initial Calibration Curve (ICAL) (minimum: 5 Standards) | Prior to samples and when ICV fails | Avg. RF - %RSD ≤ 15%<br>Curve (COD) - $R^2$ ≥ 0.990 | X | | |
| SSCV - (Second Source) | After calibration (ICAL) | 80-120% | X | | |
| ICV - (Daily Initial Cal Verification) | Every 12 hours | ISTDs Area% (50-200%)<br>Surrogates %R (See LIMS)<br>Analytes %R (80-120%) | X | | |

| Review Item | Frequency | Limits | Pass | Fail | N/A | Review |
|---|---|---|---|---|---|---|
| Method Blank (MB)<br>System Blank (SYS Blank) | Every Batch (MB) Daily (SYS BL) | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | X | | | x |
| Lab Control Sample (LCS) | Every Batch | See LIMS | X | | | |
| Lab Control Sample Dup (LCSD) | Insufficient sample Sample Matrix | See LIMS | | | X | |
| LCSD - RPD | Every LCS/LCSD | ≤ 30 (Aq/Soil/DoD) | | | X | |
| Field Samples | Up to 20 per prep batch | ISTDs Area% (50-200%)<br>Surrogates %R (See LIMS)<br>RRT ± 0.06 RRT Standard<br>Q value > 70 - check for # | X | | | |
| Matrix Spike (MS) | Every Batch/20 samples | See LIMS | | X | | |
| Matrix Spike Duplicate (MSD) (MSD is N/A for Method 625) | Every Prep Batch except Method 625 | See LIMS | | X | | |
| MSD - RPD<br>(MSD is N/A for Method 625) | Every MS/MSD except Method 625 | ≤ 30 (Aq/Soil/DoD) | X | | | |

# Lab Data Review Check List
## EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

| Review Item | Criteria | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|---|
| **Sample Analysis**<br>1. Are all sample hold times met? | 7 days (Aq) - extraction | | | X | x |
| | 14 days (Soil) - extraction | X | | | |
| | 40 days analysis | X | | | |
| 2. Are all manual integrations signed (Before & After) and printouts included ? Put in LIMS Comment Section<br>***Include MI form for DoD work*** | Before & After - signed<br>Comment Section in LIMS<br>MI Form - DoD only | | | X | |
| 3. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed? | > highest standard | X | | | |
| **Review Item #3 is N/A ONLY if all sample results are within Calibration range or NO if dilution is in different folder** | | | | | |
| 4. Is mass spectra reviewed/verified if Q value is <70 and/or # flag for results >MDL? | Q value <70 - All hits | X | | | x |
| **5. Are ALL reported analytes > MDL (+ J flags) circled by the analyst?** | | X | **Return to analyst if NO** | | |
| **VARIANCE REPORT** | | | | | |
| **QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.** | | | | | |
| **NON-CONFORMANCES / VARIANCE**<br>1. Are all non-conformances included and noted? | All deviations from the method and SOP that affect data quality | X | | | x |
| 2. Are all corrective actions included? | | | | X | |
| 3. Does the variance require approval by the Technical Director/General Manager/QA Manager? | | | | X | |

Approved by: Date:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

| VARIANCE ITEM | REASON | CORRECTIVE ACTION |
|---|---|---|
| ___ Hold Time exceeded (7D/14D-Ext/40D-Analysis) | ___ Sample Received out of HT | ___ Reanalyze QC to confirm |
| ___ ICV out of control (±20%) | ___ Carryover from previous run | ___ Recalibrate |
| ___ MB/SYS BL out of control (> MDL / >½ RL) | ___ Cross contamination | ___ Reprep/Reanalyze sample |
| ___ LCS ___ LCSD out of control (See LIMS) | ___ Lab Artifact | ___ Reprep/Reanalyze Batch |
| ___ RPD out of control for LCS/LCSD (>30) | ___ Prep Spike error (describe) | ___ Reanalyze Batch/Sample/QC |
| ___ MS ___ MSD out of control (See LIMS) | ___ High Levels of target analytes | ___ Verify H2O/reagents are clean |
| ___ RPD out of control for MS/MSD (>30) | ___ High Levels of non-targets | ___ Reanalyze sample to confirm |
| ___ Internal Standard(s) out of control | ___ Insufficient sample for QC | ___ Sample results ND w/ dilution |
| ___ Multiple Surrogates out of control | ___ Prep Error | ___ Client notified and approved |
| ___ No MS/MSD prepared - LCS/LCSD used instead | ___ Analytical Error | ___ Flag data / Case narrative |
| ___ Missing QC (other than MS/MSD) | ___ Client Request | ___ Instrument Maintenance |
| ___ QC sample(s) was mis-spiked | ___ Other (describe below) | ___ Accept data |
| ___ Other (describe below) | | |
| | | ___ Cannot reanalyze (HT out/Lack of Sample) |

General Comments and Impact on Data:

See run log. Client has been notified about MS/MSD failures and accepts results with matrix interference.

Analyst: Karyn Lane Date: 5/23/2016 11:37

Second-Level Review: Janice Whitt Date: 5/23/2016

REVIEWED BY
By Janice Whitt at 2:39:24 PM, 5/23/2016

**DHL Analytical, Inc.**

**Run ID:** GCMS8_160519B **Run No.:** 85895

**Analytical Run Date:** 5/19/2016 **InstrumentID:** GCMS8

**Analyst:** Karyn Lane **Column:** Rtx-5Sil MS (30m x 0.25mm ID x 0.5µm df)

**Calibration ID:** 660 **Column ID:** 0.18mm

**Column Length:** 20m

**Cal Comments:** PAH160517.M

| SampID | DF | TestCode | SampType | Batch ID | Analysis Date/Time | Q | Comments |
|---|---|---|---|---|---|---|---|
| DFTPP2-160519 | 1 | PAH_LL_SDOD1 | TUNE | R85895 | 5/19/2016 1:44:00 PM | | |
| ICV2-160519 | 1 | PAH_LL_SDOD1 | ICV | R85895 | 5/19/2016 2:20:00 PM | | |
| LCS-75218 | 1 | PAH_LL_SDOD1 | LCS | 75218 | 5/19/2016 2:57:00 PM | | |
| MB-75218 | 1 | PAH_LL_SDOD1 | MBLK | 75218 | 5/19/2016 3:34:00 PM | | |
| 1605098-35A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/19/2016 4:11:00 PM | | All samples in this batch run at 10x - detection limit is sufficient and is approved by project managers. Some are run at larger dilution due to color of the extract and high concentration of hydrocarbons. |
| 1605098-38A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/19/2016 4:48:00 PM | | |
| 1605098-40A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/19/2016 5:25:00 PM | | |
| 1605098-41A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/19/2016 6:02:00 PM | | |
| 1605121-02A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/19/2016 6:39:00 PM | | |
| 1605121-03A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/19/2016 7:16:00 PM | | |
| 1605121-04A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/19/2016 7:54:00 PM | | |
| 1605121-05A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/19/2016 8:31:00 PM | | |
| 1605121-08A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/19/2016 9:08:00 PM | | |
| 1605121-09A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/19/2016 9:44:00 PM | | |
| 1605121-10A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/19/2016 10:21:00 PM | | |
| 1605121-01A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/19/2016 10:58:00 PM | | See 50x for analytes above cal in this parent run and any analytes above cal in MS/MSD. |
| 1605121-01AMS | 10 | PAH_LL_SDOD1 | MS | 75218 | 5/19/2016 11:35:00 PM | | 9 analytes low. |
| 1605121-01AMSD | 10 | PAH_LL_SDOD1 | MSD | 75218 | 5/20/2016 12:11:00 AM | | 8 analytes high. RPD ok. Matrix effect. |
| DFTPP3-160519 | 1 | PAH_LL_SDOD1 | TUNE | R85895 | 5/20/2016 12:48:00 AM | | |
| ICV3-160519 | 1 | PAH_LL_SDOD1 | ICV | R85895 | 5/20/2016 1:26:00 AM | | |
| SBLK-160519 | 1 | PAH_LL_SDOD1 | SBLK | 75218 | 5/20/2016 2:40:00 AM | | |
| 1605121-12A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/20/2016 3:16:00 AM | | |
| 1605121-13A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/20/2016 3:53:00 AM | | |
| 1605121-14A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/20/2016 4:30:00 AM | | |
| 1605121-07A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/20/2016 5:07:00 AM | | |
| 1605121-11A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/20/2016 5:45:00 AM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| DFTPP160509 | 2.5 PPM 525 TUNE STD. | TUNE | 05/07/2017 |
| PAHCCV-160509 | 1 PPM PAH CCV STANDARD | CCV | 08/07/2016 |
| PAHICV160509 | 2 PPM PAH ICV | ICV | 08/07/2016 |
| SVI150810-08 | 4000 PPM INTERNAL STANDAR | ALL | 07/21/2016 |

**DHL Analytical, Inc.**

**Run ID: GCMS8_160519B** **Run No.:** 85895

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1605121-06A | 10 | PAH_LL_SDOD1 | SAMP | 75218 | 5/20/2016 6:22:00 AM | | |
| CCV-160519 | 1 | PAH_LL_SDOD1 | CCV | R85895 | 5/20/2016 6:59:00 AM | | |
| DFTPP-160520 | 1 | PAH_LL_SDOD1 | TUNE | R85895 | 5/20/2016 8:37:00 AM | | |
| ICV-160520 | 1 | PAH_LL_SDOD1 | ICV | R85895 | 5/20/2016 9:14:00 AM | | |
| SBLK-160520 | 1 | PAH_LL_SDOD1 | SBLK | 75218 | 5/20/2016 10:28:00 AM | | |
| 1605121-01A | 50 | PAH_LL_SDOD1 | SAMP | 75218 | 5/20/2016 11:05:00 AM | | |
| 1605121-01AMS | 50 | PAH_LL_SDOD1 | MS | 75218 | 5/20/2016 11:42:00 AM | | 4 analytes low. |
| 1605121-01AMSD | 50 | PAH_LL_SDOD1 | MSD | 75218 | 5/20/2016 12:19:00 PM | | 4 analytes high. RPD Ok. |
| ICV2-160520 | 1 | PAH_LL_SDOD1 | CCV | R85895 | 5/20/2016 7:07:00 PM | | Second ICV for 5/20 imported as CCV for dilution. |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| DFTPP160509 | 2.5 PPM 525 TUNE STD. | TUNE | 05/07/2017 |
| PAHCCV-160509 | 1 PPM PAH CCV STANDARD | CCV | 08/07/2016 |
| PAHICV160509 | 2 PPM PAH ICV | ICV | 08/07/2016 |
| SVI150810-08 | 4000 PPM INTERNAL STANDAR | ALL | 07/21/2016 |

Sequence Name: C:\msdchem\1\sequence\160519.S
Comment:
Operator:
Data Path: C:\MSDCHEM\1\DATA\160519\
Instrument Name: GCMS #8
Instrument Control Pre-Seq Cmd:
Data Analysis Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

| Line | | | | | |
|---|---|---|---|---|---|
| 1) | Sample | 1 | 16051901 | DFTPPPCB | DFTPP-160519 |
| 2) | Sample | 2 | 16051902 | 1660-160511 | ICV-160519 |
| 3) | Sample | 3 | 16051903 | 1660-160511 | ICV-160519 |
| 4) | Sample | 4 | 16051904 | 1660-160511 | LCS-75186 |
| 5) | Sample | 5 | 16051905 | 1660-160511 | LCSD-75186 |
| 6) | Sample | 6 | 16051906 | 1660-160511 | MB-75186 |
| 7) | Sample | 7 | 16051907 | 1660-160511 | 1605115-01B |
| 8) | Sample | 8 | 16051908 | 1660-160511 | 1605115-02B |

Sequence Name: C:\msdchem\1\sequence\160519.S
Comment:
Operator:
Data Path: C:\MSDCHEM\1\DATA\160519\
Instrument Name: GCMS #8
Instrument Control Pre-Seq Cmd:
Data Analysis Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

| Line | | | Sample Name/Misc Info | | |
|---|---|---|---|---|---|
| 1) | Sample | 1 | 16051901 | DFTPPPCB | DFTPP-160519 |
| 2) | Sample | 2 | 16051902 | 1660-160511 | ICV-160519 |
| 3) | Sample | 3 | 16051903 | 1660-160511 | ICV-160519 |
| 4) | Sample | 4 | 16051904 | 1660-160511 | LCS-75186 |
| 5) | Sample | 5 | 16051905 | 1660-160511 | LCSD-75186 |
| 6) | Sample | 6 | 16051906 | 1660-160511 | MB-75186 |
| 7) | Sample | 7 | 16051907 | 1660-160511 | 1605115-01B |
| 8) | Sample | 8 | 16051908 | 1660-160511 | 1605115-02B |
| 9) | Sample | 9 | 16051909 | DFTPPPAH | DFTPP2-160519 |
| 10) | Sample | 10 | 16051910 | PAH160517 | ICV2-160519 |
| 11) | Sample | 11 | 16051911 | PAH160517 | LCS-75218 |
| 12) | Sample | 12 | 16051912 | PAH160517 | MB-75218 |
| 13) | Sample | 13 | 16051913 | PAH160517 | 1605098-35A |
| 14) | Sample | 14 | 16051914 | PAH160517 | 1605098-38A |
| 15) | Sample | 15 | 16051915 | PAH160517 | 1605098-40A |
| 16) | Sample | 16 | 16051916 | PAH160517 | 1605098-41A |
| 17) | Sample | 17 | 16051917 | PAH160517 | 1605121-02A |
| 18) | Sample | 18 | 16051918 | PAH160517 | 1605121-03A |
| 19) | Sample | 19 | 16051919 | PAH160517 | 1605121-04A |
| 20) | Sample | 20 | 16051920 | PAH160517 | 1605121-05A |
| 21) | Sample | 21 | 16051921 | PAH160517 | 1605121-08A |
| 22) | Sample | 22 | 16051922 | PAH160517 | 1605121-09A |
| 23) | Sample | 23 | 16051923 | PAH160517 | 1605121-10A |
| 24) | Sample | 24 | 16051924 | PAH160517 | 1605121-01A |
| 25) | Sample | 25 | 16051925 | PAH160517 | 1605121-01AMS |
| 26) | Sample | 26 | 16051926 | PAH160517 | 1605121-01AMSD |
| 27) | Sample | 27 | 16051927 | DFTPPPAH | DFTPP3-160519 |
| 28) | Sample | 28 | 16051928 | PAH160517 | ICV3-160519 |
| 29) | Sample | 29 | 16051929 | PAH160517 | SBLK |
| 30) | Sample | 30 | 16051930 | PAH160517 | SBLK-160519 |
| 31) | Sample | 31 | 16051931 | PAH160517 | 1605121-12A |
| 32) | Sample | 32 | 16051932 | PAH160517 | 1605121-13A |
| 33) | Sample | 33 | 16051933 | PAH160517 | 1605121-14A |
| 34) | Sample | 34 | 16051934 | PAH160517 | 1605121-07A |
| 35) | Sample | 35 | 16051935 | PAH160517 | 1605121-11A |
| 36) | Sample | 36 | 16051936 | PAH160517 | 1605121-06A |
| 37) | Sample | 37 | 16051937 | PAH160517 | CCV-160519 |

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/18/2016 8:50:22 AM**
Digestion:
Prep End Date: **5/18/2016 1:50:00 PM**

Prep Batch **75218** Prep Code: **3550_PAHDOD** Technician: **Alex Robbins**

Prep Factor Units: **mL/g**

**Equipment List**

Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605098-35A | Soil | | 10.41 | 10 | 0.961 | 1 of 1 | |
| 1605098-36A | Soil | | 10.24 | 10 | 0.977 | 1 of 1 | |
| 1605098-38A | Soil | | 10.36 | 10 | 0.965 | 1 of 1 | |
| 1605098-39A | Soil | | 10.98 | 10 | 0.911 | 1 of 1 | |
| 1605098-40A | Soil | | 10.45 | 10 | 0.957 | 1 of 1 | |
| 1605098-41A | Soil | | 10.8 | 10 | 0.926 | 1 of 1 | |
| 1605121-01A | Soil | | 10.56 | 10 | 0.947 | 1 of 1 | |
| 1605121-01AMS | Soil | | 10.3 | 10 | 0.971 | of | |
| 1605121-01AMSD | Soil | | 10.39 | 10 | 0.962 | of | |
| 1605121-02A | Soil | | 10.77 | 10 | 0.929 | 1 of 1 | |
| 1605121-03A | Soil | | 10.45 | 10 | 0.957 | 1 of 1 | |
| 1605121-04A | Soil | | 10.26 | 10 | 0.975 | 1 of 1 | |
| 1605121-05A | Soil | | 10.02 | 10 | 0.998 | 1 of 1 | |
| 1605121-06A | Soil | | 10.13 | 10 | 0.987 | 1 of 1 | |
| 1605121-07A | Soil | | 10.86 | 10 | 0.921 | 1 of 1 | |
| 1605121-08A | Soil | | 10.32 | 10 | 0.969 | 1 of 1 | |
| 1605121-09A | Soil | | 10.05 | 10 | 0.995 | 1 of 1 | |
| 1605121-10A | Soil | | 10.17 | 10 | 0.983 | 1 of 1 | |
| 1605121-11A | Soil | | 10.01 | 10 | 0.999 | 1 of 1 | |
| 1605121-12A | Soil | | 10.4 | 10 | 0.962 | 1 of 1 | |
| 1605121-13A | Soil | | 10.07 | 10 | 0.993 | 1 of 1 | |
| 1605121-14A | Soil | | 10.15 | 10 | 0.985 | 1 of 1 | |
| LCS-75218 | Soil | | 10 | 10 | 1.000 | of | |
| MB-75218 | Soil | | 10 | 10 | 1.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 10215 | Whatman 41 Filter | 1 | filter | 03/20/2026 |
| 10216 | Purified Sodium Sulfate | 10 | g | 03/30/2026 |
| 10340 | Methylene Chloride | 8 | ml | 05/05/2026 |
| 10343 | 1:1 MeCl2/Acetone | 120 | ml | 05/09/2026 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| PAHPREP160516 | 200 PPM PAH Spike Mix | LCS/MS/MSD | 0.05 | 08/16/2016 |
| SVPREP160517 | 40 PPM Surrogate Standard | ALL | 0.25 | 08/15/2016 |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 5:24:16 PM, 5/25/2016*

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/18/2016 8:50:22 AM**
Digestion:
Prep End Date: 5/18/16 1:50PM

Prep Batch **75218** Prep Code: **3550_PAHDOD** Technician: **Alex Robbins** Prep Factor Units: **mL/g**

| Equipment List |
|---|
| Turbo-Vap # 1,2,3 |
| Balance # 25 |
| Sonicators # 1,2,3,4 |

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605098-35A | Soil | | 10.41 | 10 | 1.000 | 1 of 1 | |
| 1605098-36A | Soil | 10.24 | ~~10.24~~ | 10 | 1.000 | 1 of 1 | |
| | Extract and hold | | 5/18/16 | | | | |
| 1605098-38A | Soil | | 10.36 | 10 | 1.000 | 1 of 1 | |
| 1605098-39A | Soil | | 10.98 | 10 | 1.000 | 1 of 1 | |
| | Extract and hold | | | | | | |
| 1605098-40A | Soil | | 10.45 | 10 | 1.000 | 1 of 1 | |
| 1605098-41A | Soil | | 10.80 | 10 | 1.000 | 1 of 1 | |
| 1605121-01A | Soil | | 10.56 | 10 | 1.000 | 1 of 1 | |
| 1605121-01AMS | Soil | | 10.30 | 10 | 1.000 | of | |
| 1605121-01AMSD | Soil | | 10.39 | 10 | 1.000 | of | |
| 1605121-02A | Soil | | 10.77 | 10 | 1.000 | 1 of 1 | |
| 1605121-03A | Soil | | 10.45 | 10 | 1.000 | 1 of 1 | |
| 1605121-04A | Soil | | 10.26 | 10 | 1.000 | 1 of 1 | |
| 1605121-05A | Soil | | 10.02 | 10 | 1.000 | 1 of 1 | |
| 1605121-06A | Soil | | 10.13 | 10 | 1.000 | 1 of 1 | |
| 1605121-07A | Soil | | 10.86 | 10 | 1.000 | 1 of 1 | |
| 1605121-08A | Soil | | 10.32 | 10 | 1.000 | 1 of 1 | |
| 1605121-09A | Soil | | 10.05 | 10 | 1.000 | 1 of 1 | |
| 1605121-10A | Soil | | 10.17 | 10 | 1.000 | 1 of 1 | |
| 1605121-11A | Soil | | 10.01 | 10 | 1.000 | 1 of 1 | |
| 1605121-12A | Soil | | 10.40 | 10 | 1.000 | 1 of 1 | |
| 1605121-13A | Soil | | 10.07 | 10 | 1.000 | 1 of 1 | |
| 1605121-14A | Soil | | 10.15 | 10 | 1.000 | 1 of 1 | |
| LCS-75218 | Soil | | 10 | 10 | 1.000 | of | |
| MB-75218 | Soil | | 10 | 10 | 1.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. D |
|---|---|---|---|---|
| 10215 | Whatman 41 Filter | 1 | filter | 03/20/2026 |
| 10216 | Purified Sodium Sulfate | 10 | g | 03/30/20[illegible] |
| 10340 | Methylene Chloride | 8 | ml | 05/05/2026 |
| 10343 | 1:1 MeCl2/Acetone | 120 | ml | 05/09/2026 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| PAHPREP160516 | 200 PPM PAH Spike Mix | LCS/MS/MSD | 0.05 | 08/16/2016 |
| SVPREP160517 | 40 PPM Surrogate Standard | ALL | 0.25 | 08/15/2016 |

**REVIEWED BY**
By Janice Whitt at 1:28:06 PM, 5/23/2016

5/18/16 5/18/16 5/18/16

# DHL Analytical, Inc.

# PREP BATCH REPORT

Prep Start Date: **5/13/2016 1:00:00 PM**
Digestion: **Start: 5/13/2016 2:00:00 PM / Stop: 5/17/2016 9:00:00 AM**
Prep End Date: **5/17/2016 12:00:00 PM**

Prep Batch **75155** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

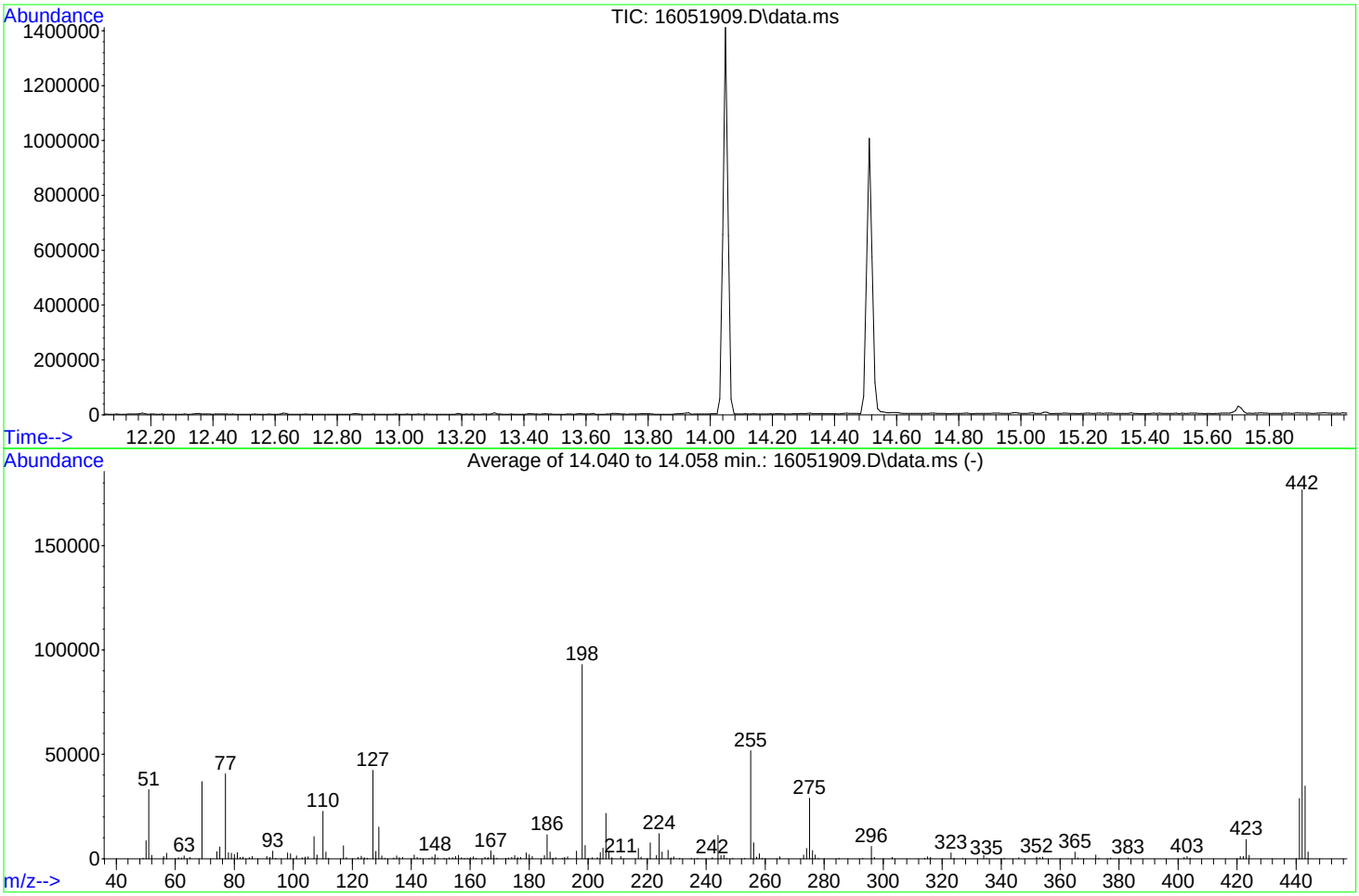
| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-01A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling - MS/MSD | | | | | | |
| 1605121-02A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-03A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-04A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-05A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-06A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-07A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-08A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-09A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-10A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-11A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-12A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-13A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-14A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-15A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-16A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-17A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-18A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-19A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |

REVIEWED BY
By Janice Whitt at 1:25:15 PM, 5/23/2016

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051909.D
Acq On : 19 May 2016 1:44 pm
Operator :
Sample : DFTPP2-160519
Misc : TUNE
ALS Vial : 9 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : CLP BNA Calibration - Large Volume Injection
Last Update : Thu Aug 27 07:24:43 2015




AutoFind: Scans 436, 437, 438; Background Corrected with Scan 432

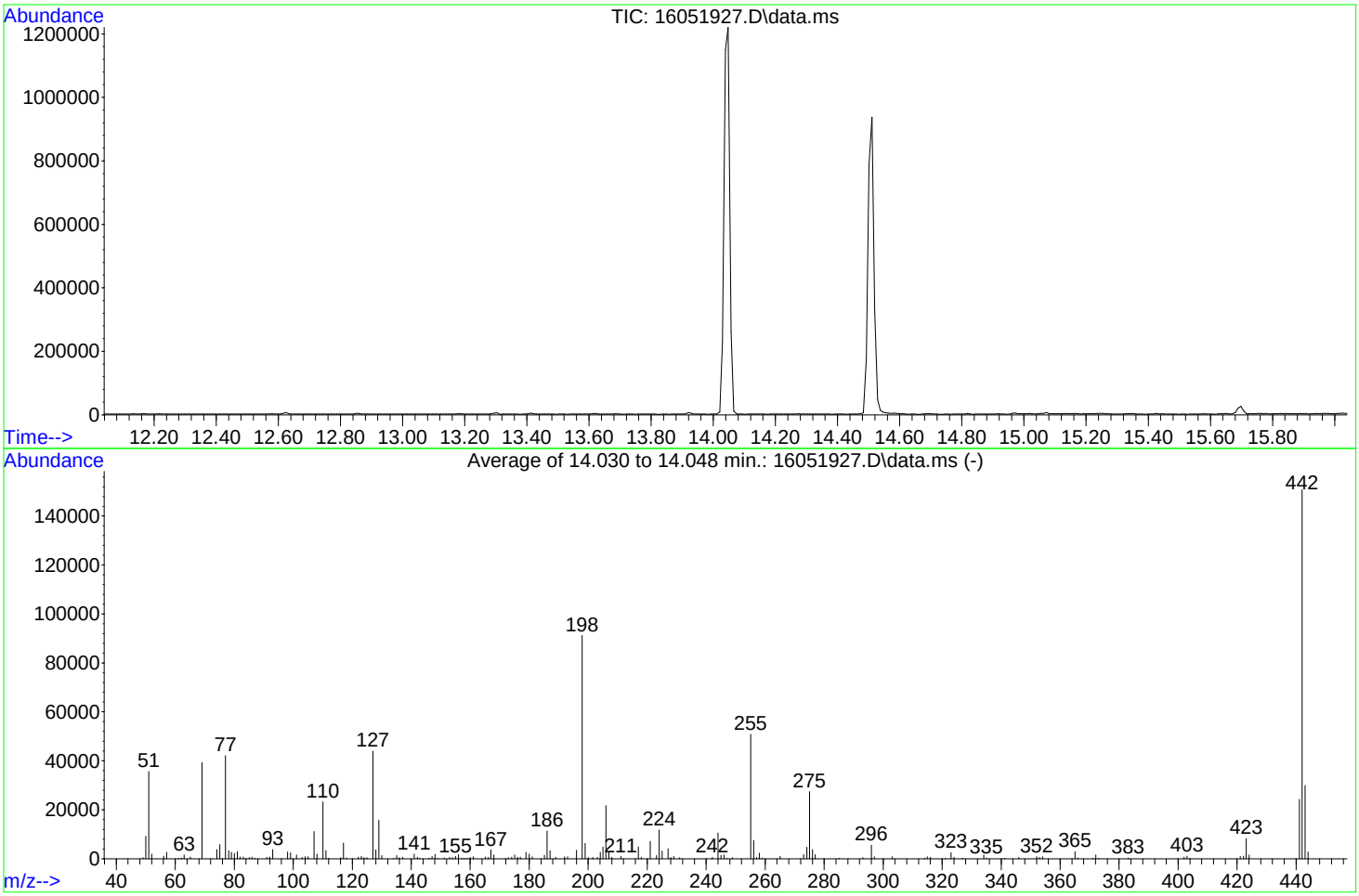
| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 51 | 198 | 10 | 80 | 35.6 | 33070 | PASS |
| 68 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 69 | 198 | 0.00 | 100 | 39.7 | 36915 | PASS |
| 70 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 127 | 198 | 10 | 80 | 45.6 | 42392 | PASS |
| 197 | 198 | 0.00 | 2 | 0.0 | 0 | PASS |
| 198 | 198 | 100 | 100 | 100.0 | 93000 | PASS |
| 199 | 198 | 5 | 9 | 6.8 | 6281 | PASS |
| 275 | 198 | 10 | 60 | 31.2 | 28991 | PASS |
| 365 | 198 | 1 | 200 | 3.5 | 3242 | PASS |
| 441 | 442 | 0.01 | 24 | 16.3 | 28846 | PASS |
| 442 | 198 | 50 | 400 | 190.1 | 176760 | PASS |
| 443 | 442 | 15 | 24 | 19.7 | 34742 | PASS |

REVIEWED BY
By Janice Whitt at 1:25:18 PM, 5/23/2016

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051927.D
Acq On : 20 May 2016 12:48 am
Operator :
Sample : DFTPP3-160519
Misc : TUNE
ALS Vial : 27 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : CLP BNA Calibration - Large Volume Injection
Last Update : Thu Aug 27 07:24:43 2015




AutoFind: Scans 435, 436, 437; Background Corrected with Scan 431

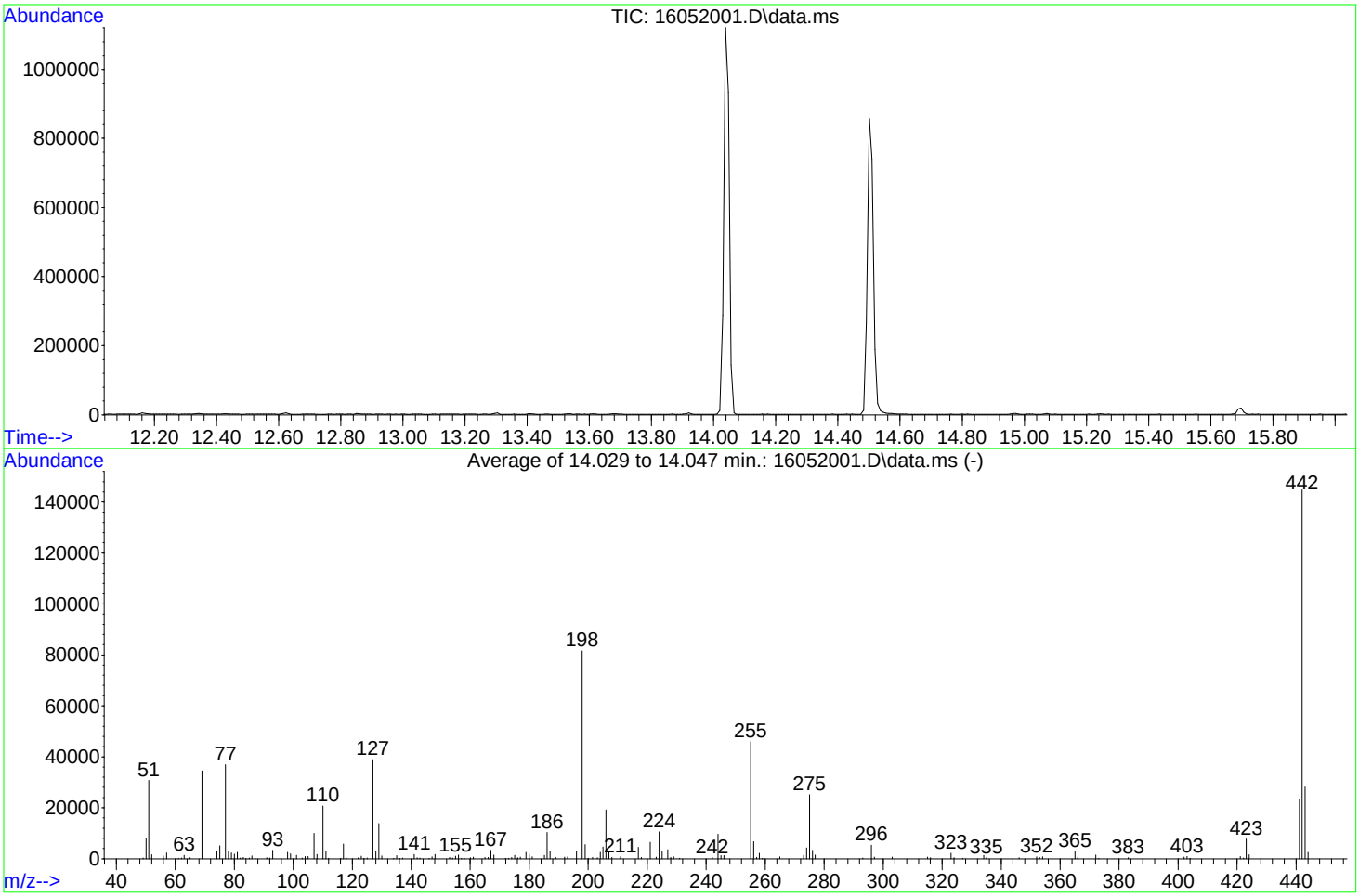
| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 51 | 198 | 10 | 80 | 39.1 | 35680 | PASS |
| 68 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 69 | 198 | 0.00 | 100 | 43.0 | 39226 | PASS |
| 70 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 127 | 198 | 10 | 80 | 48.1 | 43874 | PASS |
| 197 | 198 | 0.00 | 2 | 0.0 | 0 | PASS |
| 198 | 198 | 100 | 100 | 100.0 | 91296 | PASS |
| 199 | 198 | 5 | 9 | 6.9 | 6282 | PASS |
| 275 | 198 | 10 | 60 | 30.0 | 27415 | PASS |
| 365 | 198 | 1 | 200 | 3.1 | 2850 | PASS |
| 441 | 442 | 0.01 | 24 | 16.1 | 24279 | PASS |
| 442 | 198 | 50 | 400 | 165.2 | 150792 | PASS |
| 443 | 442 | 15 | 24 | 19.8 | 29920 | PASS |

REVIEWED BY
By Janice Whitt at 1:25:20 PM, 5/23/2016

Data Path : C:\msdchem\1\DATA\160520\
Data File : 16052001.D
Acq On : 20 May 2016 8:37 am
Operator :
Sample : DFTPP-160520
Misc : TUNE
ALS Vial : 1 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : CLP BNA Calibration - Large Volume Injection
Last Update : Thu Aug 27 07:24:43 2015




AutoFind: Scans 435, 436, 437; Background Corrected with Scan 431

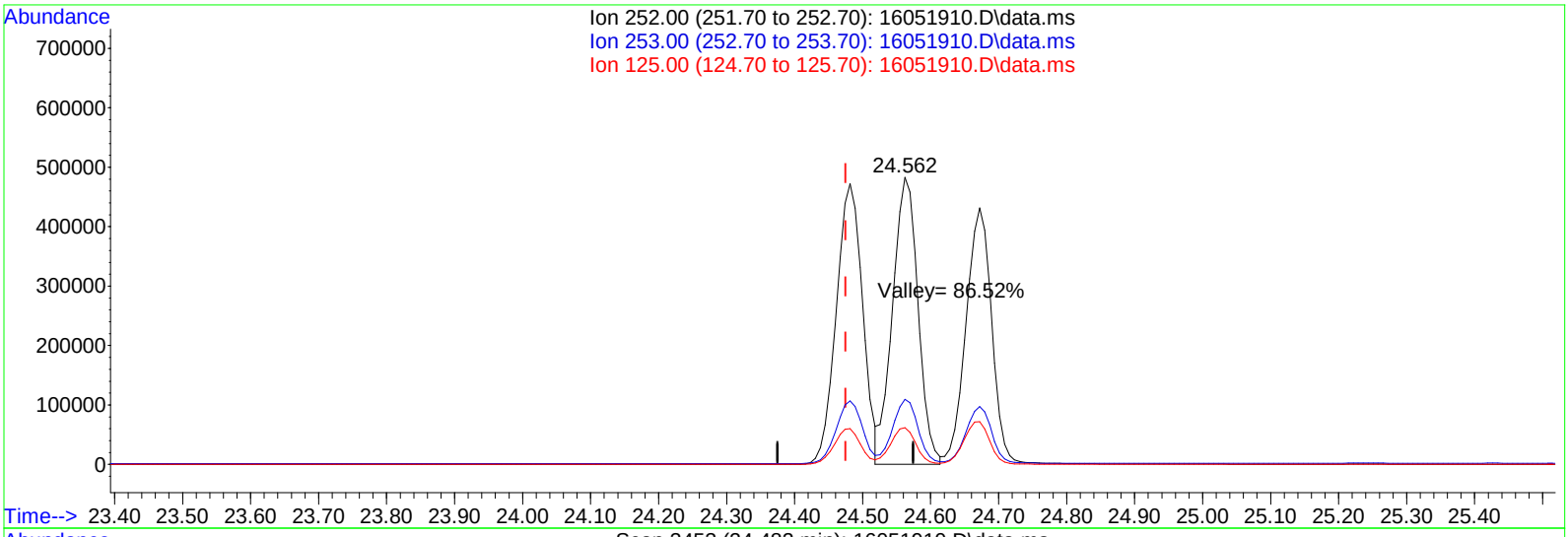
| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 51 | 198 | 10 | 80 | 37.6 | 30736 | PASS |
| 68 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 69 | 198 | 0.00 | 100 | 42.2 | 34482 | PASS |
| 70 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 127 | 198 | 10 | 80 | 47.6 | 38869 | PASS |
| 197 | 198 | 0.00 | 2 | 0.0 | 0 | PASS |
| 198 | 198 | 100 | 100 | 100.0 | 81637 | PASS |
| 199 | 198 | 5 | 9 | 6.8 | 5532 | PASS |
| 275 | 198 | 10 | 60 | 30.7 | 25087 | PASS |
| 365 | 198 | 1 | 200 | 3.3 | 2702 | PASS |
| 441 | 442 | 0.01 | 24 | 16.1 | 23363 | PASS |
| 442 | 198 | 50 | 400 | 177.4 | 144840 | PASS |
| 443 | 442 | 15 | 24 | 19.4 | 28121 | PASS |

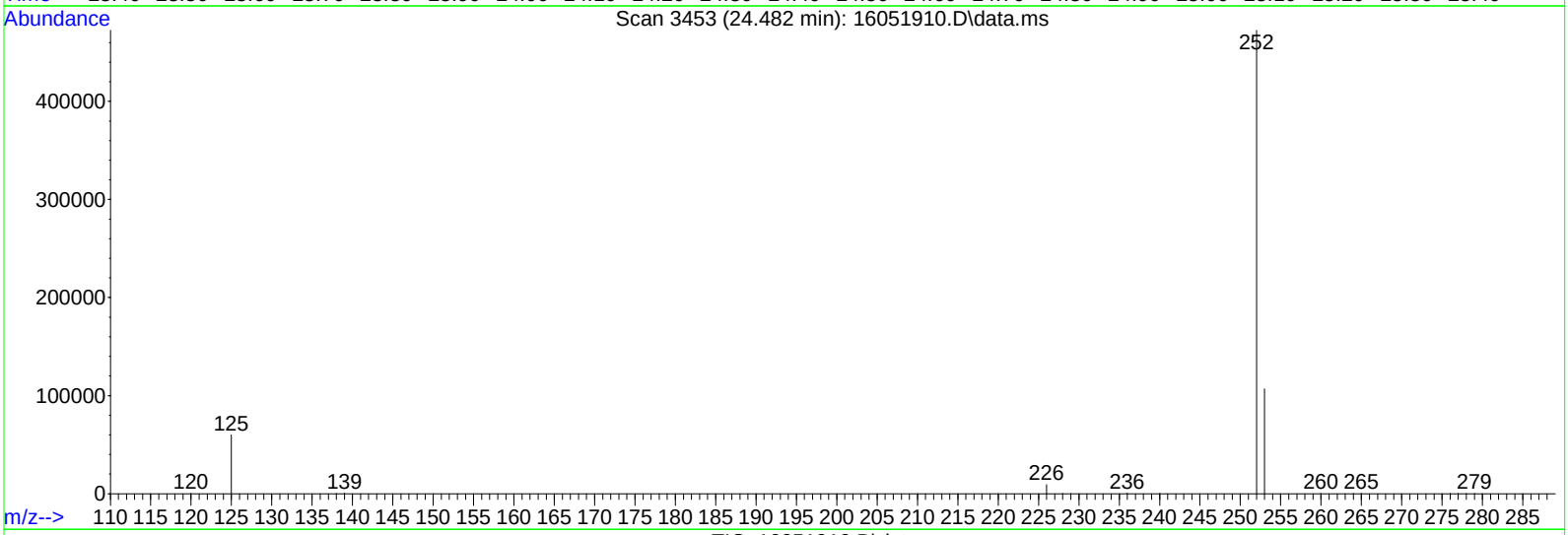
REVIEWED BY
By Janice Whitt at 1:25:25 PM, 5/23/2016

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051910.D
Acq On : 19 May 2016 2:20 pm
Operator :
Sample : ICV2-160519
Misc : ICV
ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 19 14:52:10 2016
Quant Method : C:\MSDCHEM\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration




TIC: 16051910.D\data.ms

(21) Benzo[b]fluoranthene (T)

24.482min (+0.007) 2108.62ug/kg

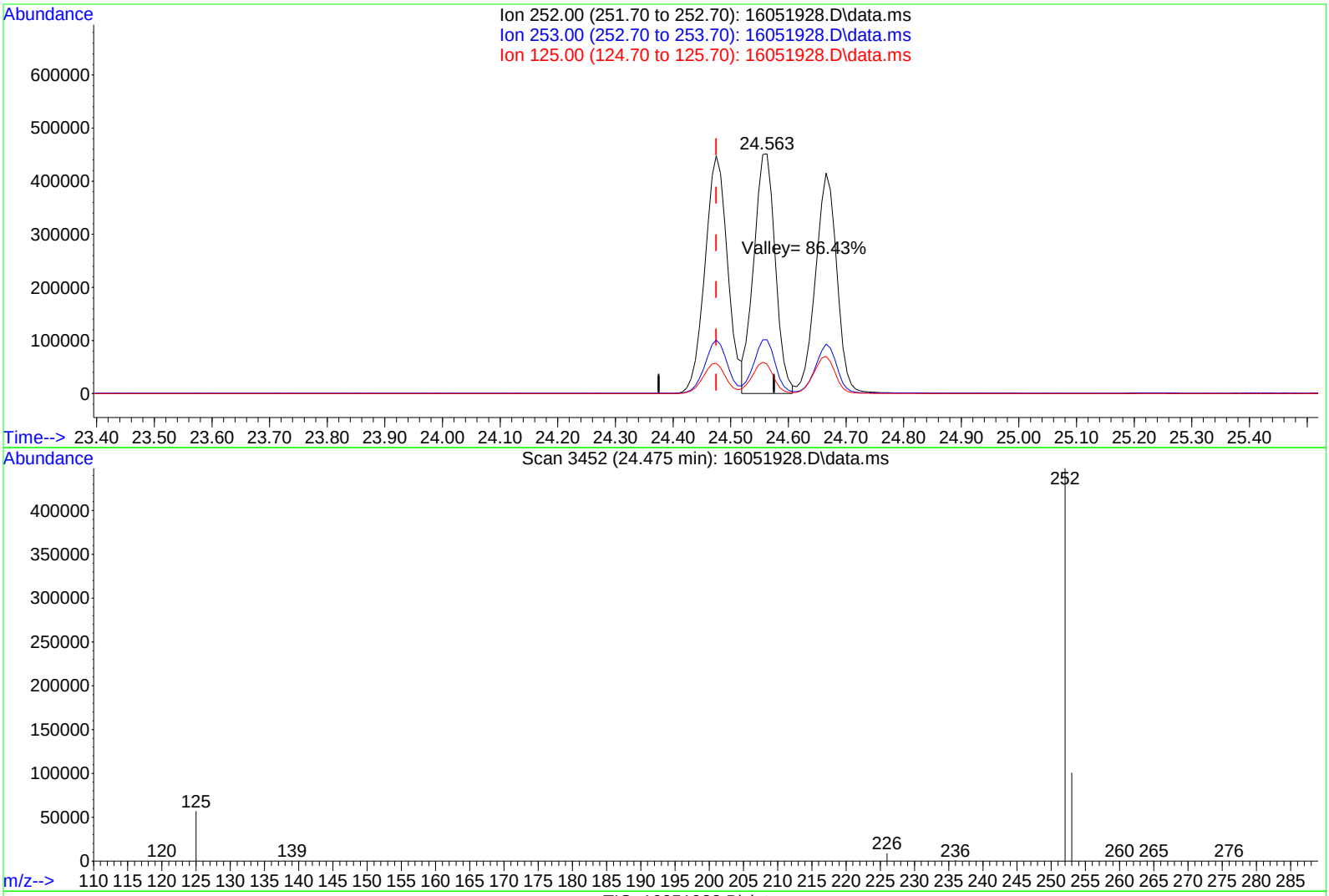
response 1268882

| Ion | Exp% | Act% |
|---|---|---|
| 252.00 | 100 | 100 |
| 253.00 | 22.30 | 22.29 |
| 125.00 | 12.20 | 12.68 |
| 0.00 | 0.00 | 0.00 |

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051928.D
Acq On : 20 May 2016 1:26 am
Operator :
Sample : ICV3-160519
Misc : ICV
ALS Vial : 28 Sample Multiplier: 1

Quant Time: May 20 01:57:23 2016
Quant Method : C:\MSDCHEM\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration







TIC: 16051928.D\data.ms

(21) Benzo[b]fluoranthene (T)

24.475min (+0.000) 2141.68ug/kg

response 1227418

| Ion | Exp% | Act% |
|---|---|---|
| 252.00 | 100 | 100 |
| 253.00 | 22.30 | 22.31 |
| 125.00 | 12.20 | 12.66 |
| 0.00 | 0.00 | 0.00 |

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051910.D
Acq On : 19 May 2016 2:20 pm
Operator :
Sample : ICV2-160519
Misc : ICV
ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 20 08:38:09 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

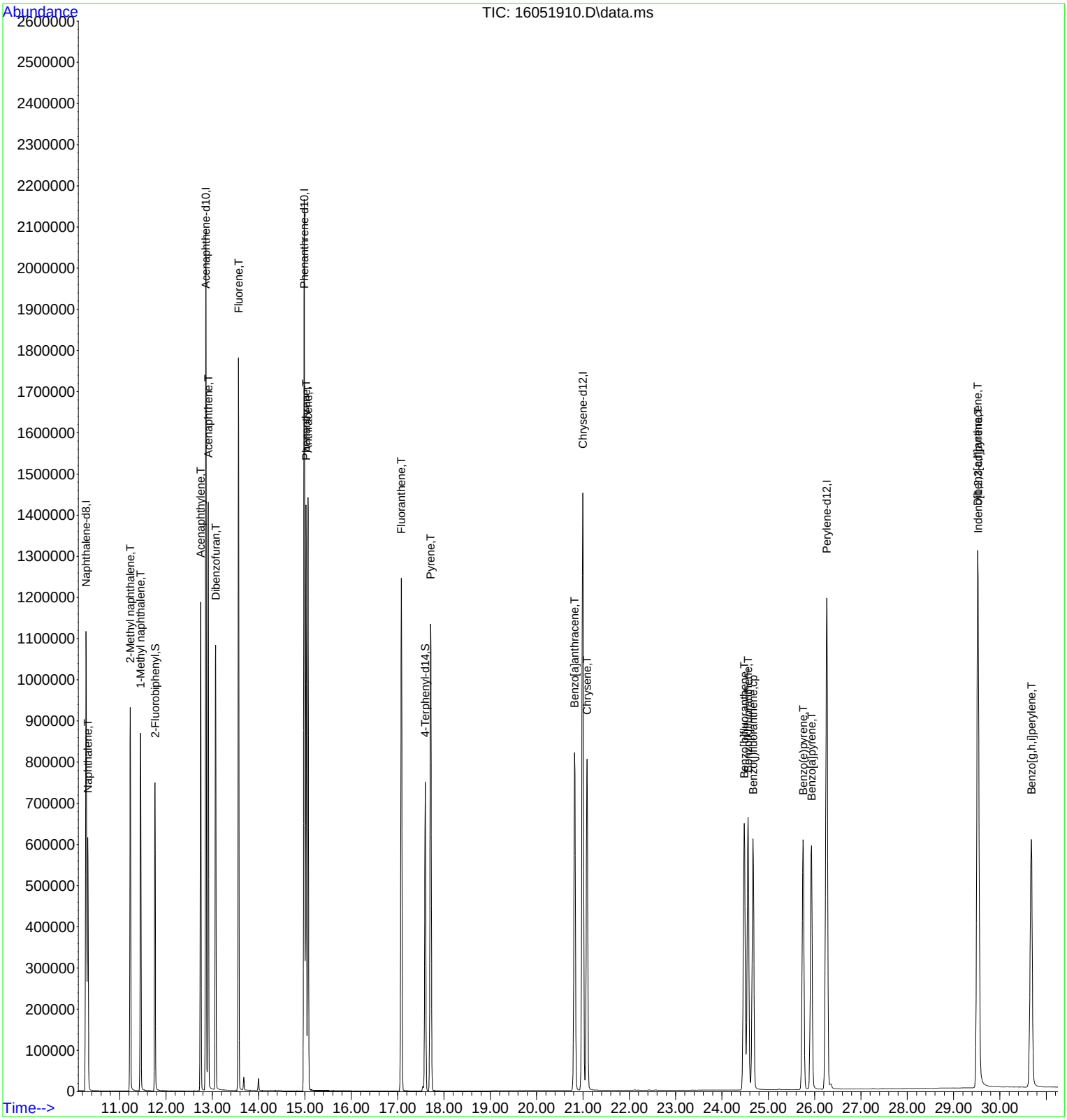
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.276 | 136 | 1586313 | 4000.00 | ug/kg | 97 |
| 6) Acenaphthene-d10 | 12.861 | 164 | 1281447 | 4000.00 | ug/kg | 102 |
| 11) Phenanthrene-d10 | 14.985 | 188 | 2714601 | 4000.00 | ug/kg | 93 |
| 16) Chrysene-d12 | 20.995 | 240 | 2494169 | 4000.00 | ug/kg | 92 |
| 20) Perylene-d12 | 26.262 | 264 | 2349051 | 4000.00 | ug/kg | 95 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.765 | 172 | 699815 | 1981.38 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 49.53% | | | |
| 17) 4-Terphenyl-d14 | 17.596 | 244 | 1058025 | 2004.15 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 50.10%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.313 | 128 | 709964 | 1997.78 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.230 | 142 | 567467 | 2054.07 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.452 | 142 | 523698 | 2003.25 | ug/kg | 100 |
| 7) Acenaphthylene | 12.748 | 152 | 1114010 | 1988.86 | ug/kg | 100 |
| 8) Acenaphthene | 12.915 | 153 | 702762 | 1988.33 | ug/kg | 99 |
| 9) Dibenzofuran | 13.072 | 168 | 1055955 | 1961.24 | ug/kg | 100 |
| 10) Fluorene | 13.563 | 166 | 958736 | 1962.51 | ug/kg | 100 |
| 12) Phenanthrene | 15.022 | 178 | 1394236 | 1866.62 | ug/kg | 100 |
| 13) Anthracene | 15.067 | 178 | 1384649 | 1832.03 | ug/kg | 100 |
| 14) Fluoranthene | 17.083 | 202 | 1421769 | 1991.82 | ug/kg | 100 |
| 15) Pyrene | 17.712 | 202 | 1396229 | 1990.85 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.819 | 228 | 1296534 | 2101.53 | ug/kg | 100 |
| 19) Chrysene | 21.090 | 228 | 1192232 | 2089.48 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.482 | 252 | 1268882 | 2108.62 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.562 | 252 | 1179529 | 2164.29 | ug/kg | 100 |
| 23) Benzo(j)fluoranthene | 24.672 | 252 | 1105659 | 2126.45 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.749 | 252 | 1192808 | 2100.31 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.932 | 252 | 1186810 | 2106.68 | ug/kg | 100 |
| 26) Indeno[1,2,3-cd]pyrene | 29.536 | 276 | 1469855 | 2134.62 | ug/kg | 100 |
| 27) Dibenz[a,h]anthracene | 29.521 | 278 | 1232062 | 2154.32 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.679 | 276 | 1273999 | 2144.29 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051910.D
Acq On : 19 May 2016 2:20 pm
Operator :
Sample : ICV2-160519
Misc : ICV
ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 20 08:38:09 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051911.D
Acq On : 19 May 2016 2:57 pm
Operator :
Sample : LCS-75218
Misc : LCS
ALS Vial : 11 Sample Multiplier: 1

Quant Time: May 20 08:38:12 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.277 | 136 | 1518752 | 4000.00 | ug/kg | 93 |
| 6) Acenaphthene-d10 | 12.861 | 164 | 1104911 | 4000.00 | ug/kg | 88 |
| 11) Phenanthrene-d10 | 14.984 | 188 | 2416401 | 4000.00 | ug/kg | 83 |
| 16) Chrysene-d12 | 20.996 | 240 | 2569558 | 4000.00 | ug/kg | 95 |
| 20) Perylene-d12 | 26.263 | 264 | 2409398 | 4000.00 | ug/kg | 97 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.762 | 172 | 249918 | 739.07 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 18.48%# | | | |
| 17) 4-Terphenyl-d14 | 17.596 | 244 | 432111 | 794.50 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 19.86%# | | | |

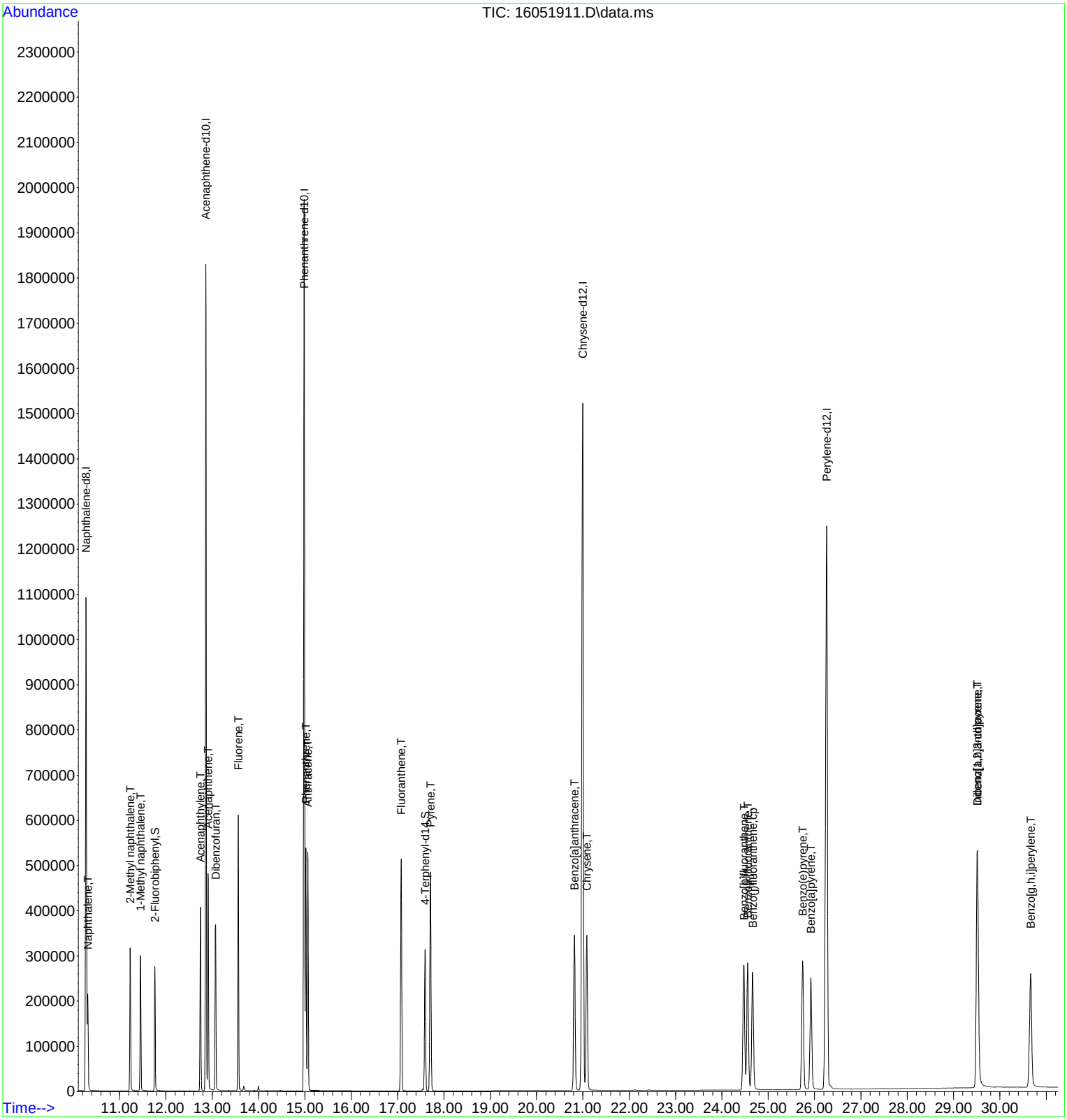
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.314 | 128 | 242997 | 714.19 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.231 | 142 | 196993 | 744.78 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.453 | 142 | 181014 | 723.22 | ug/kg | 99 |
| 7) Acenaphthylene | 12.748 | 152 | 376528 | 779.62 | ug/kg | 99 |
| 8) Acenaphthene | 12.910 | 153 | 234995 | 771.10 | ug/kg | 98 |
| 9) Dibenzofuran | 13.072 | 168 | 362467 | 780.78 | ug/kg | 97 |
| 10) Fluorene | 13.563 | 166 | 325863 | 773.61 | ug/kg | 100 |
| 12) Phenanthrene | 15.020 | 178 | 515847 | 775.85 | ug/kg | 98 |
| 13) Anthracene | 15.064 | 178 | 513839 | 763.76 | ug/kg | 98 |
| 14) Fluoranthene | 17.077 | 202 | 584078 | 890.45 | ug/kg | 99 |
| 15) Pyrene | 17.709 | 202 | 575156 | 897.13 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.820 | 228 | 549310 | 837.72 | ug/kg | 99 |
| 19) Chrysene | 21.084 | 228 | 507380 | 837.57 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.475 | 252 | 533923 | 843.22 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.556 | 252 | 493762 | 865.19 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.666 | 252 | 471047 | 858.93 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.742 | 252 | 542357 | 906.83 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.918 | 252 | 485519 | 822.94 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.522 | 276 | 608670 | 837.67 | ug/kg | 100 |
| 27) Dibenz[a,h]anthracene | 29.508 | 278 | 510059 | 842.72 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.665 | 276 | 523553 | 835.55 | ug/kg | 100 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051911.D
Acq On : 19 May 2016 2:57 pm
Operator :
Sample : LCS-75218
Misc : LCS
ALS Vial : 11 Sample Multiplier: 1

Quant Time: May 20 08:38:12 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051912.D
Acq On : 19 May 2016 3:34 pm
Operator :
Sample : MB-75218
Misc : MBLK
ALS Vial : 12 Sample Multiplier: 1

Quant Time: May 20 08:38:15 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.276 | 136 | 1445169 | 4000.00 | ug/kg | 89 |
| 6) Acenaphthene-d10 | 12.861 | 164 | 1086882 | 4000.00 | ug/kg | 87 |
| 11) Phenanthrene-d10 | 14.983 | 188 | 2361633 | 4000.00 | ug/kg | 81 |
| 16) Chrysene-d12 | 20.994 | 240 | 2524428 | 4000.00 | ug/kg | 93 |
| 20) Perylene-d12 | 26.254 | 264 | 2363360 | 4000.00 | ug/kg | 95 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.765 | 172 | 239560 | 744.51 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 18.61%# | | | |
| 17) 4-Terphenyl-d14 | 17.595 | 244 | 419689 | 785.46 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 19.64%# | | | |

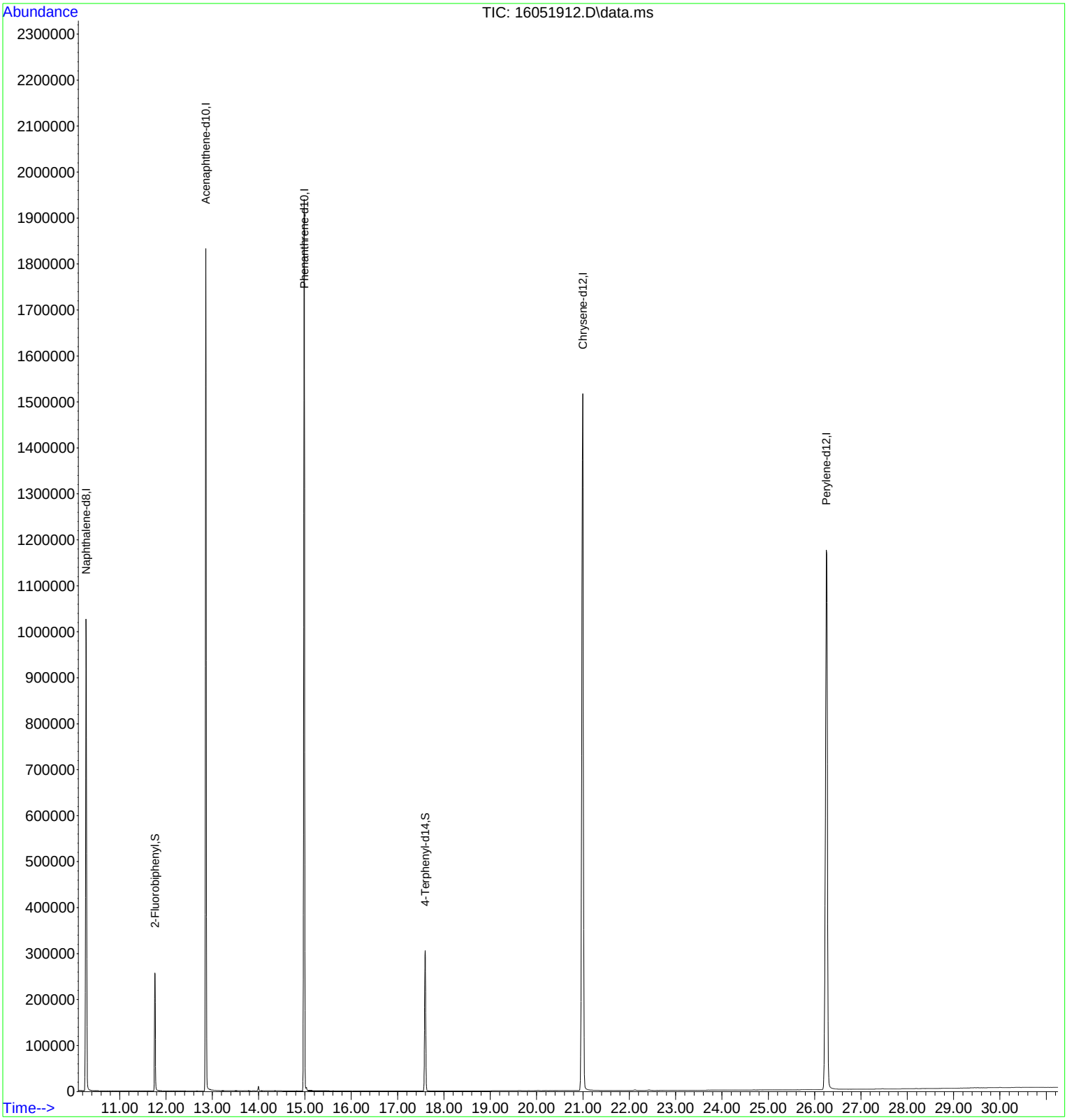
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051912.D
Acq On : 19 May 2016 3:34 pm
Operator :
Sample : MB-75218
Misc : MBLK
ALS Vial : 12 Sample Multiplier: 1

Quant Time: May 20 08:38:15 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051917.D
Acq On : 19 May 2016 6:39 pm
Operator :
Sample : 1605121-02A
Misc : SAMP
ALS Vial : 17 Sample Multiplier: 10

Quant Time: May 20 08:39:21 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.276 | 136 | 1612075 | 4000.00 | ug/kg | 99 |
| 6) Acenaphthene-d10 | 12.861 | 164 | 1313178 | 4000.00 | ug/kg | 105 |
| 11) Phenanthrene-d10 | 14.981 | 188 | 2562139 | 4000.00 | ug/kg | 88 |
| 16) Chrysene-d12 | 20.987 | 240 | 2465494 | 4000.00 | ug/kg | 91 |
| 20) Perylene-d12 | 26.254 | 264 | 2301003 | 4000.00 | ug/kg | 93 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.761 | 172 | 30206 | 84.16 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 2.10%# | | |
| 17) 4-Terphenyl-d14 | 17.590 | 244 | 42038 | 80.56 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 2.01%# | | |

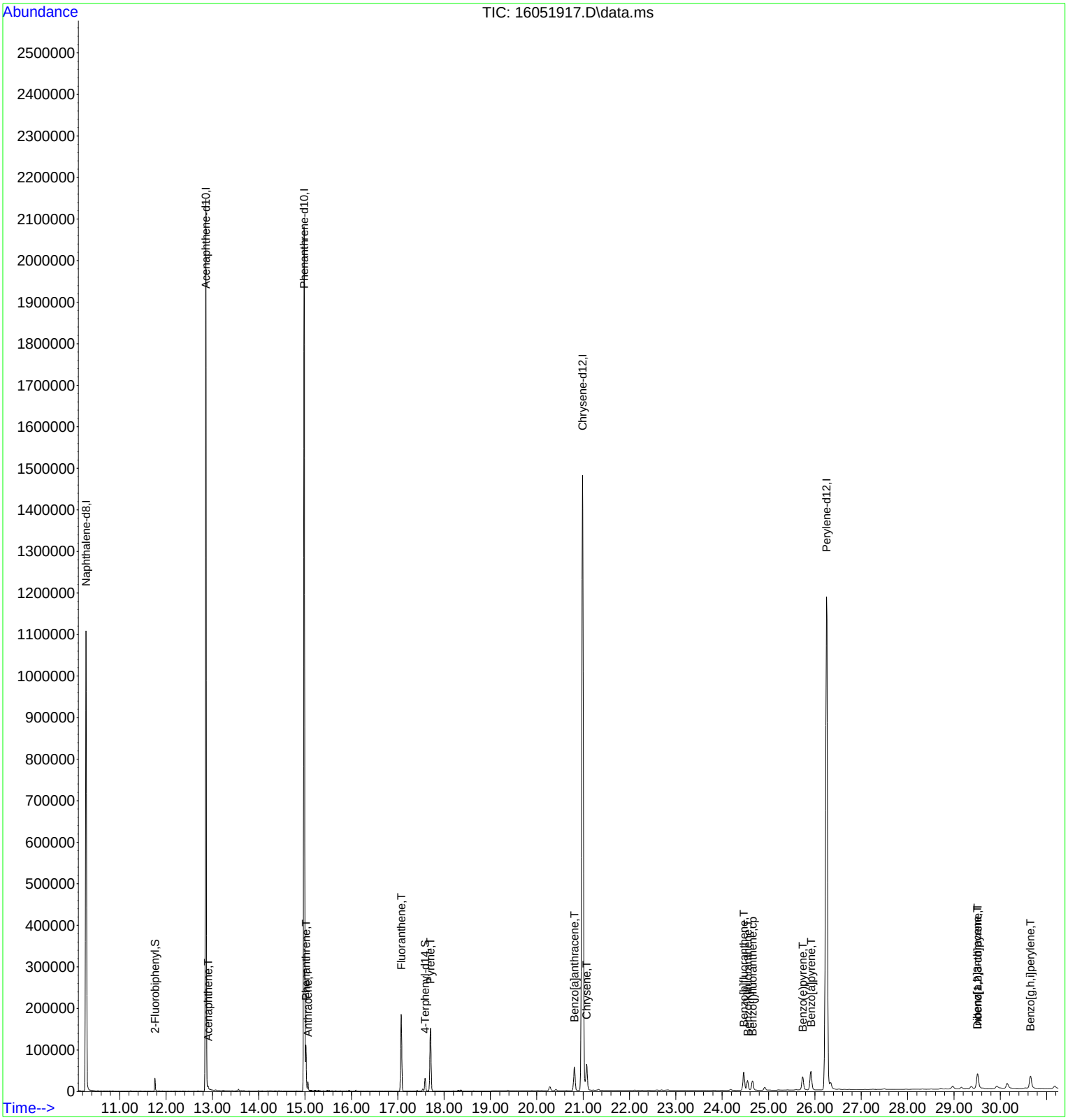
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 8) Acenaphthene | 12.910 | 153 | 3079 | 8.50 | ug/kg | 100 |
| 12) Phenanthrene | 15.018 | 178 | 98780 | 140.12 | ug/kg | 97 |
| 13) Anthracene | 15.063 | 178 | 20969 | 29.40 | ug/kg | 97 |
| 14) Fluoranthene | 17.075 | 202 | 204252 | 287.54 | ug/kg | 99 |
| 15) Pyrene | 17.704 | 202 | 179383 | 258.50 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.811 | 228 | 89418 | 138.35 | ug/kg | 99 |
| 19) Chrysene | 21.075 | 228 | 102120 | 170.97 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.466 | 252 | 83785 | 135.28 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.547 | 252 | 40934 | 73.20 | ug/kg | 96 |
| 23) Benzo(j)fluoranthene | 24.657 | 252 | 41076 | 74.32 | ug/kg | 90 |
| 24) Benzo(e)pyrene | 25.734 | 252 | 63209 | 106.69 | ug/kg | 95 |
| 25) Benzo[a]pyrene | 25.917 | 252 | 90260 | 156.91 | ug/kg | 100 |
| 26) Indeno[1,2,3-cd]pyrene | 29.513 | 276 | 65210 | 90.04 | ug/kg | 92 |
| 27) Dibenz[a,h]anthracene | 29.499 | 278 | 15100 | 21.31 | ug/kg | 97 |
| 28) Benzo[g,h,i]perylene | 30.656 | 276 | 65592 | 105.45 | ug/kg | 99 |

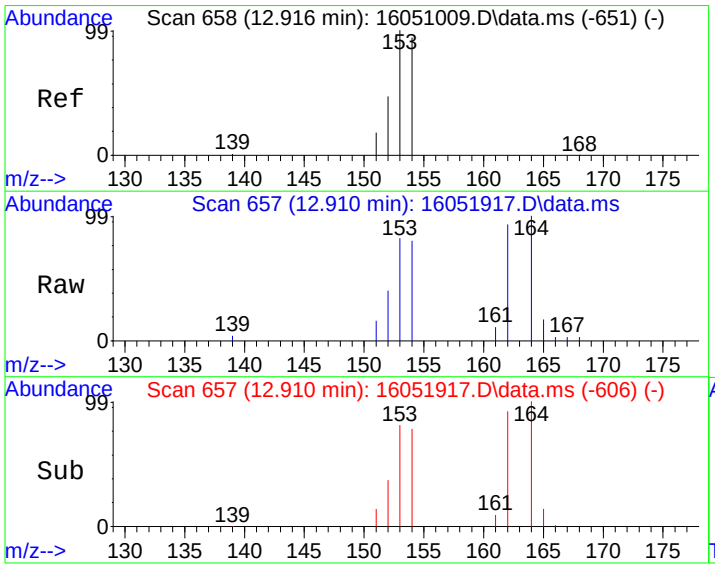
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051917.D
Acq On : 19 May 2016 6:39 pm
Operator :
Sample : 1605121-02A
Misc : SAMP
ALS Vial : 17 Sample Multiplier: 10

Quant Time: May 20 08:39:21 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

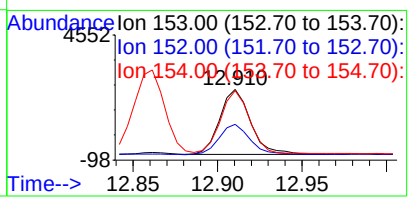


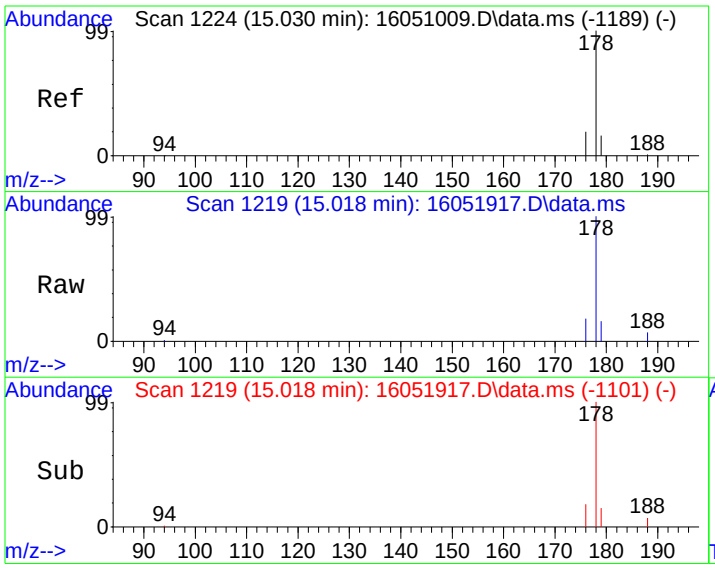



#8
Acenaphthene
Concen: 8.50 ug/kg
RT: 12.910 min Scan# 657
Delta R.T. -0.001 min
Lab File: 16051917.D
Acq: 19 May 2016 6:39 pm

Tgt Ion:153 Resp: 3079

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 153 | 100 | | |
| 152 | 46.4 | 26.5 | 66.5 |
| 154 | 95.9 | 76.3 | 116.3 |

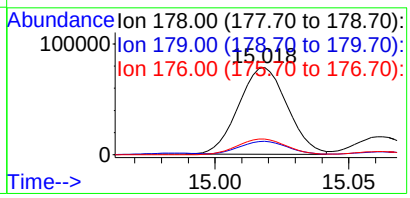


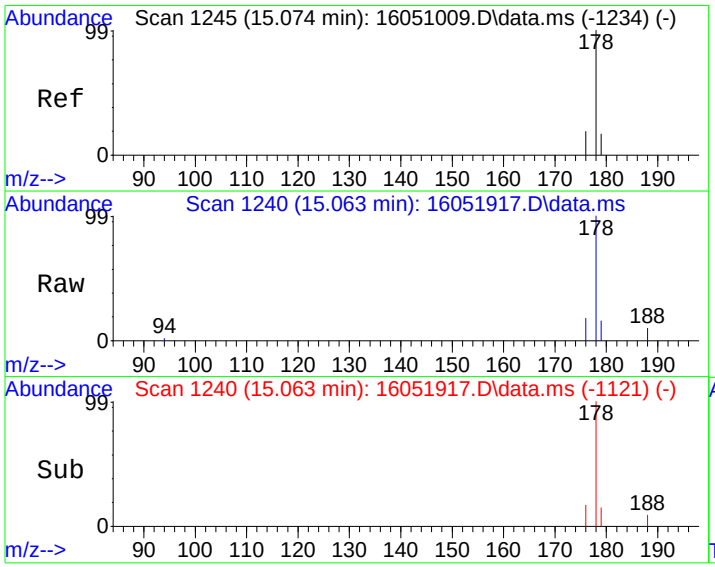




#12
Phenanthrene
Concen: 140.12 ug/kg
RT: 15.018 min Scan# 1219
Delta R.T. -0.001 min
Lab File: 16051917.D
Acq: 19 May 2016 6:39 pm

Tgt Ion:178 Resp: 98780

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 14.9 | 0.0 | 36.4 |
| 176 | 18.1 | 0.0 | 39.0 |

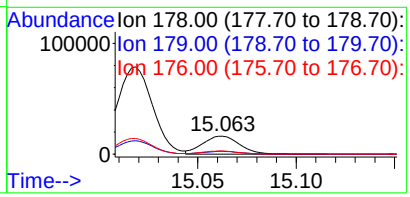


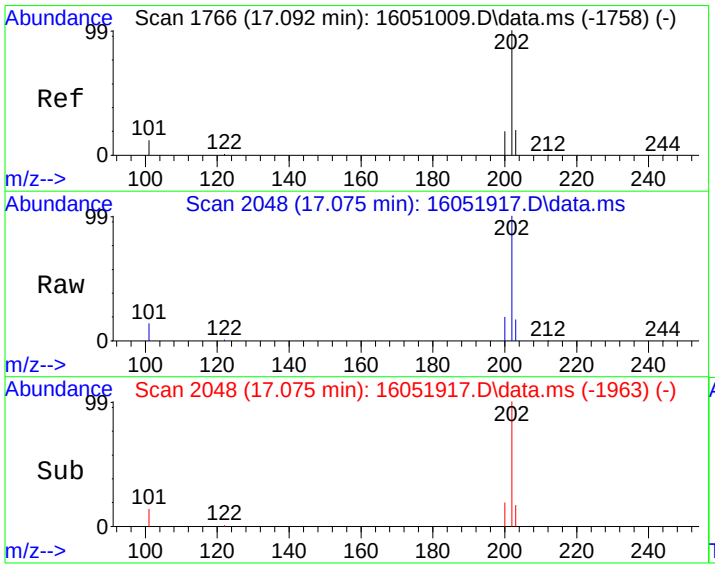




#13
Anthracene
Concen: 29.40 ug/kg
RT: 15.063 min Scan# 1240
Delta R.T. 0.001 min
Lab File: 16051917.D
Acq: 19 May 2016 6:39 pm

Tgt Ion:178 Resp: 20969

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.3 | 0.0 | 36.3 |
| 176 | 17.2 | 0.0 | 38.5 |

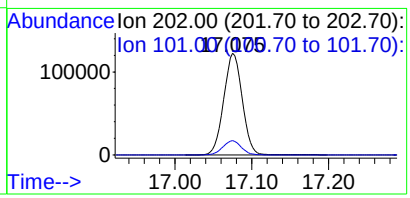


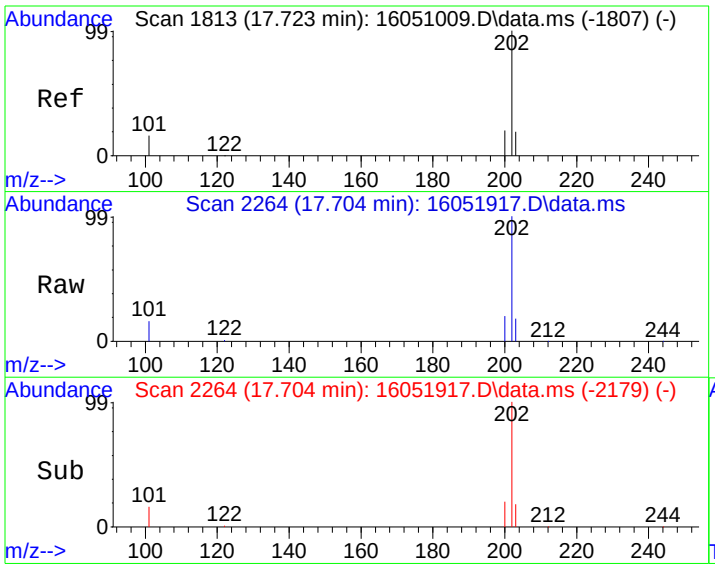



#14
Fluoranthene
Concen: 287.54 ug/kg
RT: 17.075 min Scan# 2048
Delta R.T. -0.001 min
Lab File: 16051917.D
Acq: 19 May 2016 6:39 pm

Tgt Ion:202 Resp: 204252

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 14.0 | 0.0 | 34.4 |

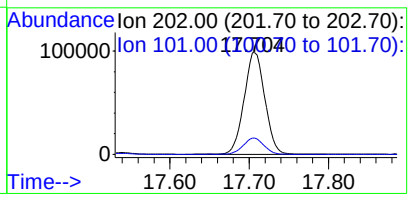


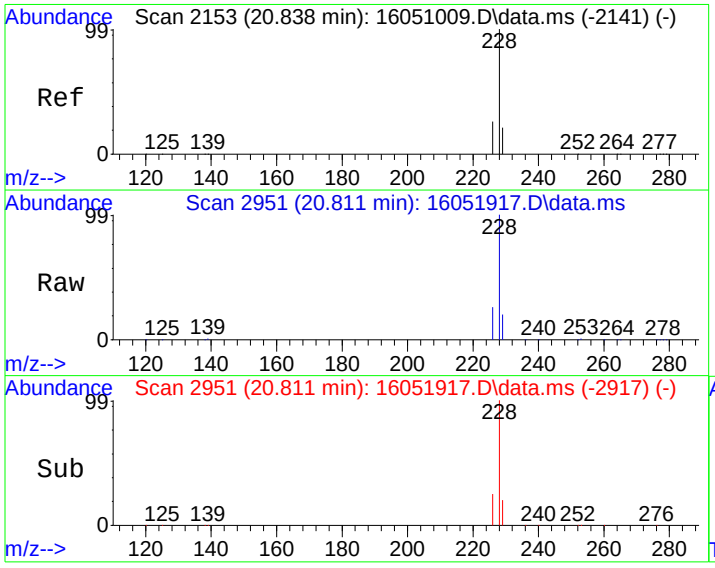




#15
Pyrene
Concen: 258.50 ug/kg
RT: 17.704 min Scan# 2264
Delta R.T. -0.002 min
Lab File: 16051917.D
Acq: 19 May 2016 6:39 pm

Tgt Ion:202 Resp: 179383

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 15.9 | 0.0 | 37.3 |

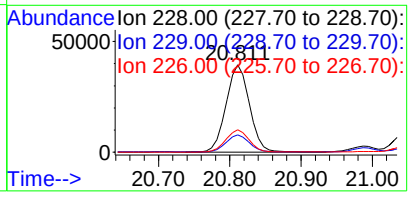


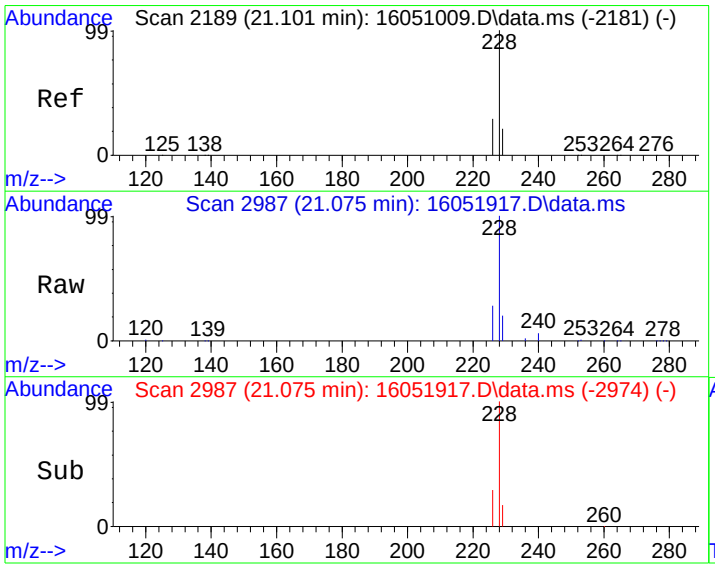




#18
Benzo[a]anthracene
Concen: 138.35 ug/kg
RT: 20.811 min Scan# 2951
Delta R.T. -0.001 min
Lab File: 16051917.D
Acq: 19 May 2016 6:39 pm

Tgt Ion:228 Resp: 89418

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.6 | 0.3 | 40.3 |
| 226 | 25.4 | 5.7 | 45.7 |

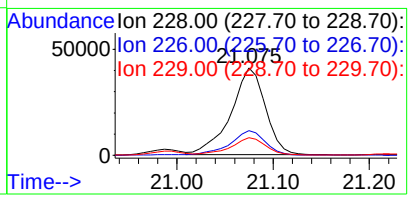


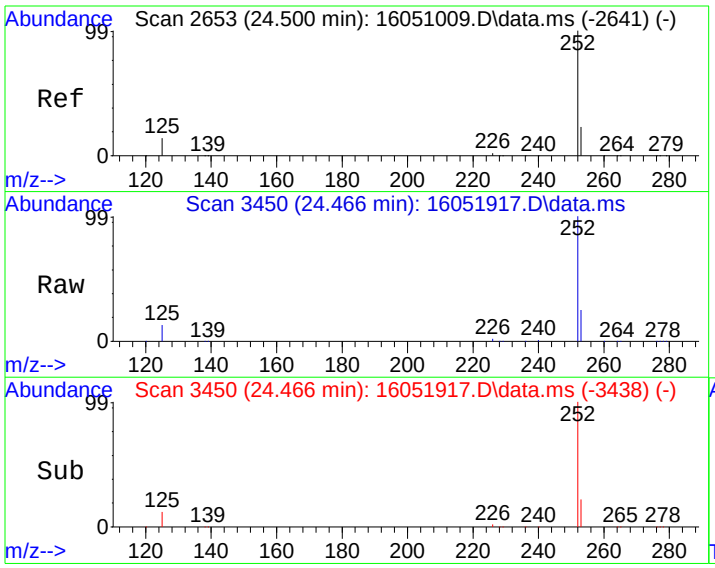



#19
Chrysene
Concen: 170.97 ug/kg
RT: 21.075 min Scan# 2987
Delta R.T. -0.008 min
Lab File: 16051917.D
Acq: 19 May 2016 6:39 pm

Tgt Ion:228 Resp: 102120

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.2 | 8.2 | 48.2 |
| 229 | 19.9 | 0.3 | 40.3 |

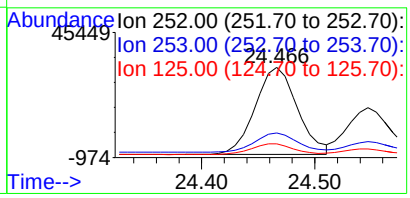


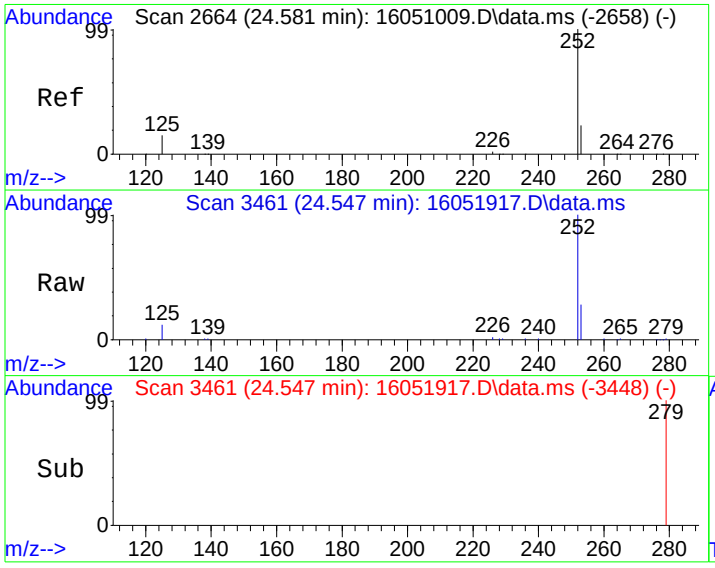




#21
Benzo[b]fluoranthene
Concen: 135.28 ug/kg
RT: 24.466 min Scan# 3450
Delta R.T. -0.009 min
Lab File: 16051917.D
Acq: 19 May 2016 6:39 pm

Tgt Ion:252 Resp: 83785

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.0 | 2.3 | 42.3 |
| 125 | 12.4 | 0.0 | 32.2 |

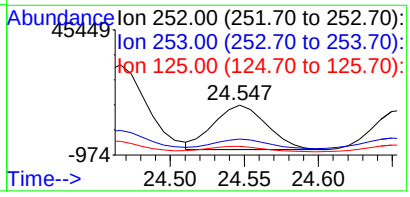


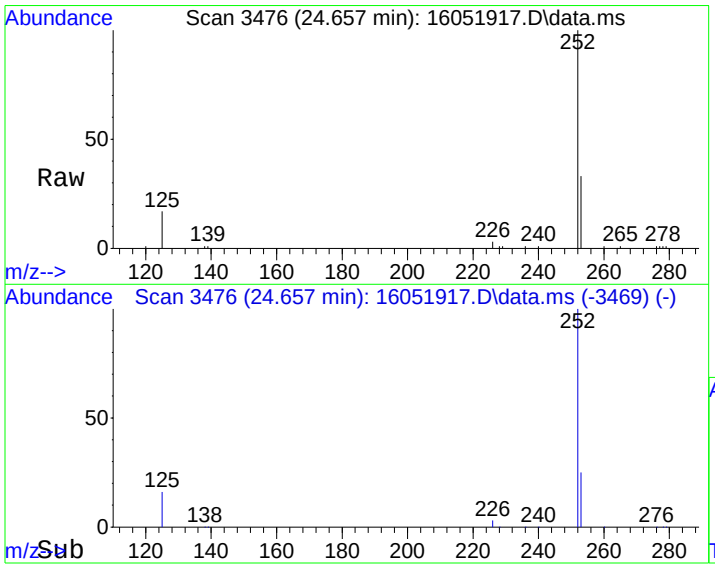




#22
Benzo[k]fluoranthene
Concen: 73.20 ug/kg
RT: 24.547 min Scan# 3461
Delta R.T. -0.008 min
Lab File: 16051917.D
Acq: 19 May 2016 6:39 pm

Tgt Ion:252 Resp: 40934

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 20.4 | 2.5 | 42.5 |
| 125 | 11.8 | 0.0 | 32.6 |

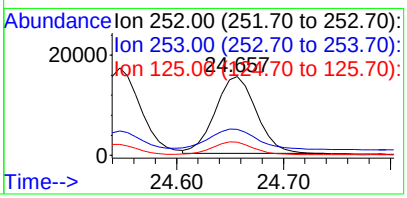


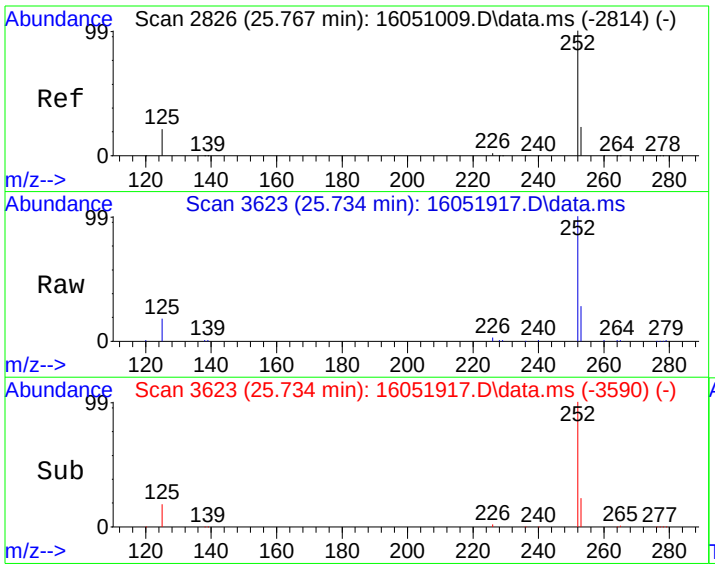



#23
Benzo(j)fluoranthene
Concen: 74.32 ug/kg
RT: 24.657 min Scan# 3476
Delta R.T. -0.008 min
Lab File: 16051917.D
Acq: 19 May 2016 6:39 pm

Tgt Ion:252 Resp: 41076

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 29.9 | 2.2 | 42.2 |
| 125 | 16.7 | 0.0 | 37.3 |

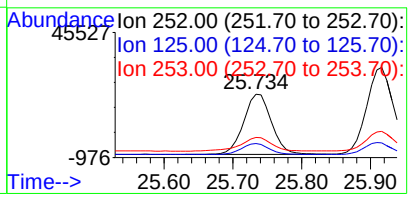


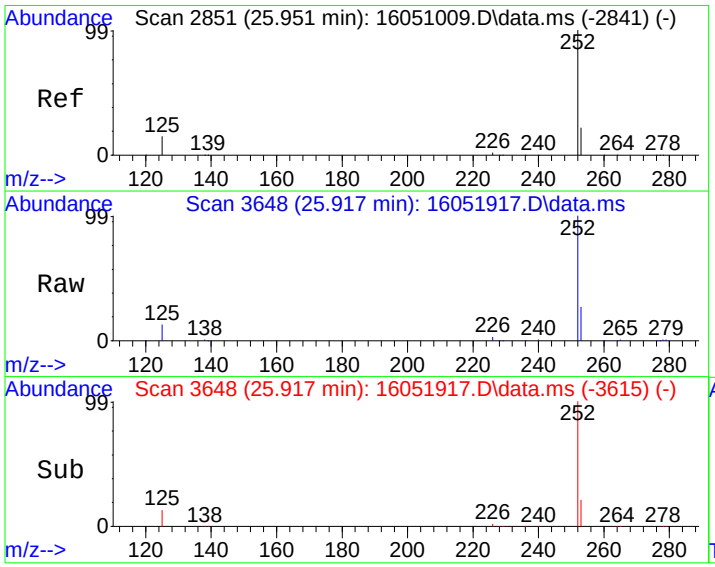




#24
Benzo(e)pyrene
Concen: 106.69 ug/kg
RT: 25.734 min Scan# 3623
Delta R.T. -0.008 min
Lab File: 16051917.D
Acq: 19 May 2016 6:39 pm

Tgt Ion:252 Resp: 63209

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 125 | 18.0 | 0.0 | 38.7 |
| 253 | 25.9 | 2.3 | 42.3 |

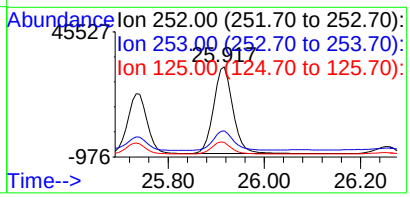


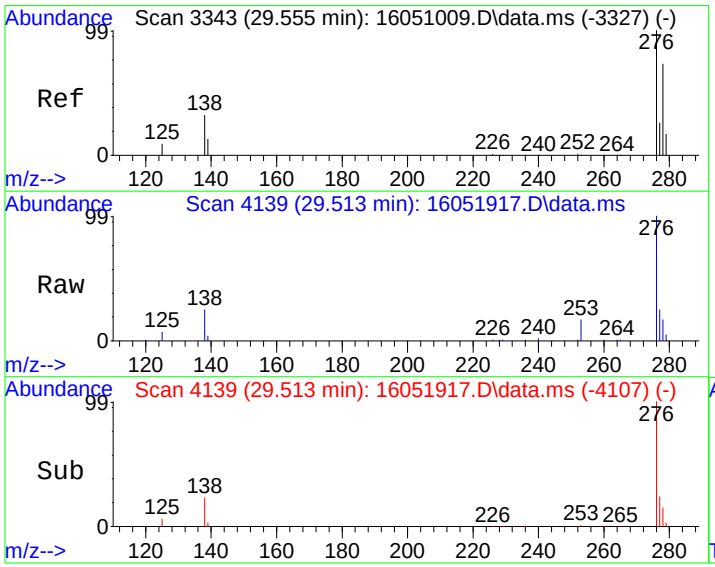




#25
Benzo[a]pyrene
Concen: 156.91 ug/kg
RT: 25.917 min Scan# 3648
Delta R.T. -0.008 min
Lab File: 16051917.D
Acq: 19 May 2016 6:39 pm

Tgt Ion:252 Resp: 90260

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.4 | 2.3 | 42.3 |
| 125 | 13.2 | 0.0 | 33.5 |

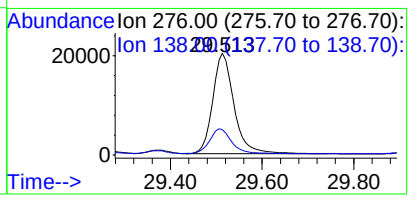


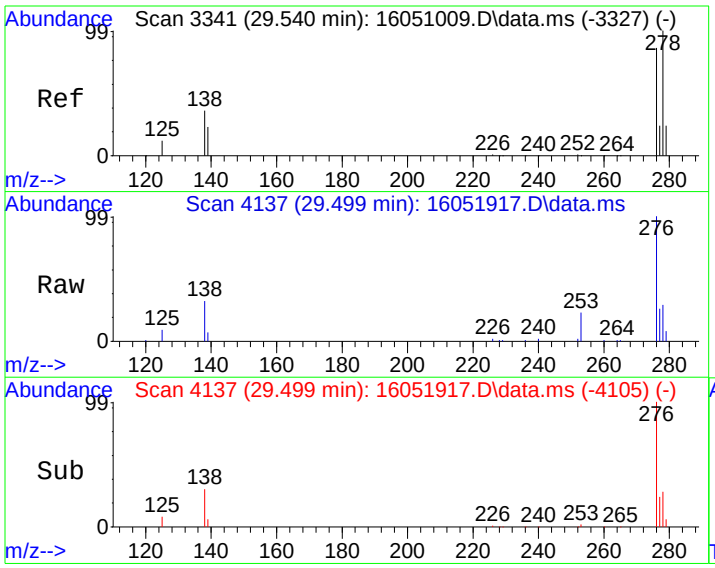



#26
Indeno[1,2,3-cd]pyrene
Concen: 90.04 ug/kg
RT: 29.513 min Scan# 4139
Delta R.T. -0.016 min
Lab File: 16051917.D
Acq: 19 May 2016 6:39 pm

Tgt Ion:276 Resp: 65210

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 23.9 | 8.3 | 48.3 |

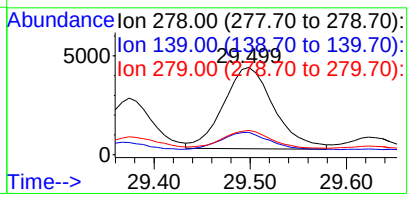


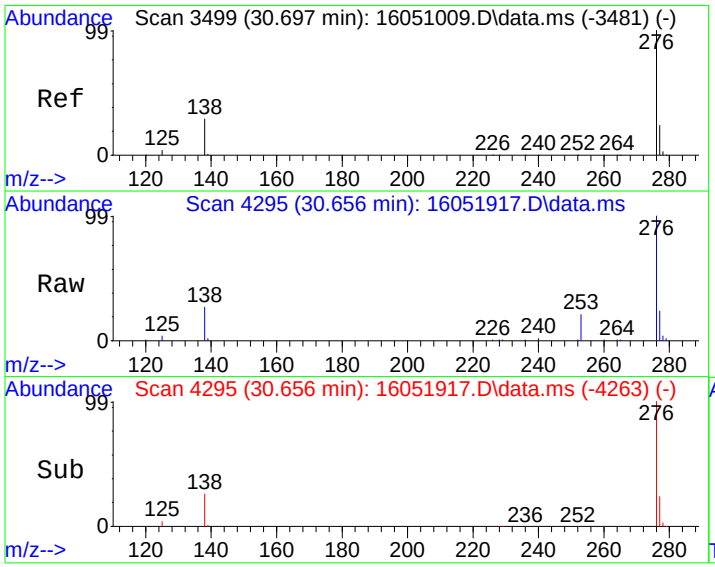




#27
Dibenz[a,h]anthracene
Concen: 21.31 ug/kg
RT: 29.499 min Scan# 4137
Delta R.T. -0.015 min
Lab File: 16051917.D
Acq: 19 May 2016 6:39 pm

Tgt Ion:278 Resp: 15100

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 22.0 | 0.0 | 40.0 |
| 279 | 23.0 | 4.2 | 44.2 |

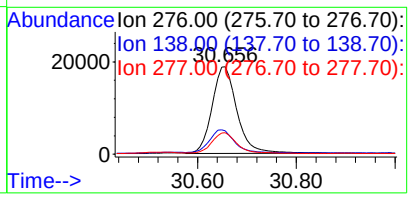



#28
Benzo[g,h,i]perylene
Concen: 105.45 ug/kg
RT: 30.656 min Scan# 4295
Delta R.T. -0.016 min
Lab File: 16051917.D
Acq: 19 May 2016 6:39 pm

Tgt Ion:276 Resp: 65592

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 25.8 | 5.8 | 45.8 |
| 277 | 23.8 | 4.4 | 44.4 |



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051918.D
Acq On : 19 May 2016 7:16 pm
Operator :
Sample : 1605121-03A
Misc : SAMP
ALS Vial : 18 Sample Multiplier: 10

Quant Time: May 20 08:39:29 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.273 | 136 | 1586122 | 4000.00 | ug/kg | 97 |
| 6) Acenaphthene-d10 | 12.861 | 164 | 1310069 | 4000.00 | ug/kg | 104 |
| 11) Phenanthrene-d10 | 14.980 | 188 | 2515520 | 4000.00 | ug/kg | 86 |
| 16) Chrysene-d12 | 20.988 | 240 | 2408891 | 4000.00 | ug/kg | 89 |
| 20) Perylene-d12 | 26.254 | 264 | 2249743 | 4000.00 | ug/kg | 91 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.762 | 172 | 32096 | 90.88 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.27%# | | | |
| 17) 4-Terphenyl-d14 | 17.590 | 244 | 43051 | 84.44 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 2.11%# | | | |

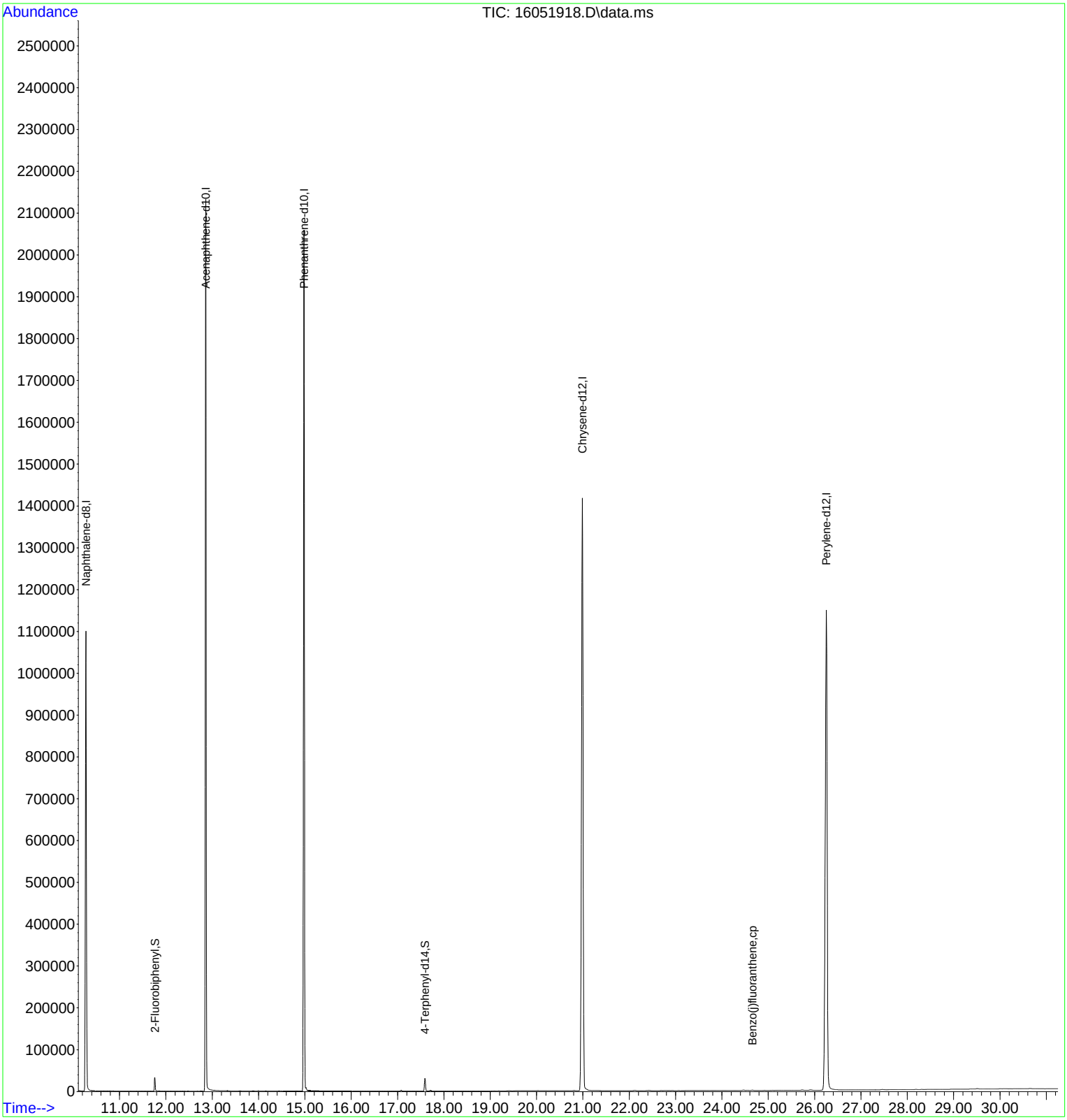
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 23) Benzo(j)fluoranthene | 24.657 | 252 | 1678 | 0.05 | ug/kg | 88 |

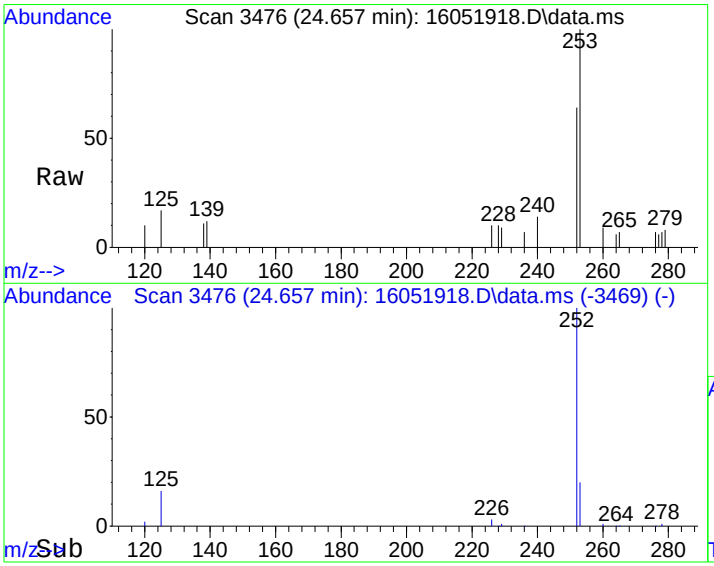
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051918.D
Acq On : 19 May 2016 7:16 pm
Operator :
Sample : 1605121-03A
Misc : SAMP
ALS Vial : 18 Sample Multiplier: 10

Quant Time: May 20 08:39:29 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

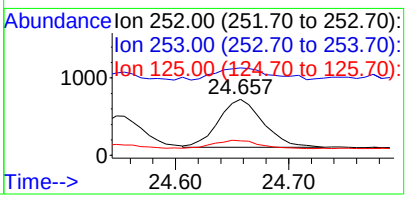





#23
Benzo(j)fluoranthene
Concen: 0.05 ug/kg
RT: 24.657 min Scan# 3476
Delta R.T. -0.008 min
Lab File: 16051918.D
Acq: 19 May 2016 7:16 pm

Tgt Ion:252 Resp: 1678

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 31.7 | 2.2 | 42.2 |
| 125 | 17.9 | 0.0 | 37.3 |



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051919.D
Acq On : 19 May 2016 7:54 pm
Operator :
Sample : 1605121-04A
Misc : SAMP
ALS Vial : 19 Sample Multiplier: 10

Quant Time: May 20 08:39:33 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.276 | 136 | 1627807 | 4000.00 | ug/kg | 100 |
| 6) Acenaphthene-d10 | 12.861 | 164 | 1339681 | 4000.00 | ug/kg | 107 |
| 11) Phenanthrene-d10 | 14.983 | 188 | 2530163 | 4000.00 | ug/kg | 86 |
| 16) Chrysene-d12 | 20.988 | 240 | 2497567 | 4000.00 | ug/kg | 92 |
| 20) Perylene-d12 | 26.255 | 264 | 2324189 | 4000.00 | ug/kg | 94 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.761 | 172 | 31925 | 88.08 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.20%# | | | |
| 17) 4-Terphenyl-d14 | 17.592 | 244 | 43715 | 82.69 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 2.07%# | | | |

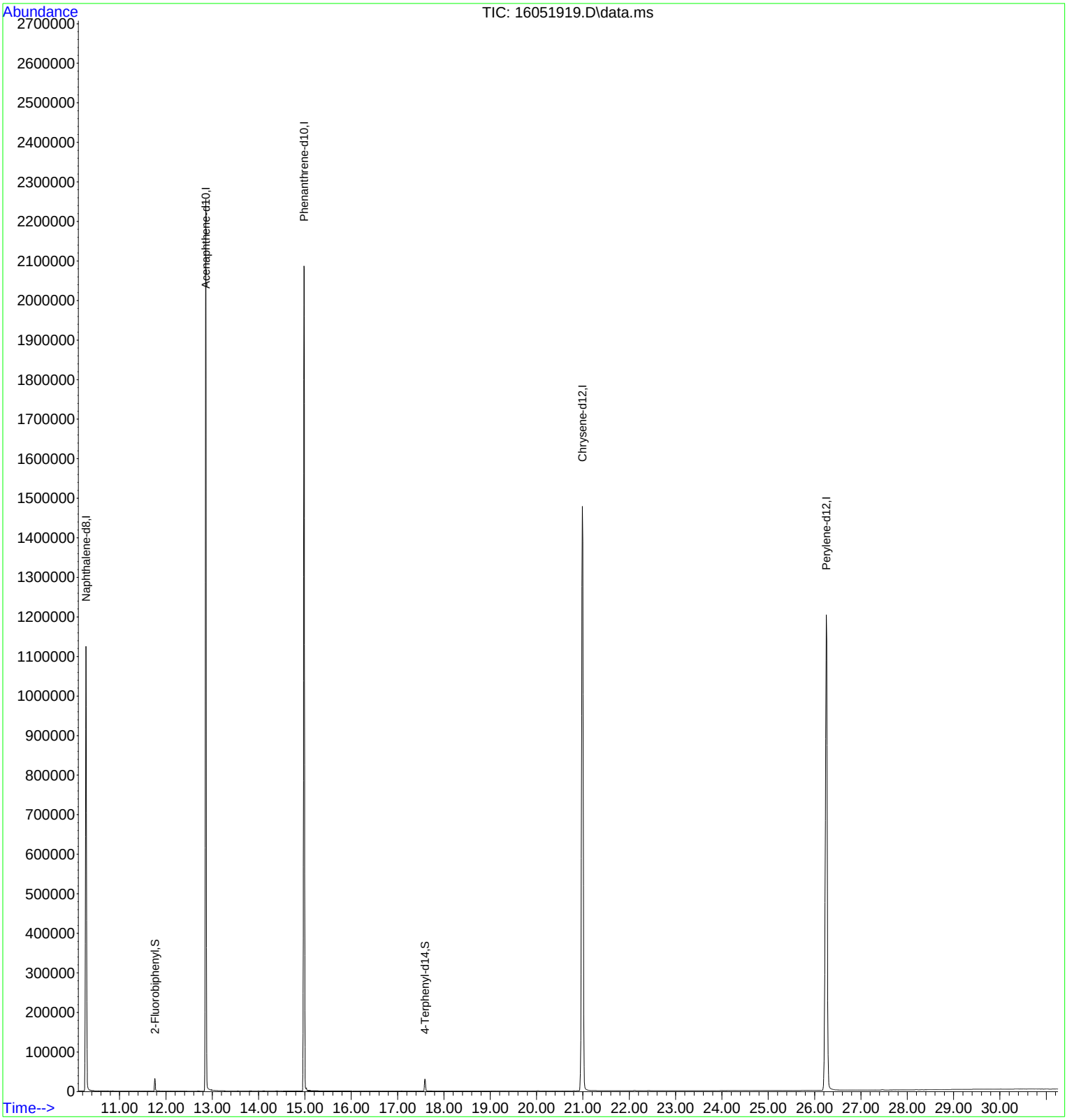
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051919.D
Acq On : 19 May 2016 7:54 pm
Operator :
Sample : 1605121-04A
Misc : SAMP
ALS Vial : 19 Sample Multiplier: 10

Quant Time: May 20 08:39:33 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051920.D
Acq On : 19 May 2016 8:31 pm
Operator :
Sample : 1605121-05A
Misc : SAMP
ALS Vial : 20 Sample Multiplier: 10

Quant Time: May 20 08:39:35 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.272 | 136 | 1606176 | 4000.00 | ug/kg | 99 |
| 6) Acenaphthene-d10 | 12.862 | 164 | 1337987 | 4000.00 | ug/kg | 107 |
| 11) Phenanthrene-d10 | 14.981 | 188 | 2508837 | 4000.00 | ug/kg | 86 |
| 16) Chrysene-d12 | 20.988 | 240 | 2401078 | 4000.00 | ug/kg | 89 |
| 20) Perylene-d12 | 26.255 | 264 | 2272691 | 4000.00 | ug/kg | 92 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.761 | 172 | 30458 | 85.17 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.13%# | | | |
| 17) 4-Terphenyl-d14 | 17.590 | 244 | 39712 | 78.14 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.95%# | | | |

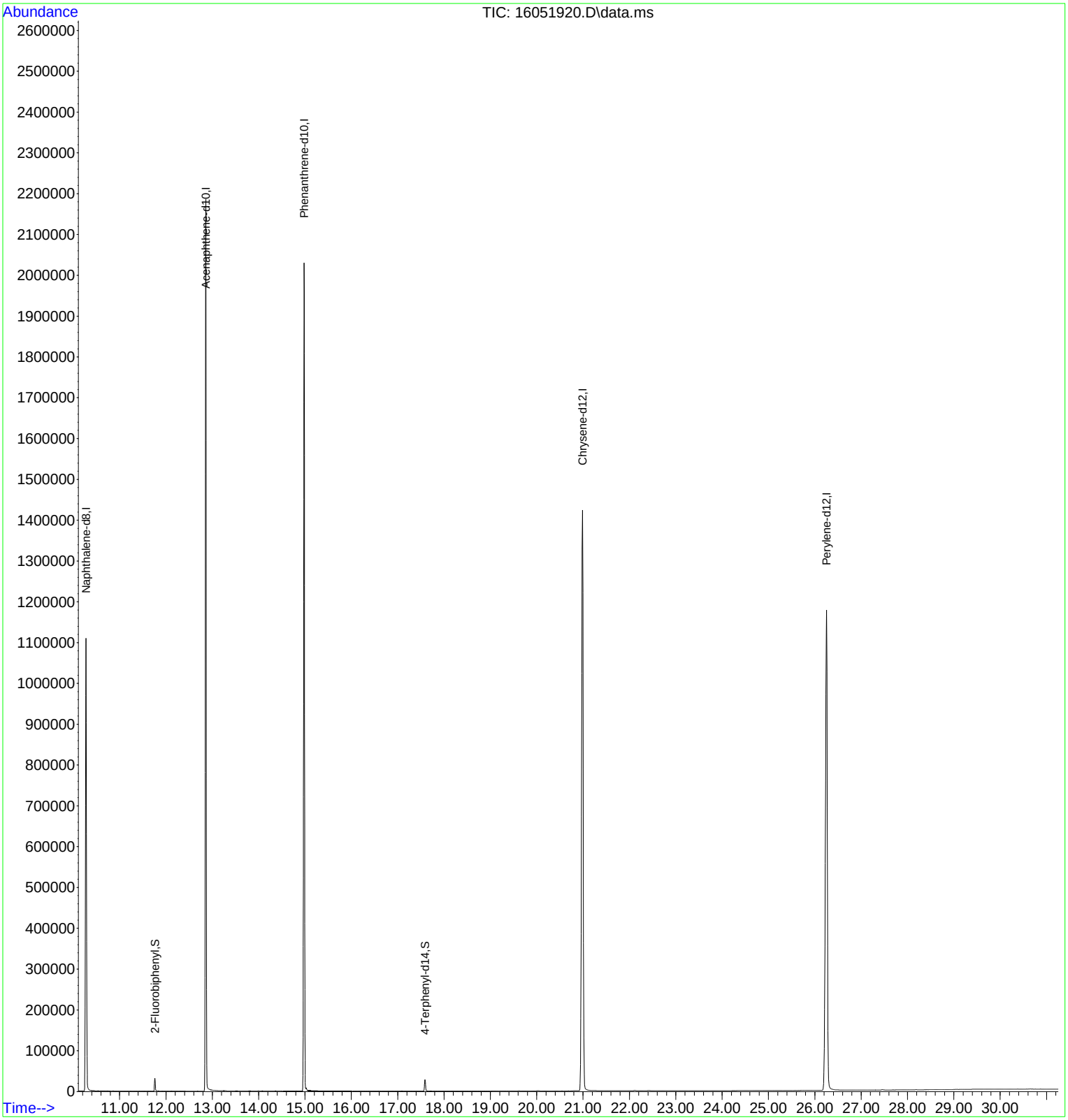
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051920.D
Acq On : 19 May 2016 8:31 pm
Operator :
Sample : 1605121-05A
Misc : SAMP
ALS Vial : 20 Sample Multiplier: 10

Quant Time: May 20 08:39:35 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051921.D
Acq On : 19 May 2016 9:08 pm
Operator :
Sample : 1605121-08A
Misc : SAMP
ALS Vial : 21 Sample Multiplier: 10

Quant Time: May 20 08:39:39 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.272 | 136 | 1618498 | 4000.00 | ug/kg | 99 |
| 6) Acenaphthene-d10 | 12.862 | 164 | 1310521 | 4000.00 | ug/kg | 105 |
| 11) Phenanthrene-d10 | 14.981 | 188 | 2498632 | 4000.00 | ug/kg | 85 |
| 16) Chrysene-d12 | 20.988 | 240 | 2473775 | 4000.00 | ug/kg | 91 |
| 20) Perylene-d12 | 26.255 | 264 | 2342909 | 4000.00 | ug/kg | 94 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.761 | 172 | 30669 | 85.11 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.13%# | | | |
| 17) 4-Terphenyl-d14 | 17.589 | 244 | 40864 | 78.04 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.95%# | | | |

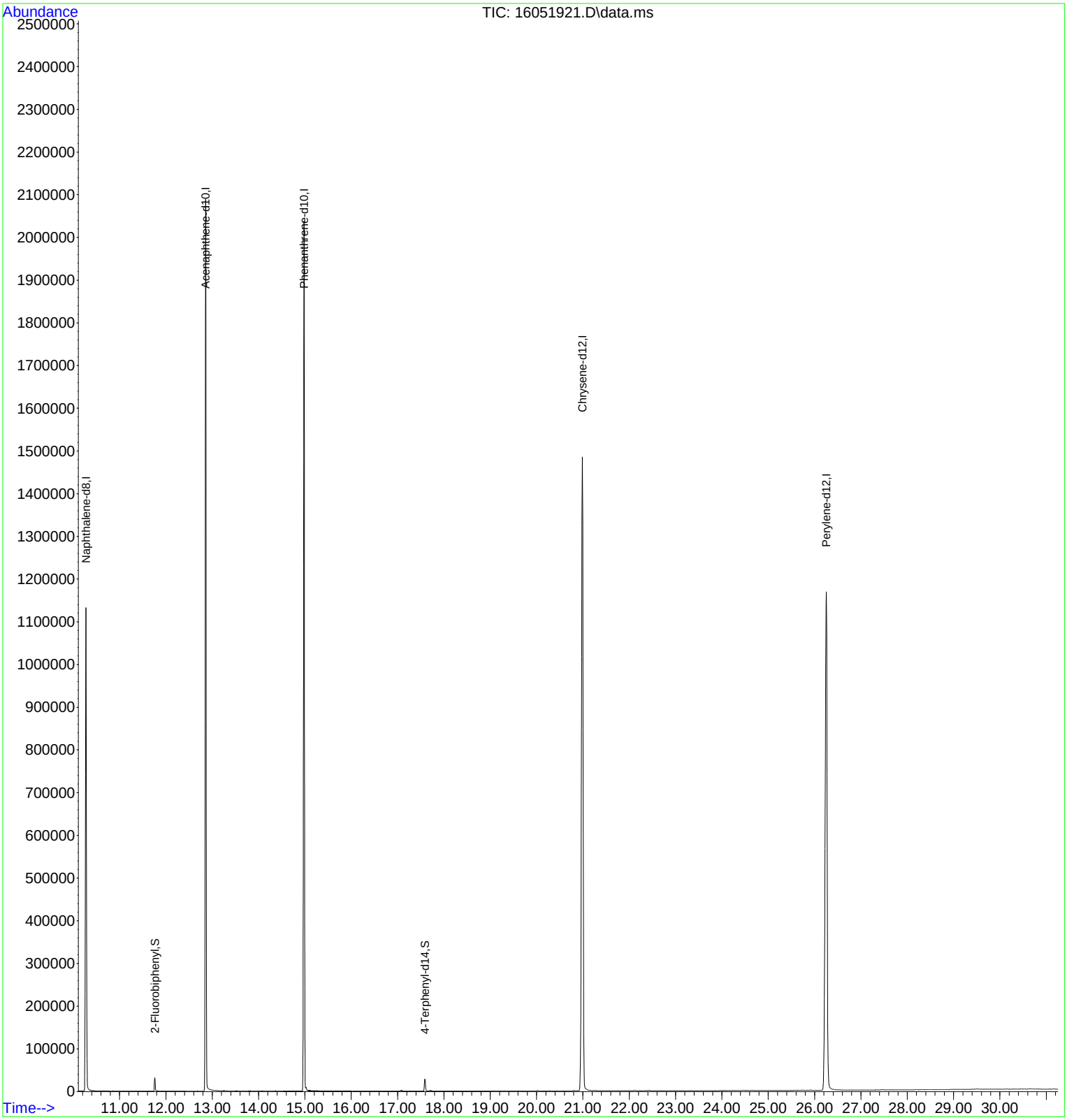
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051921.D
Acq On : 19 May 2016 9:08 pm
Operator :
Sample : 1605121-08A
Misc : SAMP
ALS Vial : 21 Sample Multiplier: 10

Quant Time: May 20 08:39:39 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051922.D
Acq On : 19 May 2016 9:44 pm
Operator :
Sample : 1605121-09A
Misc : SAMP
ALS Vial : 22 Sample Multiplier: 10

Quant Time: May 20 08:39:42 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.271 | 136 | 1537083 | 4000.00 | ug/kg | 94 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1252013 | 4000.00 | ug/kg | 100 |
| 11) Phenanthrene-d10 | 14.980 | 188 | 2380791 | 4000.00 | ug/kg | 81 |
| 16) Chrysene-d12 | 20.988 | 240 | 2289825 | 4000.00 | ug/kg | 84 |
| 20) Perylene-d12 | 26.255 | 264 | 2190642 | 4000.00 | ug/kg | 88 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.760 | 172 | 29815 | 87.12 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.18%# | | | |
| 17) 4-Terphenyl-d14 | 17.589 | 244 | 38420 | 79.27 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.98%# | | | |

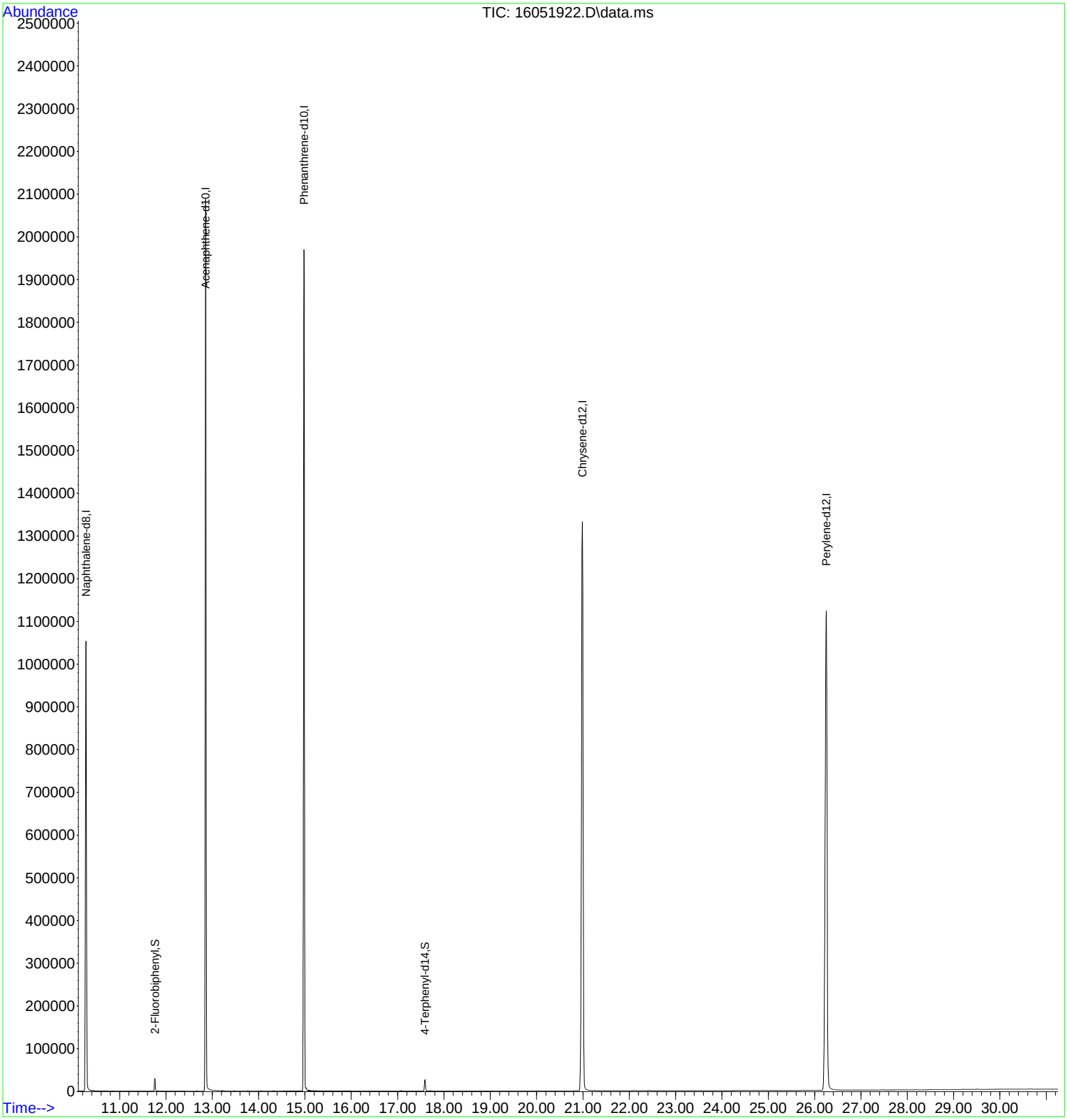
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051922.D
Acq On : 19 May 2016 9:44 pm
Operator :
Sample : 1605121-09A
Misc : SAMP
ALS Vial : 22 Sample Multiplier: 10

Quant Time: May 20 08:39:42 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051923.D
Acq On : 19 May 2016 10:21 pm
Operator :
Sample : 1605121-10A
Misc : SAMP
ALS Vial : 23 Sample Multiplier: 10

Quant Time: May 20 08:39:45 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.272 | 136 | 1614037 | 4000.00 | ug/kg | 99 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1345132 | 4000.00 | ug/kg | 107 |
| 11) Phenanthrene-d10 | 14.979 | 188 | 2524449 | 4000.00 | ug/kg | 86 |
| 16) Chrysene-d12 | 20.988 | 240 | 2456895 | 4000.00 | ug/kg | 91 |
| 20) Perylene-d12 | 26.255 | 264 | 2288845 | 4000.00 | ug/kg | 92 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.761 | 172 | 30894 | 85.97 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.15%# | | | |
| 17) 4-Terphenyl-d14 | 17.590 | 244 | 39123 | 75.23 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.88%# | | | |

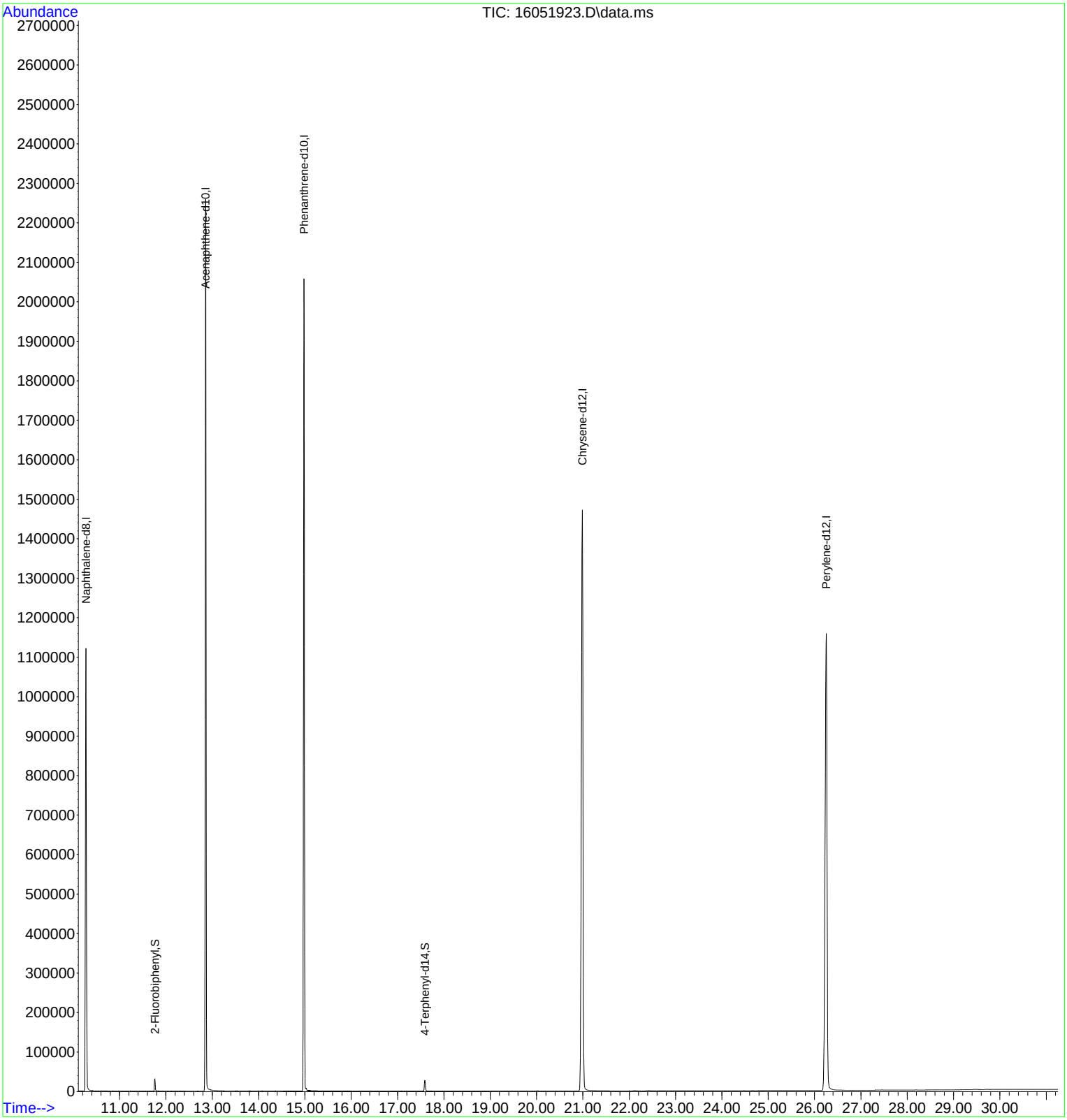
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051923.D
Acq On : 19 May 2016 10:21 pm
Operator :
Sample : 1605121-10A
Misc : SAMP
ALS Vial : 23 Sample Multiplier: 10

Quant Time: May 20 08:39:45 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051924.D
Acq On : 19 May 2016 10:58 pm
Operator :
Sample : 1605121-01A
Misc : SAMP
ALS Vial : 24 Sample Multiplier: 10

Quant Time: May 20 08:39:48 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.272 | 136 | 1558570 | 4000.00 | ug/kg | 96 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1214537 | 4000.00 | ug/kg | 97 |
| 11) Phenanthrene-d10 | 14.981 | 188 | 2474539 | 4000.00 | ug/kg | 85 |
| 16) Chrysene-d12 | 20.988 | 240 | 2402130 | 4000.00 | ug/kg | 89 |
| 20) Perylene-d12 | 26.262 | 264 | 2338487 | 4000.00 | ug/kg | 94 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.761 | 172 | 28841 | 83.11 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 2.08%# | | |
| 17) 4-Terphenyl-d14 | 17.590 | 244 | 41543 | 81.71 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 2.04%# | | |

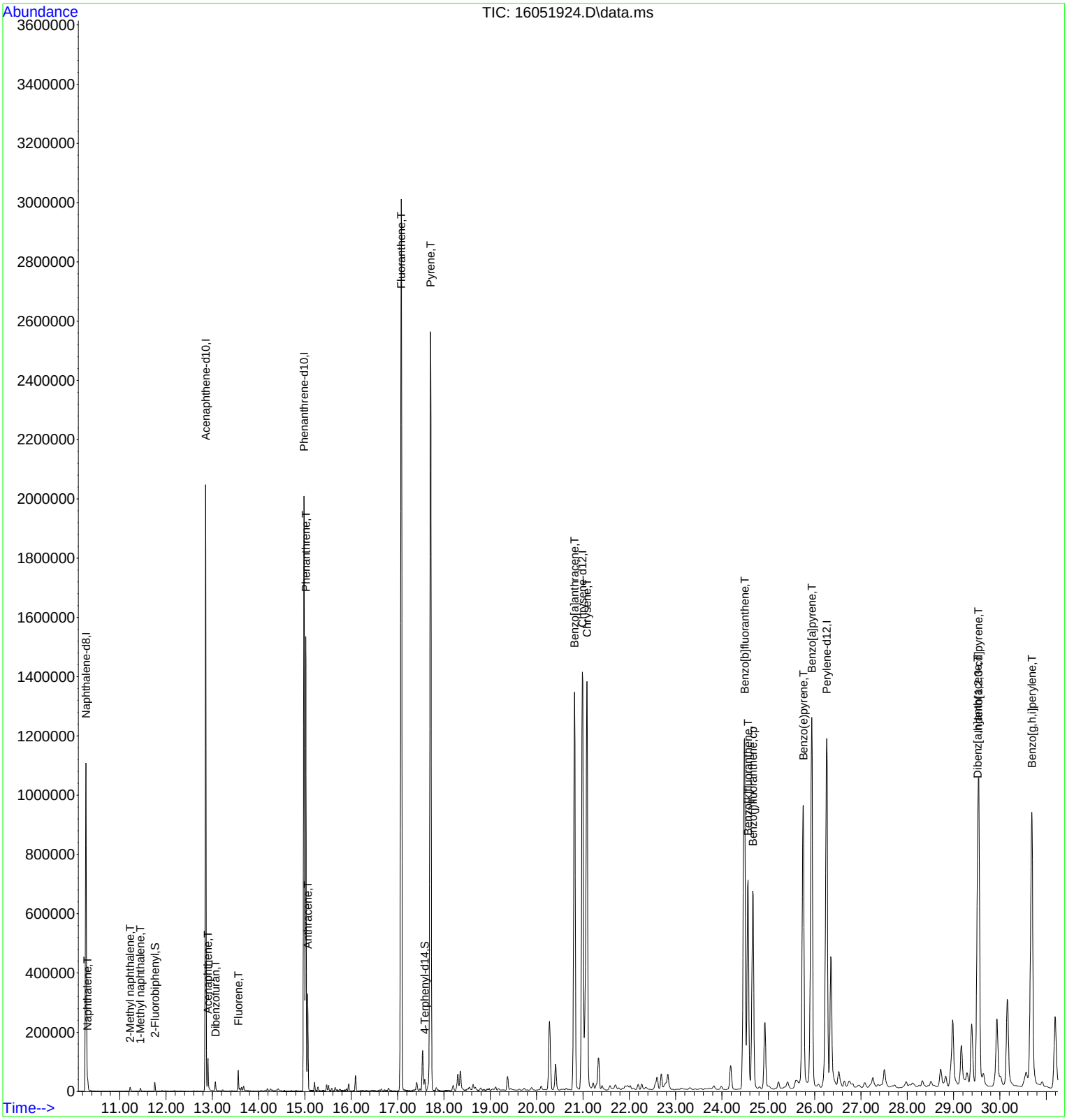
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.309 | 128 | 40378 | 115.64 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.226 | 142 | 9522 | 35.08 | ug/kg | 98 |
| 4) 1-Methyl naphthalene | 11.448 | 142 | 6521 | 25.39 | ug/kg | 98 |
| 8) Acenaphthene | 12.906 | 153 | 51302 | 153.15 | ug/kg | 98 |
| 9) Dibenzofuran | 13.068 | 168 | 30871 | 60.50 | ug/kg | 96 |
| 10) Fluorene | 13.559 | 166 | 34281 | 74.04 | ug/kg | 97 |
| 12) Phenanthrene | 15.019 | 178 | 1451877 | 2132.36 | ug/kg | 100 |
| 13) Anthracene | 15.059 | 178 | 311299 | 451.84 | ug/kg | 98 |
| 14) Fluoranthene | 17.080 | 202 | 3437901 | 5950.62 | ug/kg | 96 |
| 15) Pyrene | 17.712 | 202 | 3108018 | 5268.10 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.819 | 228 | 2140303 | 3752.07 | ug/kg | 99 |
| 19) Chrysene | 21.090 | 228 | 2443751 | 4735.62 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.489 | 252 | 2545106 | 4453.75 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.563 | 252 | 1213516 | 2239.36 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.672 | 252 | 1166034 | 2259.05 | ug/kg | 87 |
| 24) Benzo(e)pyrene | 25.756 | 252 | 1899833 | 3461.11 | ug/kg | 96 |
| 25) Benzo[a]pyrene | 25.940 | 252 | 2585956 | 4810.48 | ug/kg | 97 |
| 26) Indeno[1,2,3-cd]pyrene | 29.544 | 276 | 2022590 | 3005.62 | ug/kg | 93 |
| 27) Dibenz[a,h]anthracene | 29.514 | 278 | 469903 | 798.94 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.686 | 276 | 2045407 | 3560.14 | ug/kg | 97 |

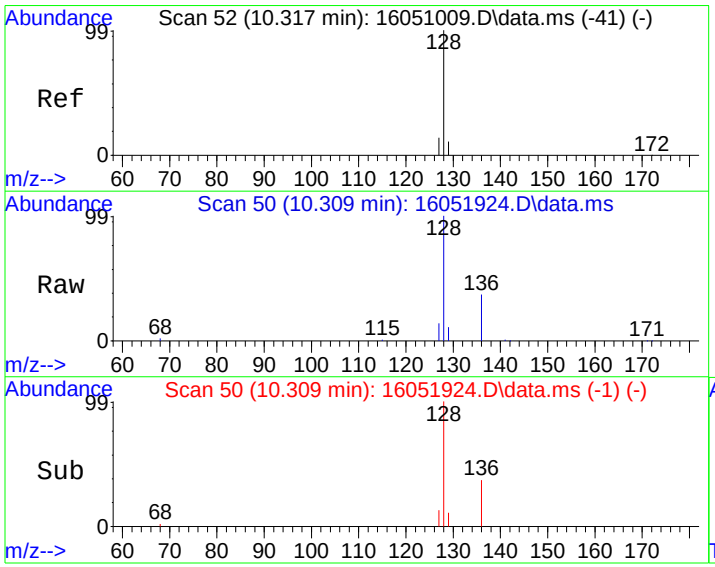
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051924.D
Acq On : 19 May 2016 10:58 pm
Operator :
Sample : 1605121-01A
Misc : SAMP
ALS Vial : 24 Sample Multiplier: 10

Quant Time: May 20 08:39:48 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

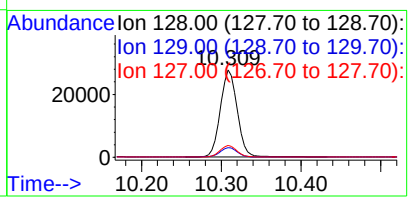


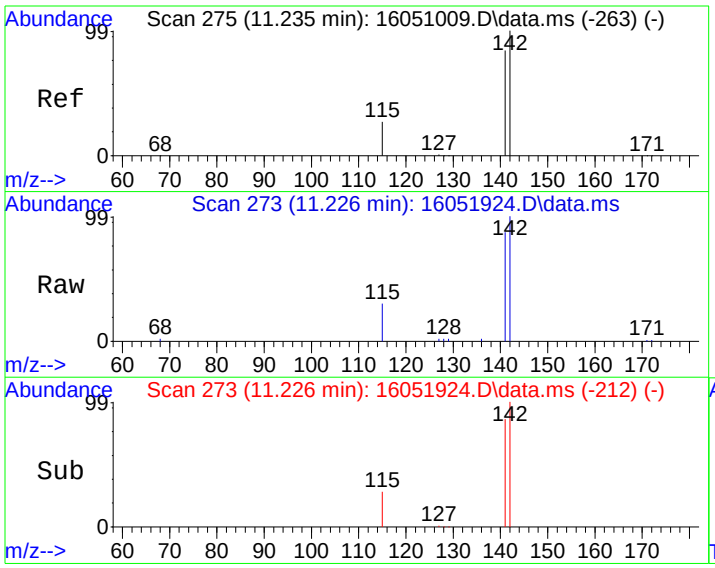



#2
Naphthalene
Concen: 115.64 ug/kg
RT: 10.309 min Scan# 50
Delta R.T. -0.001 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:128 Resp: 40378

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 10.9 | 0.0 | 31.3 |
| 127 | 13.5 | 0.0 | 33.6 |

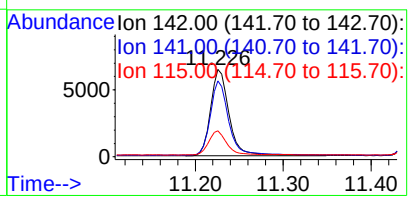


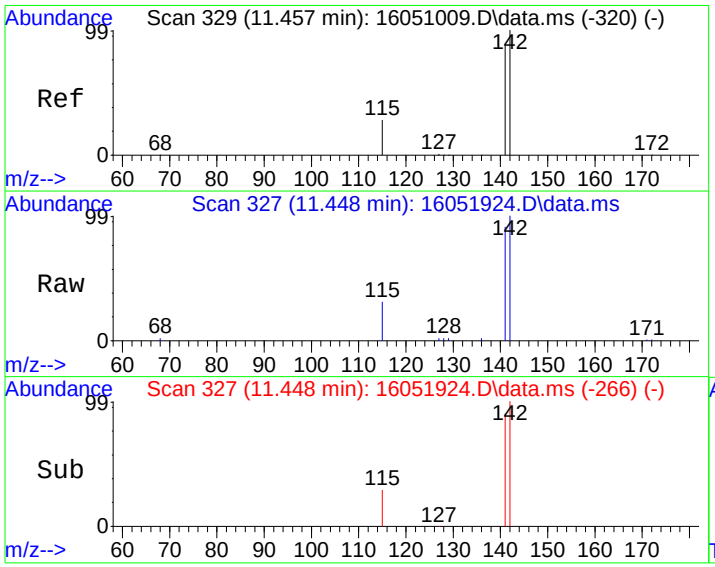




#3
2-Methyl naphthalene
Concen: 35.08 ug/kg
RT: 11.226 min Scan# 273
Delta R.T. -0.000 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:142 Resp: 9522

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 85.9 | 64.4 | 104.4 |
| 115 | 27.9 | 6.4 | 46.4 |

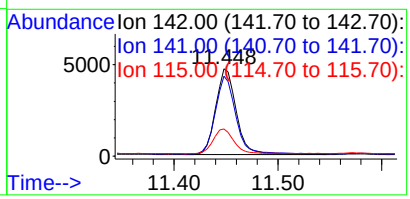


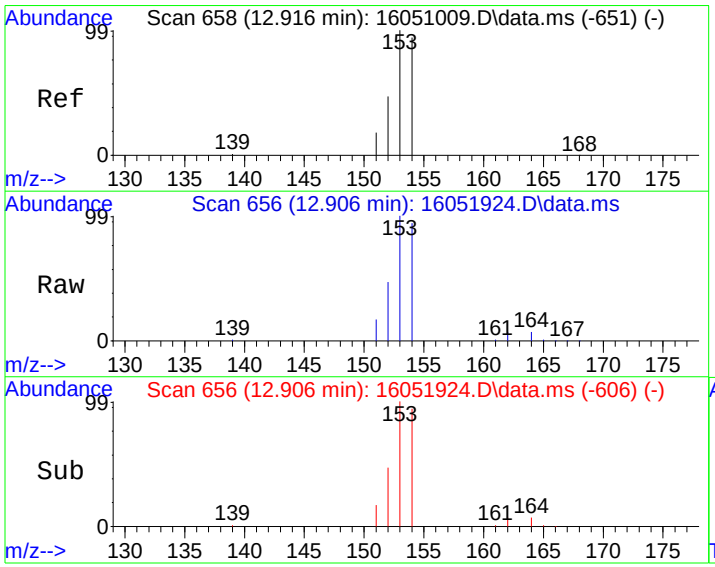




#4
1-Methyl naphthalene
Concen: 25.39 ug/kg
RT: 11.448 min Scan# 327
Delta R.T. -0.001 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:142 Resp: 6521

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 90.3 | 68.1 | 108.1 |
| 115 | 28.9 | 8.6 | 48.6 |

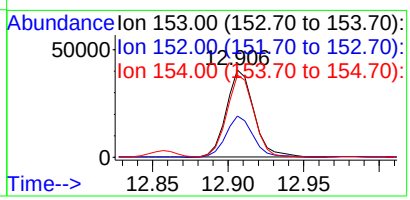


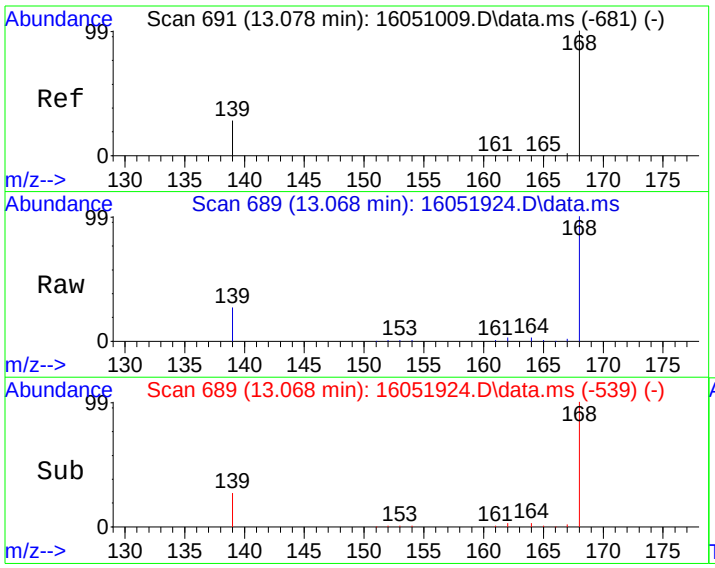



#8
Acenaphthene
Concen: 153.15 ug/kg
RT: 12.906 min Scan# 656
Delta R.T. -0.005 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:153 Resp: 51302

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 153 | 100 | | |
| 152 | 47.1 | 26.5 | 66.5 |
| 154 | 93.8 | 76.3 | 116.3 |

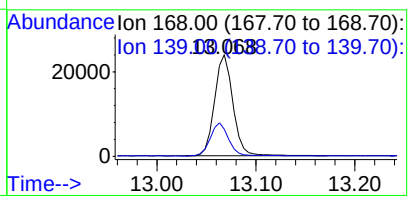


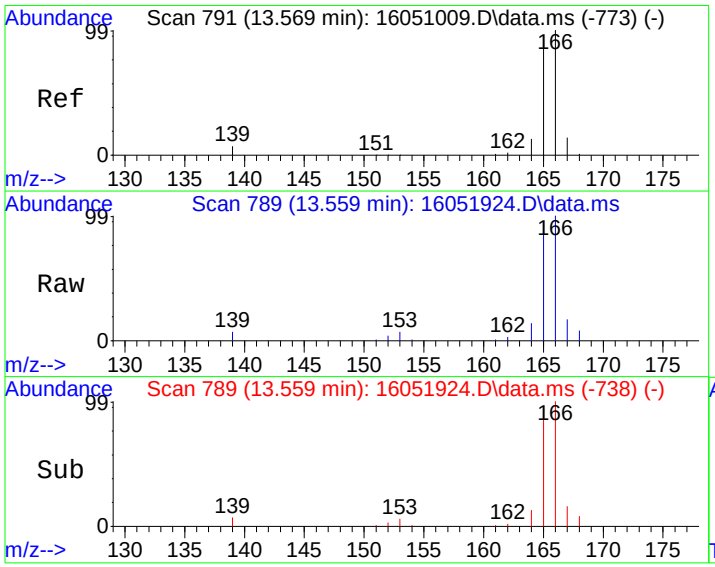




#9
Dibenzofuran
Concen: 60.50 ug/kg
RT: 13.068 min Scan# 689
Delta R.T. 0.000 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:168 Resp: 30871

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 26.3 | 8.2 | 48.2 |

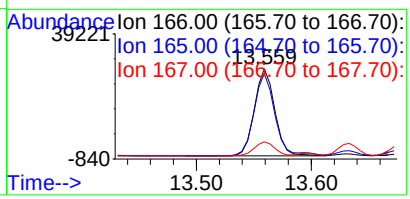


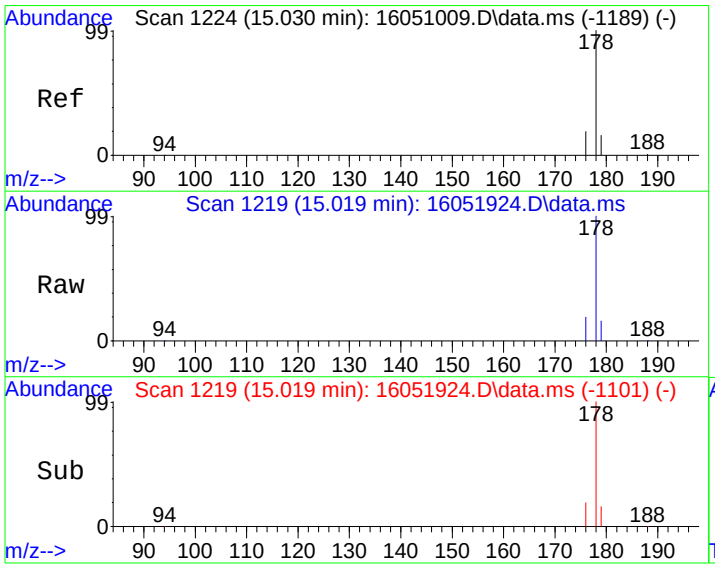




#10
Fluorene
Concen: 74.04 ug/kg
RT: 13.559 min Scan# 789
Delta R.T. 0.000 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:166 Resp: 34281

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 94.1 | 71.4 | 111.4 |
| 167 | 16.3 | 0.0 | 33.8 |

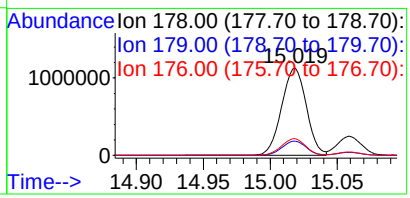


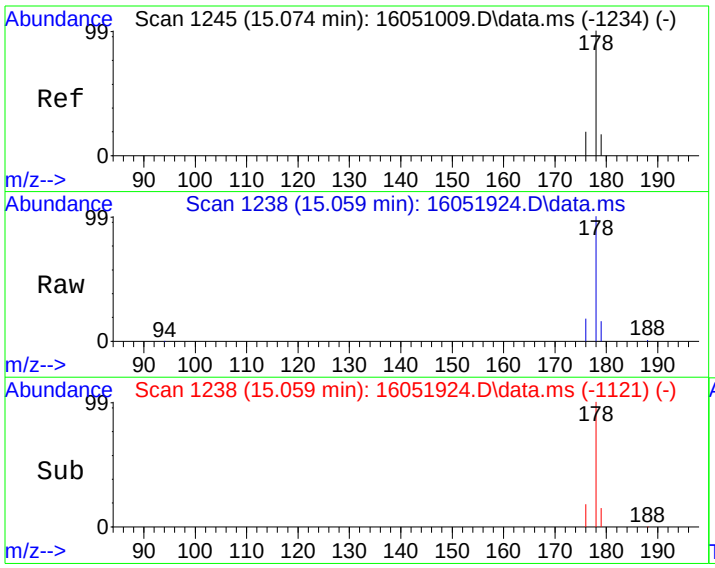



#12
Phenanthrene
Concen: 2132.36 ug/kg
RT: 15.019 min Scan# 1219
Delta R.T. -0.000 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:178 Resp: 1451877

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 16.3 | 0.0 | 36.4 |
| 176 | 19.0 | 0.0 | 39.0 |

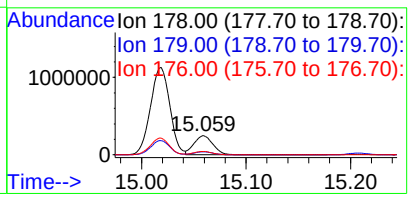


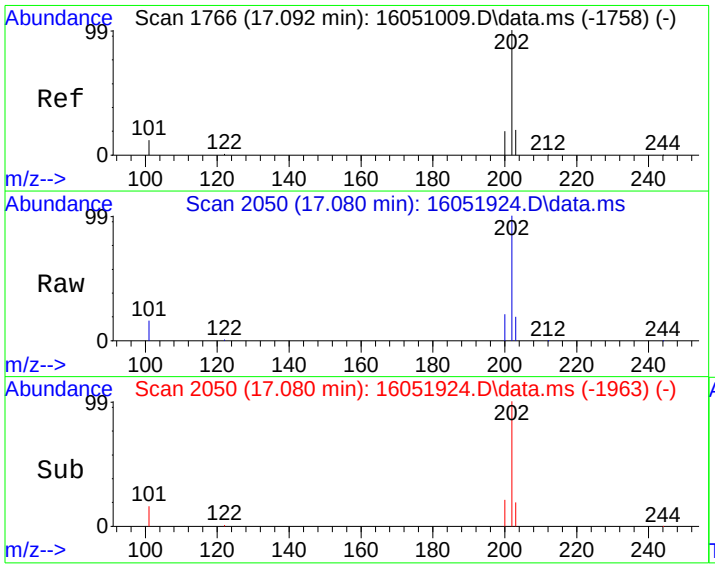




#13
Anthracene
Concen: 451.84 ug/kg
RT: 15.059 min Scan# 1238
Delta R.T. -0.002 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:178 Resp: 311299

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.5 | 0.0 | 36.3 |
| 176 | 17.5 | 0.0 | 38.5 |

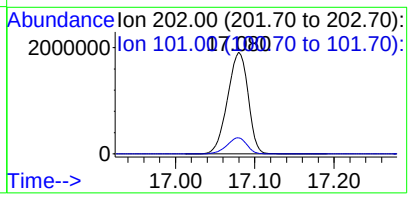


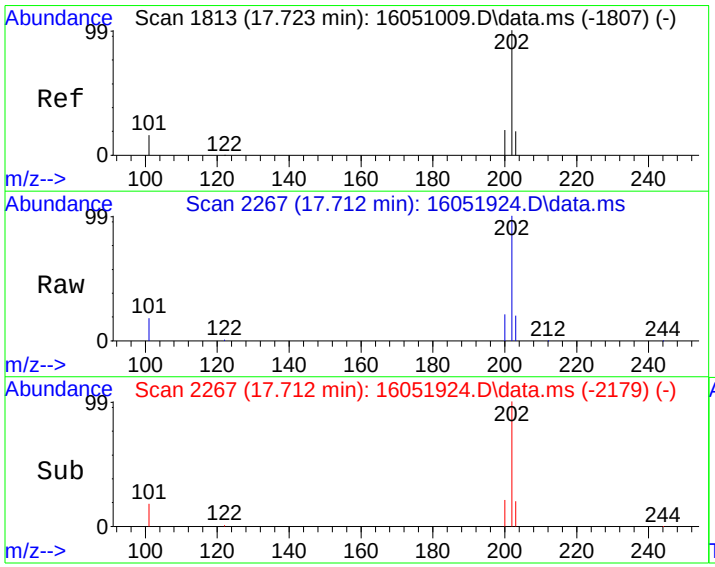




#14
Fluoranthene
Concen: 5950.62 ug/kg
RT: 17.080 min Scan# 2050
Delta R.T. 0.004 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:202 Resp: 3437901

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 15.8 | 0.0 | 34.4 |

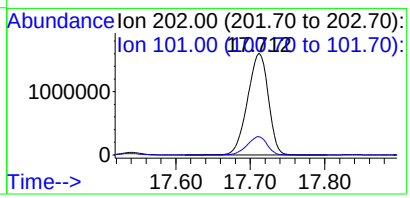


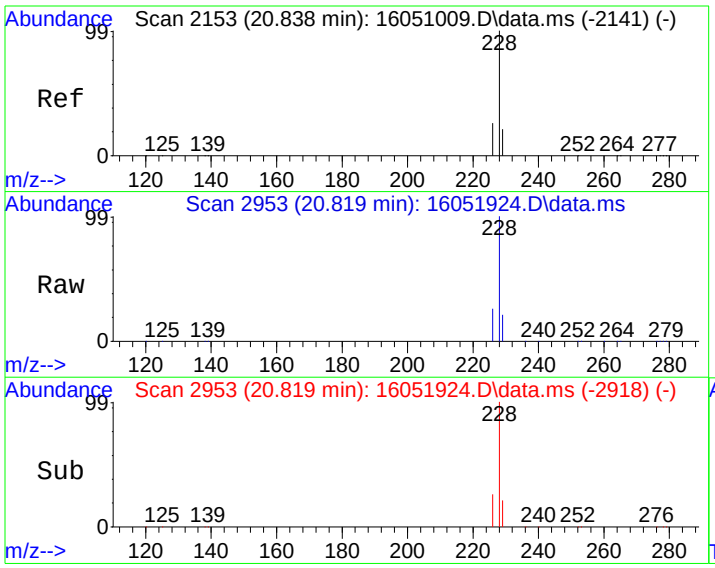



#15
Pyrene
Concen: 5268.10 ug/kg
RT: 17.712 min Scan# 2267
Delta R.T. 0.006 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:202 Resp: 3108018

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 17.9 | 0.0 | 37.3 |

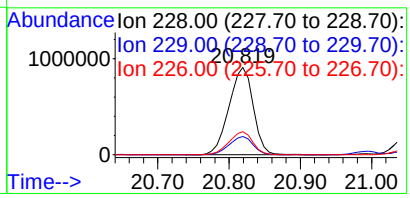


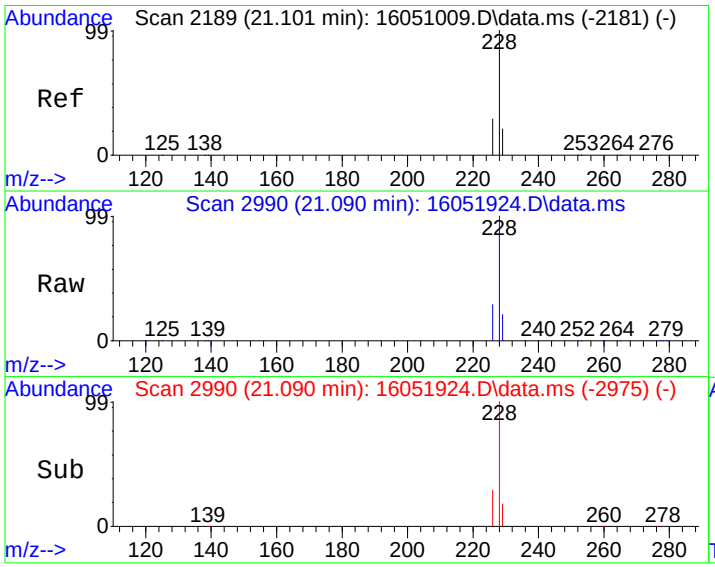




#18
Benzo[a]anthracene
Concen: 3752.07 ug/kg
RT: 20.819 min Scan# 2953
Delta R.T. 0.007 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:228 Resp: 2140303

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 20.7 | 0.3 | 40.3 |
| 226 | 26.3 | 5.7 | 45.7 |

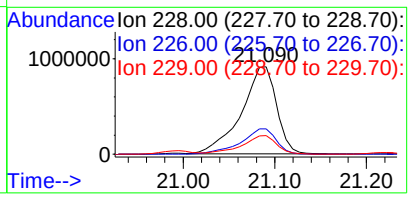


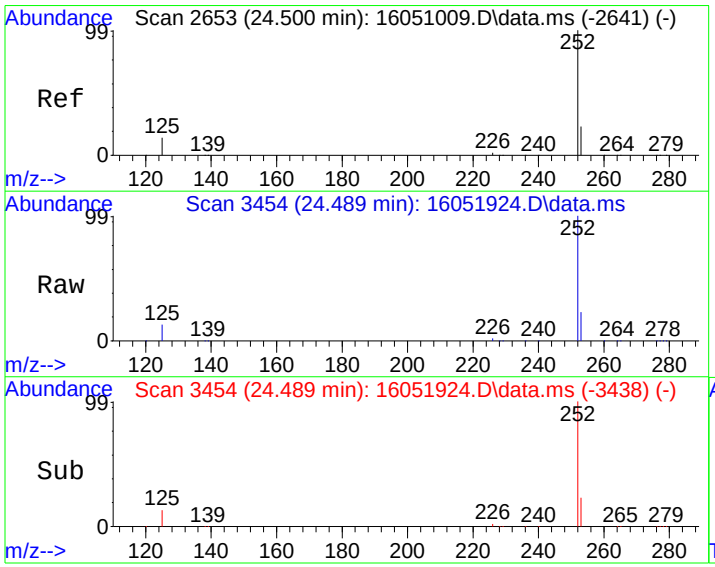




#19
Chrysene
Concen: 4735.62 ug/kg
RT: 21.090 min Scan# 2990
Delta R.T. 0.007 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:228 Resp: 2443751

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.9 | 8.2 | 48.2 |
| 229 | 21.1 | 0.3 | 40.3 |

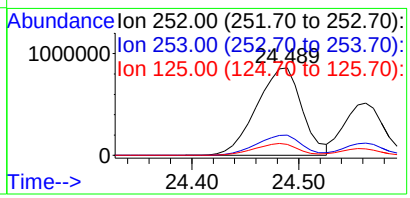


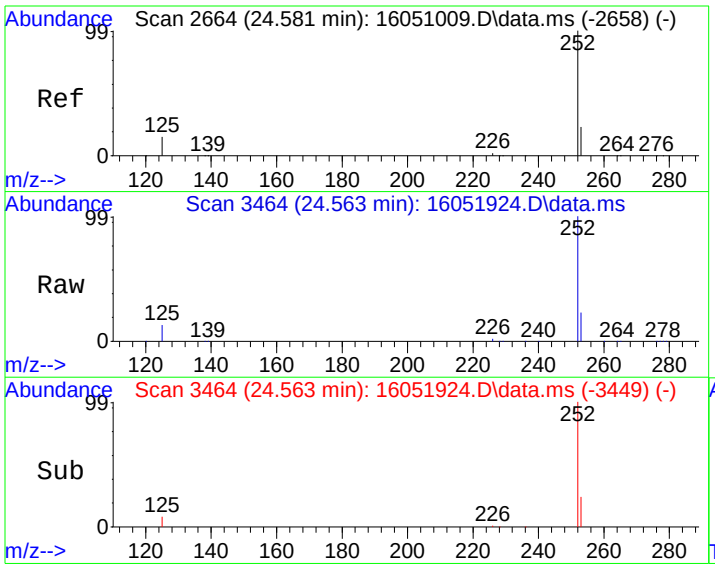



#21
Benzo[b]fluoranthene
Concen: 4453.75 ug/kg
RT: 24.489 min Scan# 3454
Delta R.T. 0.014 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:252 Resp: 2545106

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.9 | 2.3 | 42.3 |
| 125 | 12.7 | 0.0 | 32.2 |

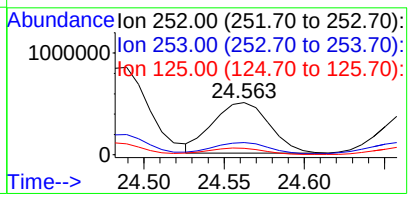


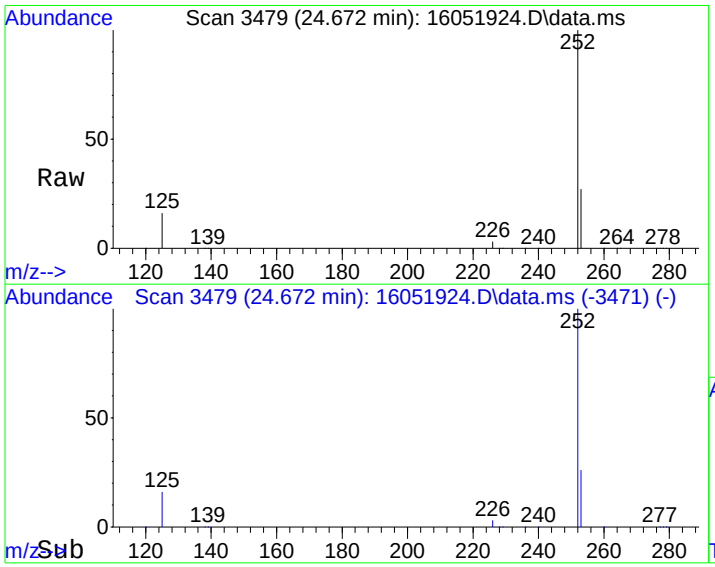




#22
Benzo[k]fluoranthene
Concen: 2239.36 ug/kg
RT: 24.563 min Scan# 3464
Delta R.T. 0.008 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:252 Resp: 1213516

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.8 | 2.5 | 42.5 |
| 125 | 12.6 | 0.0 | 32.6 |

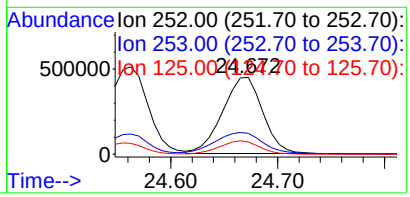


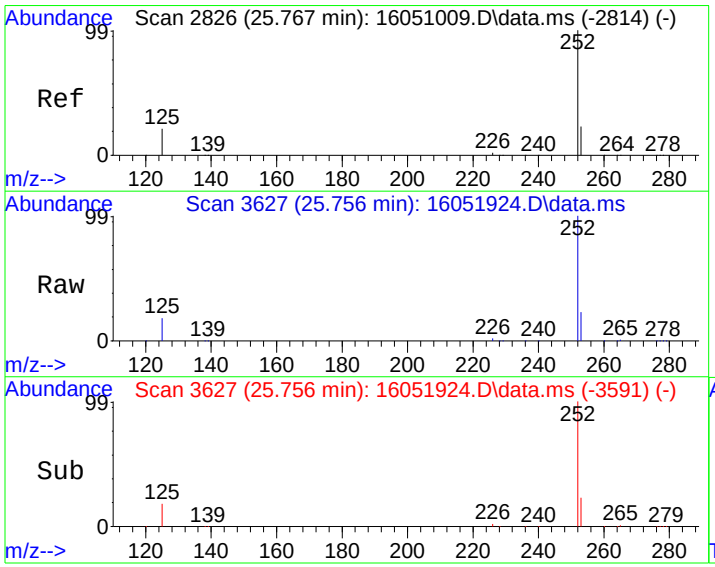




#23
Benzo(j)fluoranthene
Concen: 2259.05 ug/kg
RT: 24.672 min Scan# 3479
Delta R.T. 0.007 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:252 Resp: 1166034

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 33.0 | 2.2 | 42.2 |
| 125 | 17.3 | 0.0 | 37.3 |

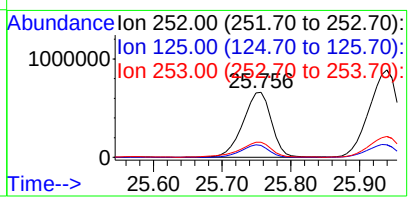


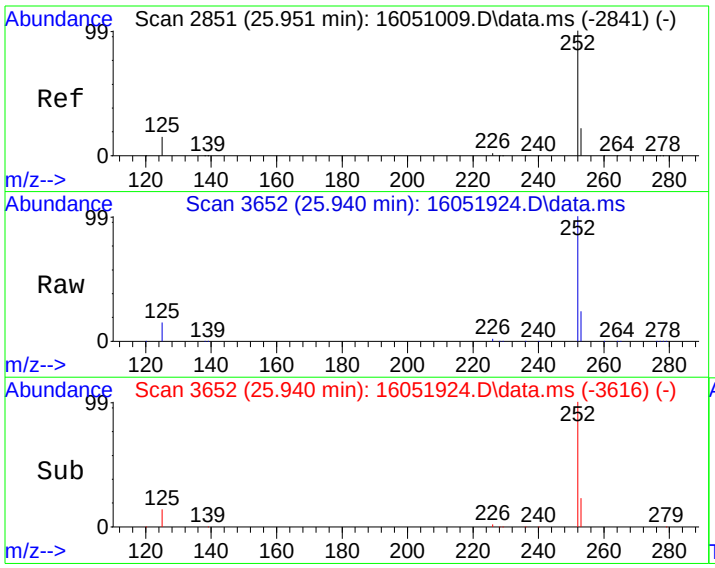



#24
Benzo(e)pyrene
Concen: 3461.11 ug/kg
RT: 25.756 min Scan# 3627
Delta R.T. 0.014 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:252 Resp: 1899833

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 125 | 18.6 | 0.0 | 38.7 |
| 253 | 25.3 | 2.3 | 42.3 |

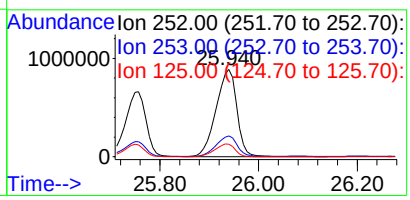


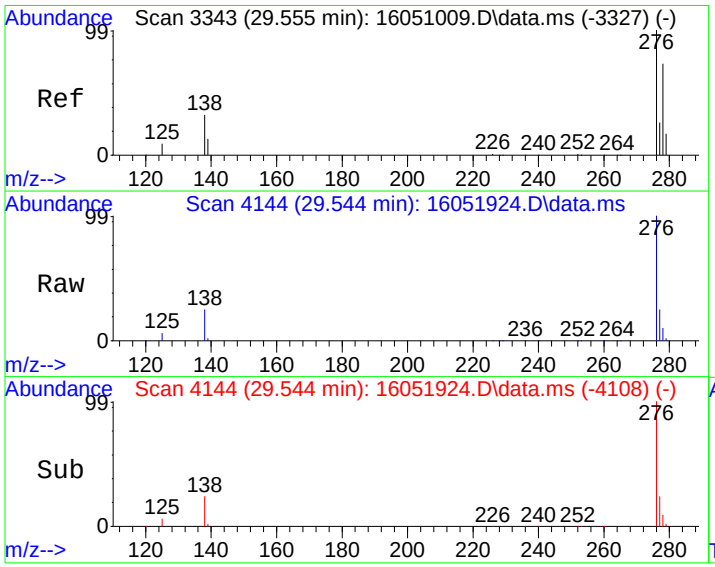




#25
Benzo[a]pyrene
Concen: 4810.48 ug/kg
RT: 25.940 min Scan# 3652
Delta R.T. 0.015 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:252 Resp: 2585956

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 23.5 | 2.3 | 42.3 |
| 125 | 14.5 | 0.0 | 33.5 |

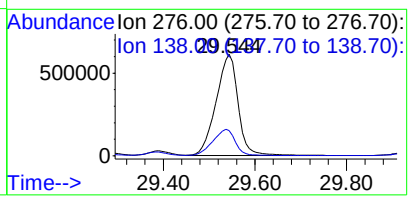


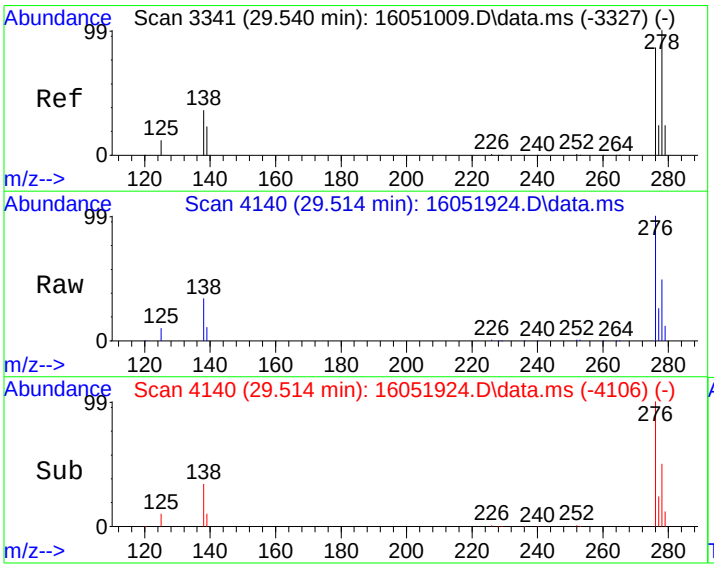




#26
Indeno[1,2,3-cd]pyrene
Concen: 3005.62 ug/kg
RT: 29.544 min Scan# 4144
Delta R.T. 0.015 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:276 Resp: 2022590

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 24.7 | 8.3 | 48.3 |

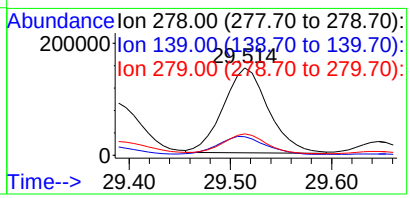


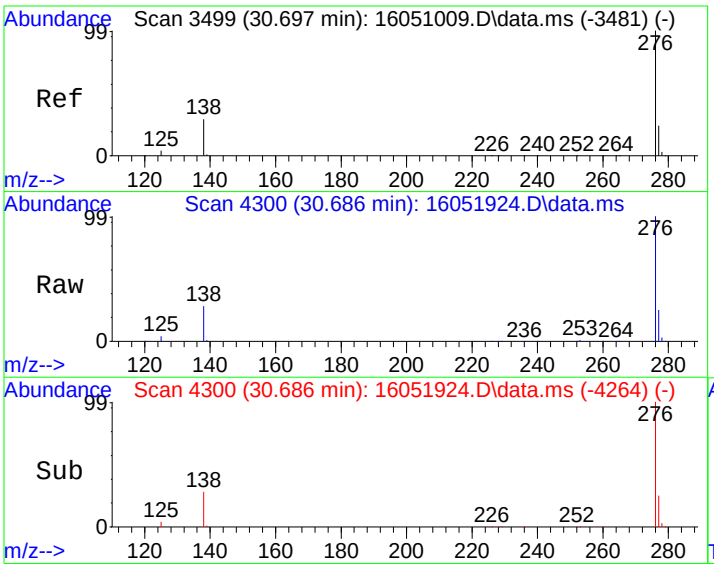



#27
Dibenz[a,h]anthracene
Concen: 798.94 ug/kg
RT: 29.514 min Scan# 4140
Delta R.T. 0.000 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:278 Resp: 469903

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 21.2 | 0.0 | 40.0 |
| 279 | 23.6 | 4.2 | 44.2 |

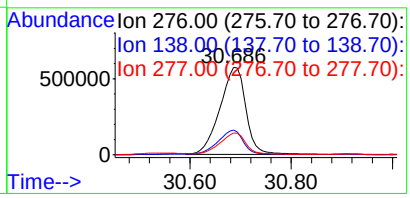



#28
Benzo[g,h,i]perylene
Concen: 3560.14 ug/kg
RT: 30.686 min Scan# 4300
Delta R.T. 0.014 min
Lab File: 16051924.D
Acq: 19 May 2016 10:58 pm

Tgt Ion:276 Resp: 2045407

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 28.2 | 5.8 | 45.8 |
| 277 | 24.6 | 4.4 | 44.4 |



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051925.D
Acq On : 19 May 2016 11:35 pm
Operator :
Sample : 1605121-01AMS
Misc : MS
ALS Vial : 25 Sample Multiplier: 10

Quant Time: May 20 08:38:18 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.272 | 136 | 1551770 | 4000.00 | ug/kg | 95 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1216751 | 4000.00 | ug/kg | 97 |
| 11) Phenanthrene-d10 | 14.981 | 188 | 2443926 | 4000.00 | ug/kg | 84 |
| 16) Chrysene-d12 | 20.995 | 240 | 2359252 | 4000.00 | ug/kg | 87 |
| 20) Perylene-d12 | 26.262 | 264 | 2311134 | 4000.00 | ug/kg | 93 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.757 | 172 | 29521 | 85.44 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.14%# | | | |
| 17) 4-Terphenyl-d14 | 17.590 | 244 | 41757 | 83.62 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 2.09%# | | | |

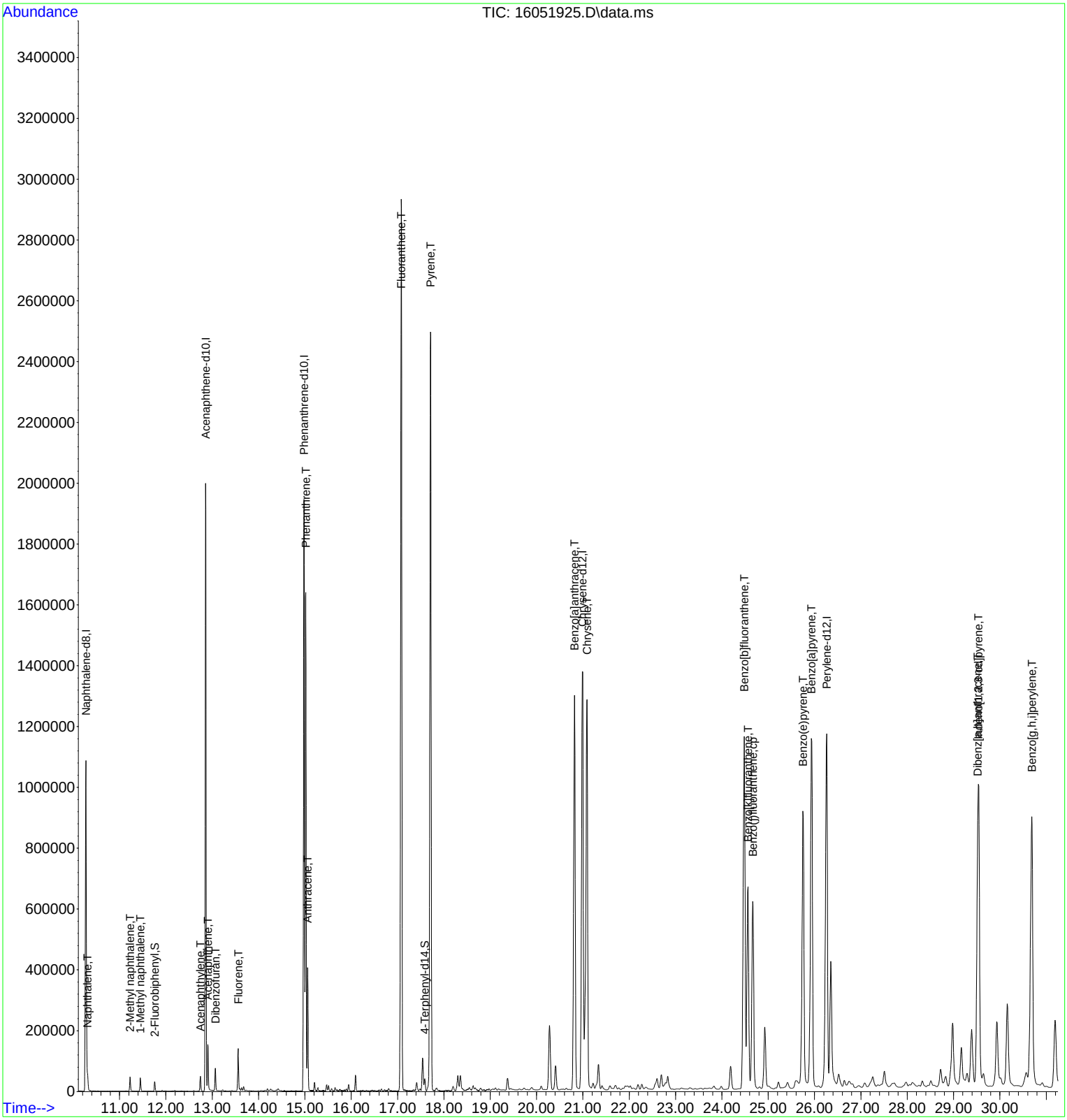
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.310 | 128 | 57916 | 166.60 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.227 | 142 | 30310 | 112.16 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.449 | 142 | 26746 | 104.59 | ug/kg | 99 |
| 7) Acenaphthylene | 12.744 | 152 | 46257 | 86.97 | ug/kg | 99 |
| 8) Acenaphthene | 12.906 | 153 | 72687 | 216.59 | ug/kg | 97 |
| 9) Dibenzofuran | 13.068 | 168 | 74288 | 145.31 | ug/kg | 97 |
| 10) Fluorene | 13.559 | 166 | 71438 | 154.01 | ug/kg | 98 |
| 12) Phenanthrene | 15.019 | 178 | 1579723 | 2349.19 | ug/kg | 100 |
| 13) Anthracene | 15.059 | 178 | 382317 | 561.87 | ug/kg | 98 |
| 14) Fluoranthene | 17.080 | 202 | 3384818 | 5927.84 | ug/kg | 96 |
| 15) Pyrene | 17.712 | 202 | 3009878 | 5150.26 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.820 | 228 | 2017213 | 3585.55 | ug/kg | 99 |
| 19) Chrysene | 21.091 | 228 | 2315544 | 4547.93 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.482 | 252 | 2350440 | 4134.74 | ug/kg | 98 |
| 22) Benzo[k]fluoranthene | 24.563 | 252 | 1185201 | 2212.04 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.673 | 252 | 1099570 | 2150.54 | ug/kg | 88 |
| 24) Benzo(e)pyrene | 25.749 | 252 | 1770337 | 3248.22 | ug/kg | 97 |
| 25) Benzo[a]pyrene | 25.940 | 252 | 2380308 | 4455.19 | ug/kg | 98 |
| 26) Indeno[1,2,3-cd]pyrene | 29.544 | 276 | 1907469 | 2859.18 | ug/kg | 94 |
| 27) Dibenz[a,h]anthracene | 29.515 | 278 | 478676 | 824.07 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.687 | 276 | 1931440 | 3389.62 | ug/kg | 97 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051925.D
Acq On : 19 May 2016 11:35 pm
Operator :
Sample : 1605121-01AMS
Misc : MS
ALS Vial : 25 Sample Multiplier: 10

Quant Time: May 20 08:38:18 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051926.D
Acq On : 20 May 2016 12:11 am
Operator :
Sample : 1605121-01AMSD
Misc : MSD
ALS Vial : 26 Sample Multiplier: 10

Quant Time: May 20 08:38:21 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

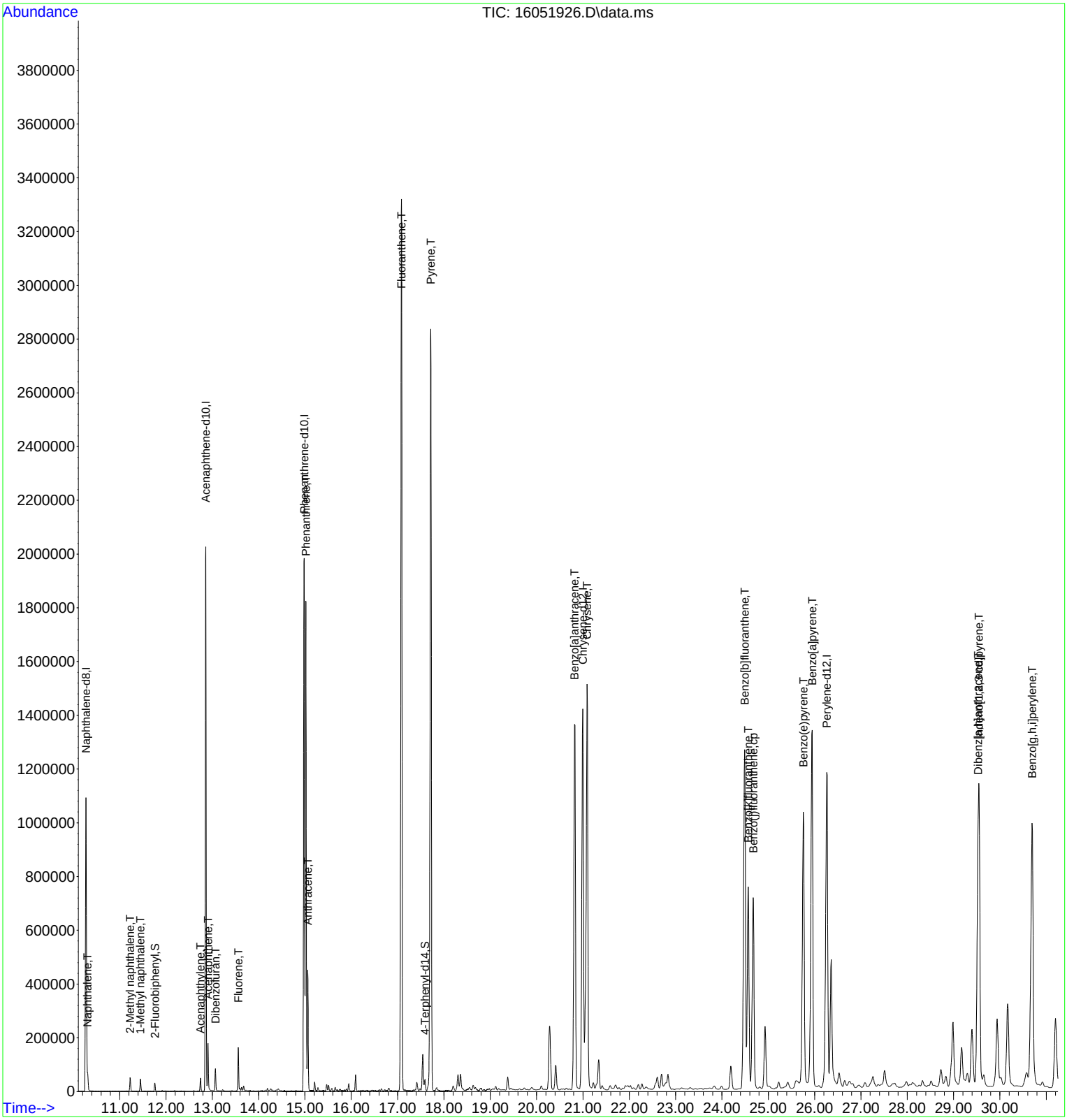
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.275 | 136 | 1588154 | 4000.00 | ug/kg | 97 |
| 6) Acenaphthene-d10 | 12.861 | 164 | 1232139 | 4000.00 | ug/kg | 98 |
| 11) Phenanthrene-d10 | 14.982 | 188 | 2479553 | 4000.00 | ug/kg | 85 |
| 16) Chrysene-d12 | 20.995 | 240 | 2394862 | 4000.00 | ug/kg | 88 |
| 20) Perylene-d12 | 26.262 | 264 | 2347255 | 4000.00 | ug/kg | 95 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.760 | 172 | 29270 | 82.78 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.07%# | | | |
| 17) 4-Terphenyl-d14 | 17.591 | 244 | 41682 | 82.23 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 2.06%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.308 | 128 | 68472 | 192.45 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.226 | 142 | 32925 | 119.04 | ug/kg | 97 |
| 4) 1-Methyl naphthalene | 11.448 | 142 | 28170 | 107.63 | ug/kg | 98 |
| 7) Acenaphthylene | 12.743 | 152 | 45746 | 84.94 | ug/kg | 98 |
| 8) Acenaphthene | 12.910 | 153 | 85201 | 250.71 | ug/kg | 98 |
| 9) Dibenzofuran | 13.067 | 168 | 80470 | 155.44 | ug/kg | 99 |
| 10) Fluorene | 13.558 | 166 | 82704 | 176.07 | ug/kg | 98 |
| 12) Phenanthrene | 15.018 | 178 | 1759081 | 2578.32 | ug/kg | 100 |
| 13) Anthracene | 15.060 | 178 | 432291 | 626.18 | ug/kg | 98 |
| 14) Fluoranthene | 17.083 | 202 | 3807922 | 6748.77 | ug/kg | 96 |
| 15) Pyrene | 17.716 | 202 | 3405439 | 5846.25 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.819 | 228 | 2288655 | 4055.17 | ug/kg | 99 |
| 19) Chrysene | 21.090 | 228 | 2634297 | 5175.84 | ug/kg | 98 |
| 21) Benzo[b]fluoranthene | 24.489 | 252 | 2657830 | 4652.58 | ug/kg | 98 |
| 22) Benzo[k]fluoranthene | 24.570 | 252 | 1336457 | 2465.80 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.680 | 252 | 1247683 | 2416.26 | ug/kg | 88 |
| 24) Benzo(e)pyrene | 25.756 | 252 | 2009864 | 3664.17 | ug/kg | 97 |
| 25) Benzo[a]pyrene | 25.947 | 252 | 2721395 | 5063.88 | ug/kg | 98 |
| 26) Indeno[1,2,3-cd]pyrene | 29.551 | 276 | 2146960 | 3191.09 | ug/kg | 92 |
| 27) Dibenz[a,h]anthracene | 29.522 | 278 | 535946 | 910.60 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.694 | 276 | 2198879 | 3834.68 | ug/kg | 97 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051926.D
Acq On : 20 May 2016 12:11 am
Operator :
Sample : 1605121-01AMSD
Misc : MSD
ALS Vial : 26 Sample Multiplier: 10

Quant Time: May 20 08:38:21 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051928.D
Acq On : 20 May 2016 1:26 am
Operator :
Sample : ICV3-160519
Misc : ICV
ALS Vial : 28 Sample Multiplier: 1

Quant Time: May 20 08:38:24 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

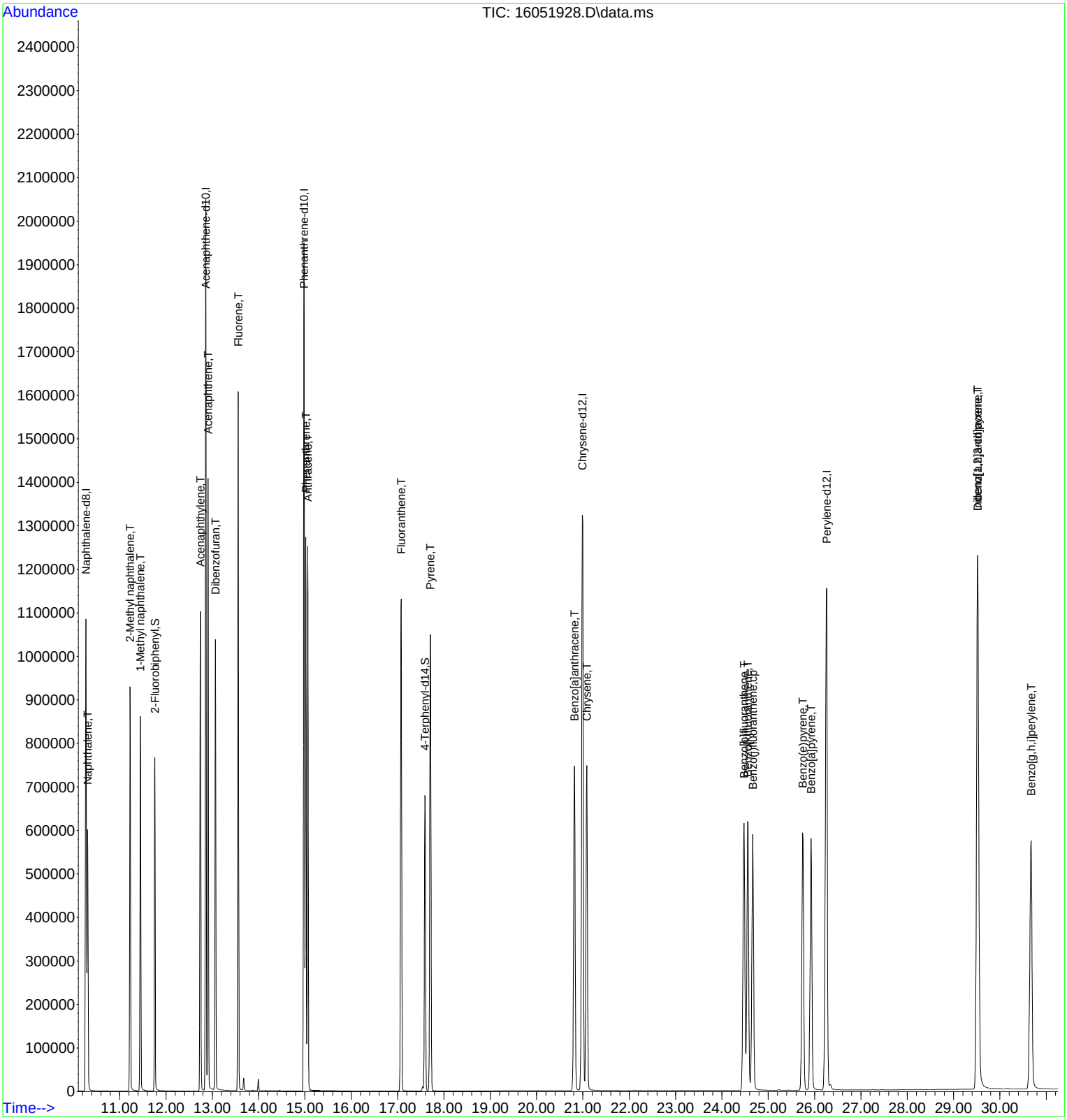
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.272 | 136 | 1551122 | 4000.00 | ug/kg | 95 |
| 6) Acenaphthene-d10 | 12.861 | 164 | 1214874 | 4000.00 | ug/kg | 97 |
| 11) Phenanthrene-d10 | 14.980 | 188 | 2391833 | 4000.00 | ug/kg | 82 |
| 16) Chrysene-d12 | 20.996 | 240 | 2292045 | 4000.00 | ug/kg | 85 |
| 20) Perylene-d12 | 26.262 | 264 | 2238687 | 4000.00 | ug/kg | 90 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.761 | 172 | 694313 | 2010.40 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 50.26% | | |
| 17) 4-Terphenyl-d14 | 17.593 | 244 | 947417 | 1952.89 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 48.82%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.309 | 128 | 695472 | 2001.40 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.226 | 142 | 561429 | 2078.32 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.449 | 142 | 516022 | 2018.67 | ug/kg | 99 |
| 7) Acenaphthylene | 12.748 | 152 | 1078626 | 2031.21 | ug/kg | 99 |
| 8) Acenaphthene | 12.910 | 153 | 674178 | 2011.99 | ug/kg | 99 |
| 9) Dibenzofuran | 13.067 | 168 | 988368 | 1936.30 | ug/kg | 93 |
| 10) Fluorene | 13.563 | 166 | 881101 | 1902.42 | ug/kg | 99 |
| 12) Phenanthrene | 15.018 | 178 | 1224594 | 1860.74 | ug/kg | 99 |
| 13) Anthracene | 15.062 | 178 | 1236181 | 1856.31 | ug/kg | 100 |
| 14) Fluoranthene | 17.077 | 202 | 1278941 | 2036.09 | ug/kg | 100 |
| 15) Pyrene | 17.706 | 202 | 1267395 | 2054.12 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.813 | 228 | 1196899 | 2111.63 | ug/kg | 100 |
| 19) Chrysene | 21.084 | 228 | 1104270 | 2106.84 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.475 | 252 | 1227418 | 2141.68 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.563 | 252 | 1101629 | 2119.51 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.666 | 252 | 1039488 | 2096.41 | ug/kg | 100 |
| 24) Benzo(e)pyrene | 25.742 | 252 | 1141739 | 2109.93 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.925 | 252 | 1139540 | 2123.03 | ug/kg | 100 |
| 26) Indeno[1,2,3-cd]pyrene | 29.529 | 276 | 1415742 | 2158.49 | ug/kg | 98 |
| 27) Dibenz[a,h]anthracene | 29.515 | 278 | 1192495 | 2189.68 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.672 | 276 | 1214603 | 2145.14 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051928.D
Acq On : 20 May 2016 1:26 am
Operator :
Sample : ICV3-160519
Misc : ICV
ALS Vial : 28 Sample Multiplier: 1

Quant Time: May 20 08:38:24 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051930.D
Acq On : 20 May 2016 2:40 am
Operator :
Sample : SBLK-160519
Misc : SBLK
ALS Vial : 30 Sample Multiplier: 1

Quant Time: May 20 08:38:27 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.275 | 136 | 1750646 | 4000.00 | ug/kg | 107 |
| 6) Acenaphthene-d10 | 12.861 | 164 | 1431079 | 4000.00 | ug/kg | 114 |
| 11) Phenanthrene-d10 | 14.982 | 188 | 2572799 | 4000.00 | ug/kg | 88 |
| 16) Chrysene-d12 | 20.995 | 240 | 2494186 | 4000.00 | ug/kg | 92 |
| 20) Perylene-d12 | 26.255 | 264 | 2379231 | 4000.00 | ug/kg | 96 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.764 | 172 | 89 | 0.23 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 0.01%# | | | |
| 17) 4-Terphenyl-d14 | 17.593 | 244 | 283 | 0.54 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 0.01%# | | | |

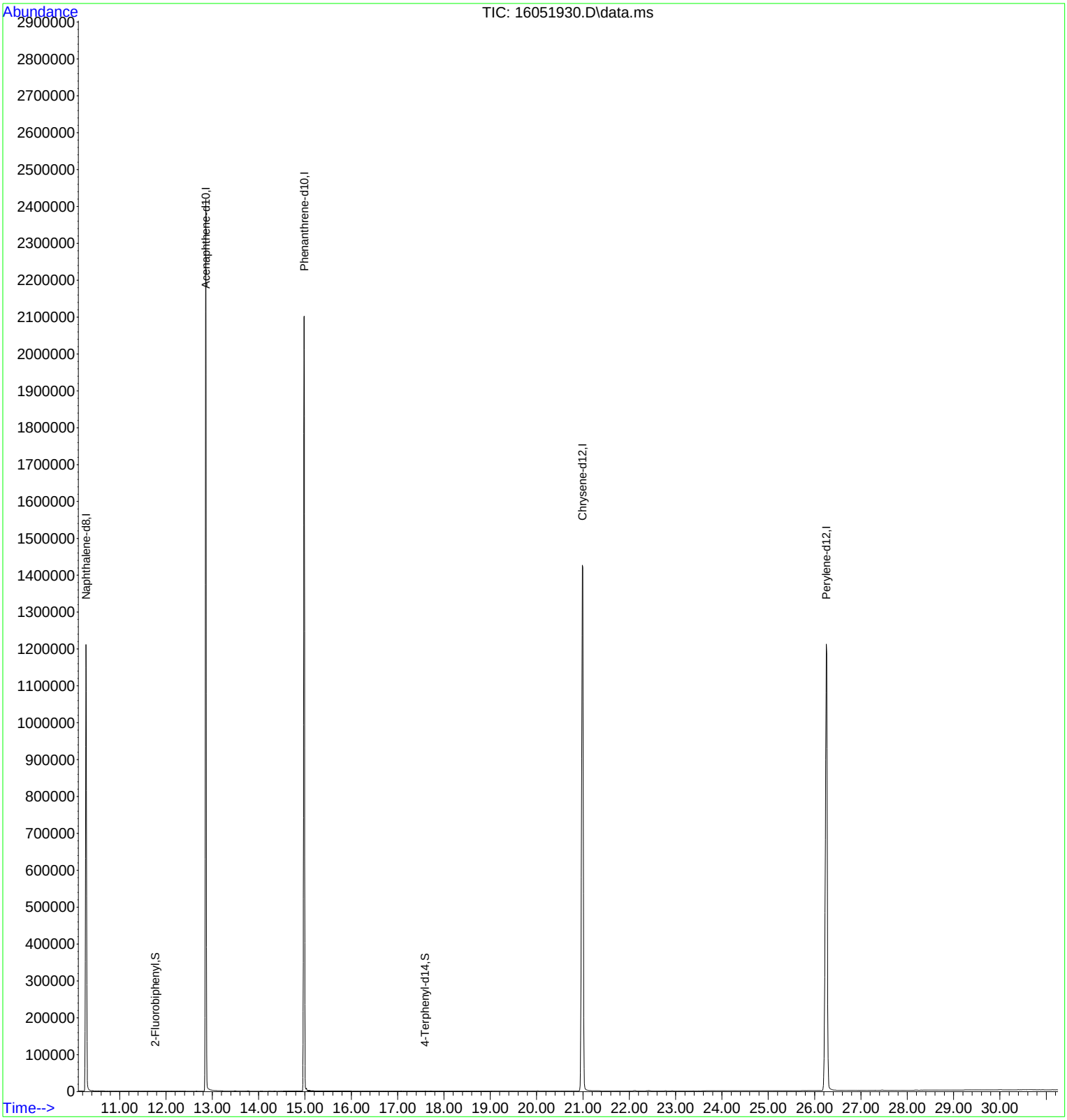
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051930.D
Acq On : 20 May 2016 2:40 am
Operator :
Sample : SBLK-160519
Misc : SBLK
ALS Vial : 30 Sample Multiplier: 1

Quant Time: May 20 08:38:27 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051931.D
Acq On : 20 May 2016 3:16 am
Operator :
Sample : 1605121-12A
Misc : SAMP
ALS Vial : 31 Sample Multiplier: 10

Quant Time: May 20 08:39:57 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.275 | 136 | 1521760 | 4000.00 | ug/kg | 93 |
| 6) Acenaphthene-d10 | 12.861 | 164 | 1216978 | 4000.00 | ug/kg | 97 |
| 11) Phenanthrene-d10 | 14.980 | 188 | 2251191 | 4000.00 | ug/kg | 77 |
| 16) Chrysene-d12 | 20.987 | 240 | 2224880 | 4000.00 | ug/kg | 82 |
| 20) Perylene-d12 | 26.254 | 264 | 2107387 | 4000.00 | ug/kg | 85 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.760 | 172 | 29445 | 86.90 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.17%# | | | |
| 17) 4-Terphenyl-d14 | 17.590 | 244 | 37218 | 79.03 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.98%# | | | |

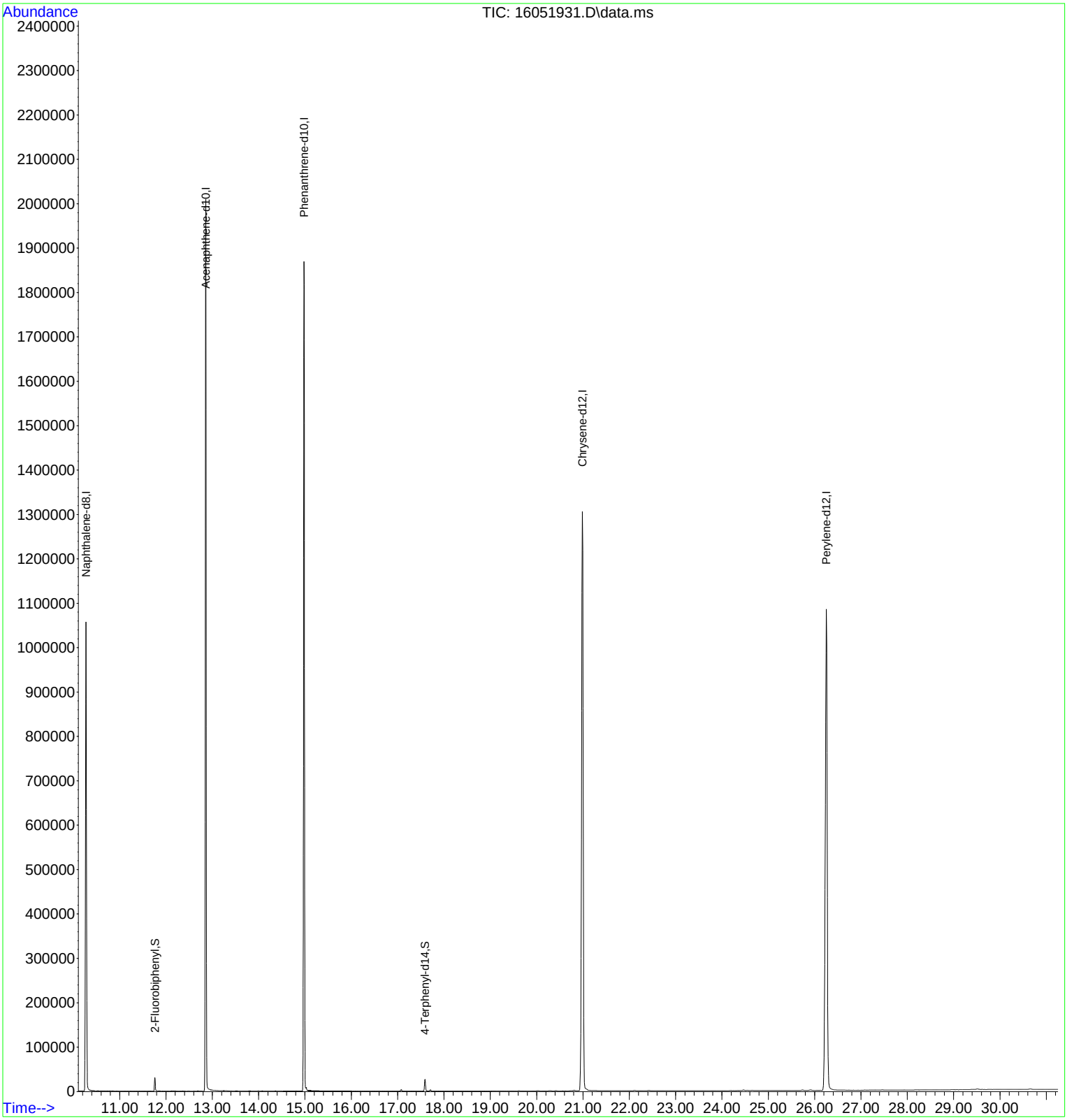
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051931.D
Acq On : 20 May 2016 3:16 am
Operator :
Sample : 1605121-12A
Misc : SAMP
ALS Vial : 31 Sample Multiplier: 10

Quant Time: May 20 08:39:57 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051932.D
Acq On : 20 May 2016 3:53 am
Operator :
Sample : 1605121-13A
Misc : SAMP
ALS Vial : 32 Sample Multiplier: 10

Quant Time: May 20 08:40:01 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.274 | 136 | 1551009 | 4000.00 | ug/kg | 95 |
| 6) Acenaphthene-d10 | 12.862 | 164 | 1237882 | 4000.00 | ug/kg | 99 |
| 11) Phenanthrene-d10 | 14.979 | 188 | 2266938 | 4000.00 | ug/kg | 77 |
| 16) Chrysene-d12 | 20.987 | 240 | 2314360 | 4000.00 | ug/kg | 85 |
| 20) Perylene-d12 | 26.254 | 264 | 2174021 | 4000.00 | ug/kg | 88 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.759 | 172 | 30555 | 88.48 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.21%# | | | |
| 17) 4-Terphenyl-d14 | 17.592 | 244 | 37562 | 76.68 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.92%# | | | |

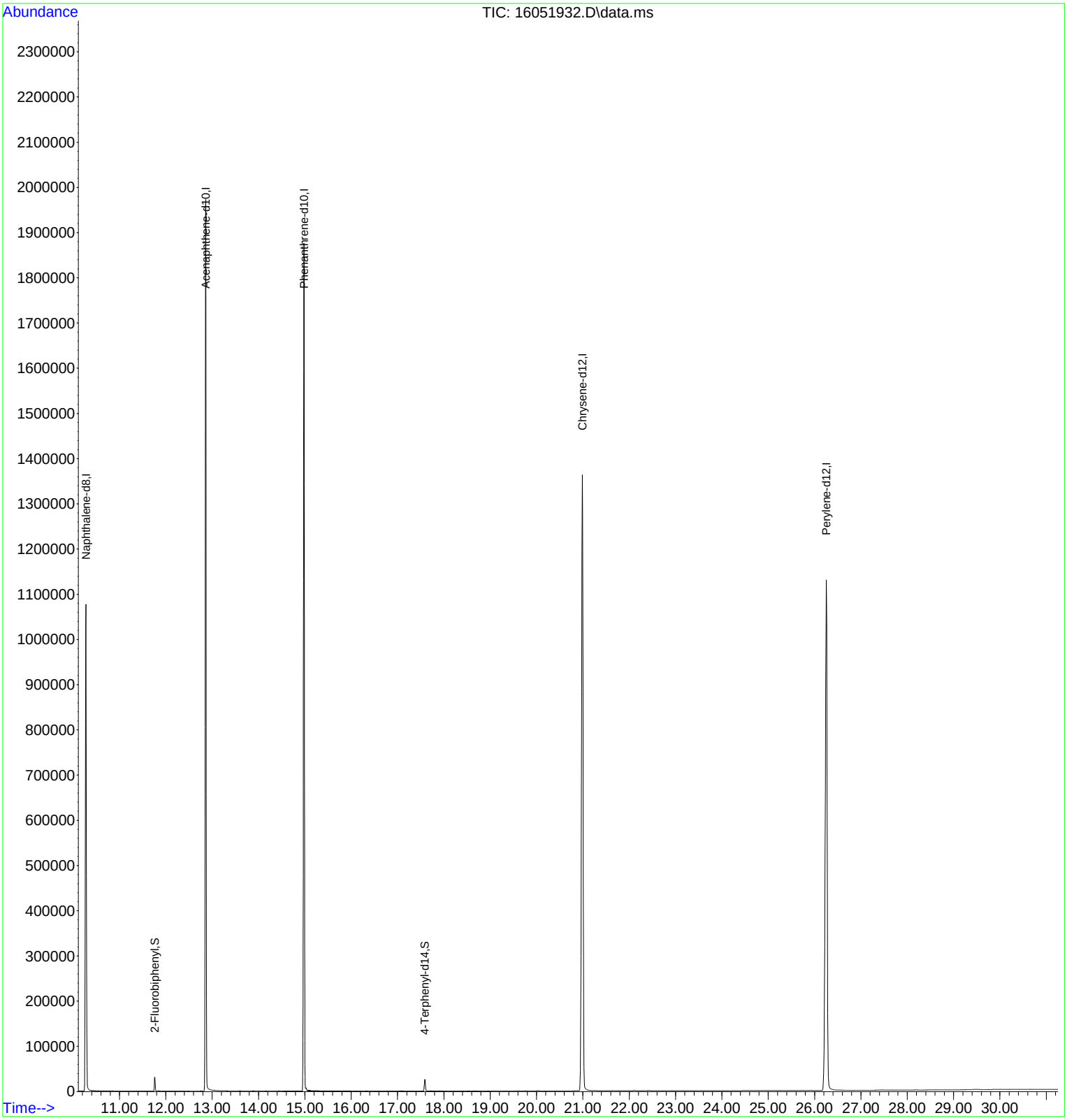
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051932.D
Acq On : 20 May 2016 3:53 am
Operator :
Sample : 1605121-13A
Misc : SAMP
ALS Vial : 32 Sample Multiplier: 10

Quant Time: May 20 08:40:01 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051933.D
Acq On : 20 May 2016 4:30 am
Operator :
Sample : 1605121-14A
Misc : SAMP
ALS Vial : 33 Sample Multiplier: 10

Quant Time: May 20 08:40:03 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.272 | 136 | 1572036 | 4000.00 | ug/kg | 96 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1266364 | 4000.00 | ug/kg | 101 |
| 11) Phenanthrene-d10 | 14.979 | 188 | 2304615 | 4000.00 | ug/kg | 79 |
| 16) Chrysene-d12 | 20.988 | 240 | 2291556 | 4000.00 | ug/kg | 85 |
| 20) Perylene-d12 | 26.255 | 264 | 2169658 | 4000.00 | ug/kg | 87 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.761 | 172 | 30385 | 86.81 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.17%# | | | |
| 17) 4-Terphenyl-d14 | 17.587 | 244 | 38406 | 79.18 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.98%# | | | |

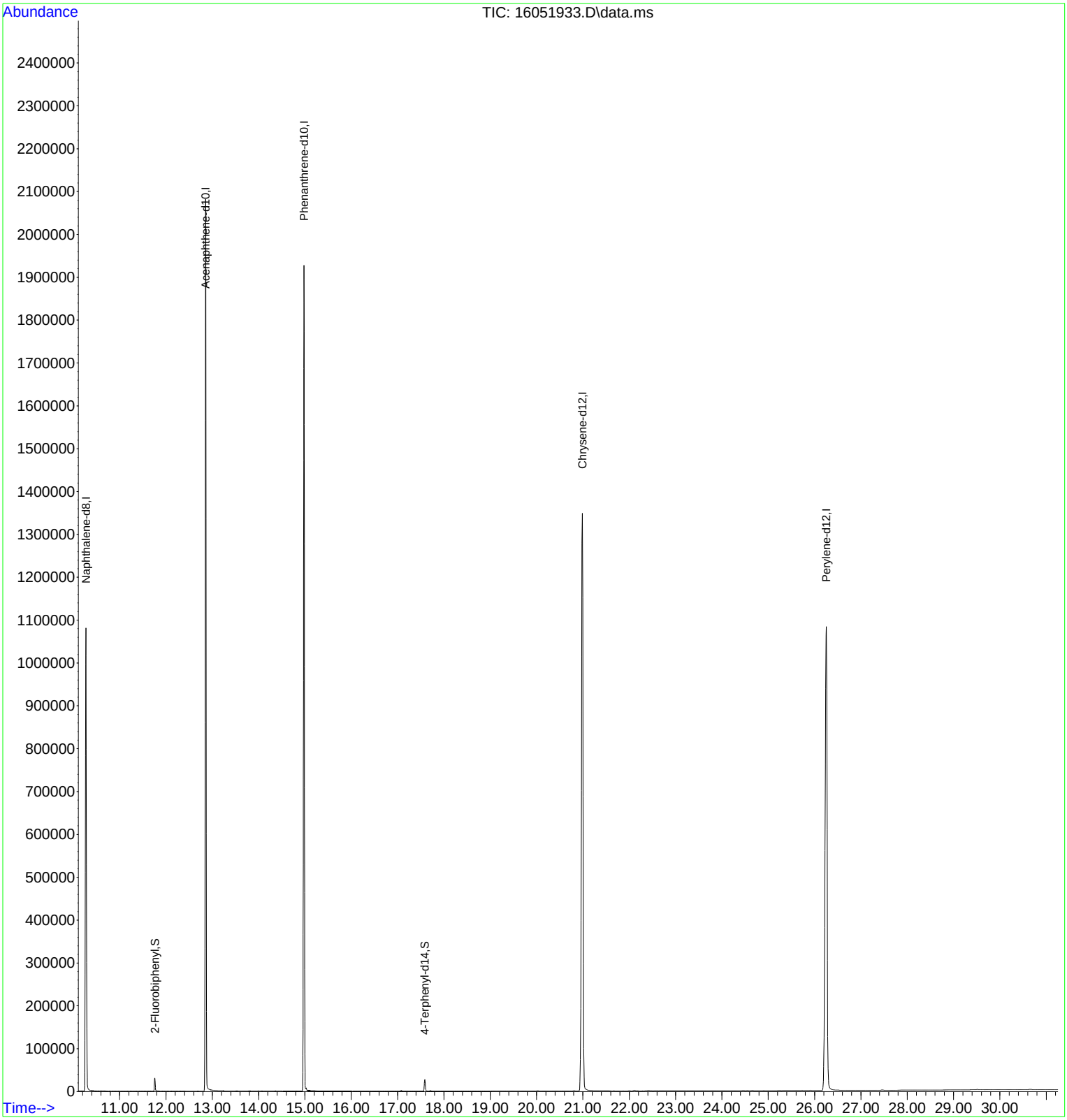
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051933.D
Acq On : 20 May 2016 4:30 am
Operator :
Sample : 1605121-14A
Misc : SAMP
ALS Vial : 33 Sample Multiplier: 10

Quant Time: May 20 08:40:03 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051934.D
Acq On : 20 May 2016 5:07 am
Operator :
Sample : 1605121-07A
Misc : SAMP
ALS Vial : 34 Sample Multiplier: 10

Quant Time: May 20 08:40:07 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.273 | 136 | 1579916 | 4000.00 | ug/kg | 97 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1236962 | 4000.00 | ug/kg | 99 |
| 11) Phenanthrene-d10 | 14.978 | 188 | 2323757 | 4000.00 | ug/kg | 79 |
| 16) Chrysene-d12 | 20.987 | 240 | 2378650 | 4000.00 | ug/kg | 88 |
| 20) Perylene-d12 | 26.254 | 264 | 2262975 | 4000.00 | ug/kg | 91 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.758 | 172 | 29641 | 84.26 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.11%# | | | |
| 17) 4-Terphenyl-d14 | 17.589 | 244 | 38488 | 76.45 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.91%# | | | |

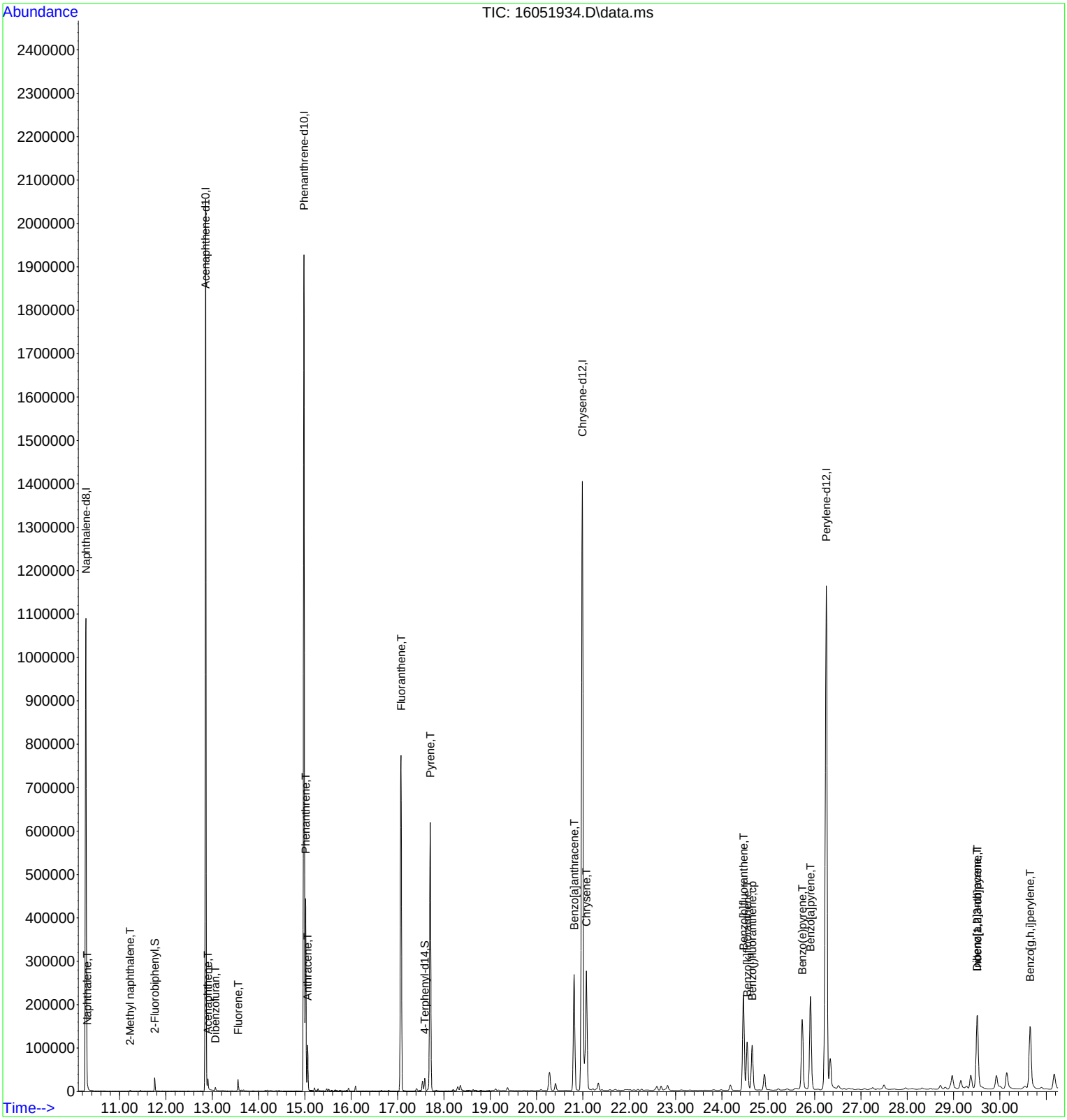
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.306 | 128 | 7226 | 20.42 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.228 | 142 | 1650 | 6.00 | ug/kg | 97 |
| 8) Acenaphthene | 12.906 | 153 | 11122 | 32.60 | ug/kg | 97 |
| 9) Dibenzofuran | 13.068 | 168 | 7134 | 13.73 | ug/kg | 100 |
| 10) Fluorene | 13.559 | 166 | 13549 | 28.73 | ug/kg | 99 |
| 12) Phenanthrene | 15.016 | 178 | 419026 | 655.35 | ug/kg | 98 |
| 13) Anthracene | 15.059 | 178 | 100614 | 155.51 | ug/kg | 98 |
| 14) Fluoranthene | 17.073 | 202 | 874648 | 1407.66 | ug/kg | 99 |
| 15) Pyrene | 17.706 | 202 | 731967 | 1196.13 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.811 | 228 | 421338 | 691.46 | ug/kg | 99 |
| 19) Chrysene | 21.075 | 228 | 464689 | 828.46 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.467 | 252 | 426543 | 715.22 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.547 | 252 | 192875 | 356.42 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.657 | 252 | 187595 | 358.75 | ug/kg | 88 |
| 24) Benzo(e)pyrene | 25.734 | 252 | 305053 | 537.96 | ug/kg | 97 |
| 25) Benzo[a]pyrene | 25.910 | 252 | 424116 | 764.56 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.514 | 276 | 301572 | 437.00 | ug/kg | 92 |
| 27) Dibenz[a,h]anthracene | 29.499 | 278 | 69661 | 116.84 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.649 | 276 | 303994 | 512.16 | ug/kg | 99 |

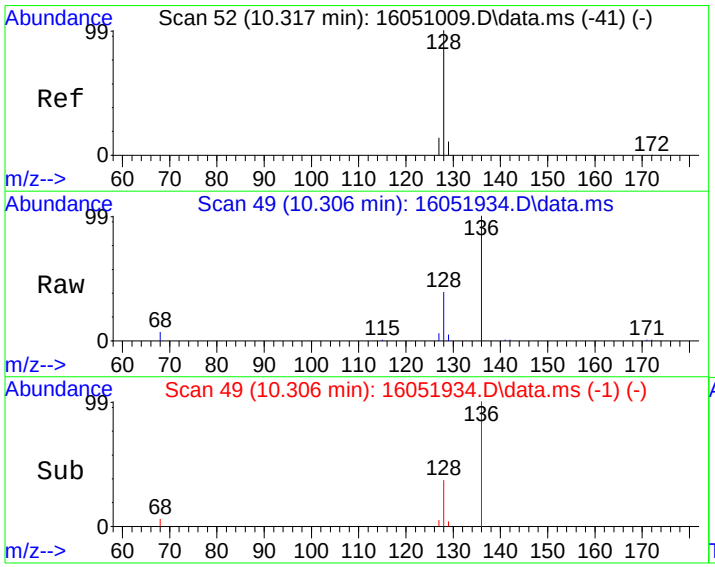
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051934.D
Acq On : 20 May 2016 5:07 am
Operator :
Sample : 1605121-07A
Misc : SAMP
ALS Vial : 34 Sample Multiplier: 10

Quant Time: May 20 08:40:07 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

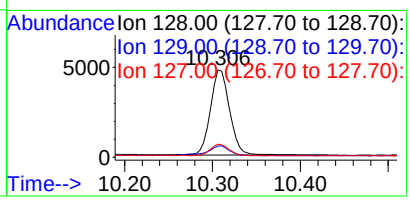


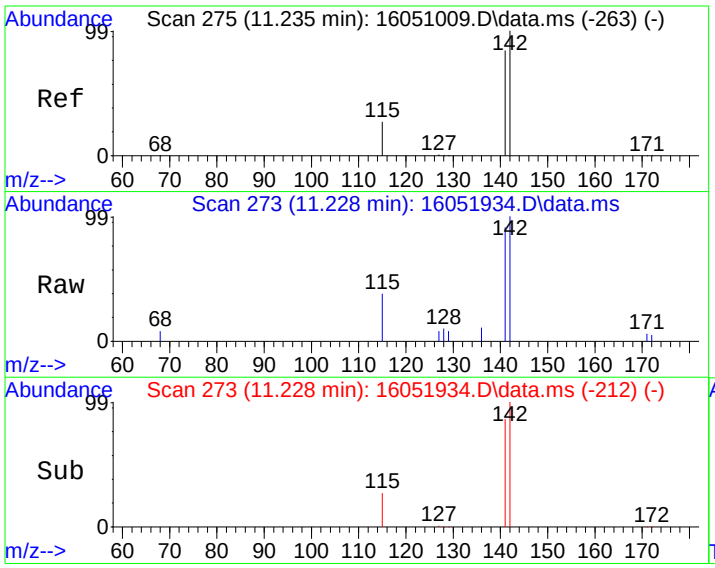



#2
Naphthalene
Concen: 20.42 ug/kg
RT: 10.306 min Scan# 49
Delta R.T. -0.003 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:128 Resp: 7226

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 11.5 | 0.0 | 31.3 |
| 127 | 13.4 | 0.0 | 33.6 |

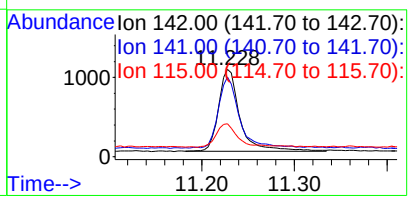


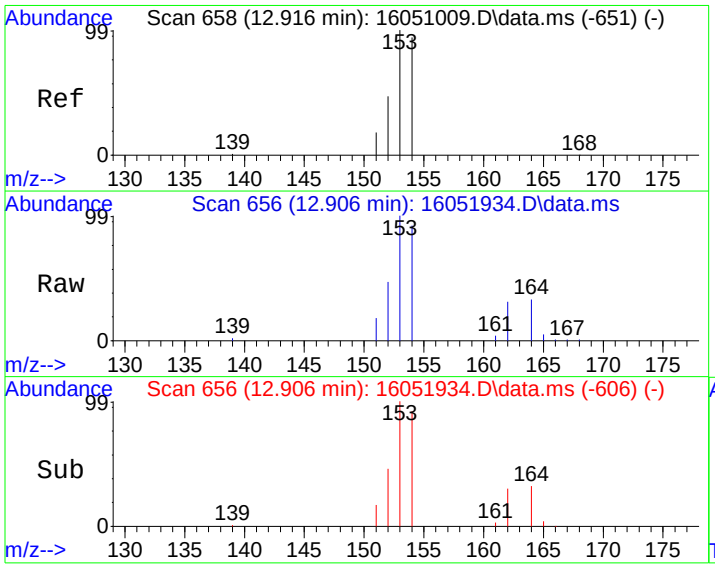




#3
2-Methyl naphthalene
Concen: 6.00 ug/kg
RT: 11.228 min Scan# 273
Delta R.T. 0.002 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:142 Resp: 1650

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 86.5 | 64.4 | 104.4 |
| 115 | 28.2 | 6.4 | 46.4 |

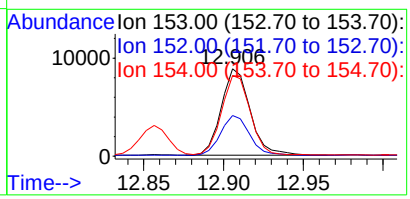


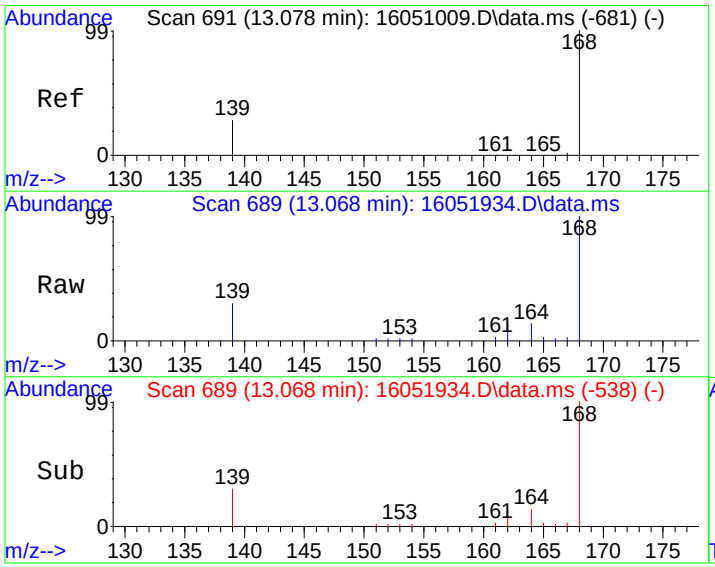




#8
Acenaphthene
Concen: 32.60 ug/kg
RT: 12.906 min Scan# 656
Delta R.T. -0.005 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:153 Resp: 11122

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 153 | 100 | | |
| 152 | 46.1 | 26.5 | 66.5 |
| 154 | 91.6 | 76.3 | 116.3 |

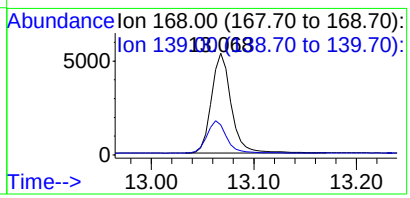


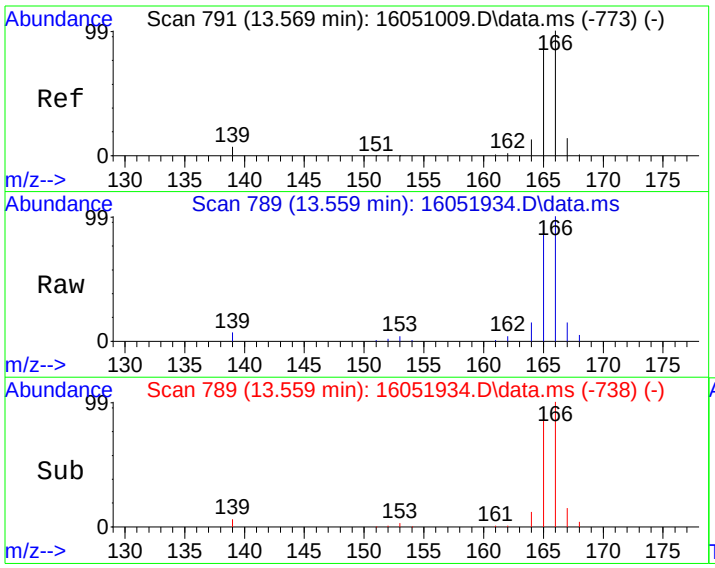



#9
Dibenzofuran
Concen: 13.73 ug/kg
RT: 13.068 min Scan# 689
Delta R.T. -0.000 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:168 Resp: 7134

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 28.3 | 8.2 | 48.2 |

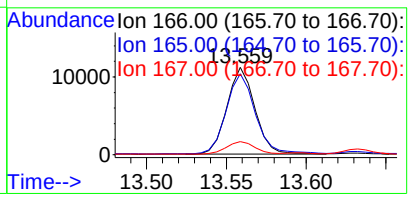


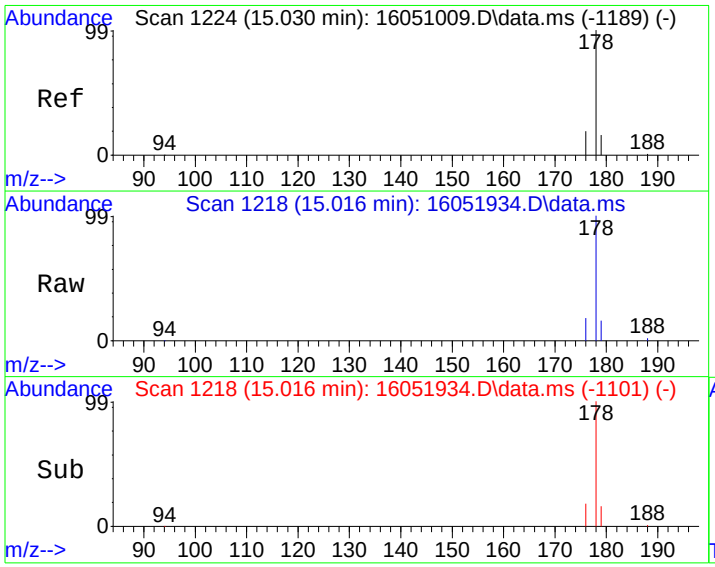




#10
Fluorene
Concen: 28.73 ug/kg
RT: 13.559 min Scan# 789
Delta R.T. -0.000 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:166 Resp: 13549

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 92.0 | 71.4 | 111.4 |
| 167 | 14.6 | 0.0 | 33.8 |

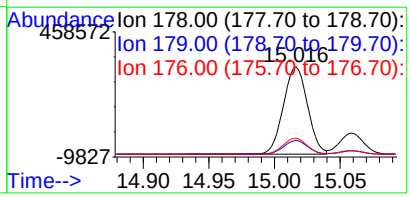


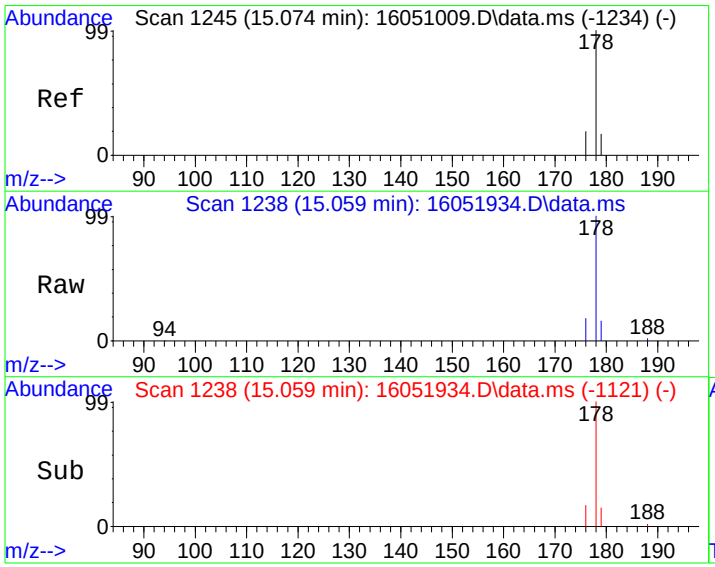




#12
Phenanthrene
Concen: 655.35 ug/kg
RT: 15.016 min Scan# 1218
Delta R.T. -0.003 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:178 Resp: 419026

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.7 | 0.0 | 36.4 |
| 176 | 18.3 | 0.0 | 39.0 |

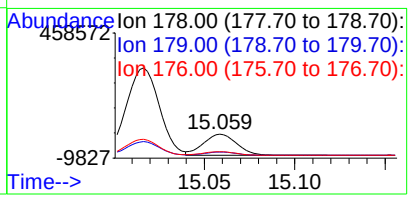


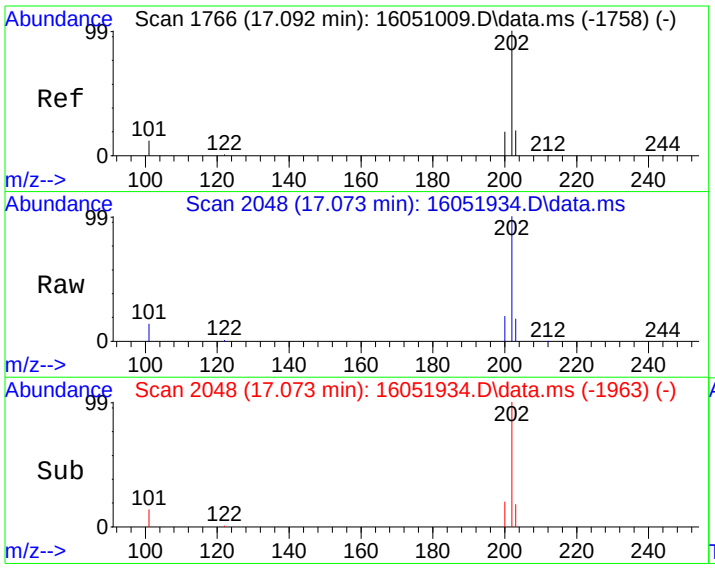



#13
Anthracene
Concen: 155.51 ug/kg
RT: 15.059 min Scan# 1238
Delta R.T. -0.003 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:178 Resp: 100614

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.4 | 0.0 | 36.3 |
| 176 | 17.4 | 0.0 | 38.5 |

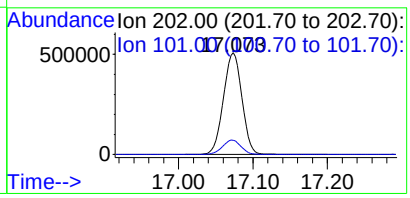


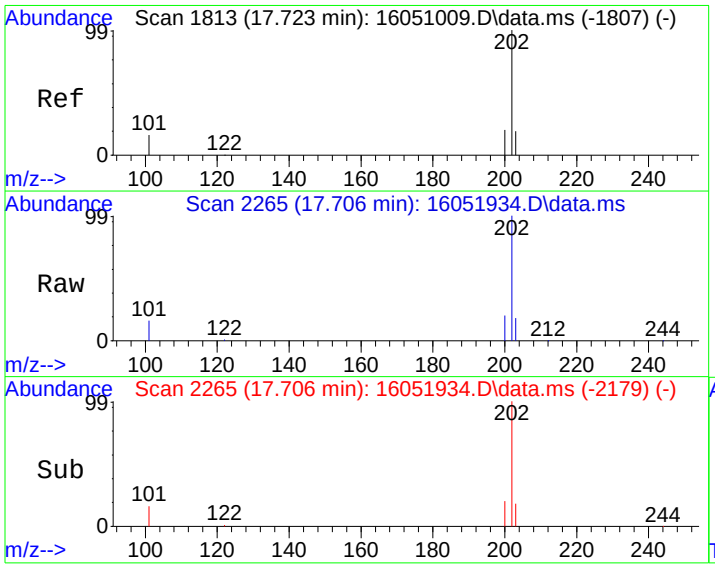




#14
Fluoranthene
Concen: 1407.66 ug/kg
RT: 17.073 min Scan# 2048
Delta R.T. -0.003 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:202 Resp: 874648

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 13.9 | 0.0 | 34.4 |

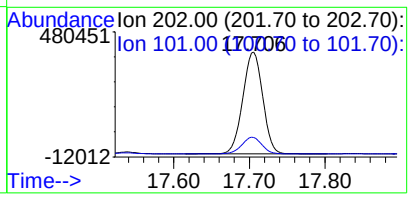


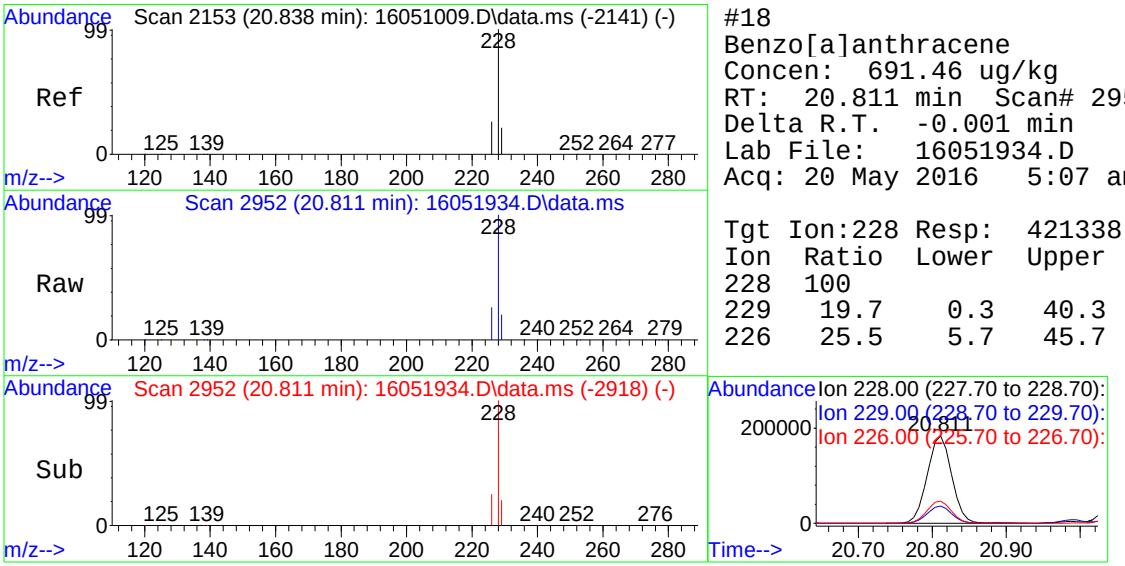




#15
Pyrene
Concen: 1196.13 ug/kg
RT: 17.706 min Scan# 2265
Delta R.T. -0.000 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:202 Resp: 731967

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 16.1 | 0.0 | 37.3 |

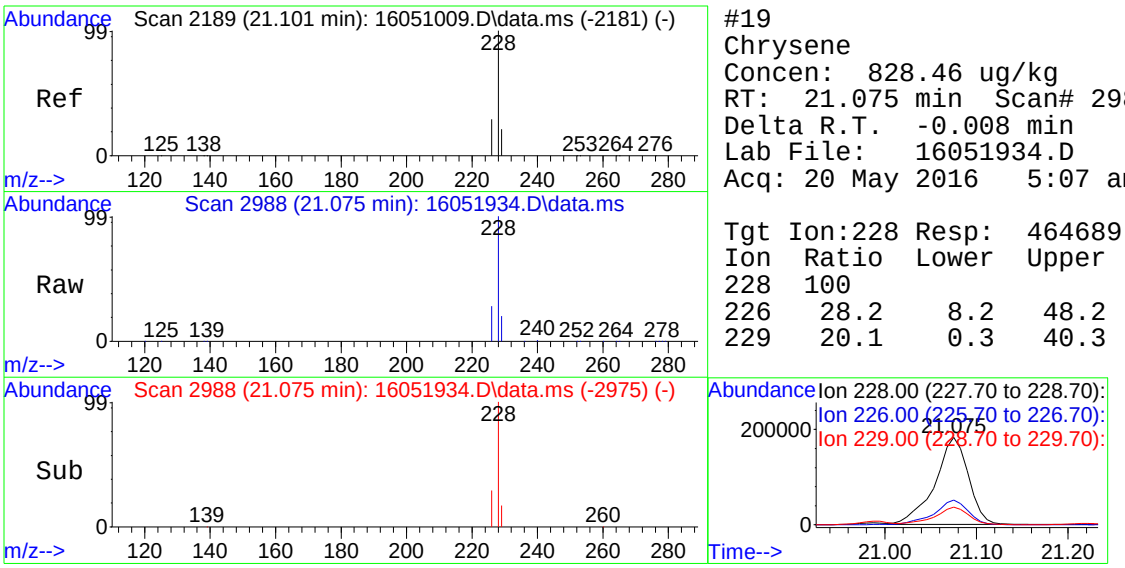





#18
Benzo[a]anthracene
Concen: 691.46 ug/kg
RT: 20.811 min Scan# 2952
Delta R.T. -0.001 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:228 Resp: 421338

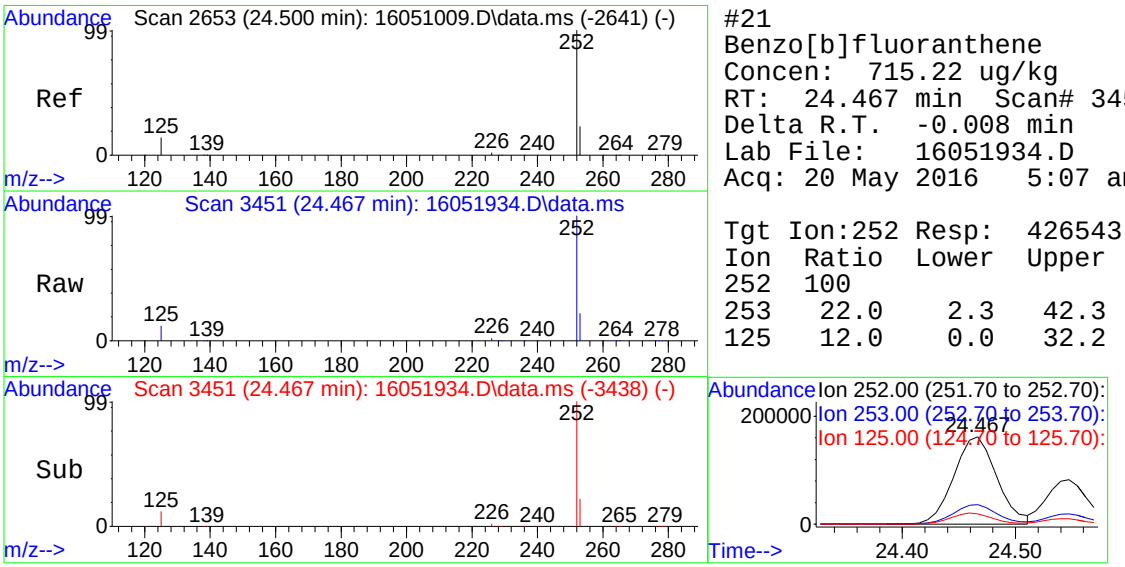
| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.7 | 0.3 | 40.3 |
| 226 | 25.5 | 5.7 | 45.7 |




#19
Chrysene
Concen: 828.46 ug/kg
RT: 21.075 min Scan# 2988
Delta R.T. -0.008 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:228 Resp: 464689

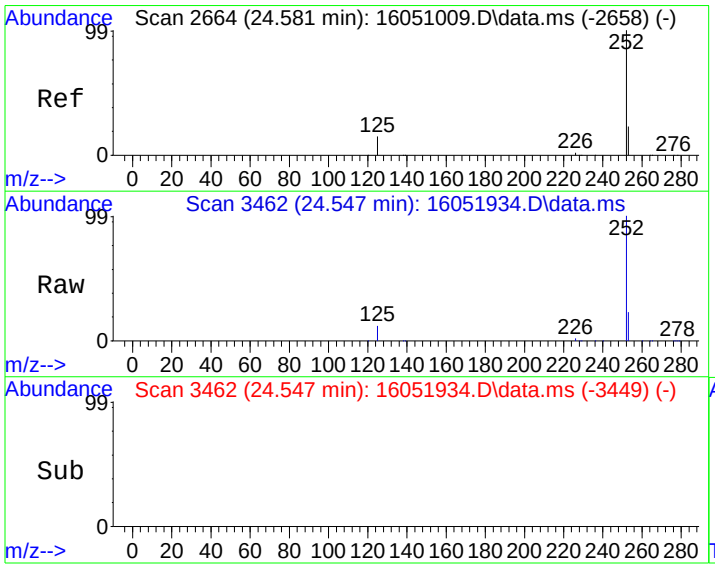
| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.2 | 8.2 | 48.2 |
| 229 | 20.1 | 0.3 | 40.3 |




#21
Benzo[b]fluoranthene
Concen: 715.22 ug/kg
RT: 24.467 min Scan# 3451
Delta R.T. -0.008 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:252 Resp: 426543

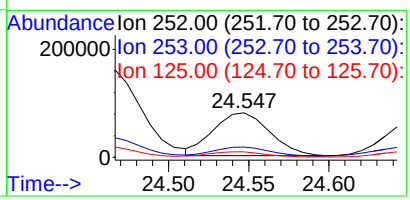
| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.0 | 2.3 | 42.3 |
| 125 | 12.0 | 0.0 | 32.2 |

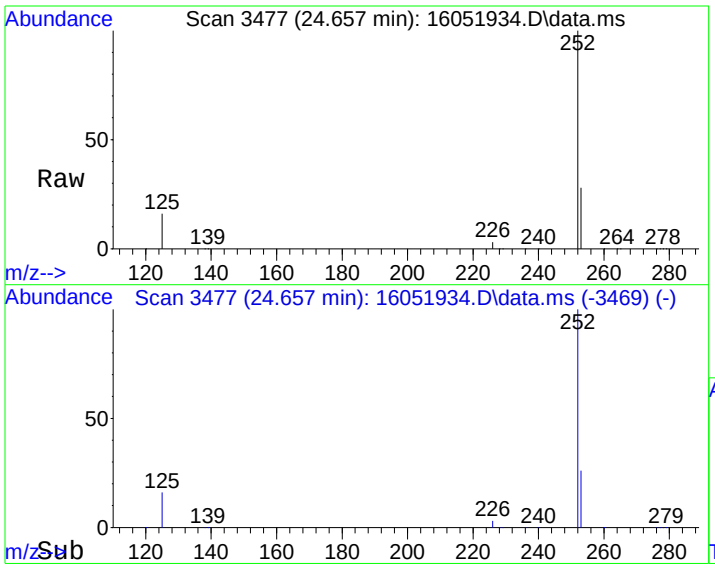



#22
Benzo[k]fluoranthene
Concen: 356.42 ug/kg
RT: 24.547 min Scan# 3462
Delta R.T. -0.008 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:252 Resp: 192875

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.3 | 2.5 | 42.5 |
| 125 | 12.1 | 0.0 | 32.6 |

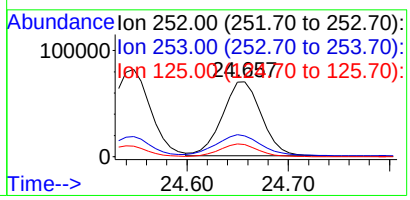


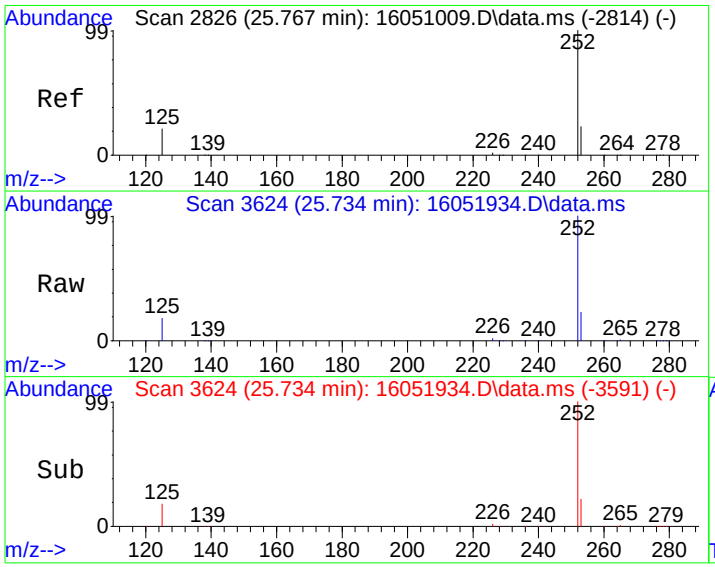




#23
Benzo(j)fluoranthene
Concen: 358.75 ug/kg
RT: 24.657 min Scan# 3477
Delta R.T. -0.008 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:252 Resp: 187595

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 32.1 | 2.2 | 42.2 |
| 125 | 16.6 | 0.0 | 37.3 |

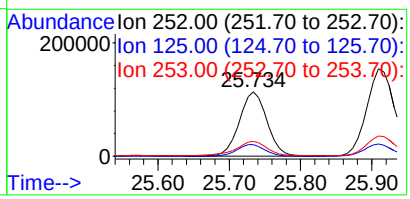


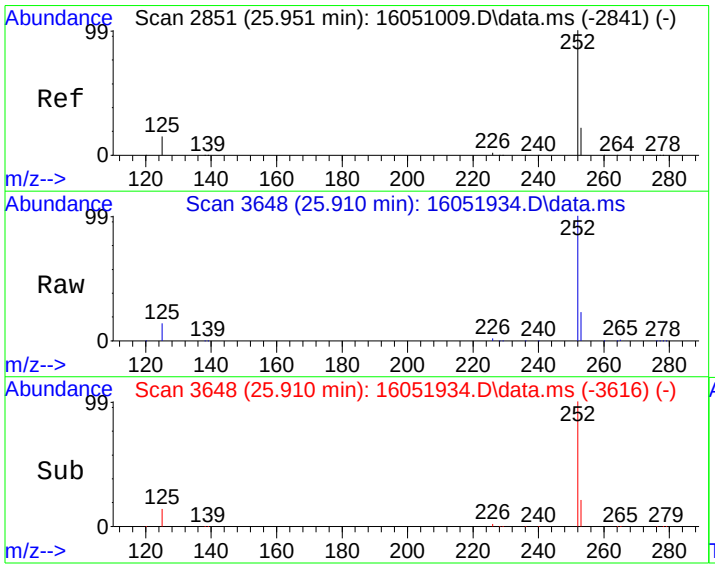




#24
Benzo(e)pyrene
Concen: 537.96 ug/kg
RT: 25.734 min Scan# 3624
Delta R.T. -0.008 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:252 Resp: 305053

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 125 | 18.1 | 0.0 | 38.7 |
| 253 | 24.6 | 2.3 | 42.3 |

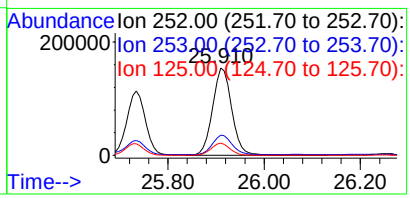


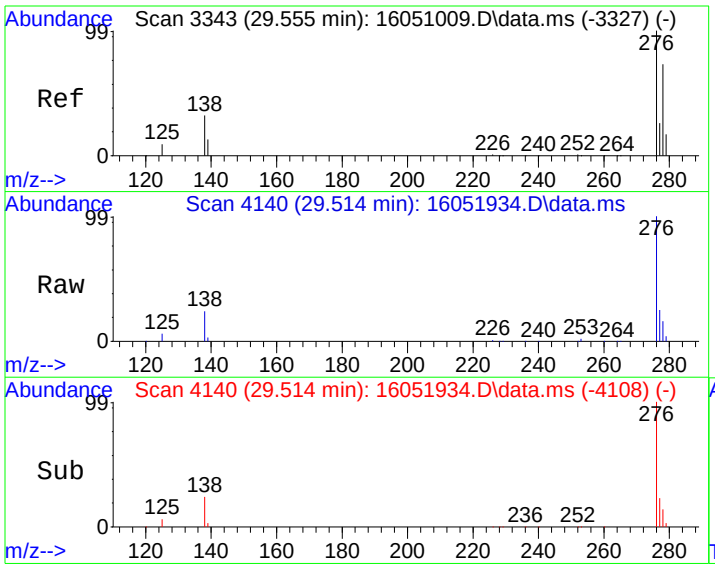



#25
Benzo[a]pyrene
Concen: 764.56 ug/kg
RT: 25.910 min Scan# 3648
Delta R.T. -0.015 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:252 Resp: 424116

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.5 | 2.3 | 42.3 |
| 125 | 14.1 | 0.0 | 33.5 |

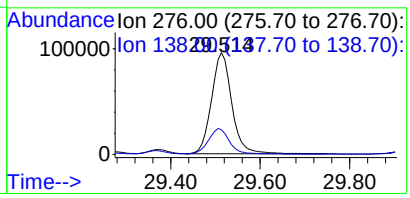


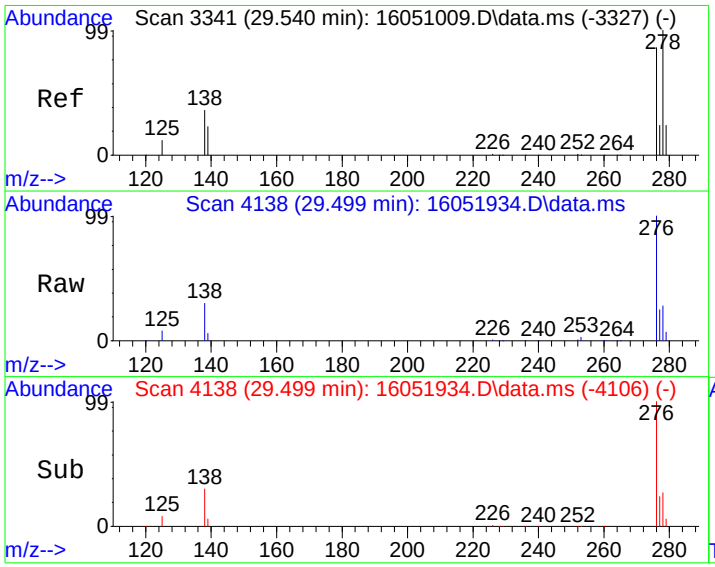




#26
Indeno[1,2,3-cd]pyrene
Concen: 437.00 ug/kg
RT: 29.514 min Scan# 4140
Delta R.T. -0.015 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:276 Resp: 301572

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 23.9 | 8.3 | 48.3 |

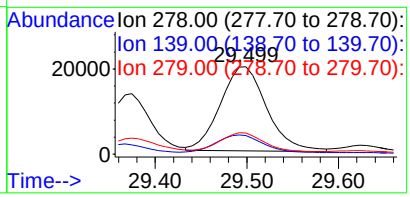


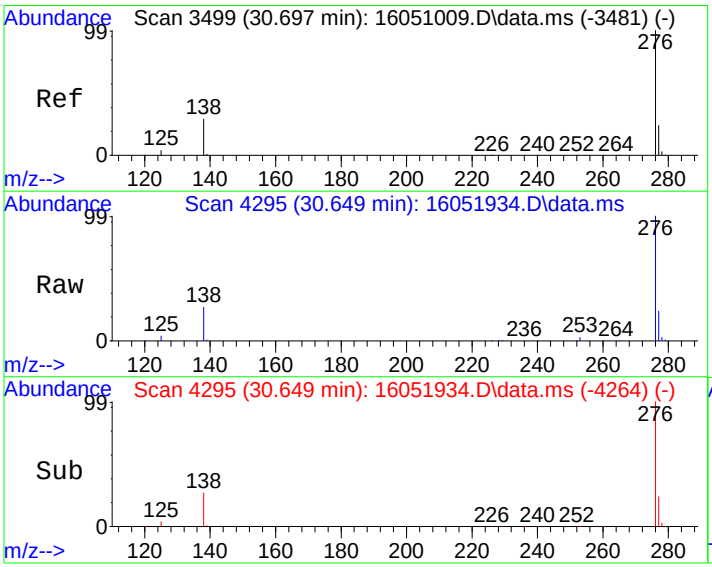




#27
Dibenz[a,h]anthracene
Concen: 116.84 ug/kg
RT: 29.499 min Scan# 4138
Delta R.T. -0.015 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:278 Resp: 69661

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 20.5 | 0.0 | 40.0 |
| 279 | 22.7 | 4.2 | 44.2 |

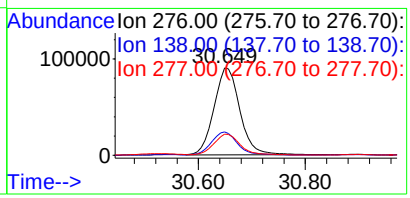





#28
Benzo[g,h,i]perylene
Concen: 512.16 ug/kg
RT: 30.649 min Scan# 4295
Delta R.T. -0.023 min
Lab File: 16051934.D
Acq: 20 May 2016 5:07 am

Tgt Ion:276 Resp: 303994

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 26.6 | 5.8 | 45.8 |
| 277 | 24.0 | 4.4 | 44.4 |



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051935.D
Acq On : 20 May 2016 5:45 am
Operator :
Sample : 1605121-11A
Misc : SAMP
ALS Vial : 35 Sample Multiplier: 10

Quant Time: May 20 08:40:16 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.270 | 136 | 1440199 | 4000.00 | ug/kg | 88 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1148480 | 4000.00 | ug/kg | 92 |
| 11) Phenanthrene-d10 | 14.979 | 188 | 2263033 | 4000.00 | ug/kg | 77 |
| 16) Chrysene-d12 | 20.989 | 240 | 2221347 | 4000.00 | ug/kg | 82 |
| 20) Perylene-d12 | 26.248 | 264 | 2124989 | 4000.00 | ug/kg | 86 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.759 | 172 | 27156 | 84.69 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.12%# | | | |
| 17) 4-Terphenyl-d14 | 17.587 | 244 | 37253 | 79.23 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.98%# | | | |

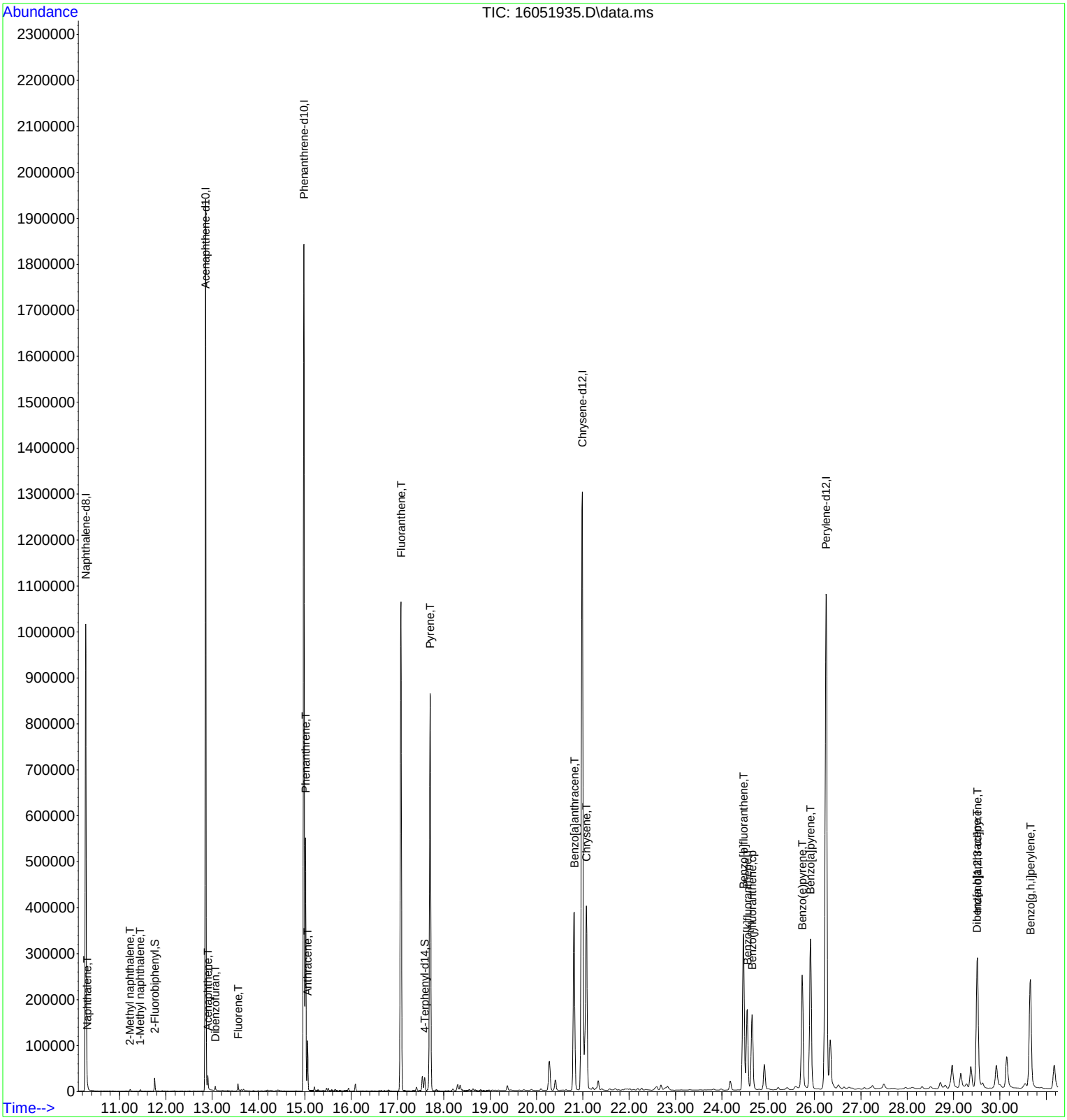
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.307 | 128 | 11604 | 35.97 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.229 | 142 | 2576 | 10.27 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.447 | 142 | 1790 | 7.54 | ug/kg | 99 |
| 8) Acenaphthene | 12.906 | 153 | 13444 | 42.44 | ug/kg | 97 |
| 9) Dibenzofuran | 13.068 | 168 | 9313 | 19.30 | ug/kg | 94 |
| 10) Fluorene | 13.560 | 166 | 8030 | 18.34 | ug/kg | 98 |
| 12) Phenanthrene | 15.015 | 178 | 525125 | 843.33 | ug/kg | 99 |
| 13) Anthracene | 15.057 | 178 | 104482 | 165.82 | ug/kg | 98 |
| 14) Fluoranthene | 17.074 | 202 | 1213602 | 2042.41 | ug/kg | 100 |
| 15) Pyrene | 17.703 | 202 | 1043204 | 1775.11 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.813 | 228 | 610172 | 1083.12 | ug/kg | 99 |
| 19) Chrysene | 21.077 | 228 | 687289 | 1328.42 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.468 | 252 | 662835 | 1195.63 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.549 | 252 | 298839 | 590.90 | ug/kg | 97 |
| 23) Benzo(j)fluoranthene | 24.651 | 252 | 292072 | 599.79 | ug/kg | 88 |
| 24) Benzo(e)pyrene | 25.735 | 252 | 477250 | 904.73 | ug/kg | 97 |
| 25) Benzo[a]pyrene | 25.911 | 252 | 644102 | 1246.78 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.515 | 276 | 493224 | 768.34 | ug/kg | 93 |
| 27) Dibenz[a,h]anthracene | 29.493 | 278 | 108974 | 197.98 | ug/kg | 97 |
| 28) Benzo[g,h,i]perylene | 30.658 | 276 | 496894 | 900.50 | ug/kg | 99 |

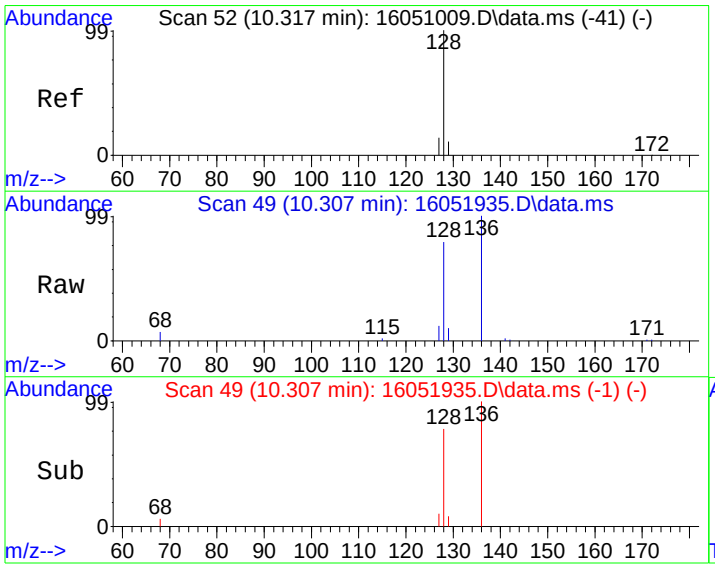
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051935.D
Acq On : 20 May 2016 5:45 am
Operator :
Sample : 1605121-11A
Misc : SAMP
ALS Vial : 35 Sample Multiplier: 10

Quant Time: May 20 08:40:16 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

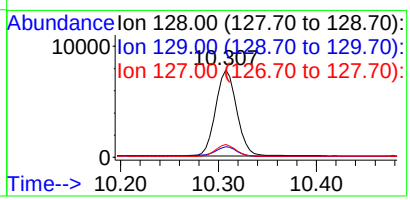


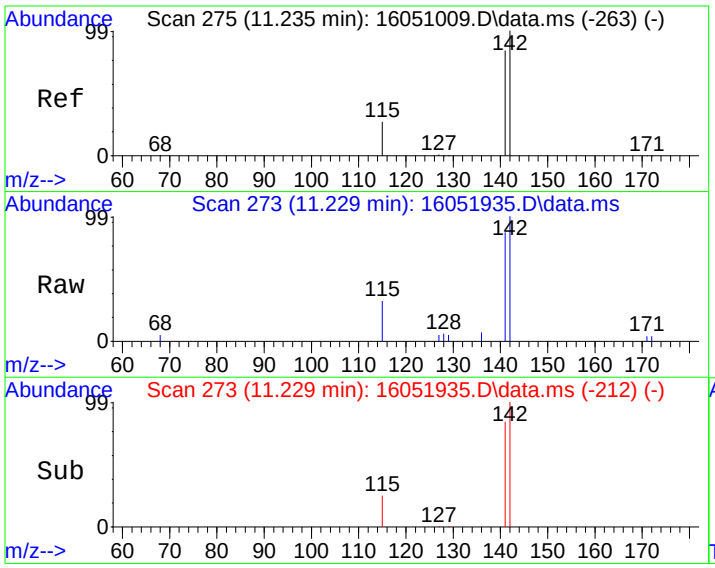



#2
Naphthalene
Concen: 35.97 ug/kg
RT: 10.307 min Scan# 49
Delta R.T. -0.002 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:128 Resp: 11604

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 11.0 | 0.0 | 31.3 |
| 127 | 13.7 | 0.0 | 33.6 |

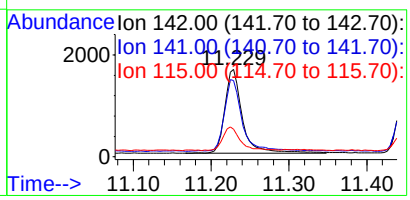


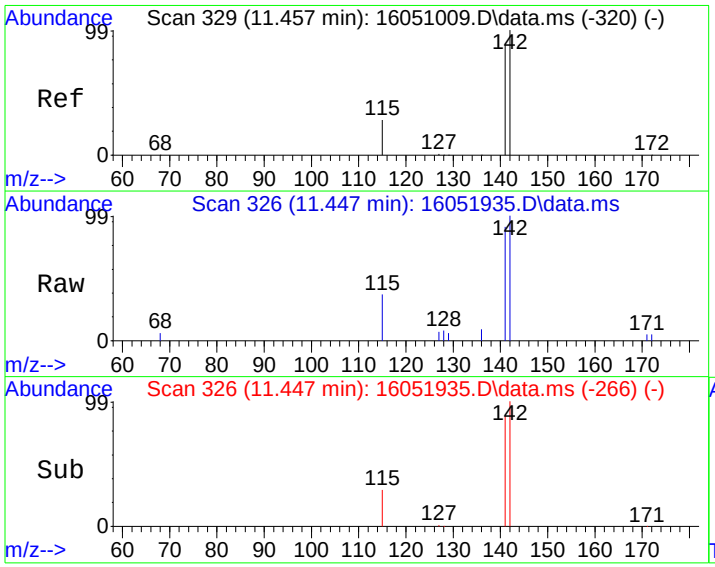




#3
2-Methyl naphthalene
Concen: 10.27 ug/kg
RT: 11.229 min Scan# 273
Delta R.T. 0.003 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:142 Resp: 2576

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 84.3 | 64.4 | 104.4 |
| 115 | 25.2 | 6.4 | 46.4 |

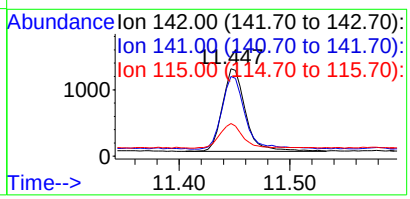


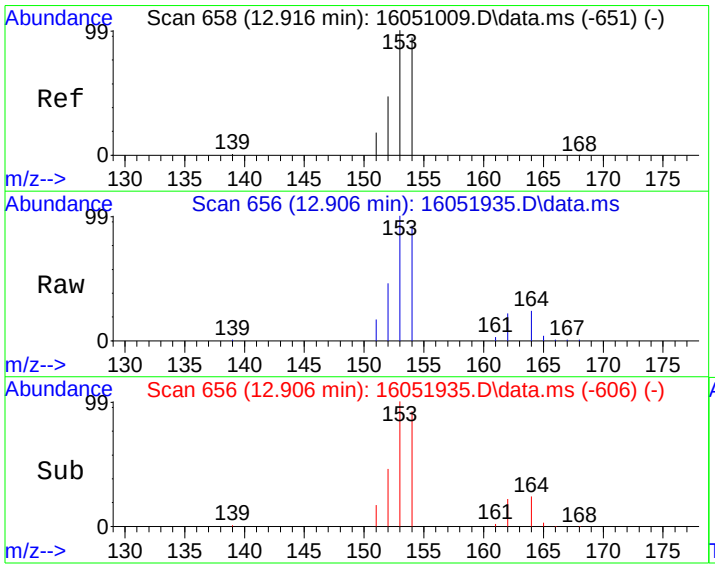




#4
1-Methyl naphthalene
Concen: 7.54 ug/kg
RT: 11.447 min Scan# 326
Delta R.T. -0.002 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:142 Resp: 1790

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 87.0 | 68.1 | 108.1 |
| 115 | 29.3 | 8.6 | 48.6 |

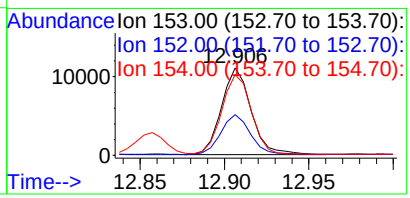


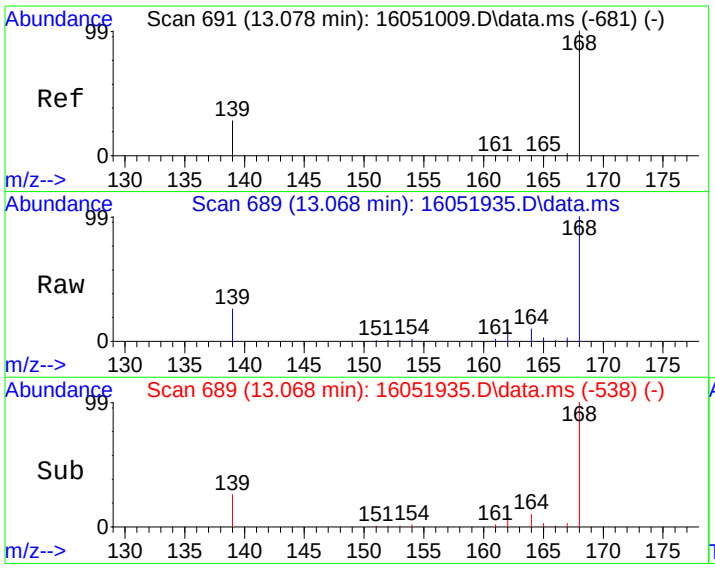



#8
Acenaphthene
Concen: 42.44 ug/kg
RT: 12.906 min Scan# 656
Delta R.T. -0.005 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:153 Resp: 13444

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 153 | 100 | | |
| 152 | 45.9 | 26.5 | 66.5 |
| 154 | 91.9 | 76.3 | 116.3 |

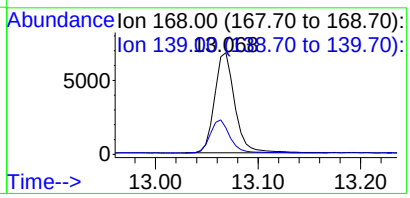


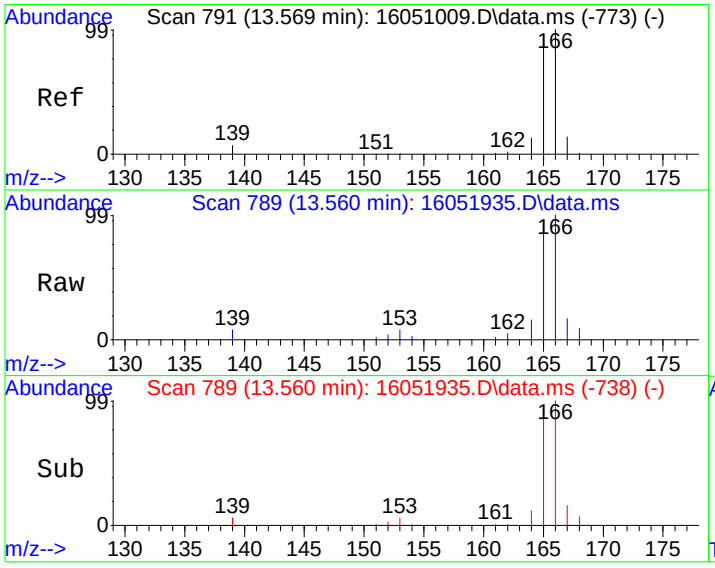




#9
Dibenzofuran
Concen: 19.30 ug/kg
RT: 13.068 min Scan# 689
Delta R.T. 0.000 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:168 Resp: 9313

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 25.2 | 8.2 | 48.2 |

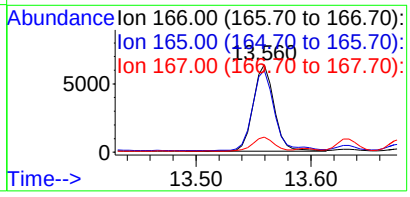


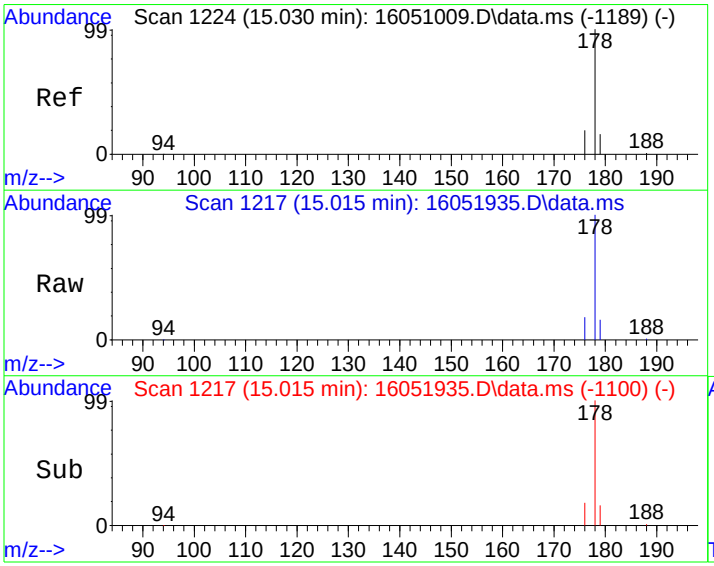




#10
Fluorene
Concen: 18.34 ug/kg
RT: 13.560 min Scan# 789
Delta R.T. 0.000 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:166 Resp: 8030

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 92.9 | 71.4 | 111.4 |
| 167 | 16.2 | 0.0 | 33.8 |

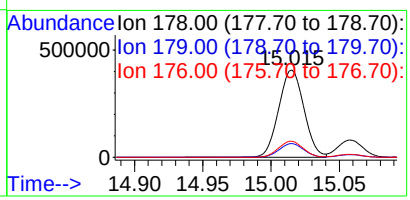


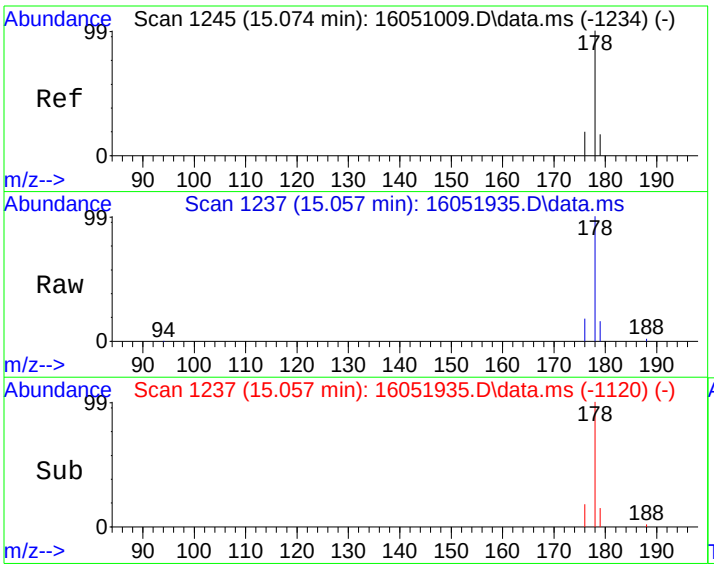



#12
Phenanthrene
Concen: 843.33 ug/kg
RT: 15.015 min Scan# 1217
Delta R.T. -0.004 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:178 Resp: 525125

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.8 | 0.0 | 36.4 |
| 176 | 18.3 | 0.0 | 39.0 |

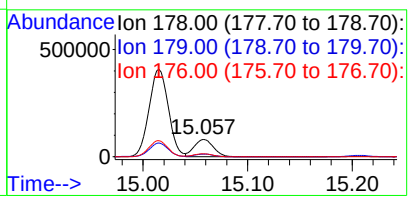


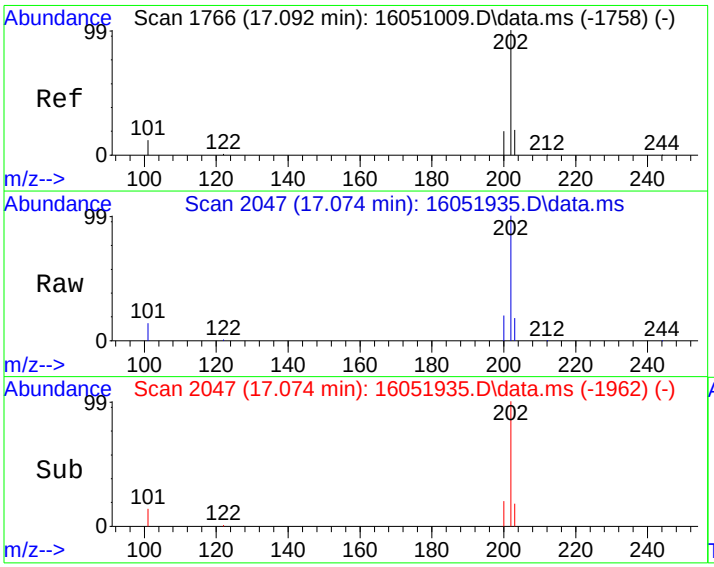




#13
Anthracene
Concen: 165.82 ug/kg
RT: 15.057 min Scan# 1237
Delta R.T. -0.004 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:178 Resp: 104482

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.4 | 0.0 | 36.3 |
| 176 | 17.6 | 0.0 | 38.5 |

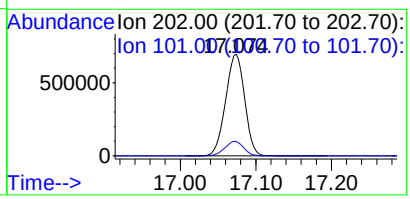


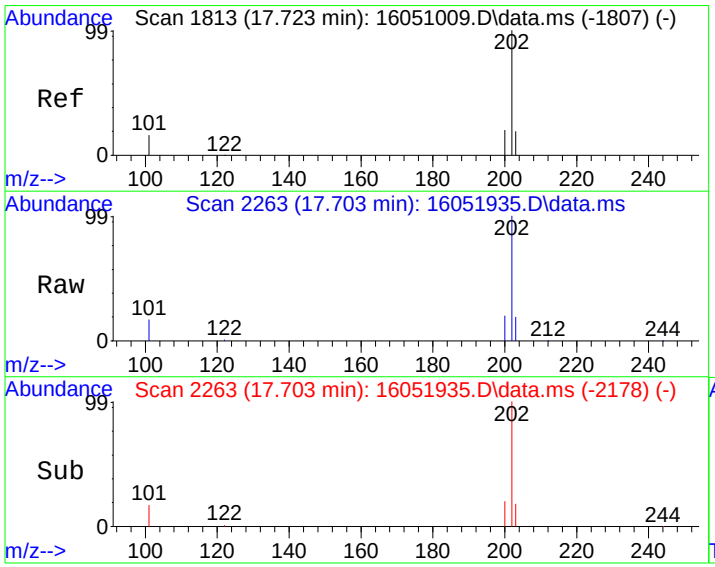




#14
Fluoranthene
Concen: 2042.41 ug/kg
RT: 17.074 min Scan# 2047
Delta R.T. -0.002 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:202 Resp: 1213602

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 14.2 | 0.0 | 34.4 |

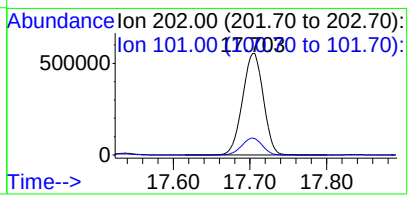


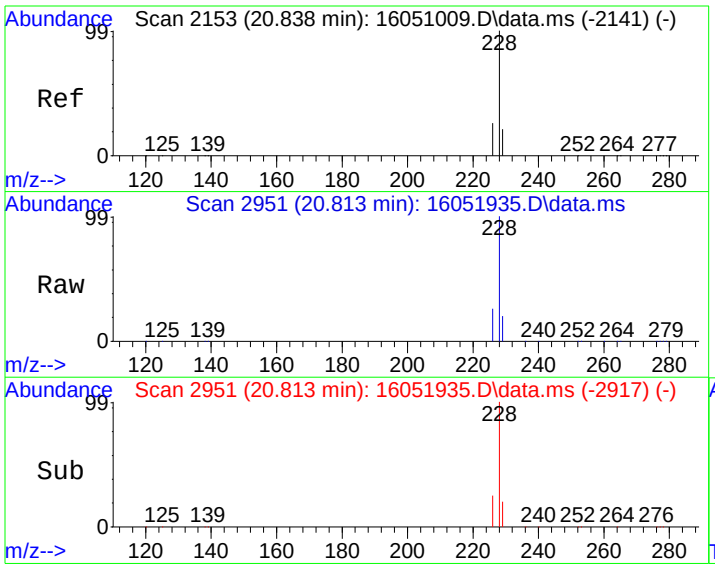



#15
Pyrene
Concen: 1775.11 ug/kg
RT: 17.703 min Scan# 2263
Delta R.T. -0.003 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:202 Resp: 1043204

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 16.7 | 0.0 | 37.3 |

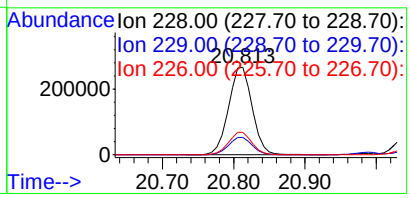


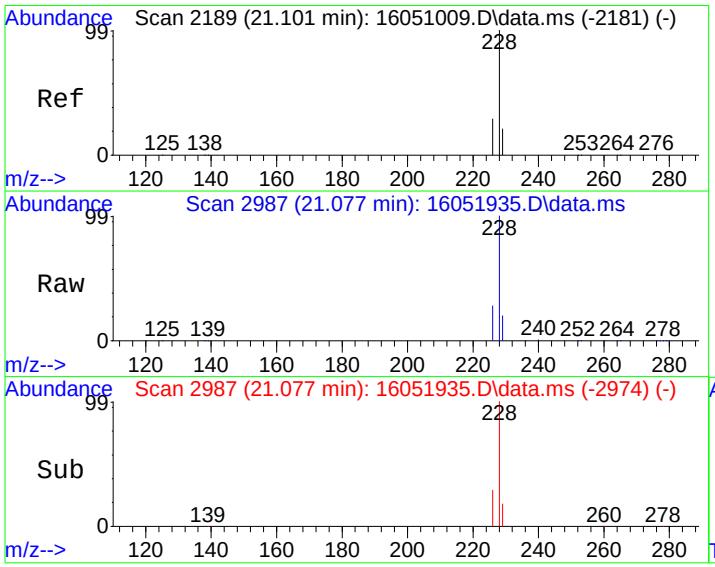




#18
Benzo[a]anthracene
Concen: 1083.12 ug/kg
RT: 20.813 min Scan# 2951
Delta R.T. 0.001 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:228 Resp: 610172

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.7 | 0.3 | 40.3 |
| 226 | 25.5 | 5.7 | 45.7 |

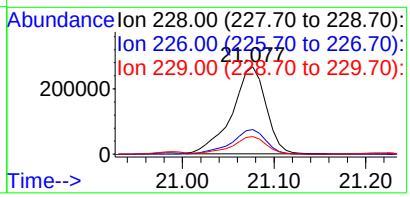


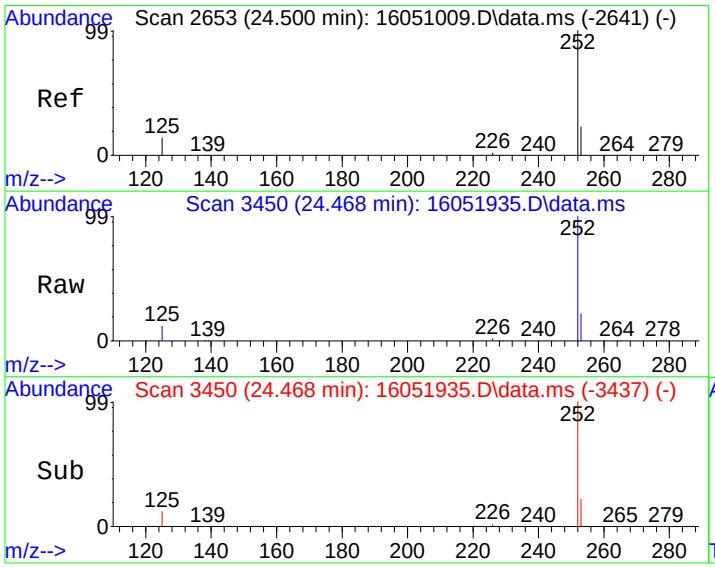




#19
Chrysene
Concen: 1328.42 ug/kg
RT: 21.077 min Scan# 2987
Delta R.T. -0.006 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:228 Resp: 687289

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.4 | 8.2 | 48.2 |
| 229 | 20.2 | 0.3 | 40.3 |

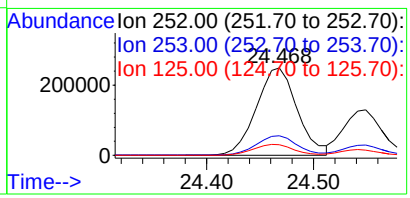


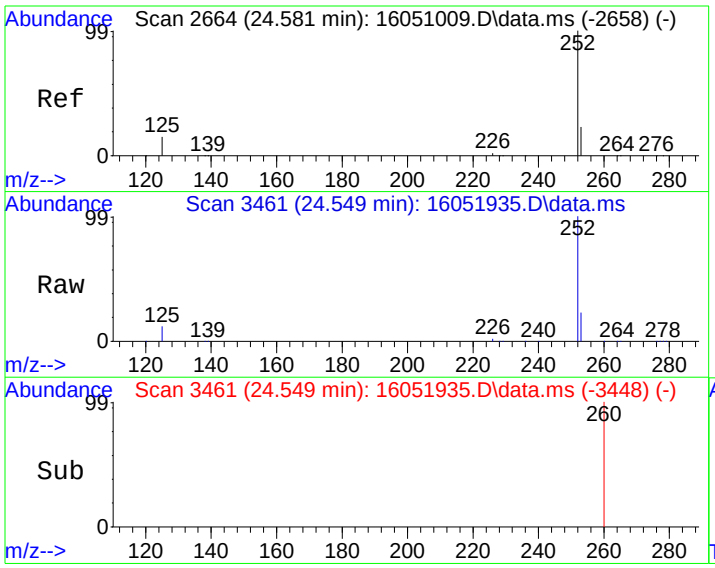



#21
Benzo[b]fluoranthene
Concen: 1195.63 ug/kg
RT: 24.468 min Scan# 3450
Delta R.T. -0.007 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:252 Resp: 662835

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.1 | 2.3 | 42.3 |
| 125 | 12.2 | 0.0 | 32.2 |

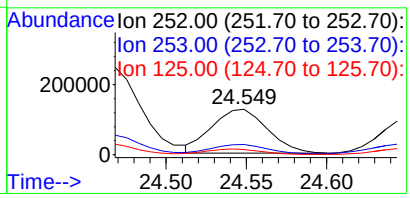


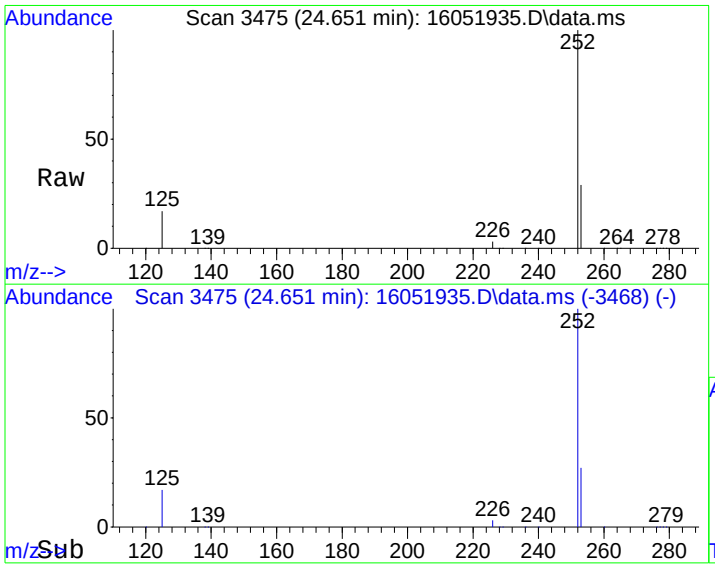




#22
Benzo[k]fluoranthene
Concen: 590.90 ug/kg
RT: 24.549 min Scan# 3461
Delta R.T. -0.006 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:252 Resp: 298839

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.3 | 2.5 | 42.5 |
| 125 | 11.6 | 0.0 | 32.6 |

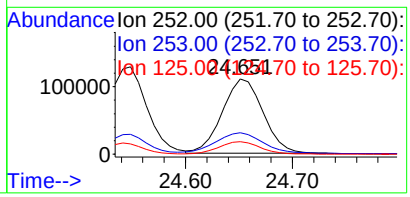


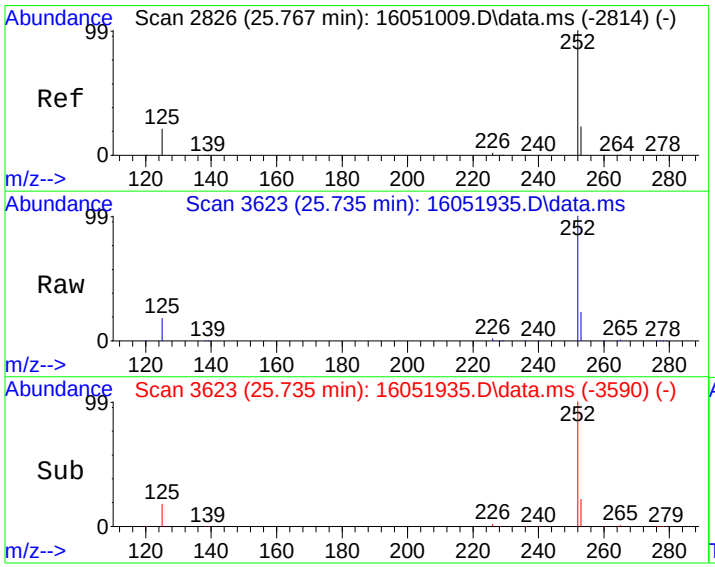




#23
Benzo(j)fluoranthene
Concen: 599.79 ug/kg
RT: 24.651 min Scan# 3475
Delta R.T. -0.014 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:252 Resp: 292072

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 31.5 | 2.2 | 42.2 |
| 125 | 16.6 | 0.0 | 37.3 |

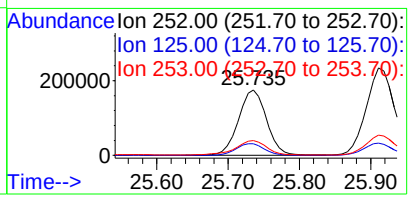


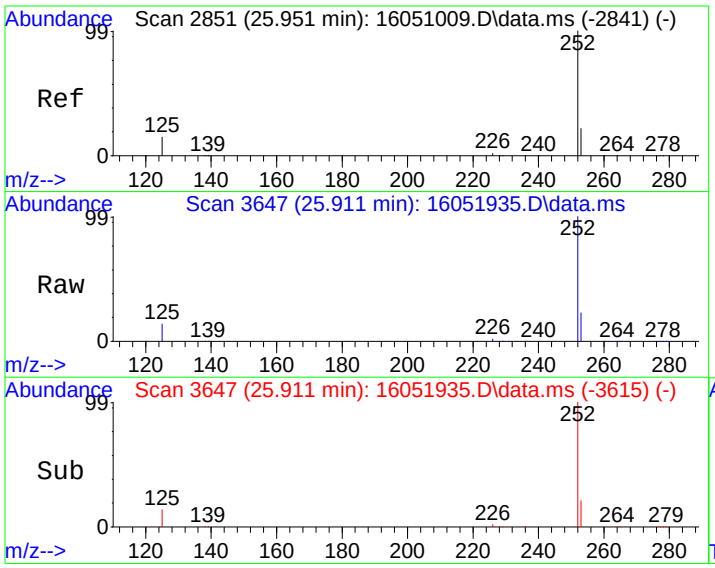



#24
Benzo(e)pyrene
Concen: 904.73 ug/kg
RT: 25.735 min Scan# 3623
Delta R.T. -0.007 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:252 Resp: 477250

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 125 | 18.2 | 0.0 | 38.7 |
| 253 | 24.2 | 2.3 | 42.3 |

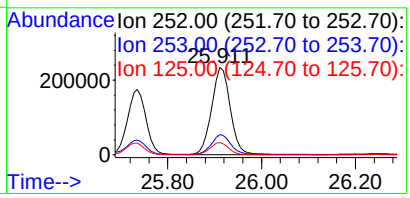


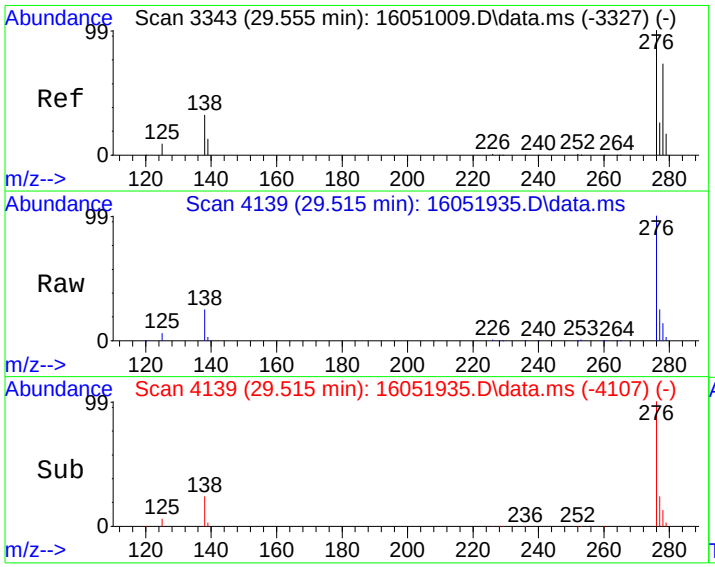




#25
Benzo[a]pyrene
Concen: 1246.78 ug/kg
RT: 25.911 min Scan# 3647
Delta R.T. -0.014 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:252 Resp: 644102

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.7 | 2.3 | 42.3 |
| 125 | 14.0 | 0.0 | 33.5 |

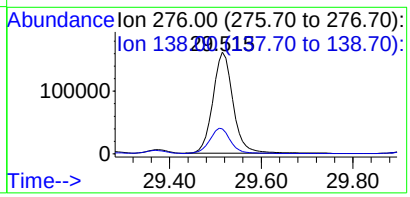


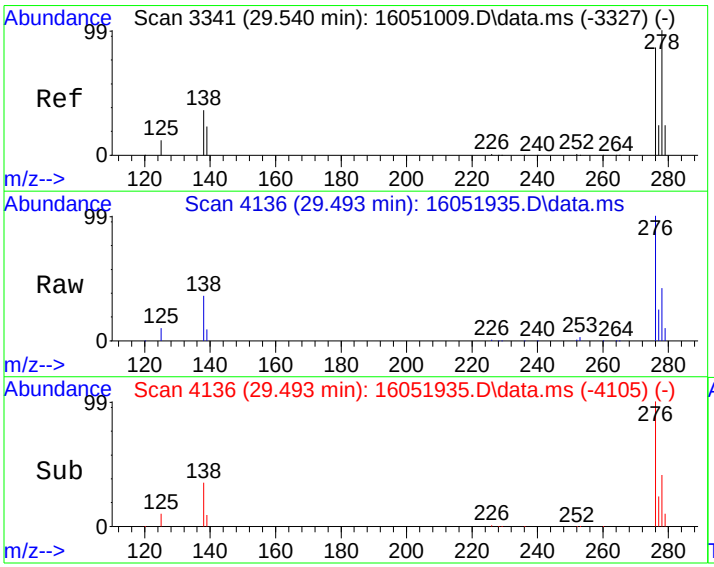




#26
Indeno[1,2,3-cd]pyrene
Concen: 768.34 ug/kg
RT: 29.515 min Scan# 4139
Delta R.T. -0.014 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:276 Resp: 493224

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 24.4 | 8.3 | 48.3 |

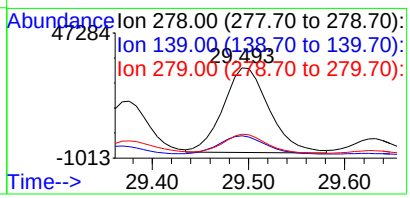


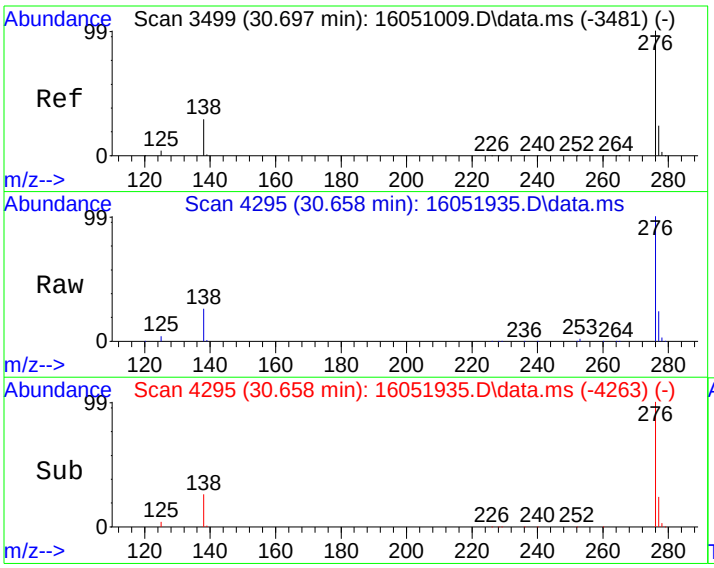



#27
Dibenz[a,h]anthracene
Concen: 197.98 ug/kg
RT: 29.493 min Scan# 4136
Delta R.T. -0.021 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:278 Resp: 108974

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 22.2 | 0.0 | 40.0 |
| 279 | 23.2 | 4.2 | 44.2 |

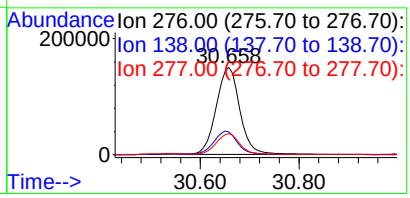



#28
Benzo[g,h,i]perylene
Concen: 900.50 ug/kg
RT: 30.658 min Scan# 4295
Delta R.T. -0.014 min
Lab File: 16051935.D
Acq: 20 May 2016 5:45 am

Tgt Ion:276 Resp: 496894

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 25.8 | 5.8 | 45.8 |
| 277 | 23.9 | 4.4 | 44.4 |



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051936.D
Acq On : 20 May 2016 6:22 am
Operator :
Sample : 1605121-06A
Misc : SAMP
ALS Vial : 36 Sample Multiplier: 10

Quant Time: May 20 08:40:26 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.271 | 136 | 1521417 | 4000.00 | ug/kg | 93 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1161364 | 4000.00 | ug/kg | 93 |
| 11) Phenanthrene-d10 | 14.976 | 188 | 2277091 | 4000.00 | ug/kg | 78 |
| 16) Chrysene-d12 | 20.988 | 240 | 2339903 | 4000.00 | ug/kg | 86 |
| 20) Perylene-d12 | 26.254 | 264 | 2238252 | 4000.00 | ug/kg | 90 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.756 | 172 | 28804 | 85.03 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.13%# | | | |
| 17) 4-Terphenyl-d14 | 17.587 | 244 | 39356 | 79.46 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.99%# | | | |

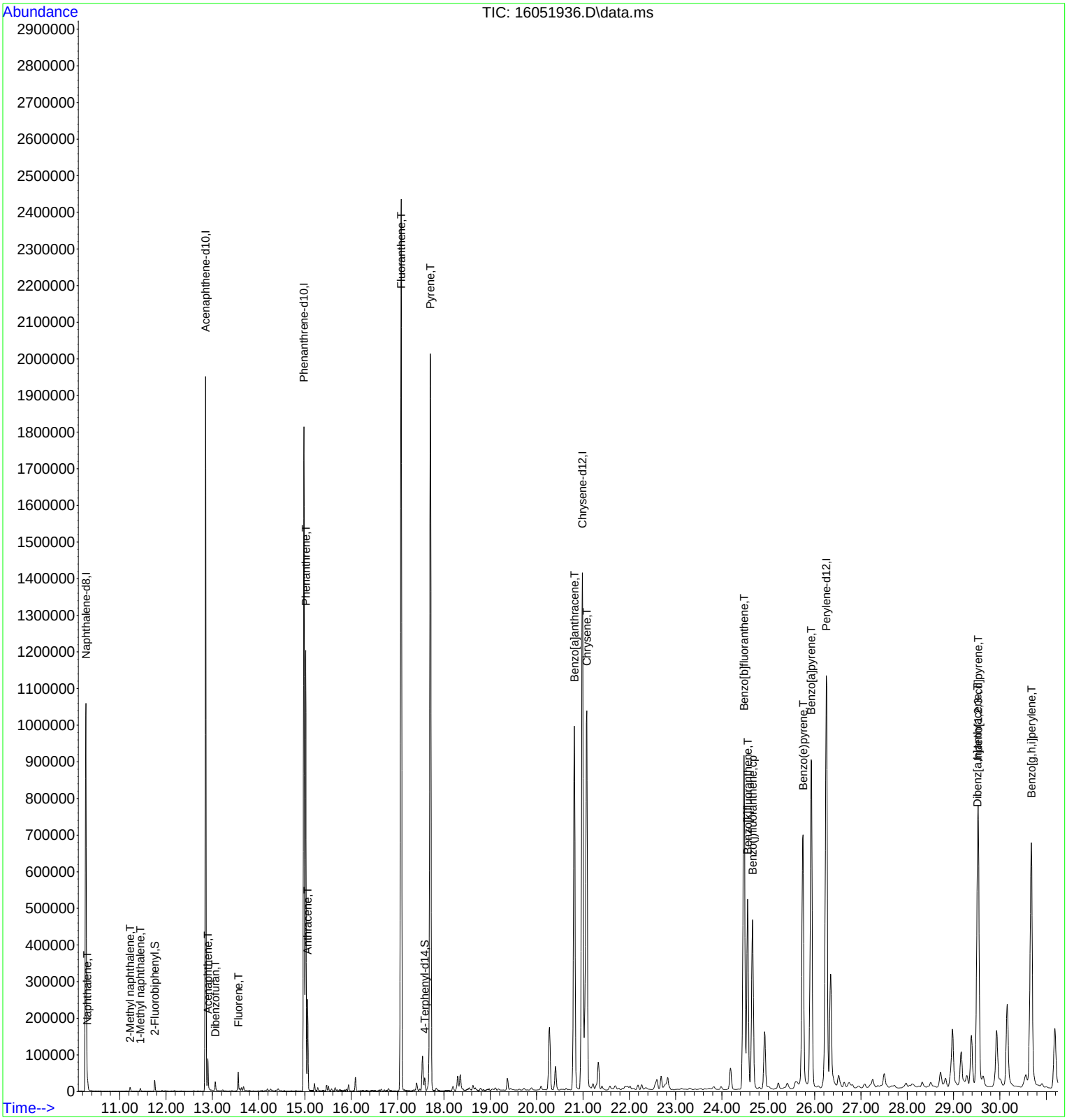
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.304 | 128 | 31829 | 93.38 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.226 | 142 | 7507 | 28.33 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.448 | 142 | 5043 | 20.11 | ug/kg | 99 |
| 8) Acenaphthene | 12.905 | 153 | 40979 | 127.93 | ug/kg | 98 |
| 9) Dibenzofuran | 13.067 | 168 | 24438 | 50.08 | ug/kg | 93 |
| 10) Fluorene | 13.558 | 166 | 25520 | 57.64 | ug/kg | 96 |
| 12) Phenanthrene | 15.016 | 178 | 1145359 | 1828.04 | ug/kg | 99 |
| 13) Anthracene | 15.057 | 178 | 240585 | 379.48 | ug/kg | 98 |
| 14) Fluoranthene | 17.077 | 202 | 2716060 | 4951.70 | ug/kg | 98 |
| 15) Pyrene | 17.707 | 202 | 2438604 | 4394.40 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.812 | 228 | 1572918 | 2761.92 | ug/kg | 99 |
| 19) Chrysene | 21.083 | 228 | 1823045 | 3522.44 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.474 | 252 | 1821109 | 3249.18 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.555 | 252 | 861480 | 1645.45 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.665 | 252 | 816918 | 1631.57 | ug/kg | 87 |
| 24) Benzo(e)pyrene | 25.749 | 252 | 1346970 | 2511.39 | ug/kg | 97 |
| 25) Benzo[a]pyrene | 25.932 | 252 | 1822448 | 3467.92 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.536 | 276 | 1405865 | 2143.15 | ug/kg | 90 |
| 27) Dibenz[a,h]anthracene | 29.507 | 278 | 317722 | 560.23 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.679 | 276 | 1432667 | 2551.92 | ug/kg | 99 |

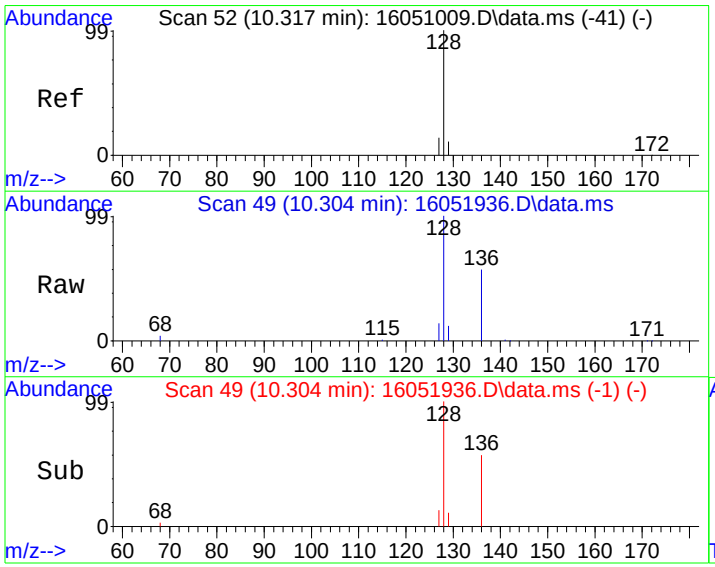
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051936.D
Acq On : 20 May 2016 6:22 am
Operator :
Sample : 1605121-06A
Misc : SAMP
ALS Vial : 36 Sample Multiplier: 10

Quant Time: May 20 08:40:26 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

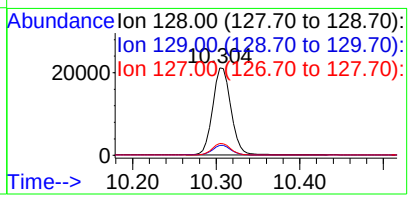


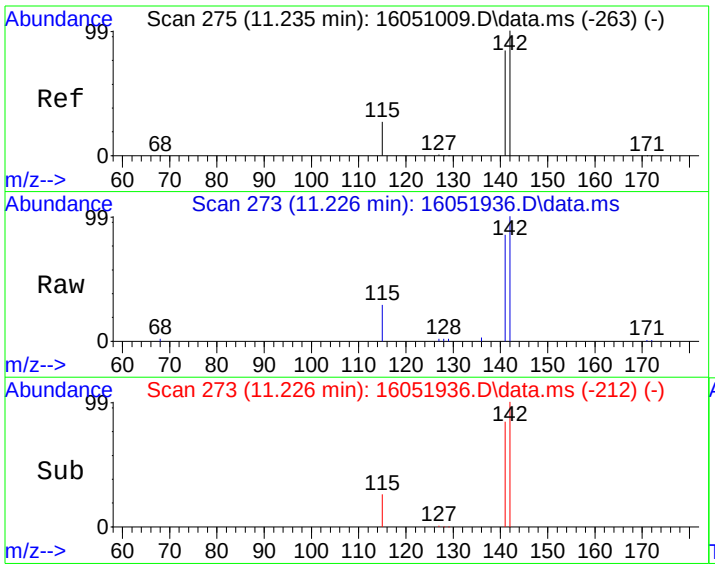



#2
Naphthalene
Concen: 93.38 ug/kg
RT: 10.304 min Scan# 49
Delta R.T. -0.005 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:128 Resp: 31829

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 11.2 | 0.0 | 31.3 |
| 127 | 13.4 | 0.0 | 33.6 |

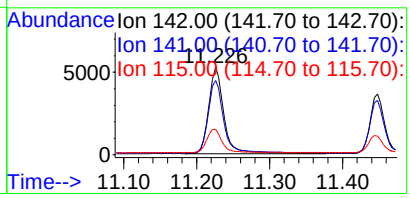


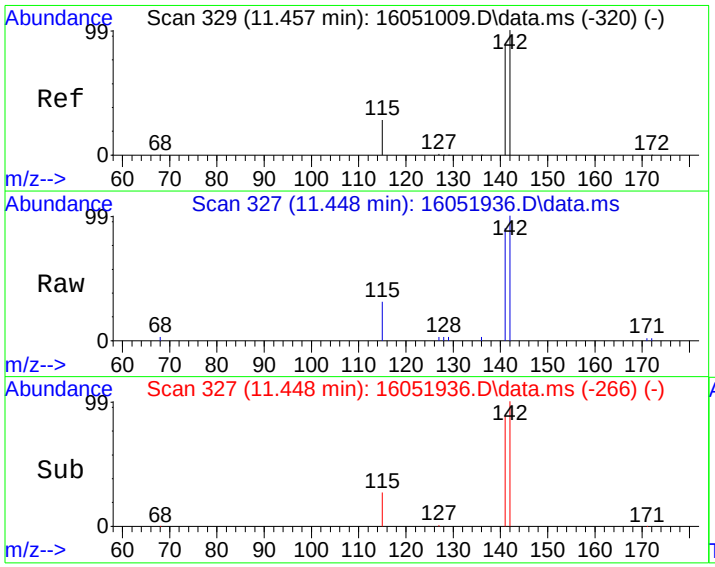




#3
2-Methyl naphthalene
Concen: 28.33 ug/kg
RT: 11.226 min Scan# 273
Delta R.T. -0.000 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:142 Resp: 7507

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 84.1 | 64.4 | 104.4 |
| 115 | 26.7 | 6.4 | 46.4 |

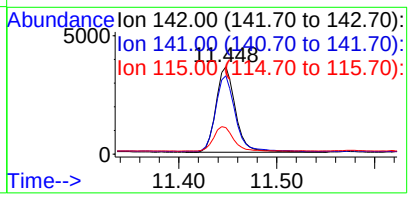


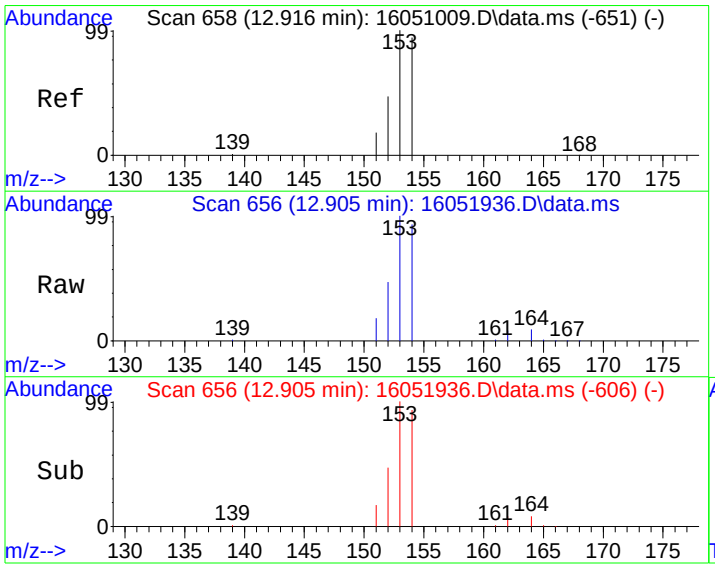




#4
1-Methyl naphthalene
Concen: 20.11 ug/kg
RT: 11.448 min Scan# 327
Delta R.T. -0.001 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:142 Resp: 5043

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 88.2 | 68.1 | 108.1 |
| 115 | 27.6 | 8.6 | 48.6 |

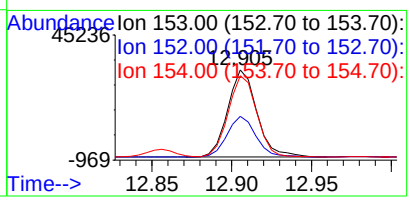


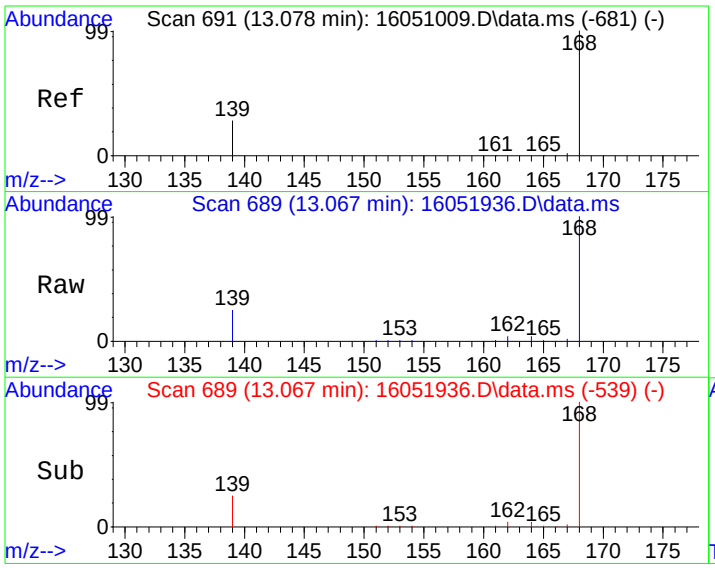



#8
Acenaphthene
Concen: 127.93 ug/kg
RT: 12.905 min Scan# 656
Delta R.T. -0.006 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:153 Resp: 40979

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 153 | 100 | | |
| 152 | 46.8 | 26.5 | 66.5 |
| 154 | 93.1 | 76.3 | 116.3 |

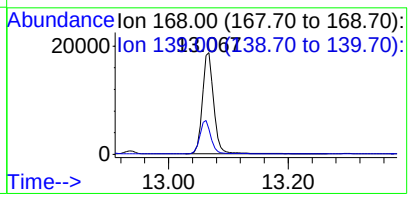


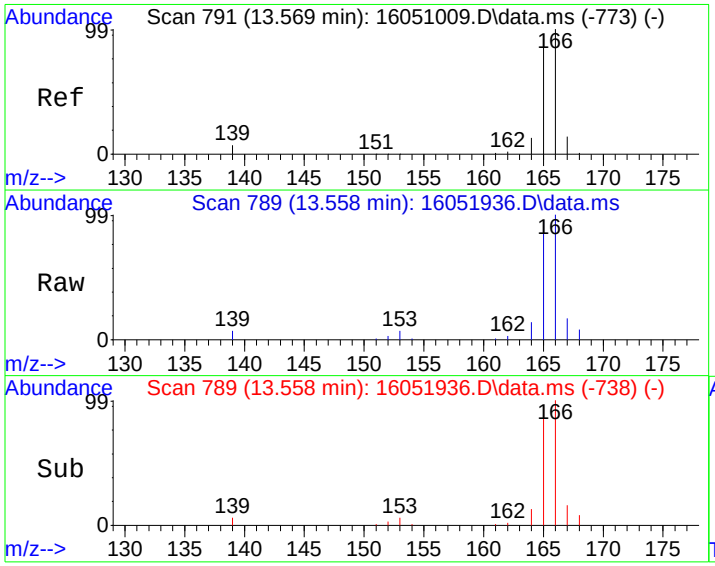




#9
Dibenzofuran
Concen: 50.08 ug/kg
RT: 13.067 min Scan# 689
Delta R.T. -0.001 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:168 Resp: 24438

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 24.4 | 8.2 | 48.2 |

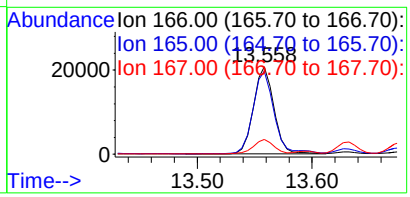


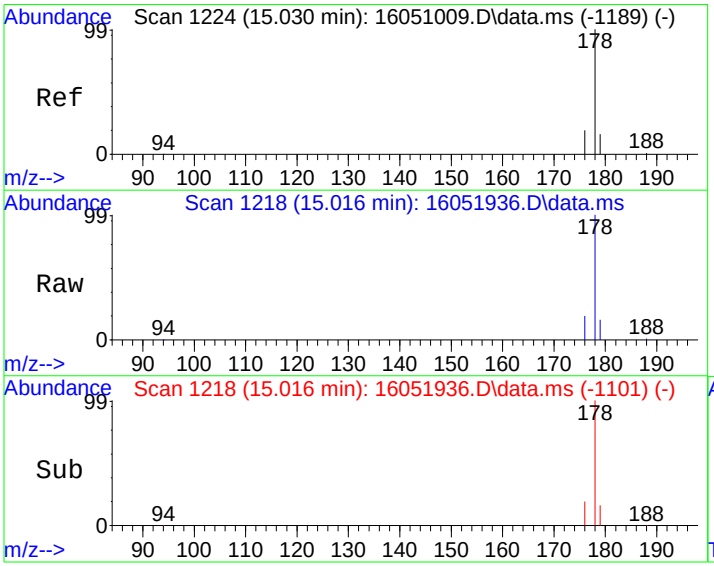




#10
Fluorene
Concen: 57.64 ug/kg
RT: 13.558 min Scan# 789
Delta R.T. -0.001 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:166 Resp: 25520

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 94.4 | 71.4 | 111.4 |
| 167 | 16.4 | 0.0 | 33.8 |

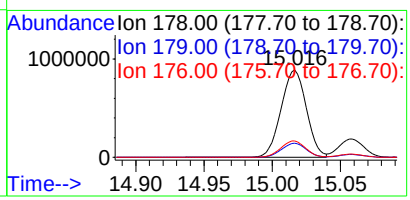


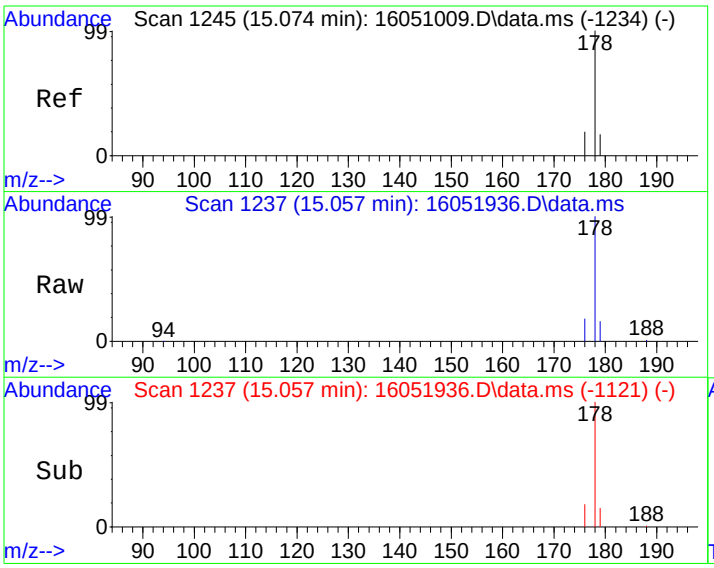



#12
Phenanthrene
Concen: 1828.04 ug/kg
RT: 15.016 min Scan# 1218
Delta R.T. -0.003 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:178 Resp: 1145359

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 16.1 | 0.0 | 36.4 |
| 176 | 18.7 | 0.0 | 39.0 |

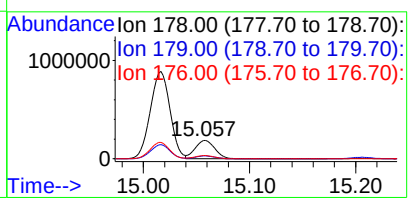


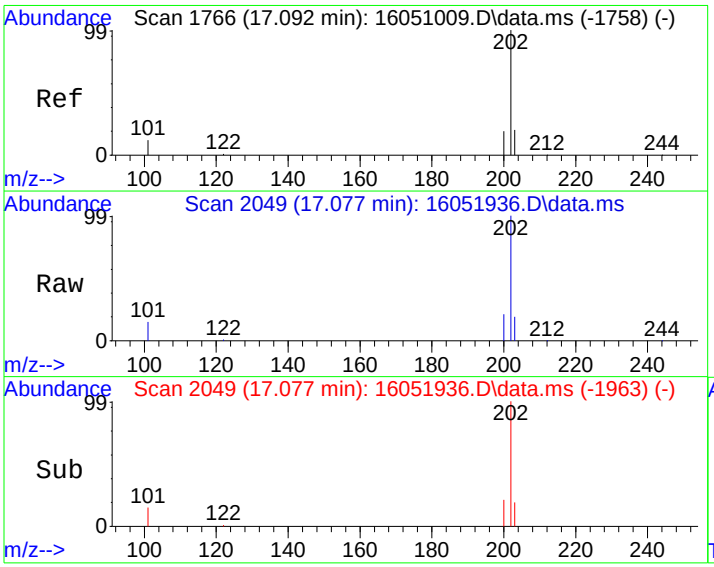




#13
Anthracene
Concen: 379.48 ug/kg
RT: 15.057 min Scan# 1237
Delta R.T. -0.005 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:178 Resp: 240585

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.4 | 0.0 | 36.3 |
| 176 | 17.6 | 0.0 | 38.5 |

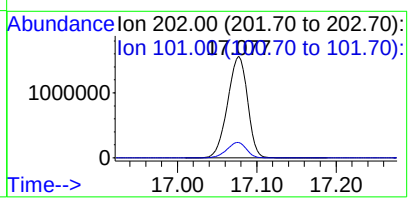


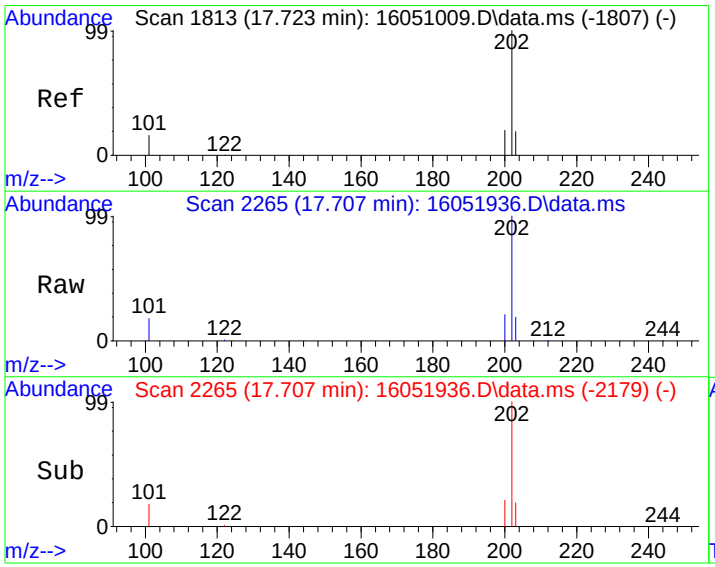




#14
Fluoranthene
Concen: 4951.70 ug/kg
RT: 17.077 min Scan# 2049
Delta R.T. 0.001 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:202 Resp: 2716060

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 15.2 | 0.0 | 34.4 |

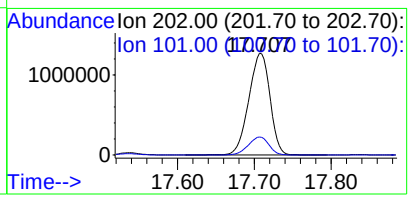


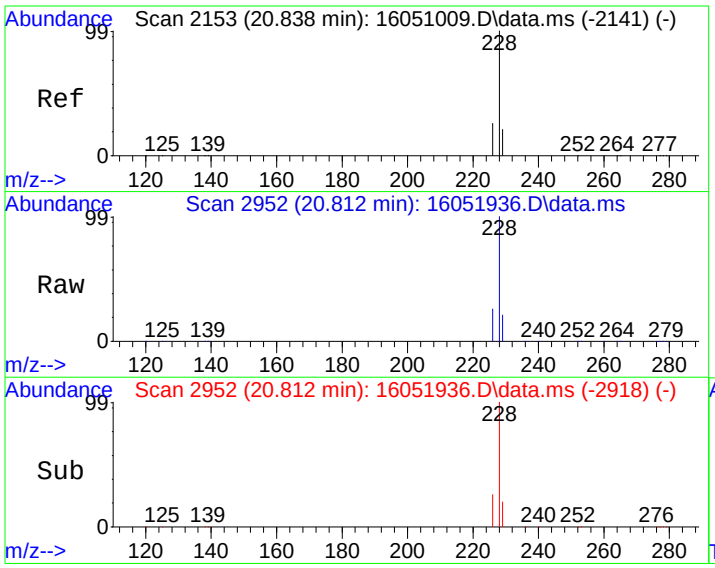



#15
Pyrene
Concen: 4394.40 ug/kg
RT: 17.707 min Scan# 2265
Delta R.T. 0.001 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:202 Resp: 2438604

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 17.7 | 0.0 | 37.3 |

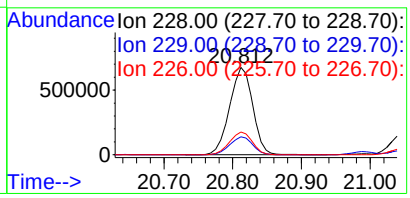


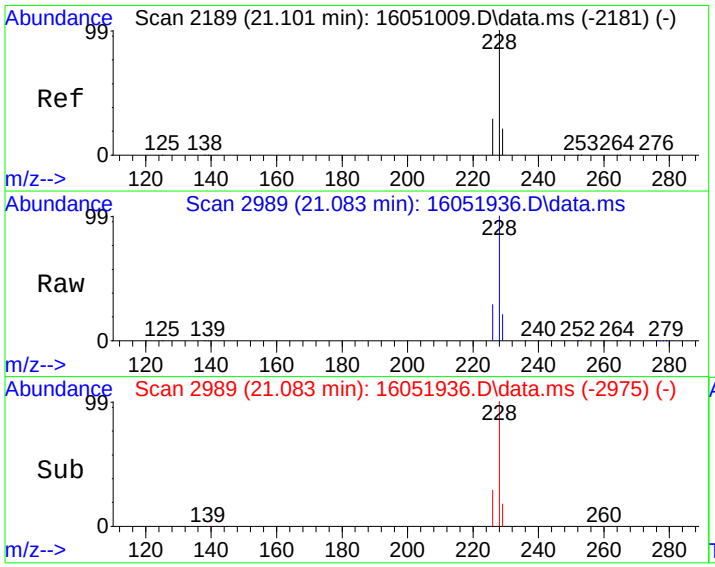




#18
Benzo[a]anthracene
Concen: 2761.92 ug/kg
RT: 20.812 min Scan# 2952
Delta R.T. -0.000 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:228 Resp: 1572918

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 20.4 | 0.3 | 40.3 |
| 226 | 26.1 | 5.7 | 45.7 |

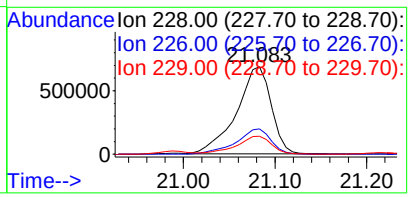


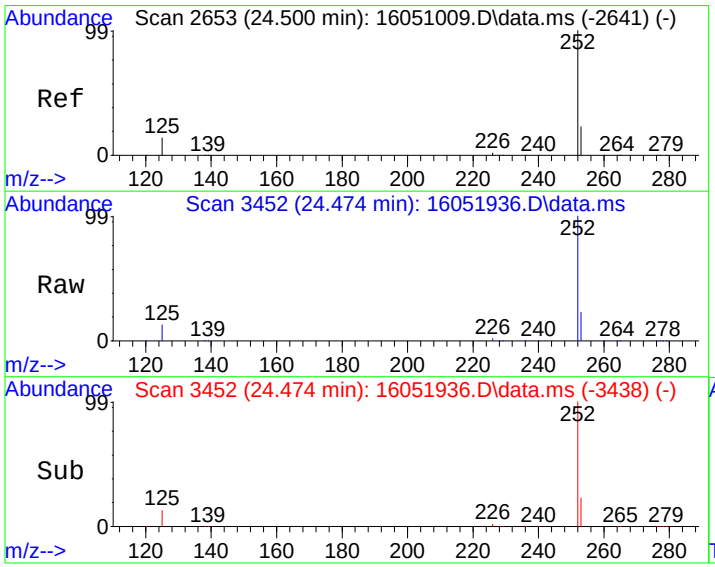




#19
Chrysene
Concen: 3522.44 ug/kg
RT: 21.083 min Scan# 2989
Delta R.T. -0.000 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:228 Resp: 1823045

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.8 | 8.2 | 48.2 |
| 229 | 20.6 | 0.3 | 40.3 |

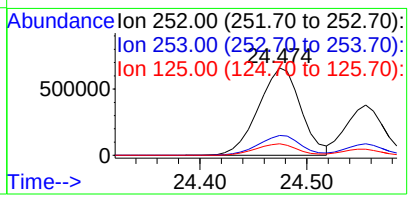


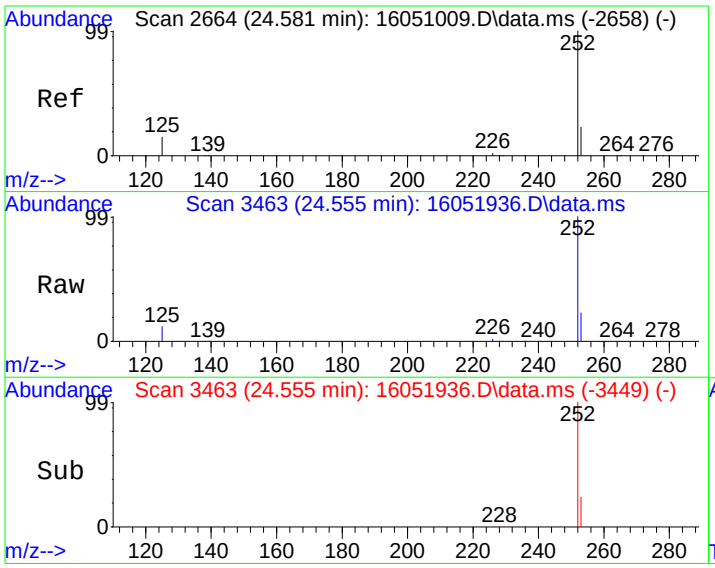



#21
Benzo[b]fluoranthene
Concen: 3249.18 ug/kg
RT: 24.474 min Scan# 3452
Delta R.T. -0.001 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:252 Resp: 1821109

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.7 | 2.3 | 42.3 |
| 125 | 13.2 | 0.0 | 32.2 |

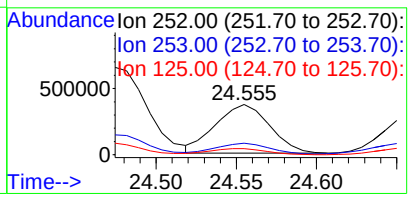


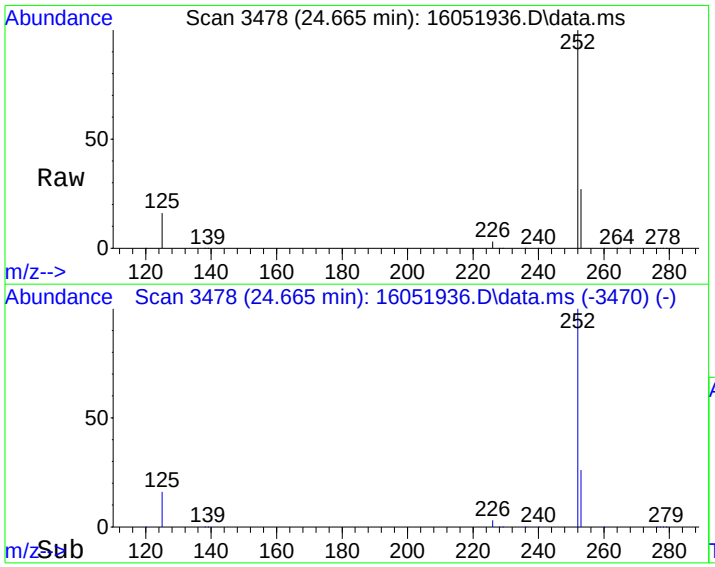




#22
Benzo[k]fluoranthene
Concen: 1645.45 ug/kg
RT: 24.555 min Scan# 3463
Delta R.T. -0.000 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:252 Resp: 861480

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.7 | 2.5 | 42.5 |
| 125 | 12.4 | 0.0 | 32.6 |

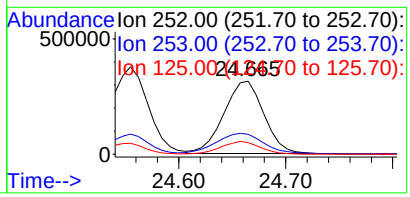


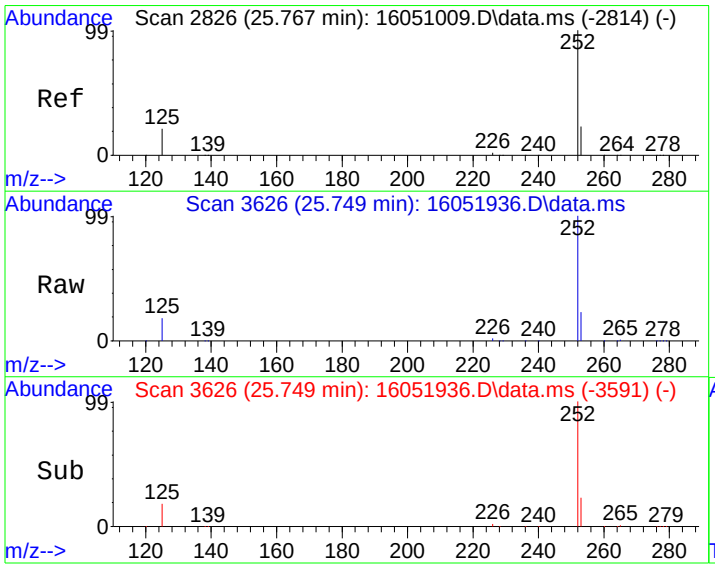




#23
Benzo(j)fluoranthene
Concen: 1631.57 ug/kg
RT: 24.665 min Scan# 3478
Delta R.T. -0.000 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:252 Resp: 816918

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 32.8 | 2.2 | 42.2 |
| 125 | 17.1 | 0.0 | 37.3 |

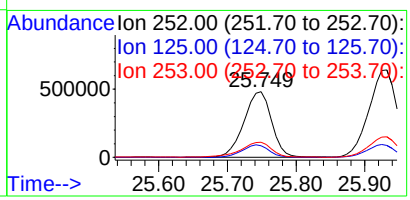


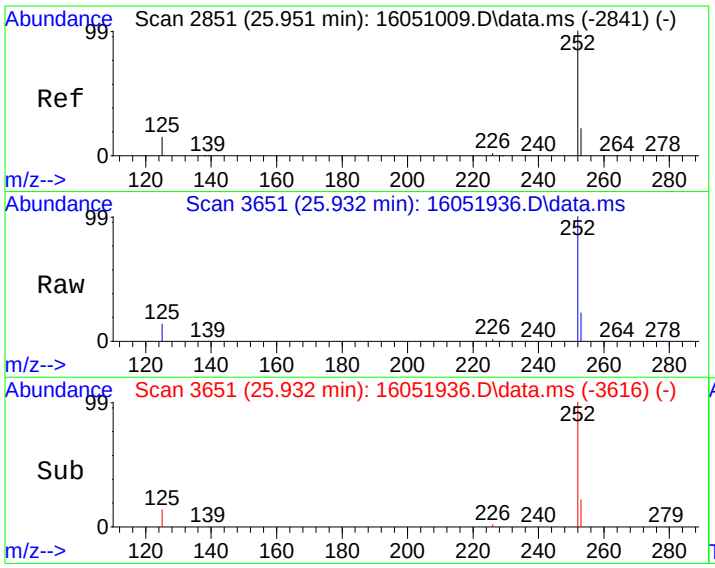



#24
Benzo(e)pyrene
Concen: 2511.39 ug/kg
RT: 25.749 min Scan# 3626
Delta R.T. 0.007 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:252 Resp: 1346970

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 125 | 18.5 | 0.0 | 38.7 |
| 253 | 25.0 | 2.3 | 42.3 |

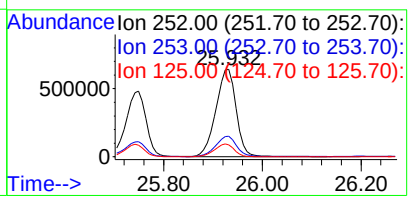


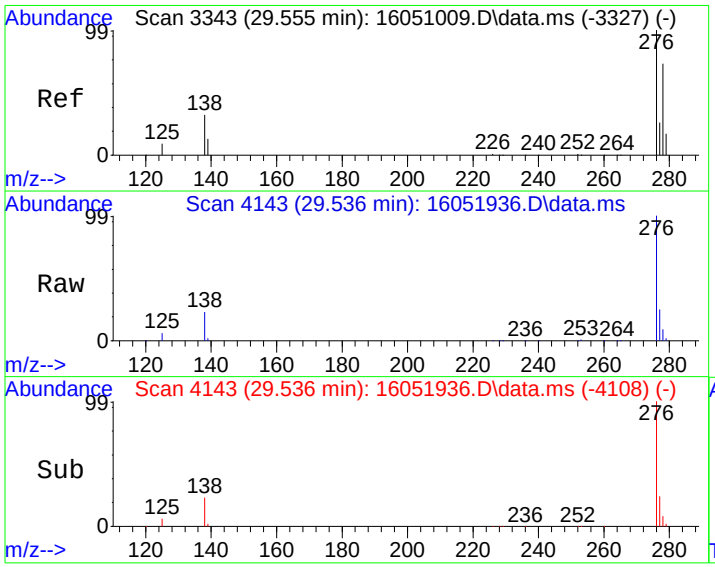




#25
Benzo[a]pyrene
Concen: 3467.92 ug/kg
RT: 25.932 min Scan# 3651
Delta R.T. 0.007 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:252 Resp: 1822448

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 23.2 | 2.3 | 42.3 |
| 125 | 13.5 | 0.0 | 33.5 |

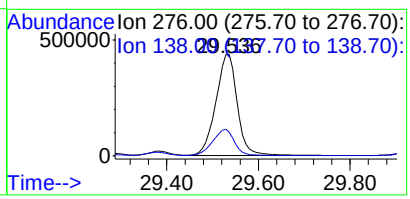


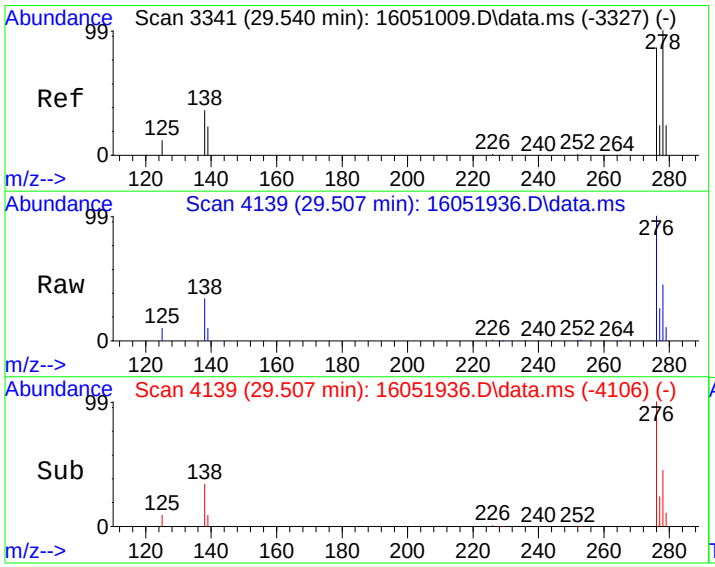




#26
Indeno[1,2,3-cd]pyrene
Concen: 2143.15 ug/kg
RT: 29.536 min Scan# 4143
Delta R.T. 0.007 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:276 Resp: 1405865

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 23.2 | 8.3 | 48.3 |

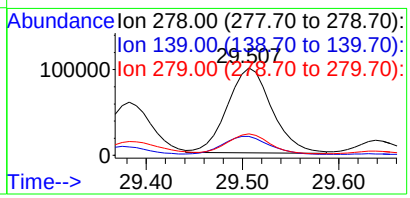


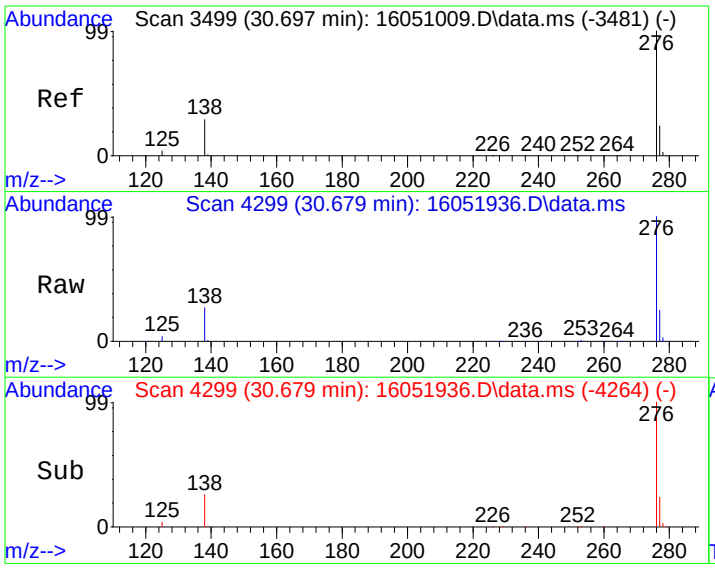



#27
Dibenz[a,h]anthracene
Concen: 560.23 ug/kg
RT: 29.507 min Scan# 4139
Delta R.T. -0.007 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:278 Resp: 317722

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 21.3 | 0.0 | 40.0 |
| 279 | 23.5 | 4.2 | 44.2 |

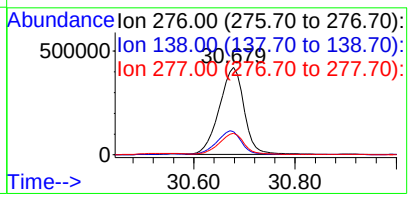



#28
Benzo[g,h,i]perylene
Concen: 2551.92 ug/kg
RT: 30.679 min Scan# 4299
Delta R.T. 0.007 min
Lab File: 16051936.D
Acq: 20 May 2016 6:22 am

Tgt Ion:276 Resp: 1432667

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 26.3 | 5.8 | 45.8 |
| 277 | 24.3 | 4.4 | 44.4 |



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051937.D
Acq On : 20 May 2016 6:59 am
Operator :
Sample : CCV-160519
Misc : CCV
ALS Vial : 37 Sample Multiplier: 1

Quant Time: May 20 08:38:30 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

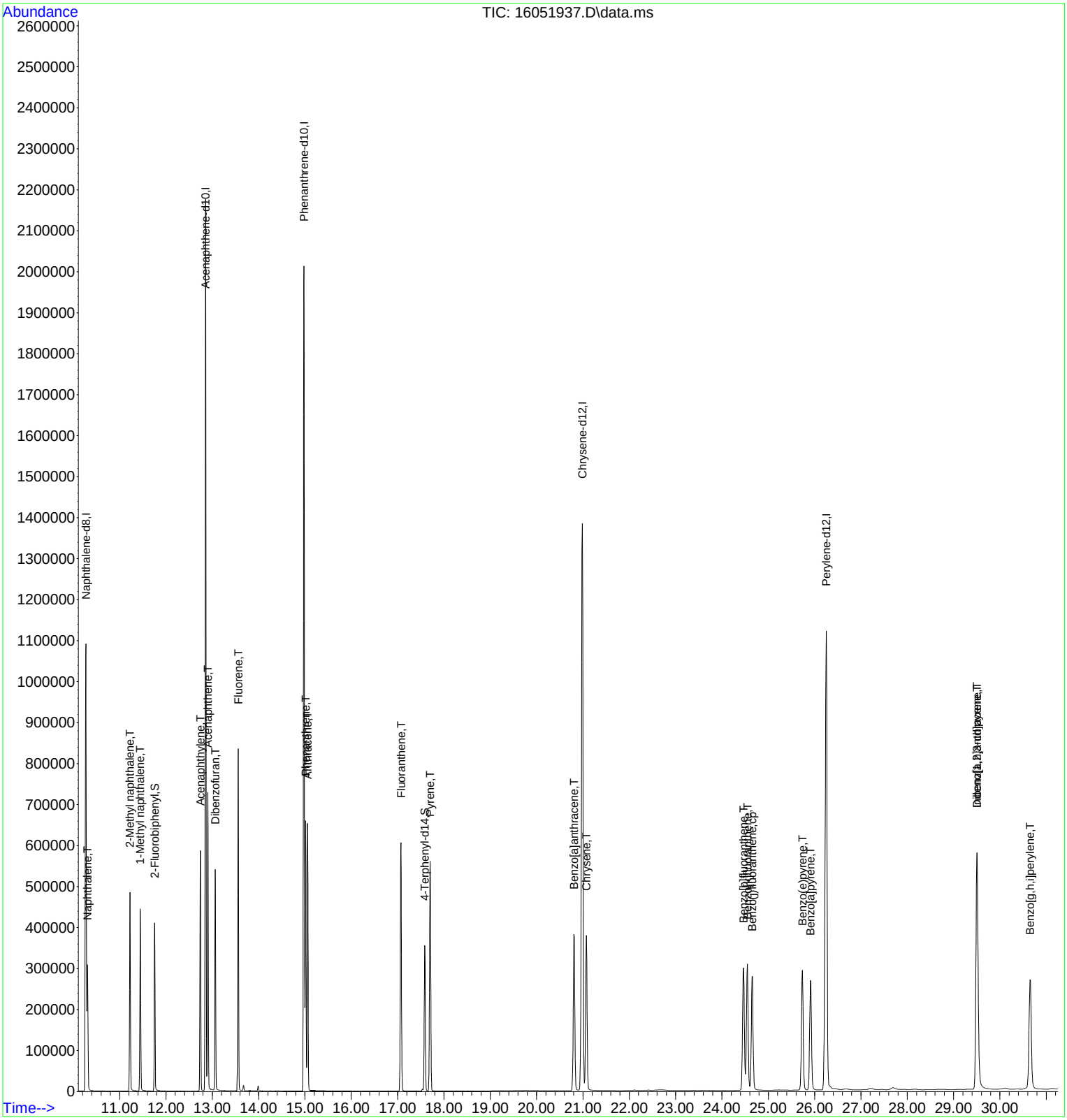
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.272 | 136 | 1596529 | 4000.00 | ug/kg | 98 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1273874 | 4000.00 | ug/kg | 102 |
| 11) Phenanthrene-d10 | 14.978 | 188 | 2458683 | 4000.00 | ug/kg | 84 |
| 16) Chrysene-d12 | 20.988 | 240 | 2342216 | 4000.00 | ug/kg | 86 |
| 20) Perylene-d12 | 26.254 | 264 | 2171898 | 4000.00 | ug/kg | 87 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.756 | 172 | 365539 | 1028.33 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 25.71%# | | | |
| 17) 4-Terphenyl-d14 | 17.587 | 244 | 489182 | 986.74 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 24.67%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.304 | 128 | 352970 | 986.87 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.222 | 142 | 294101 | 1057.75 | ug/kg | 98 |
| 4) 1-Methyl naphthalene | 11.448 | 142 | 269618 | 1024.74 | ug/kg | 99 |
| 7) Acenaphthylene | 12.743 | 152 | 559854 | 1005.46 | ug/kg | 99 |
| 8) Acenaphthene | 12.905 | 153 | 346482 | 986.13 | ug/kg | 98 |
| 9) Dibenzofuran | 13.063 | 168 | 513174 | 958.79 | ug/kg | 91 |
| 10) Fluorene | 13.559 | 166 | 449201 | 924.97 | ug/kg | 100 |
| 12) Phenanthrene | 15.014 | 178 | 633815 | 936.88 | ug/kg | 99 |
| 13) Anthracene | 15.058 | 178 | 632927 | 924.59 | ug/kg | 99 |
| 14) Fluoranthene | 17.071 | 202 | 668308 | 1004.74 | ug/kg | 99 |
| 15) Pyrene | 17.704 | 202 | 655948 | 1008.38 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.805 | 228 | 598818 | 1006.17 | ug/kg | 100 |
| 19) Chrysene | 21.076 | 228 | 555607 | 1010.64 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.467 | 252 | 574850 | 1010.68 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.548 | 252 | 531953 | 1036.96 | ug/kg | 100 |
| 23) Benzo(j)fluoranthene | 24.657 | 252 | 503321 | 1022.08 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.734 | 252 | 544356 | 1012.18 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.910 | 252 | 538769 | 1016.47 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.514 | 276 | 668438 | 1025.01 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.499 | 278 | 562619 | 1036.47 | ug/kg | 100 |
| 28) Benzo[g,h,i]perylene | 30.657 | 276 | 577419 | 1026.77 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160519\
Data File : 16051937.D
Acq On : 20 May 2016 6:59 am
Operator :
Sample : CCV-160519
Misc : CCV
ALS Vial : 37 Sample Multiplier: 1

Quant Time: May 20 08:38:30 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160520\
Data File : 16052002.D
Acq On : 20 May 2016 9:14 am
Operator :
Sample : ICV-160520
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 20 13:07:10 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

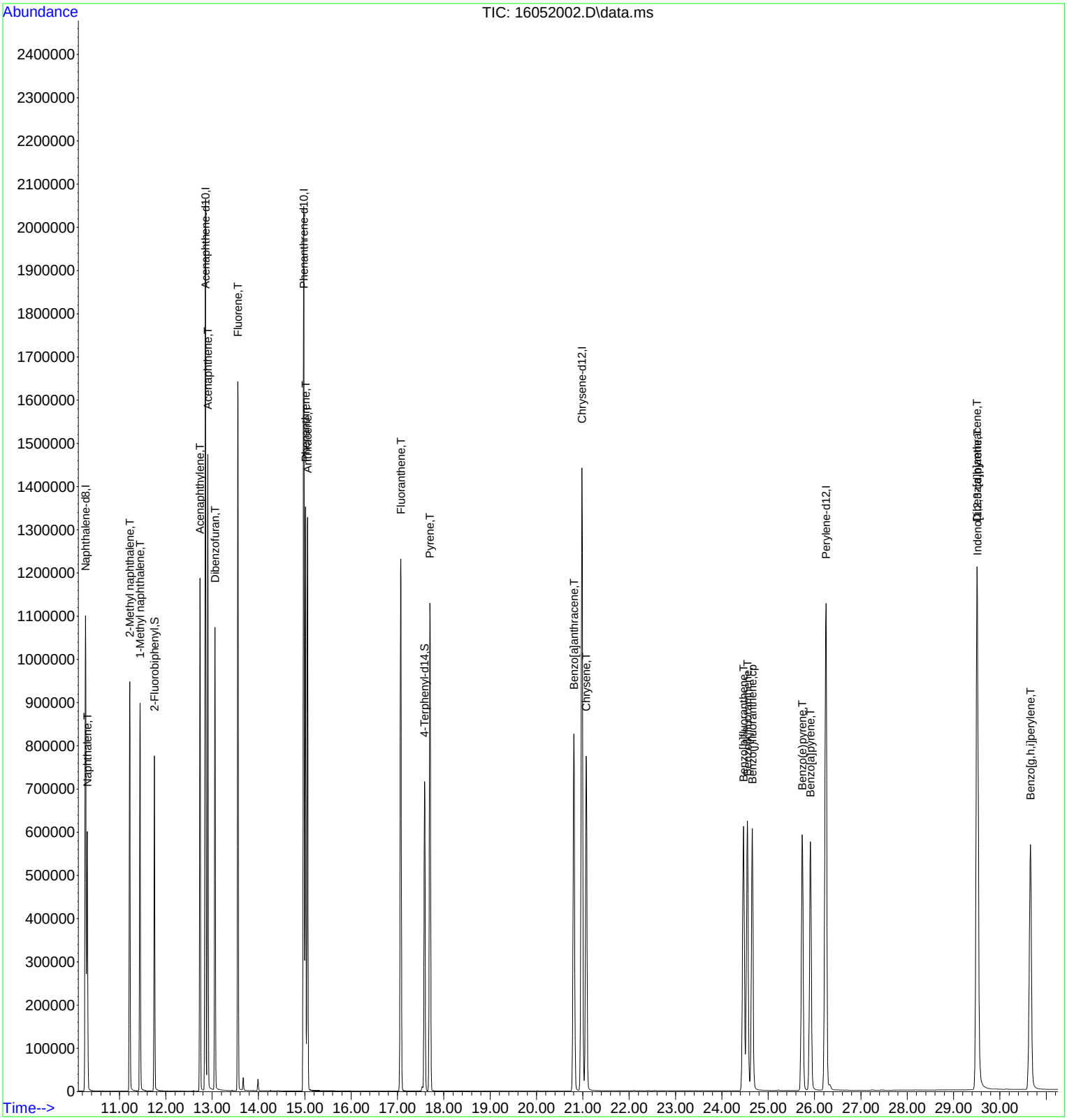
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.266 | 136 | 1547153 | 4000.00 | ug/kg | 95 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1247032 | 4000.00 | ug/kg | 99 |
| 11) Phenanthrene-d10 | 14.976 | 188 | 2509434 | 4000.00 | ug/kg | 86 |
| 16) Chrysene-d12 | 20.981 | 240 | 2390872 | 4000.00 | ug/kg | 88 |
| 20) Perylene-d12 | 26.248 | 264 | 2231698 | 4000.00 | ug/kg | 90 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.755 | 172 | 709214 | 2058.82 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 51.47% | | |
| 17) 4-Terphenyl-d14 | 17.587 | 244 | 1015188 | 2006.09 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 50.15%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.303 | 128 | 698696 | 2015.83 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.221 | 142 | 572699 | 2125.48 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.443 | 142 | 529187 | 2075.48 | ug/kg | 99 |
| 7) Acenaphthylene | 12.738 | 152 | 1111364 | 2038.89 | ug/kg | 100 |
| 8) Acenaphthene | 12.905 | 153 | 693530 | 2016.37 | ug/kg | 99 |
| 9) Dibenzofuran | 13.062 | 168 | 1026850 | 1959.81 | ug/kg | 95 |
| 10) Fluorene | 13.558 | 166 | 903846 | 1901.21 | ug/kg | 99 |
| 12) Phenanthrene | 15.014 | 178 | 1287796 | 1865.07 | ug/kg | 100 |
| 13) Anthracene | 15.058 | 178 | 1302404 | 1864.10 | ug/kg | 100 |
| 14) Fluoranthene | 17.071 | 202 | 1369440 | 2080.66 | ug/kg | 100 |
| 15) Pyrene | 17.700 | 202 | 1356149 | 2097.12 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.806 | 228 | 1269123 | 2148.43 | ug/kg | 100 |
| 19) Chrysene | 21.069 | 228 | 1164874 | 2131.85 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.468 | 252 | 1227085 | 2148.07 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.549 | 252 | 1117252 | 2157.59 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.659 | 252 | 1061744 | 2150.47 | ug/kg | 100 |
| 24) Benzo(e)pyrene | 25.735 | 252 | 1146281 | 2125.69 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.911 | 252 | 1132855 | 2116.99 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.523 | 276 | 1395443 | 2133.05 | ug/kg | 98 |
| 27) Dibenz[a,h]anthracene | 29.508 | 278 | 1170086 | 2153.50 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.658 | 276 | 1203641 | 2131.86 | ug/kg | 98 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160520\
Data File : 16052002.D
Acq On : 20 May 2016 9:14 am
Operator :
Sample : ICV-160520
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

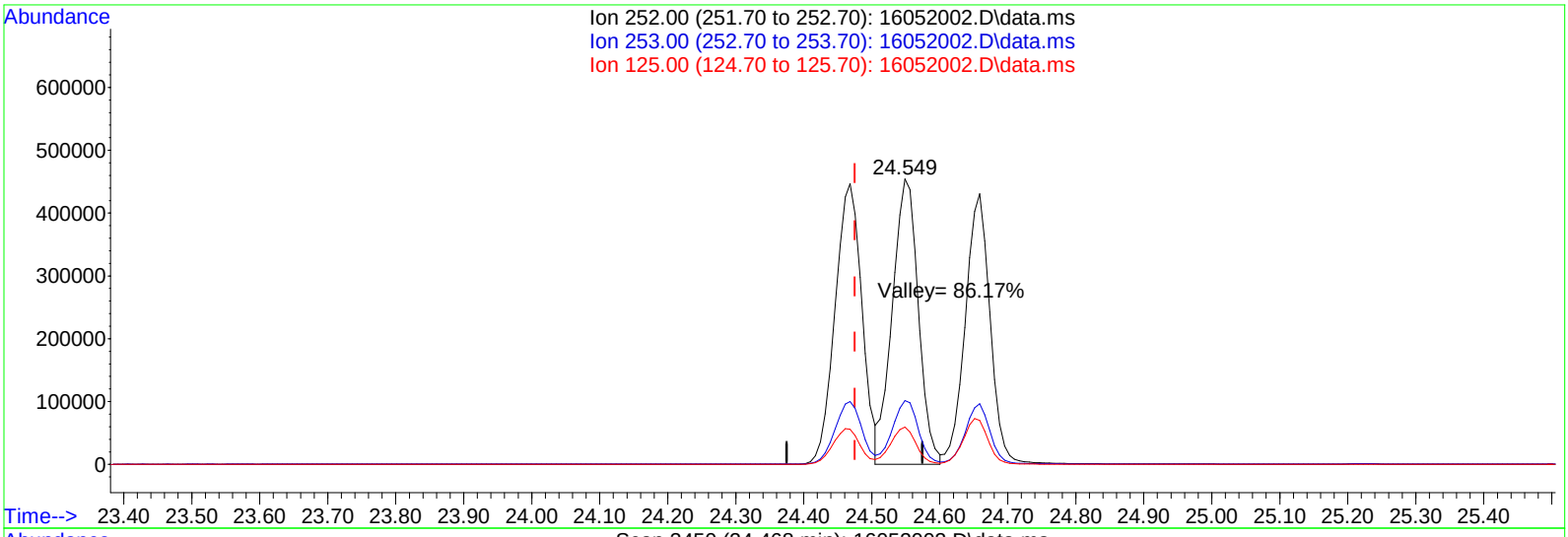
Quant Time: May 20 13:07:10 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

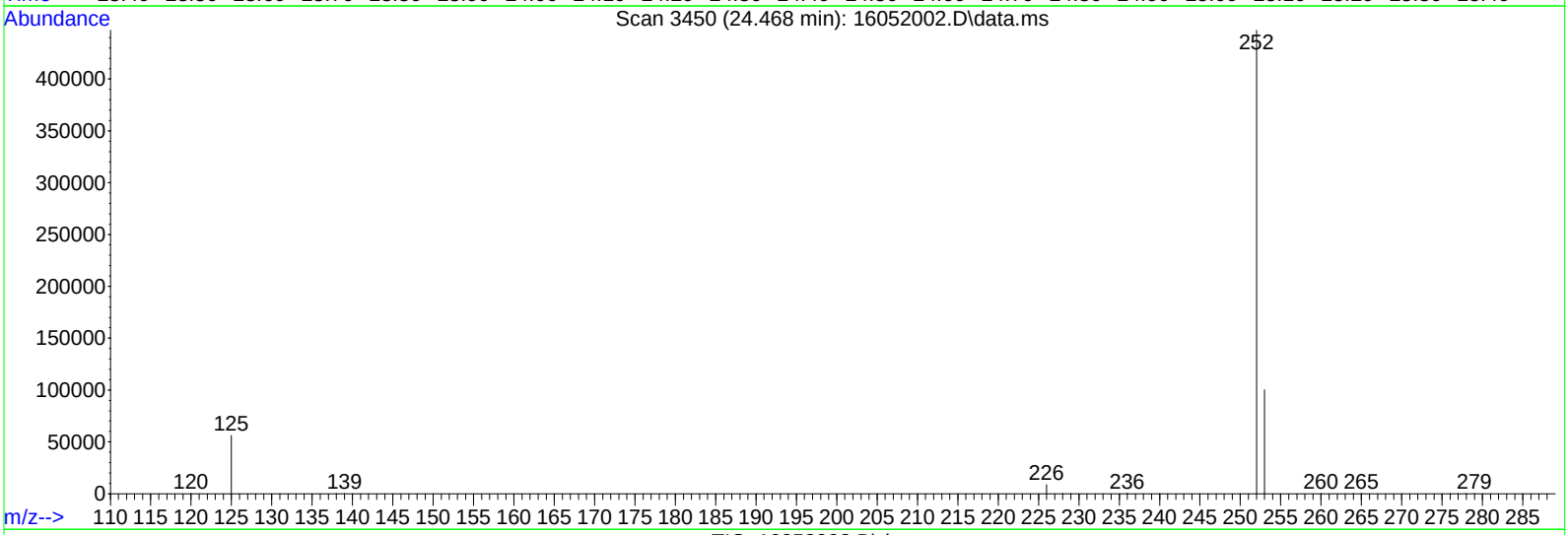


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\160520\
Data File : 16052002.D
Acq On : 20 May 2016 9:14 am
Operator :
Sample : ICV-160520
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 20 12:29:31 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration




TIC: 16052002.D\data.ms

(21) Benzo[b]fluoranthene (T)

24.468min (-0.007) 2148.07ug/kg

response 1227085

| Ion | Exp% | Act% |
|---|---|---|
| 252.00 | 100 | 100 |
| 253.00 | 22.30 | 22.27 |
| 125.00 | 12.20 | 12.52 |
| 0.00 | 0.00 | 0.00 |

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160520\
Data File : 16052004.D
Acq On : 20 May 2016 10:28 am
Operator :
Sample : SBLK-160520
Misc : SBLK
ALS Vial : 4 Sample Multiplier: 1

Quant Time: May 23 10:33:00 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.268 | 136 | 1447548 | 4000.00 | ug/kg | 89 |
| 6) Acenaphthene-d10 | 12.852 | 164 | 1094738 | 4000.00 | ug/kg | 87 |
| 11) Phenanthrene-d10 | 14.975 | 188 | 2117575 | 4000.00 | ug/kg | 72 |
| 16) Chrysene-d12 | 20.980 | 240 | 2240420 | 4000.00 | ug/kg | 83 |
| 20) Perylene-d12 | 26.247 | 264 | 2132137 | 4000.00 | ug/kg | 86 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.753 | 172 | 243872 | 756.66 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 18.92%# | | | |
| 17) 4-Terphenyl-d14 | 17.583 | 244 | 344106 | 725.64 | ug/kg | -0.01 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 18.14%# | | | |

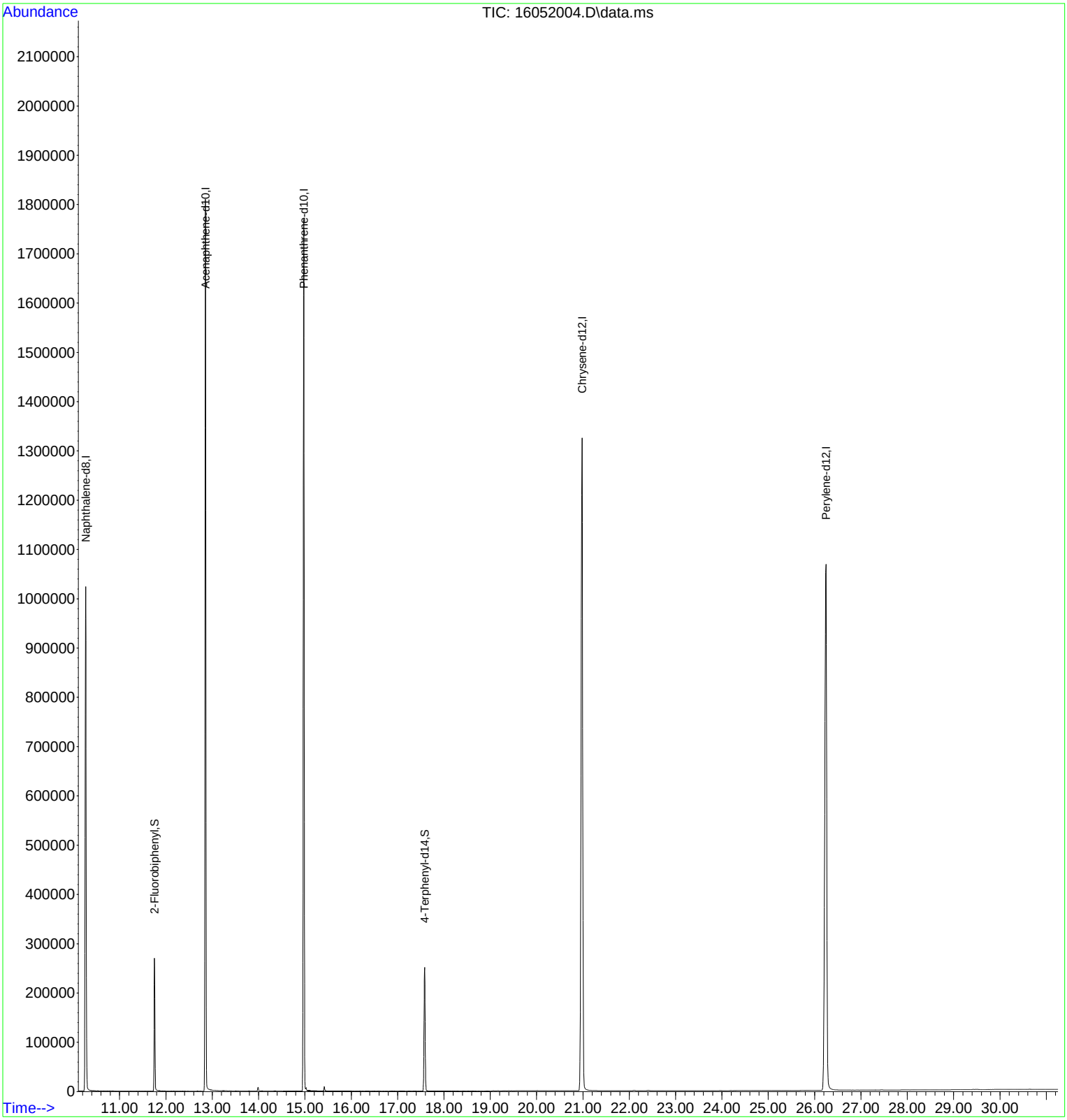
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160520\
Data File : 16052004.D
Acq On : 20 May 2016 10:28 am
Operator :
Sample : SBLK-160520
Misc : SBLK
ALS Vial : 4 Sample Multiplier: 1

Quant Time: May 23 10:33:00 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160520\
Data File : 16052005.D
Acq On : 20 May 2016 11:05 am
Operator :
Sample : 1605121-01A
Misc : SAMP
ALS Vial : 5 Sample Multiplier: 50

Quant Time: May 20 12:29:48 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.268 | 136 | 1508561 | 4000.00 | ug/kg | 93 |
| 6) Acenaphthene-d10 | 12.852 | 164 | 1228605 | 4000.00 | ug/kg | 98 |
| 11) Phenanthrene-d10 | 14.975 | 188 | 2309610 | 4000.00 | ug/kg | 79 |
| 16) Chrysene-d12 | 20.982 | 240 | 2266028 | 4000.00 | ug/kg | 84 |
| 20) Perylene-d12 | 26.241 | 264 | 2141995 | 4000.00 | ug/kg | 86 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.757 | 172 | 6261 | 18.64 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 0.47%# | | |
| 17) 4-Terphenyl-d14 | 17.583 | 244 | 8354 | 17.42 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 0.44%# | | |

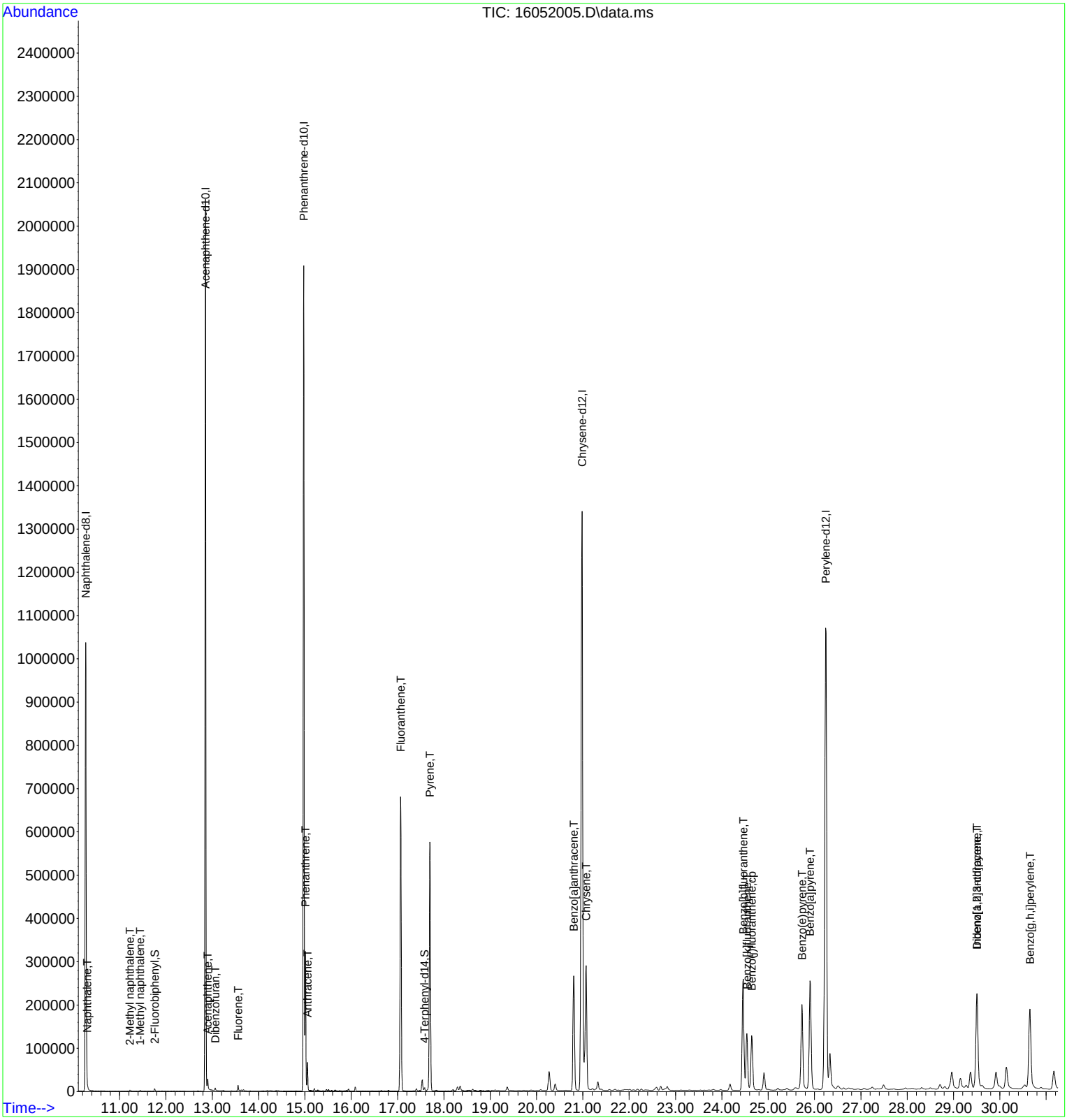
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.305 | 128 | 8246 | 24.40 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.227 | 142 | 2029 | 7.72 | ug/kg | 98 |
| 4) 1-Methyl naphthalene | 11.445 | 142 | 1390 | 5.59 | ug/kg | 98 |
| 8) Acenaphthene | 12.901 | 153 | 10935 | 32.27 | ug/kg | 98 |
| 9) Dibenzofuran | 13.063 | 168 | 6370 | 12.34 | ug/kg | 96 |
| 10) Fluorene | 13.554 | 166 | 6890 | 14.71 | ug/kg | 97 |
| 12) Phenanthrene | 15.011 | 178 | 305050 | 480.02 | ug/kg | 98 |
| 13) Anthracene | 15.055 | 178 | 62972 | 97.93 | ug/kg | 98 |
| 14) Fluoranthene | 17.068 | 202 | 762687 | 1228.63 | ug/kg | 99 |
| 15) Pyrene | 17.697 | 202 | 678069 | 1112.55 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.806 | 228 | 429160 | 740.27 | ug/kg | 99 |
| 19) Chrysene | 21.069 | 228 | 494936 | 928.63 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.461 | 252 | 500081 | 889.24 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.542 | 252 | 226717 | 443.47 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.644 | 252 | 219530 | 445.05 | ug/kg | 88 |
| 24) Benzo(e)pyrene | 25.728 | 252 | 369272 | 690.85 | ug/kg | 97 |
| 25) Benzo[a]pyrene | 25.904 | 252 | 499568 | 954.67 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.508 | 276 | 383115 | 589.30 | ug/kg | 92 |
| 27) Dibenz[a,h]anthracene | 29.493 | 278 | 85953 | 153.79 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.651 | 276 | 389031 | 695.99 | ug/kg | 99 |

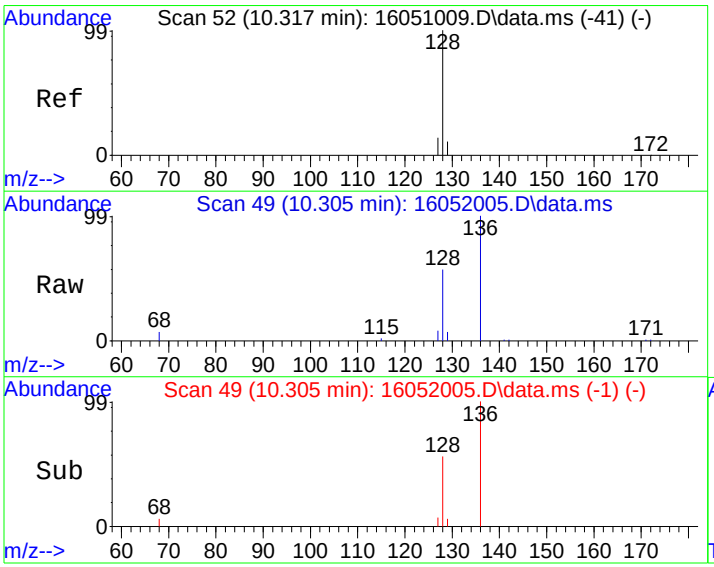
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160520\
Data File : 16052005.D
Acq On : 20 May 2016 11:05 am
Operator :
Sample : 1605121-01A
Misc : SAMP
ALS Vial : 5 Sample Multiplier: 50

Quant Time: May 20 12:29:48 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

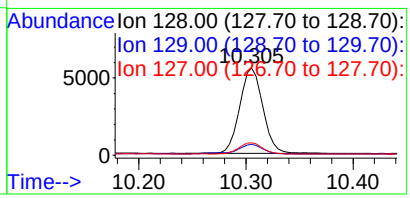


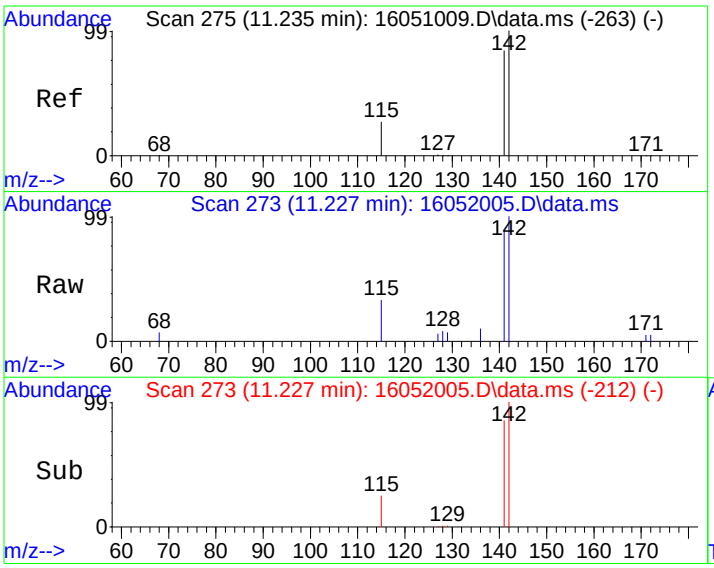



#2
Naphthalene
Concen: 24.40 ug/kg
RT: 10.305 min Scan# 49
Delta R.T. -0.004 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:128 Resp: 8246

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 11.2 | 0.0 | 31.3 |
| 127 | 13.3 | 0.0 | 33.6 |

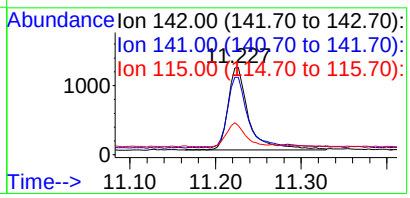


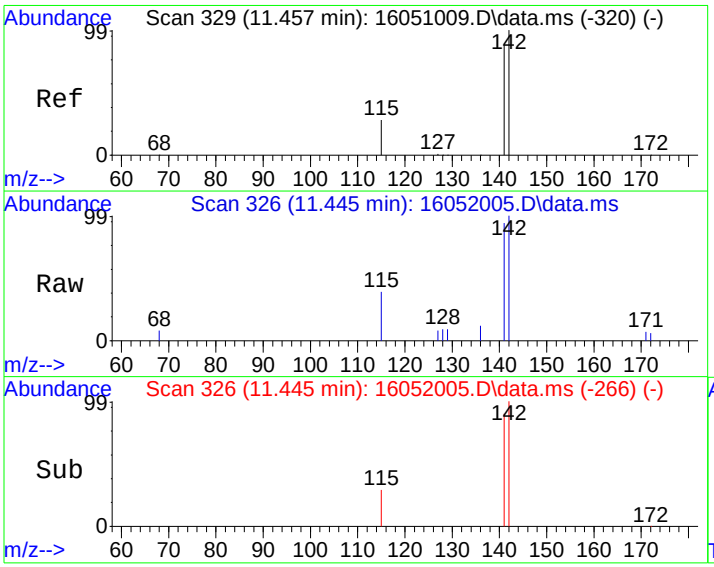




#3
2-Methyl naphthalene
Concen: 7.72 ug/kg
RT: 11.227 min Scan# 273
Delta R.T. 0.001 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:142 Resp: 2029

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 85.5 | 64.4 | 104.4 |
| 115 | 24.5 | 6.4 | 46.4 |

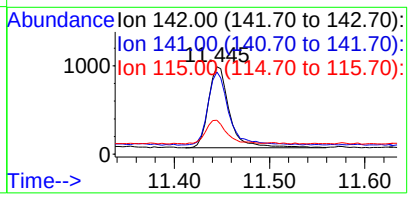


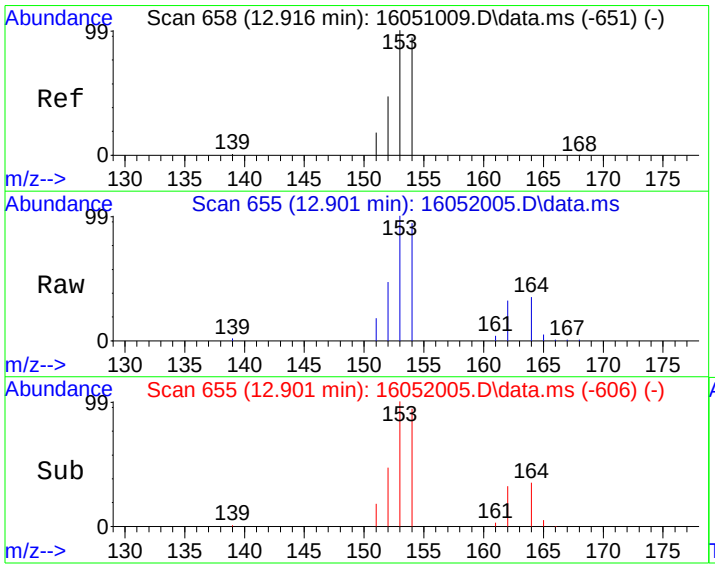




#4
1-Methyl naphthalene
Concen: 5.59 ug/kg
RT: 11.445 min Scan# 326
Delta R.T. -0.004 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:142 Resp: 1390

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 142 | 100 | | |
| 141 | 90.3 | 68.1 | 108.1 |
| 115 | 29.2 | 8.6 | 48.6 |

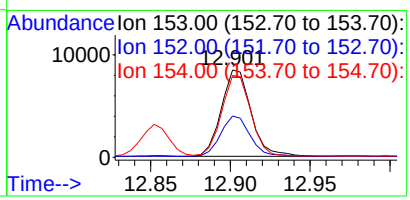


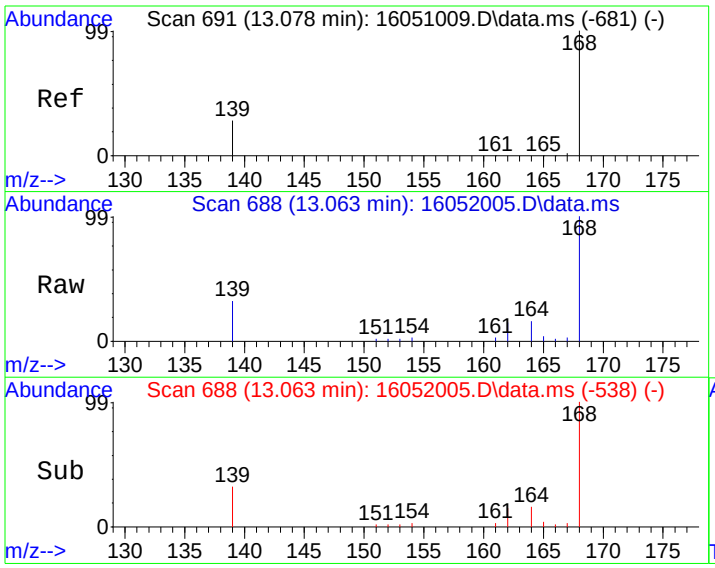



#8
Acenaphthene
Concen: 32.27 ug/kg
RT: 12.901 min Scan# 655
Delta R.T. -0.010 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:153 Resp: 10935

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 153 | 100 | | |
| 152 | 47.0 | 26.5 | 66.5 |
| 154 | 93.4 | 76.3 | 116.3 |

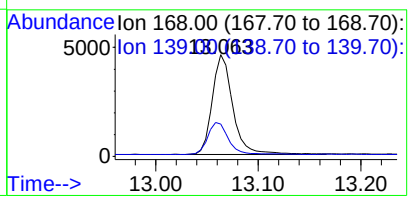


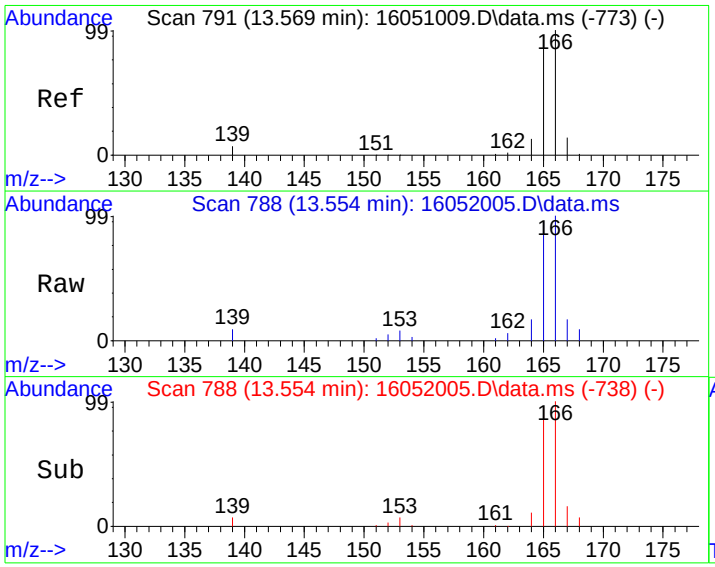




#9
Dibenzofuran
Concen: 12.34 ug/kg
RT: 13.063 min Scan# 688
Delta R.T. -0.005 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:168 Resp: 6370

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 168 | 100 | | |
| 139 | 30.4 | 8.2 | 48.2 |

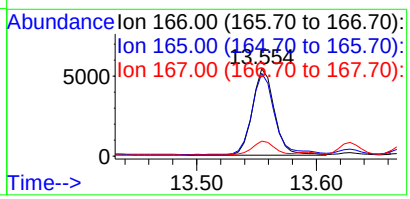


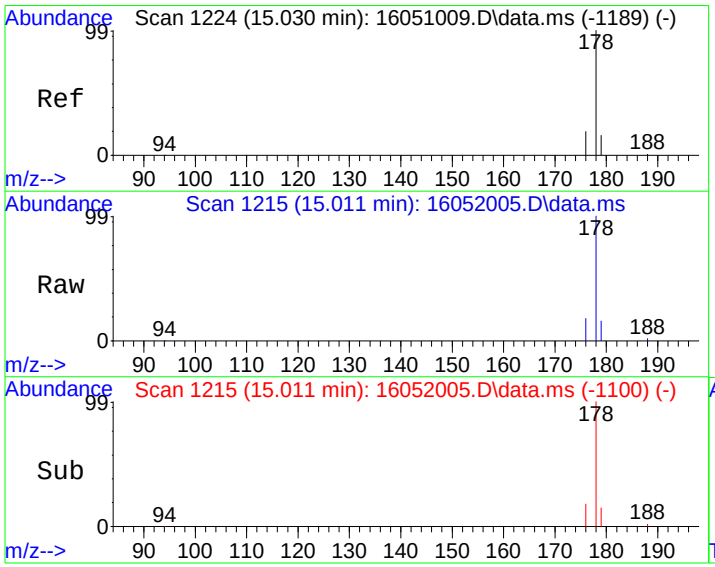




#10
Fluorene
Concen: 14.71 ug/kg
RT: 13.554 min Scan# 788
Delta R.T. -0.005 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:166 Resp: 6890

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 166 | 100 | | |
| 165 | 94.1 | 71.4 | 111.4 |
| 167 | 16.3 | 0.0 | 33.8 |

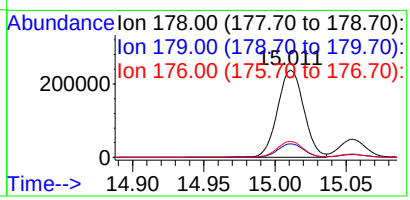


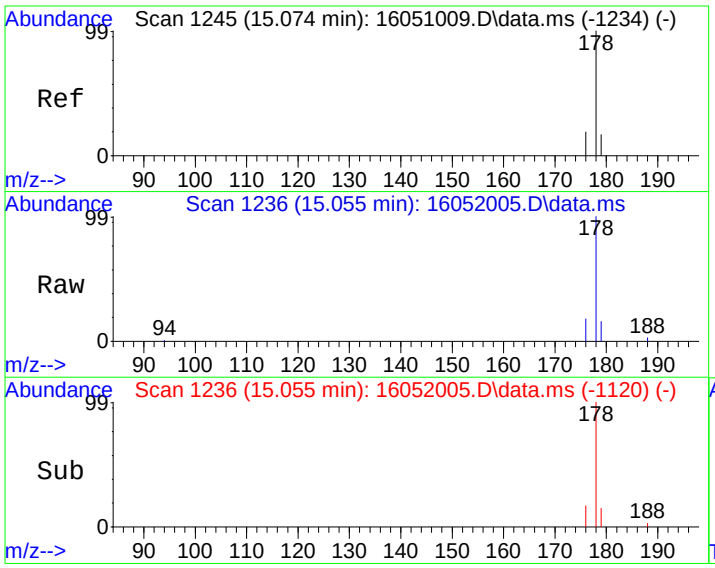



#12
Phenanthrene
Concen: 480.02 ug/kg
RT: 15.011 min Scan# 1215
Delta R.T. -0.008 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:178 Resp: 305050

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.5 | 0.0 | 36.4 |
| 176 | 18.2 | 0.0 | 39.0 |

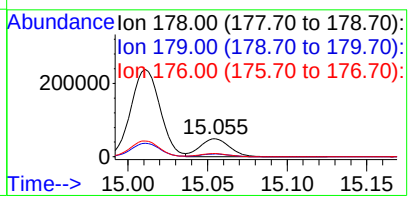


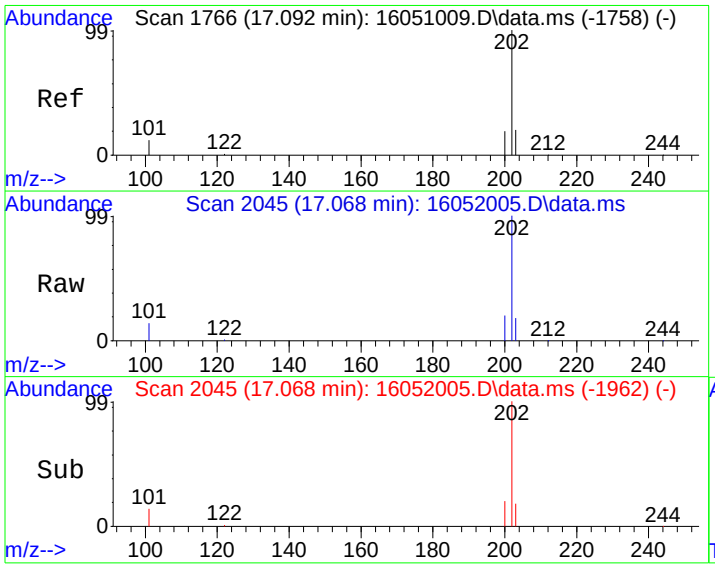




#13
Anthracene
Concen: 97.93 ug/kg
RT: 15.055 min Scan# 1236
Delta R.T. -0.006 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:178 Resp: 62972

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.5 | 0.0 | 36.3 |
| 176 | 17.4 | 0.0 | 38.5 |

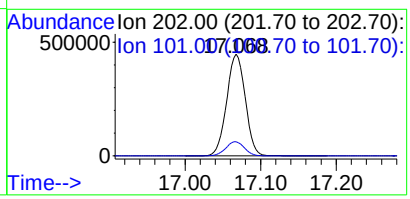


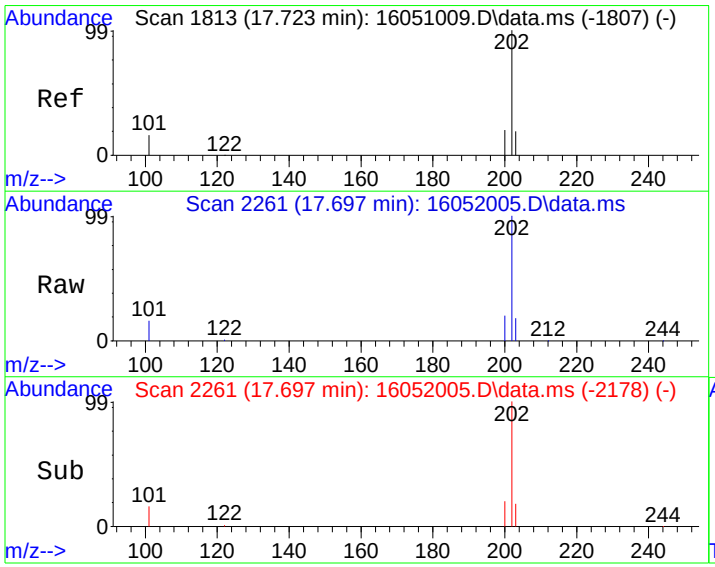




#14
Fluoranthene
Concen: 1228.63 ug/kg
RT: 17.068 min Scan# 2045
Delta R.T. -0.008 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:202 Resp: 762687

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 13.9 | 0.0 | 34.4 |

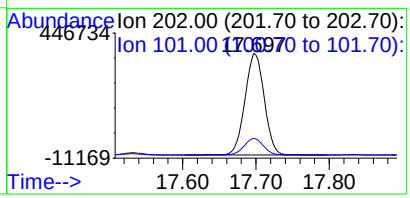


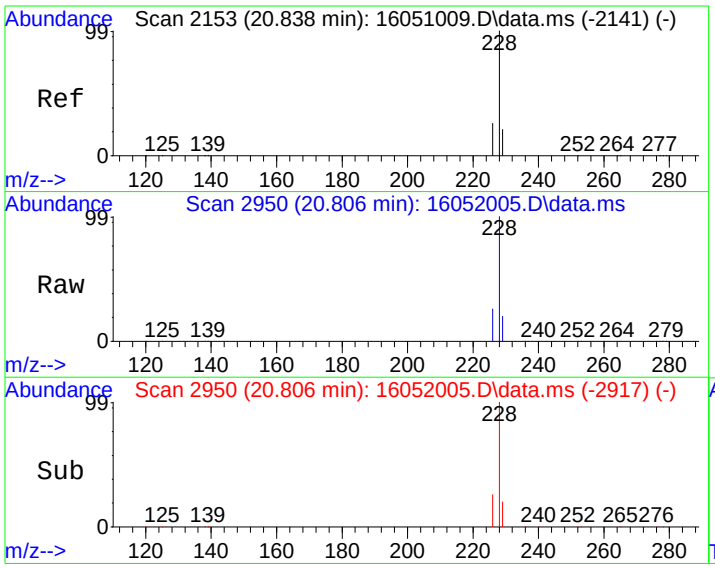



#15
Pyrene
Concen: 1112.55 ug/kg
RT: 17.697 min Scan# 2261
Delta R.T. -0.009 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:202 Resp: 678069

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 16.3 | 0.0 | 37.3 |

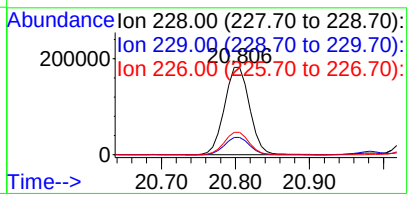


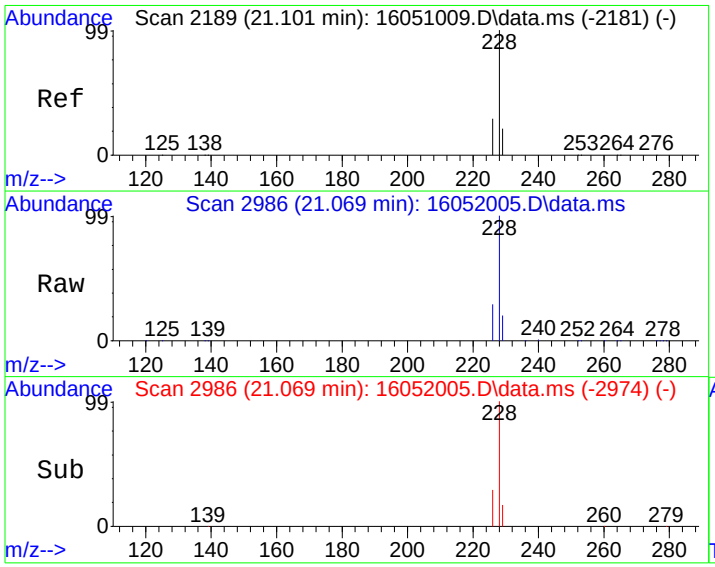




#18
Benzo[a]anthracene
Concen: 740.27 ug/kg
RT: 20.806 min Scan# 2950
Delta R.T. -0.006 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:228 Resp: 429160

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.7 | 0.3 | 40.3 |
| 226 | 25.5 | 5.7 | 45.7 |

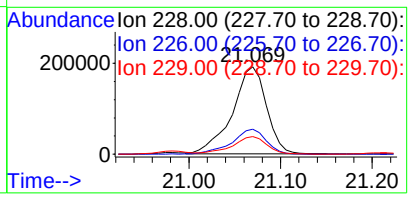


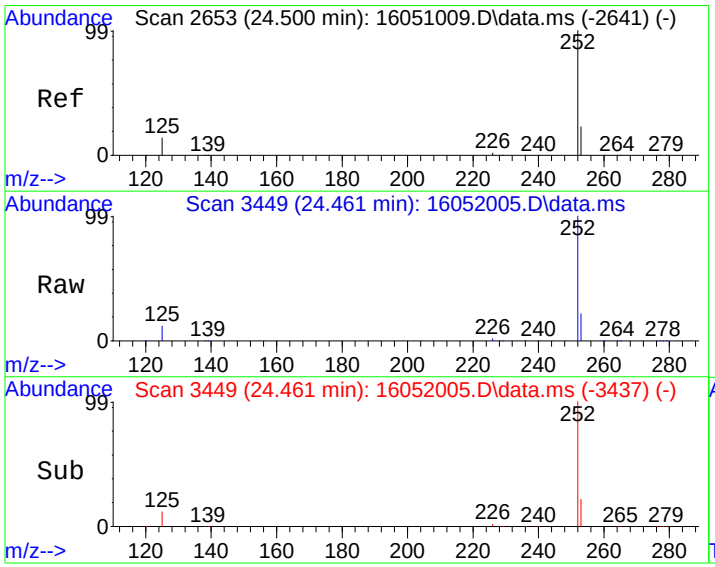




#19
Chrysene
Concen: 928.63 ug/kg
RT: 21.069 min Scan# 2986
Delta R.T. -0.014 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:228 Resp: 494936

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.5 | 8.2 | 48.2 |
| 229 | 20.0 | 0.3 | 40.3 |

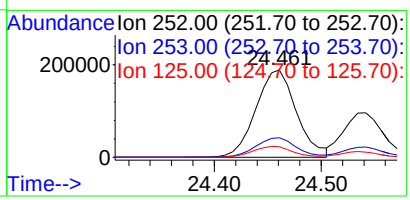


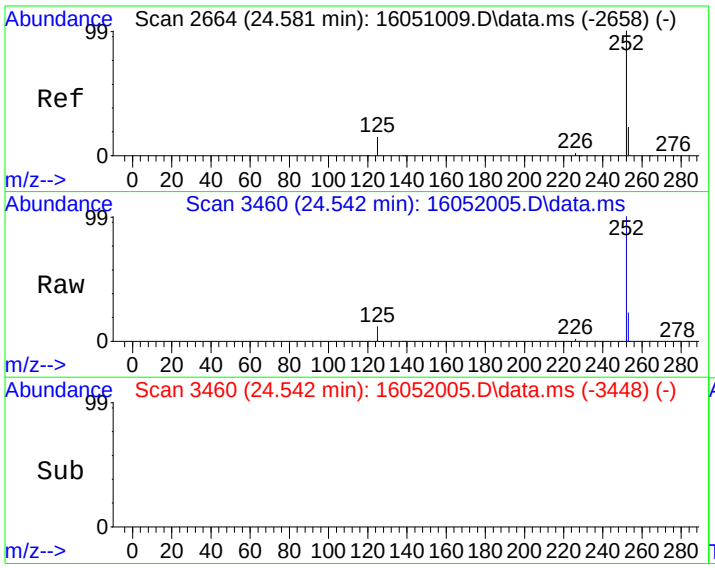



#21
Benzo[b]fluoranthene
Concen: 889.24 ug/kg
RT: 24.461 min Scan# 3449
Delta R.T. -0.014 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:252 Resp: 500081

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.0 | 2.3 | 42.3 |
| 125 | 12.0 | 0.0 | 32.2 |

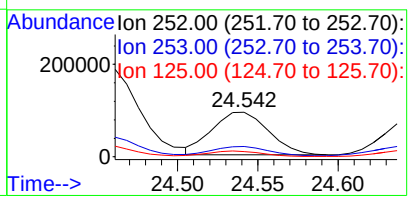


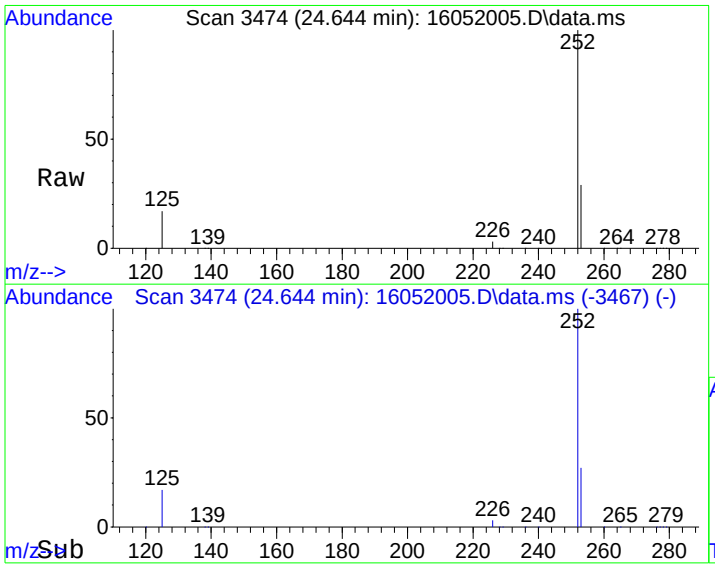




#22
Benzo[k]fluoranthene
Concen: 443.47 ug/kg
RT: 24.542 min Scan# 3460
Delta R.T. -0.013 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:252 Resp: 226717

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.2 | 2.5 | 42.5 |
| 125 | 11.9 | 0.0 | 32.6 |

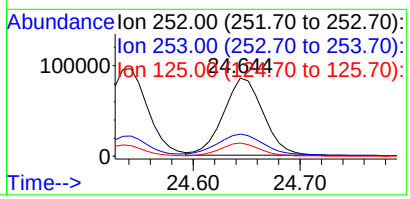


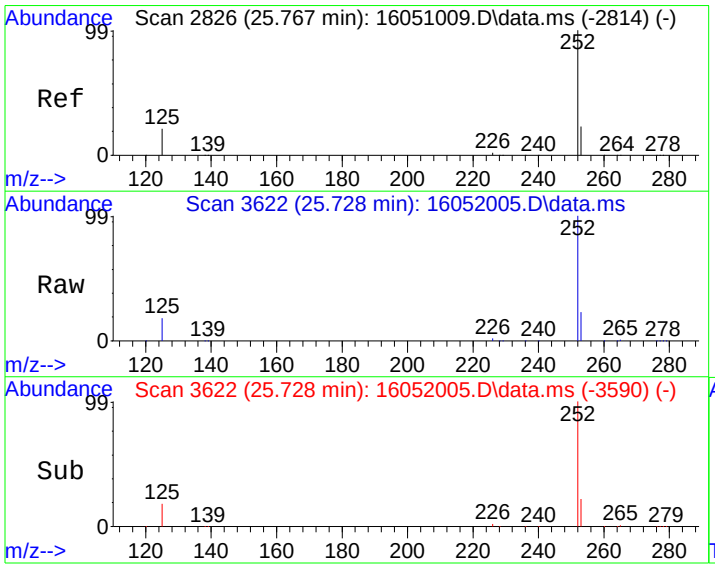




#23
Benzo(j)fluoranthene
Concen: 445.05 ug/kg
RT: 24.644 min Scan# 3474
Delta R.T. -0.021 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:252 Resp: 219530

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 31.6 | 2.2 | 42.2 |
| 125 | 16.7 | 0.0 | 37.3 |

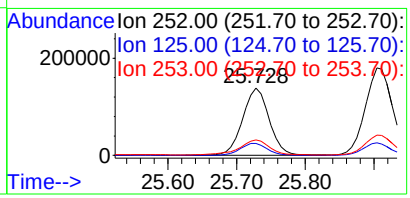


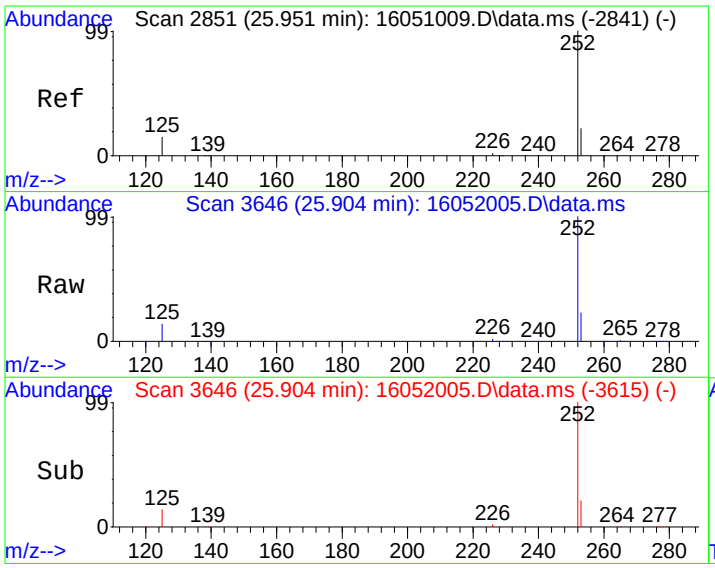



#24
Benzo(e)pyrene
Concen: 690.85 ug/kg
RT: 25.728 min Scan# 3622
Delta R.T. -0.014 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:252 Resp: 369272

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 125 | 18.1 | 0.0 | 38.7 |
| 253 | 24.5 | 2.3 | 42.3 |

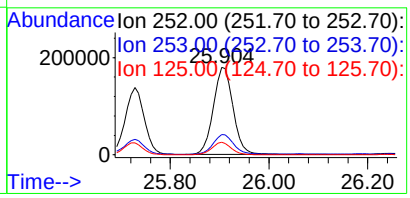


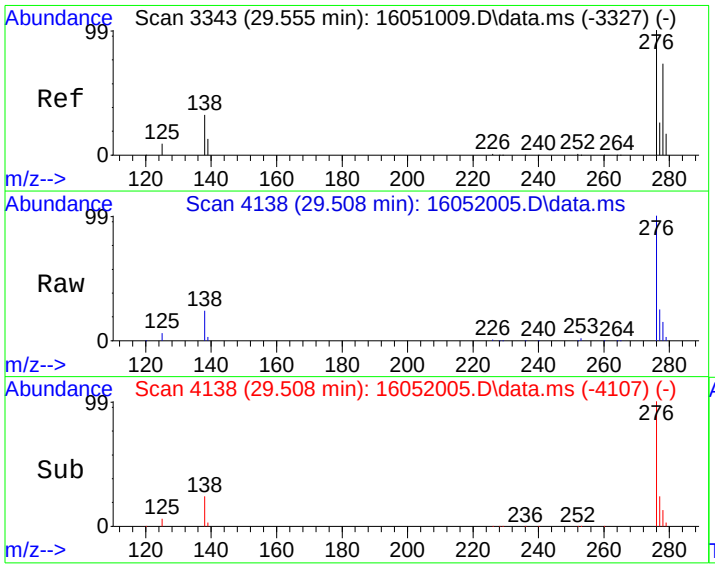




#25
Benzo[a]pyrene
Concen: 954.67 ug/kg
RT: 25.904 min Scan# 3646
Delta R.T. -0.021 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:252 Resp: 499568

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.6 | 2.3 | 42.3 |
| 125 | 14.2 | 0.0 | 33.5 |

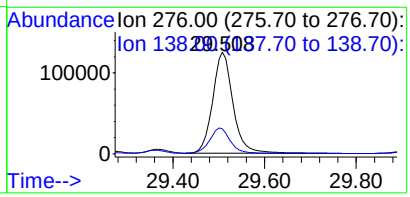


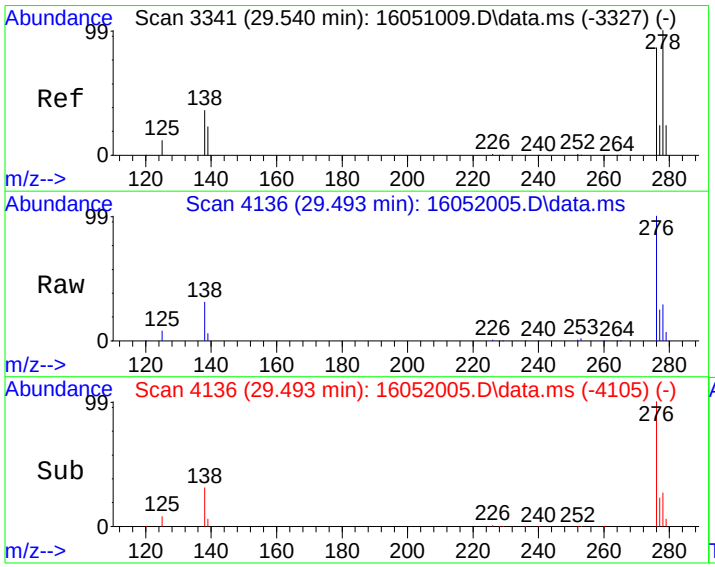




#26
Indeno[1,2,3-cd]pyrene
Concen: 589.30 ug/kg
RT: 29.508 min Scan# 4138
Delta R.T. -0.021 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:276 Resp: 383115

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 24.3 | 8.3 | 48.3 |

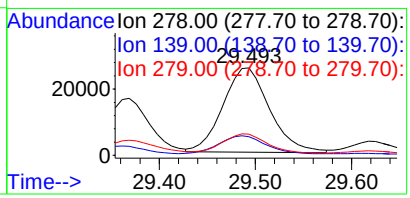


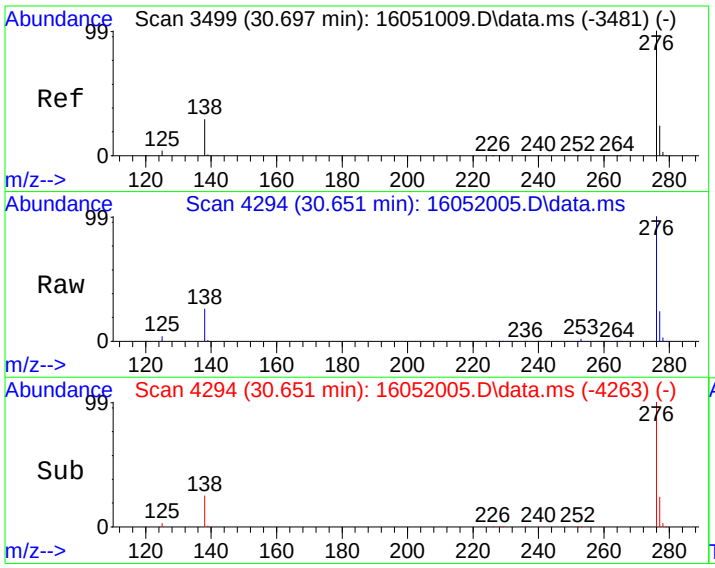



#27
Dibenz[a,h]anthracene
Concen: 153.79 ug/kg
RT: 29.493 min Scan# 4136
Delta R.T. -0.021 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:278 Resp: 85953

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 20.6 | 0.0 | 40.0 |
| 279 | 22.6 | 4.2 | 44.2 |

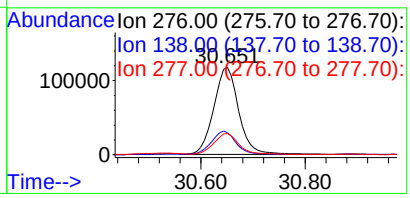



#28
Benzo[g,h,i]perylene
Concen: 695.99 ug/kg
RT: 30.651 min Scan# 4294
Delta R.T. -0.021 min
Lab File: 16052005.D
Acq: 20 May 2016 11:05 am

Tgt Ion:276 Resp: 389031

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 25.3 | 5.8 | 45.8 |
| 277 | 24.1 | 4.4 | 44.4 |



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160520\
Data File : 16052006.D
Acq On : 20 May 2016 11:42 am
Operator :
Sample : 1605121-01AMS
Misc : MS
ALS Vial : 6 Sample Multiplier: 50

Quant Time: May 20 12:29:40 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

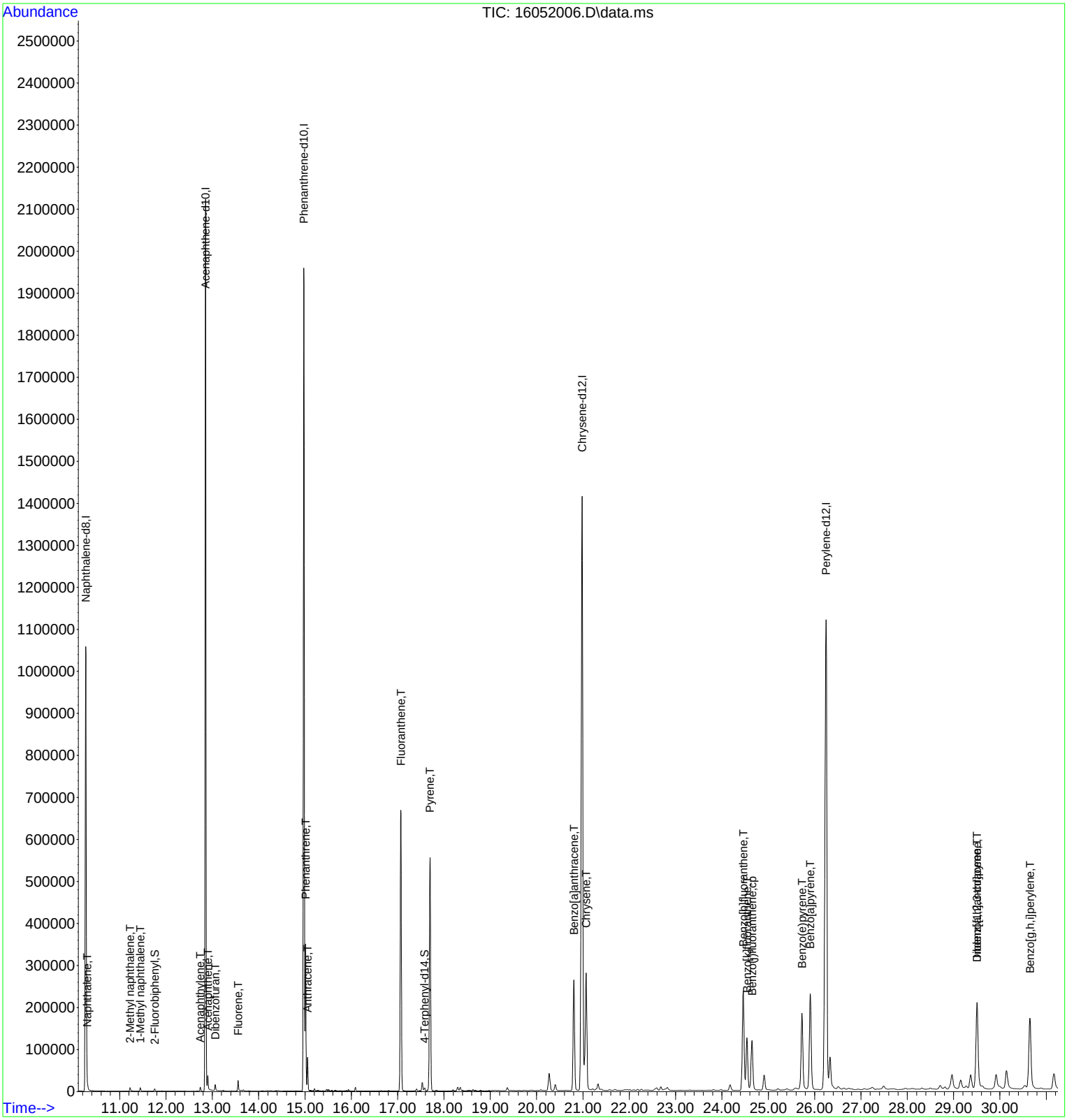
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.266 | 136 | 1558898 | 4000.00 | ug/kg | 96 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1276354 | 4000.00 | ug/kg | 102 |
| 11) Phenanthrene-d10 | 14.976 | 188 | 2382656 | 4000.00 | ug/kg | 81 |
| 16) Chrysene-d12 | 20.981 | 240 | 2369311 | 4000.00 | ug/kg | 87 |
| 20) Perylene-d12 | 26.247 | 264 | 2203212 | 4000.00 | ug/kg | 89 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.755 | 172 | 6180 | 17.81 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 0.45%# | | | |
| 17) 4-Terphenyl-d14 | 17.584 | 244 | 8322 | 16.59 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 0.41%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.303 | 128 | 11578 | 33.15 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.225 | 142 | 6351 | 23.39 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.447 | 142 | 5529 | 21.52 | ug/kg | 99 |
| 7) Acenaphthylene | 12.738 | 152 | 9496 | 17.02 | ug/kg | 99 |
| 8) Acenaphthene | 12.905 | 153 | 15006 | 42.63 | ug/kg | 98 |
| 9) Dibenzofuran | 13.062 | 168 | 14796 | 27.59 | ug/kg | 92 |
| 10) Fluorene | 13.553 | 166 | 13744 | 28.25 | ug/kg | 98 |
| 12) Phenanthrene | 15.011 | 178 | 327537 | 499.60 | ug/kg | 98 |
| 13) Anthracene | 15.056 | 178 | 76891 | 115.91 | ug/kg | 98 |
| 14) Fluoranthene | 17.068 | 202 | 753875 | 1175.39 | ug/kg | 99 |
| 15) Pyrene | 17.698 | 202 | 660666 | 1049.11 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.805 | 228 | 407771 | 671.47 | ug/kg | 99 |
| 19) Chrysene | 21.069 | 228 | 467506 | 836.96 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.460 | 252 | 462281 | 797.62 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.541 | 252 | 215311 | 409.16 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.651 | 252 | 208620 | 410.65 | ug/kg | 89 |
| 24) Benzo(e)pyrene | 25.727 | 252 | 342902 | 622.58 | ug/kg | 97 |
| 25) Benzo[a]pyrene | 25.903 | 252 | 458431 | 850.16 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.507 | 276 | 356037 | 531.54 | ug/kg | 94 |
| 27) Dibenz[a,h]anthracene | 29.492 | 278 | 85254 | 148.12 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.650 | 276 | 361481 | 627.61 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160520\
Data File : 16052006.D
Acq On : 20 May 2016 11:42 am
Operator :
Sample : 1605121-01AMS
Misc : MS
ALS Vial : 6 Sample Multiplier: 50

Quant Time: May 20 12:29:40 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160520\
Data File : 16052007.D
Acq On : 20 May 2016 12:19 pm
Operator :
Sample : 1605121-01AMSD
Misc : MSD
ALS Vial : 7 Sample Multiplier: 50

Quant Time: May 20 13:07:13 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

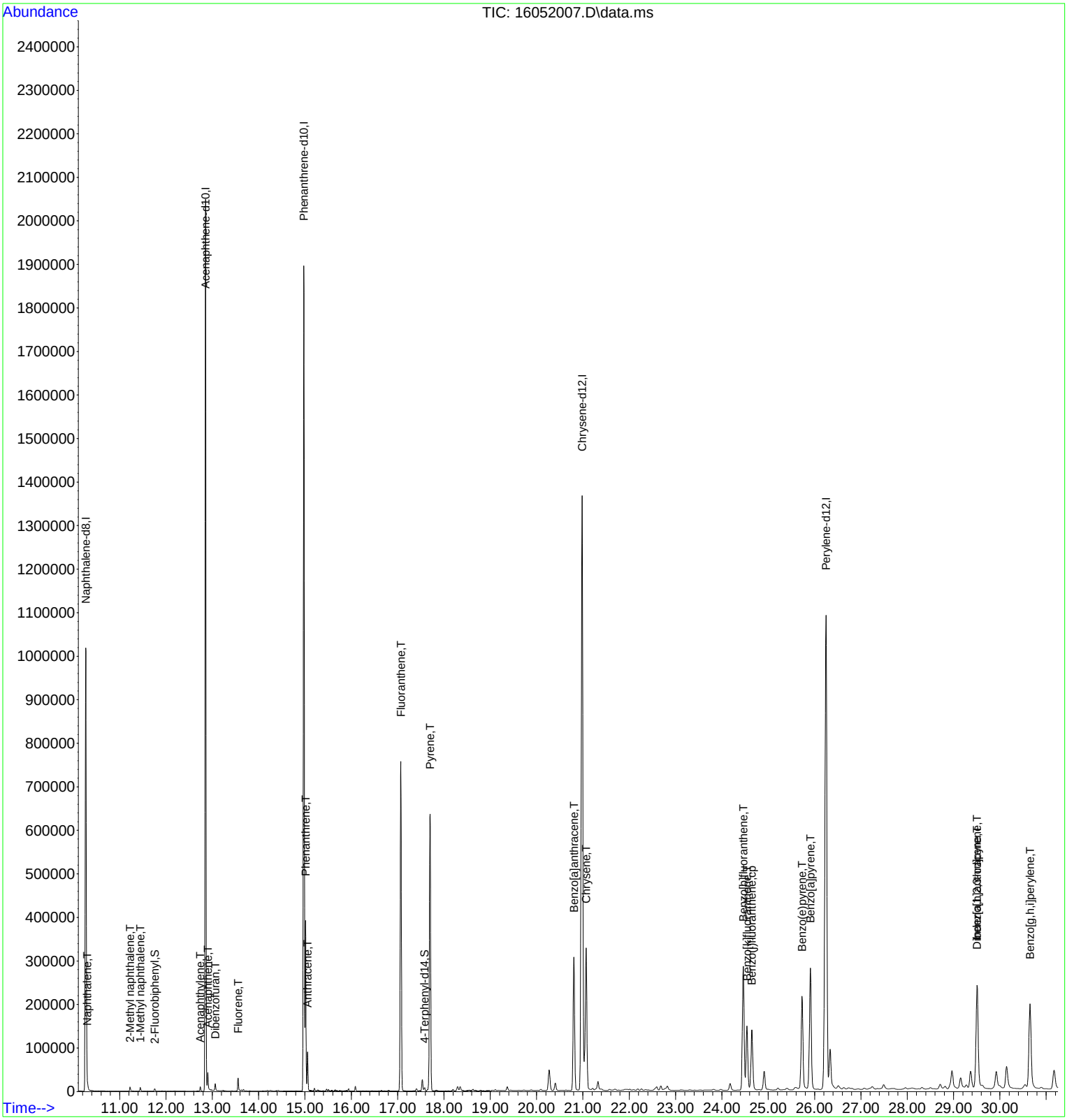
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.267 | 136 | 1526101 | 4000.00 | ug/kg | 94 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1233530 | 4000.00 | ug/kg | 98 |
| 11) Phenanthrene-d10 | 14.976 | 188 | 2299411 | 4000.00 | ug/kg | 79 |
| 16) Chrysene-d12 | 20.981 | 240 | 2312245 | 4000.00 | ug/kg | 85 |
| 20) Perylene-d12 | 26.248 | 264 | 2191286 | 4000.00 | ug/kg | 88 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.756 | 172 | 6182 | 18.19 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 0.45%# | | | |
| 17) 4-Terphenyl-d14 | 17.584 | 244 | 8177 | 16.71 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 0.42%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.304 | 128 | 13632 | 39.87 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.225 | 142 | 6742 | 25.37 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.447 | 142 | 5832 | 23.19 | ug/kg | 99 |
| 7) Acenaphthylene | 12.738 | 152 | 9470 | 17.56 | ug/kg | 99 |
| 8) Acenaphthene | 12.905 | 153 | 17519 | 51.49 | ug/kg | 98 |
| 9) Dibenzofuran | 13.062 | 168 | 16073 | 31.01 | ug/kg | 94 |
| 10) Fluorene | 13.558 | 166 | 16017 | 34.06 | ug/kg | 100 |
| 12) Phenanthrene | 15.012 | 178 | 365702 | 578.01 | ug/kg | 98 |
| 13) Anthracene | 15.056 | 178 | 86139 | 134.55 | ug/kg | 98 |
| 14) Fluoranthene | 17.068 | 202 | 850219 | 1381.80 | ug/kg | 100 |
| 15) Pyrene | 17.701 | 202 | 750440 | 1240.65 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.806 | 228 | 476484 | 806.88 | ug/kg | 100 |
| 19) Chrysene | 21.069 | 228 | 547004 | 1007.81 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.461 | 252 | 545577 | 949.52 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.541 | 252 | 253459 | 485.03 | ug/kg | 96 |
| 23) Benzo(j)fluoranthene | 24.651 | 252 | 243339 | 482.85 | ug/kg | 89 |
| 24) Benzo(e)pyrene | 25.728 | 252 | 402273 | 736.51 | ug/kg | 97 |
| 25) Benzo[a]pyrene | 25.911 | 252 | 543493 | 1016.31 | ug/kg | 100 |
| 26) Indeno[1,2,3-cd]pyrene | 29.515 | 276 | 413098 | 621.68 | ug/kg | 91 |
| 27) Dibenz[a,h]anthracene | 29.493 | 278 | 98730 | 173.30 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.650 | 276 | 414627 | 725.64 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160520\
Data File : 16052007.D
Acq On : 20 May 2016 12:19 pm
Operator :
Sample : 1605121-01AMSD
Misc : MSD
ALS Vial : 7 Sample Multiplier: 50

Quant Time: May 20 13:07:13 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160520\
Data File : 16052018.D
Acq On : 20 May 2016 7:07 pm
Operator :
Sample : ICV2-160520
Misc : ICV
ALS Vial : 18 Sample Multiplier: 1

Quant Time: May 23 09:59:20 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

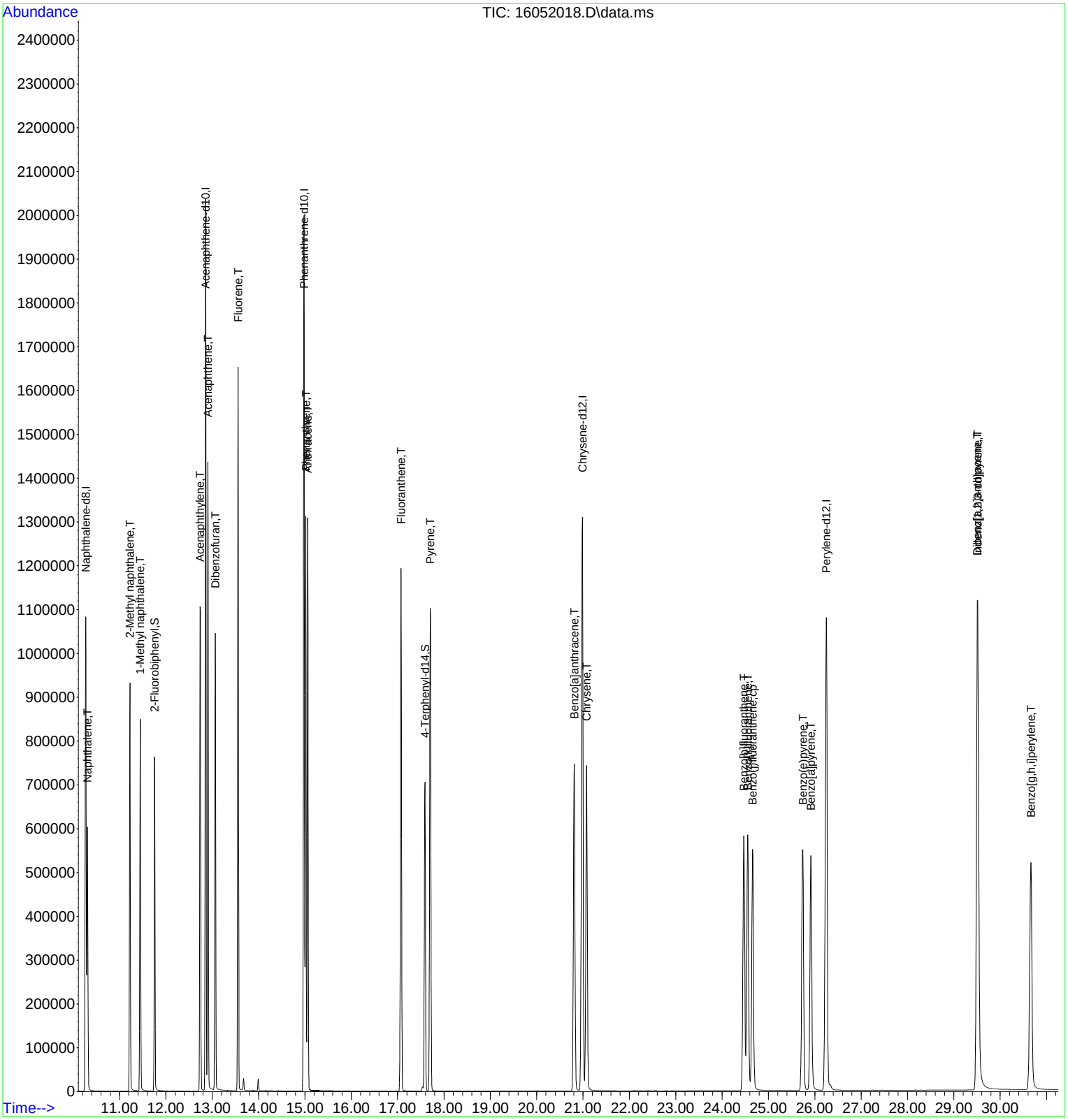
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.270 | 136 | 1532151 | 4000.00 | ug/kg | 94 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1204470 | 4000.00 | ug/kg | 96 |
| 11) Phenanthrene-d10 | 14.979 | 188 | 2477706 | 4000.00 | ug/kg | 85 |
| 16) Chrysene-d12 | 20.988 | 240 | 2269640 | 4000.00 | ug/kg | 84 |
| 20) Perylene-d12 | 26.247 | 264 | 2105420 | 4000.00 | ug/kg | 85 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.755 | 172 | 688746 | 2018.98 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 50.47% | | | |
| 17) 4-Terphenyl-d14 | 17.590 | 244 | 987579 | 2055.77 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 51.39% | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.307 | 128 | 692924 | 2018.76 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.224 | 142 | 558282 | 2092.26 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.446 | 142 | 511902 | 2027.34 | ug/kg | 100 |
| 7) Acenaphthylene | 12.739 | 152 | 1073973 | 2039.92 | ug/kg | 100 |
| 8) Acenaphthene | 12.906 | 153 | 671773 | 2022.13 | ug/kg | 98 |
| 9) Dibenzofuran | 13.063 | 168 | 1000445 | 1976.89 | ug/kg | 89 |
| 10) Fluorene | 13.559 | 166 | 890108 | 1938.47 | ug/kg | 100 |
| 12) Phenanthrene | 15.017 | 178 | 1281253 | 1879.36 | ug/kg | 100 |
| 13) Anthracene | 15.059 | 178 | 1273055 | 1845.43 | ug/kg | 100 |
| 14) Fluoranthene | 17.071 | 202 | 1350402 | 2077.84 | ug/kg | 100 |
| 15) Pyrene | 17.704 | 202 | 1324197 | 2072.72 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.812 | 228 | 1196044 | 2132.01 | ug/kg | 100 |
| 19) Chrysene | 21.076 | 228 | 1105063 | 2130.33 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.467 | 252 | 1156713 | 2146.25 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.555 | 252 | 1038548 | 2124.80 | ug/kg | 100 |
| 23) Benzo(j)fluoranthene | 24.658 | 252 | 982696 | 2107.83 | ug/kg | 100 |
| 24) Benzo(e)pyrene | 25.742 | 252 | 1079577 | 2121.89 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.918 | 252 | 1065084 | 2109.47 | ug/kg | 100 |
| 26) Indeno[1,2,3-cd]pyrene | 29.522 | 276 | 1319070 | 2137.44 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.507 | 278 | 1101978 | 2149.60 | ug/kg | 100 |
| 28) Benzo[g,h,i]perylene | 30.664 | 276 | 1125638 | 2112.44 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160520\
Data File : 16052018.D
Acq On : 20 May 2016 7:07 pm
Operator :
Sample : ICV2-160520
Misc : ICV
ALS Vial : 18 Sample Multiplier: 1

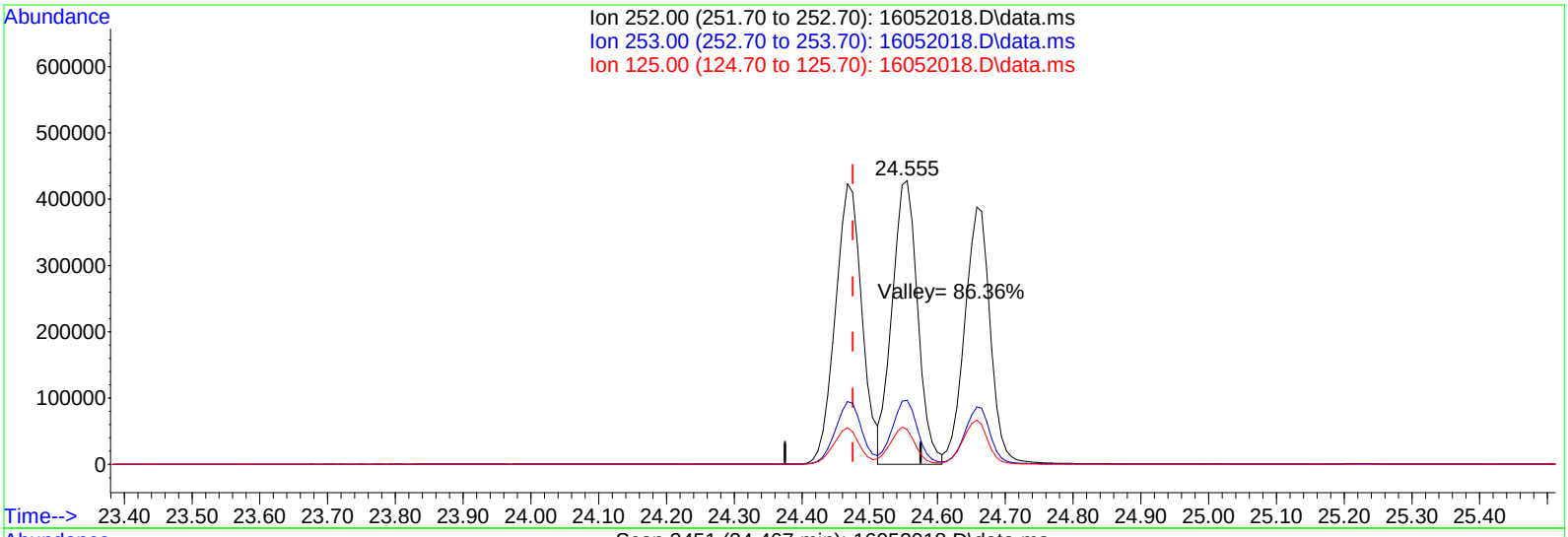
Quant Time: May 23 09:59:20 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

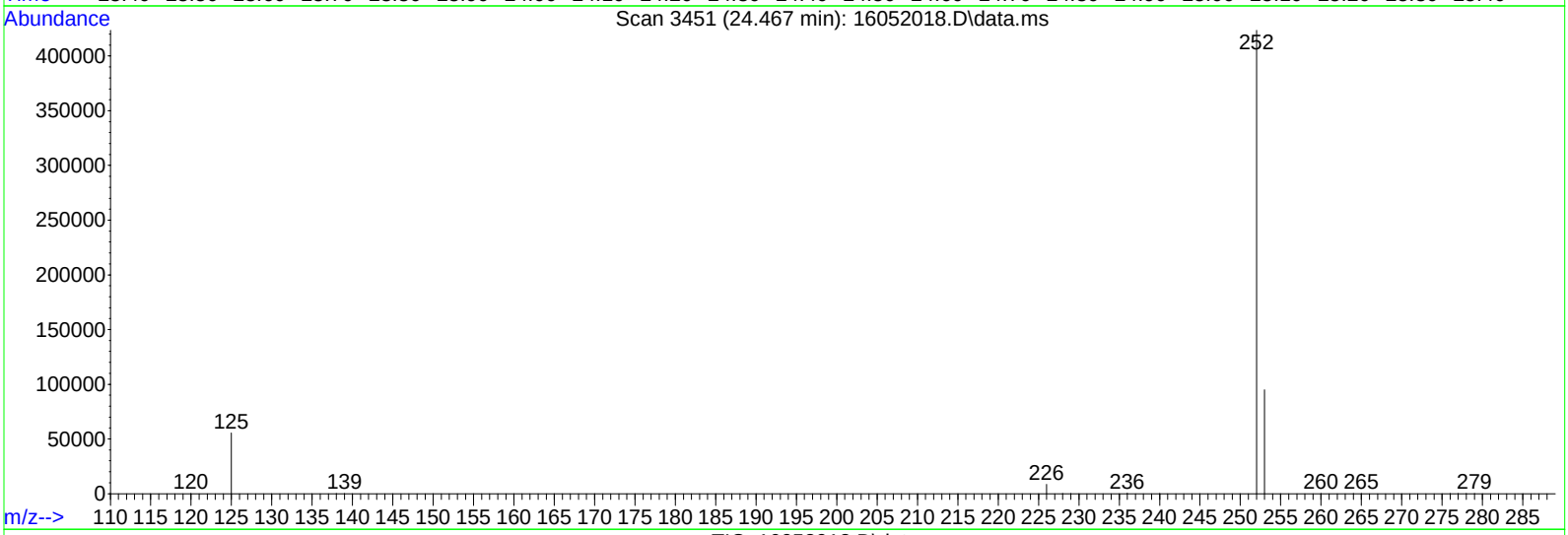


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\160520\
Data File : 16052018.D
Acq On : 20 May 2016 7:07 pm
Operator :
Sample : ICV2-160520
Misc : ICV
ALS Vial : 18 Sample Multiplier: 1

Quant Time: May 20 19:38:35 2016
Quant Method : C:\MSDCHEM\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration




TIC: 16052018.D\data.ms

(21) Benzo[b]fluoranthene (T)

24.467min (-0.008) 2146.25ug/kg

response 1156713

| Ion | Exp% | Act% |
|---|---|---|
| 252.00 | 100 | 100 |
| 253.00 | 22.30 | 22.30 |
| 125.00 | 12.20 | 13.05 |
| 0.00 | 0.00 | 0.00 |

# GCMS8_160524A
# For

# DHL Work Order
# 1605121

# Lab Data Review Check List
## EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

| *SEE RUN LOG FOR ALL PROJECT AND BATCH NUMBERS AND MATRICES* | Run ID: GCMS8_160524A |
|---|---|
| Batch Number(s): See Run Log.<br>Matrix: See Run Log. | SOP: ORGANICS-PAH-01 |

| Review Item | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|
| **Data Folder Contents**<br>1. Is the Prep Batch Report included? Check and record the following:<br>***Prep Start/End Dates, Sample Amounts, Bottle #s*** | X | | | X |
| 2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date?<br>***All standard/QC sample preparations shall be documented in LIMS*** | X | | | |
| 3. Is the Run Log and instrument sequence included?<br>***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time*** | X | | | |
| 4. Is the System Verification - Tune Report included?<br>***Date/Tme of Tune starts 12-hour analysis window*** | X | | | |
| 5. Is the Evaluate Continuing Calibration Report included? | X | | | |

## Daily Demonstration of Performance

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.**

| Review Item | Frequency | Limits | Pass | Fail (List Batch/Sample) **See Run Log** | 2nd Level Review |
|---|---|---|---|---|---|
| Tune | Before ICAL<br>Every 12 hours | See Tune Eval Report | X | | X |
| Resolution Check - Benzo(b) and Benzo(k)phenanthrene | Before ICAL<br>Every 12 hours | Benzo(b) and Benzo(k) Valley > 50% | X | | |
| Initial Calibration Curve (ICAL) (minimum: 5 Standards) | Prior to samples and when ICV fails | Avg. RF - %RSD ≤ 15%<br>Curve (COD) - $R^2$ ≥ 0.990 | X | | |
| SSCV - (Second Source) | After calibration (ICAL) | 80-120% | X | | |
| ICV - (Daily Initial Cal Verification) | Every 12 hours | ISTDs Area% (50-200%)<br>Surrogates %R (See LIMS)<br>Analytes %R (80-120%) | X | | |

| Review Item | Frequency | Limits | Pass | Fail | N/A | Review |
|---|---|---|---|---|---|---|
| Method Blank (MB)<br>System Blank (SYS Blank) | Every Batch (MB) Daily (SYS BL) | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | X | | | X |
| Lab Control Sample (LCS) | Every Batch | See LIMS | X | | | |
| Lab Control Sample Dup (LCSD) | Insufficient sample Sample Matrix | See LIMS | | | X | |
| LCSD - RPD | Every LCS/LCSD | ≤ 30 (Aq/Soil/DoD) | | | X | |
| Field Samples | Up to 20 per prep batch | ISTDs Area% (50-200%)<br>Surrogates %R (See LIMS)<br>RRT ± 0.06 RRT Standard<br>Q value > 70 - check for # | X | | | |
| Matrix Spike (MS) | Every Batch/20 samples | See LIMS | X | | | |
| Matrix Spike Duplicate (MSD) (MSD is N/A for Method 625) | Every Prep Batch except Method 625 | See LIMS | X | | | |
| MSD - RPD<br>(MSD is N/A for Method 625) | Every MS/MSD except Method 625 | ≤ 30 (Aq/Soil/DoD) | X | | | |

# Lab Data Review Check List
## EPA Method 8270 / 625 - PAH: Polynuclear Aromatic Hydrocarbons

| Review Item | Criteria | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|---|
| **Sample Analysis** | 7 days (Aq) - extraction | | | X | |
| 1. Are all sample hold times met? | 14 days (Soil) - extraction | X | | | |
| | 40 days analysis | X | | | |
| 2. Are all manual integrations signed (Before & After) and printouts included ? Put in LIMS Comment Section ***Include MI form for DoD work*** | Before & After - signed Comment Section in LIMS MI Form - DoD only | | | X | X |
| 3. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed? | > highest standard | X | | | |
| **Review Item #3 is N/A ONLY if all sample results are within Calibration range or NO if dilution is in different folder** | | | | | |
| 4. Is mass spectra reviewed/verified if Q value is <70 and/or # flag for results >MDL? | Q value <70 - All hits | X | | | X |
| **5. Are ALL reported analytes > MDL (+ J flags) circled by the analyst?** | | X | **Return to analyst if NO** | | |
| **VARIANCE REPORT** | | | | | |
| **QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.** | | | | | |
| **NON-CONFORMANCES / VARIANCE** | All deviations from the method and SOP that affect data quality | | | X | X |
| 1. Are all non-conformances included and noted? | | | | | |
| 2. Are all corrective actions included? | | | | X | |
| 3. Does the variance require approval by the Technical Director/General Manager/QA Manager? | | | | X | |

Approved by: Date:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

| VARIANCE ITEM | REASON | CORRECTIVE ACTION |
|---|---|---|
| ___ Hold Time exceeded (7D/14D-Ext/40D-Analysis) | ___ Sample Received out of HT | ___ Reanalyze QC to confirm |
| ___ ICV out of control (±20%) | ___ Carryover from previous run | ___ Recalibrate |
| ___ MB/SYS BL out of control (> MDL / >½ RL) | ___ Cross contamination | ___ Reprep/Reanalyze sample |
| ___ LCS ___LCSD out of control (See LIMS) | ___ Lab Artifact | ___ Reprep/Reanalyze Batch |
| ___ RPD out of control for LCS/LCSD (>30) | ___ Prep Spike error (describe) | ___ Reanalyze Batch/Sample/QC |
| ___ MS ___ MSD out of control (See LIMS) | ___ High Levels of target analytes | ___ Verify H2O/reagents are clean |
| ___ RPD out of control for MS/MSD (>30) | ___ High Levels of non-targets | ___ Reanalyze sample to confirm |
| ___ Internal Standard(s) out of control | ___ Insufficient sample for QC | ___ Sample results ND w/ dilution |
| ___ Multiple Surrogates out of control | ___ Prep Error | ___ Client notified and approved |
| ___ No MS/MSD prepared - LCS/LCSD used instead | ___ Analytical Error | ___ Flag data / Case narrative |
| ___ Missing QC (other than MS/MSD) | ___ Client Request | ___ Instrument Maintenance |
| ___ QC sample(s) was mis-spiked | ___ Other (describe below) | ___ Accept data |
| ___ Other (describe below) | | ___ Cannot reanalyze (HT out/Lack of Sample) |

General Comments and Impact on Data: **See Run Log.**

**All samples in this batch run at 10x - detection limit is sufficient and is approved by project managers.**

Analyst: Karyn Lane Date: ***REVIEWED/APPROVED*** 5/25/2016

*By Sherri Herschmann at 12:20:29 PM, 5/31/2016*

Second-Level Review: Date: **05/31/2016**

**DHL Analytical, Inc.**

**Run ID:** GCMS8_160524A **Run No.:** 85980

**Analytical Run Date:** 5/24/2016 **InstrumentID:** GCMS8

**Analyst:** Karyn Lane **Column:** Rtx-5Sil MS (30m x 0.25mm ID x 0.5µm df)

**Calibration ID:** 660 **Column ID:** 0.18mm

**Column Length:** 20m

**Cal Comments:** PAH160517.M

| SampID | DF | TestCode | SampType | Batch ID | Analysis Date/Time | Q | Comments |
|---|---|---|---|---|---|---|---|
| DFTPP-160524 | 1 | PAH_LL_SDOD1 | TUNE | R85980 | 5/24/2016 9:10:00 AM | | |
| ICV-160524 | 1 | PAH_LL_SDOD1 | ICV | R85980 | 5/24/2016 9:47:00 AM | | |
| LCS-75227 | 1 | PAH_LL_SDOD1 | LCS | 75227 | 5/24/2016 10:23:00 AM | | |
| MB-75227 | 1 | PAH_LL_SDOD1 | MBLK | 75227 | 5/24/2016 11:04:00 AM | | |
| 1605121-35A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/24/2016 11:41:00 AM | | All samples in this batch run at 10x - detection limit is sufficient and is approved by project managers. |
| 1605121-36A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/24/2016 12:18:00 PM | | |
| 1605121-37A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/24/2016 12:56:00 PM | | |
| 1605121-38A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/24/2016 1:32:00 PM | | |
| 1605121-39A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/24/2016 2:10:00 PM | | |
| 1605121-40A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/24/2016 2:46:00 PM | | |
| 1605121-41A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/24/2016 3:24:00 PM | | |
| 1605121-42A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/24/2016 4:01:00 PM | | |
| 1605121-43A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/24/2016 4:38:00 PM | | |
| 1605121-44A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/24/2016 5:16:00 PM | | |
| 1605121-45A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/24/2016 5:54:00 PM | | |
| 1605135-01A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/24/2016 6:30:00 PM | | |
| 1605135-02A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/24/2016 7:08:00 PM | | |
| 1605135-03A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/24/2016 7:46:00 PM | | |
| DFTPP2-160524 | 1 | PAH_LL_SDOD1 | TUNE | R85980 | 5/24/2016 8:23:00 PM | | |
| ICV2-160524 | 1 | PAH_LL_SDOD1 | ICV | R85980 | 5/24/2016 9:00:00 PM | | |
| SBLK-160524 | 1 | PAH_LL_SDOD1 | SBLK | 75227 | 5/24/2016 10:15:00 PM | | |
| 1605135-04A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/24/2016 10:52:00 PM | | |
| 1605135-05A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/24/2016 11:29:00 PM | | |
| 1605135-06A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/25/2016 12:07:00 AM | | |
| 1605135-07A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/25/2016 12:44:00 AM | | |
| 1605135-08A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/25/2016 1:20:00 AM | | |
| 1605135-09A | 10 | PAH_LL_SDOD1 | SAMP | 75227 | 5/25/2016 1:58:00 AM | | |
| 1605121-43AMS | 10 | PAH_LL_SDOD1 | MS | 75227 | 5/25/2016 2:34:00 AM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| DFTPP160509 | 2.5 PPM 525 TUNE STD. | TUNE | 05/07/2017 |
| PAHCCV-160509 | 1 PPM PAH CCV STANDARD | CCV | 08/07/2016 |
| PAHICV160509 | 2 PPM PAH ICV | ICV | 08/07/2016 |
| SVI150810-09 | 4000 PPM INTERNAL STANDAR | ALL | 05/13/2017 |

**DHL Analytical, Inc.**

**Run ID: GCMS8_160524A** **Run No.:** 85980

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1605121-43AMSD | 10 | PAH_LL_SDOD1 | MSD | 75227 | 5/25/2016 3:11:00 AM | | |
| CCV-160524 | 1 | PAH_LL_SDOD1 | CCV | R85980 | 5/25/2016 3:48:00 AM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| DFTPP160509 | 2.5 PPM 525 TUNE STD. | TUNE | 05/07/2017 |
| PAHCCV-160509 | 1 PPM PAH CCV STANDARD | CCV | 08/07/2016 |
| PAHICV160509 | 2 PPM PAH ICV | ICV | 08/07/2016 |
| SVI150810-09 | 4000 PPM INTERNAL STANDAR | ALL | 05/13/2017 |

Sequence Name: C:\msdchem\1\sequence\160524.S
Comment:
Operator:
Data Path: C:\MSDCHEM\1\DATA\160524\
Instrument Name: GCMS #8
Instrument Control Pre-Seq Cmd:
Data Analysis Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

| Line | | | Sample Name/Misc Info | | |
|---|---|---|---|---|---|
| 1) | Sample | 1 | 16052401 | DFTPPPAH | DFTPP-160524 |
| 2) | Sample | 2 | 16052402 | PAH160517 | ICV-160524 |
| 3) | Sample | 3 | 16052403 | PAH160517 | LCS-75227 |
| 4) | Sample | 4 | 16052404 | PAH160517 | MB-75227 |
| 5) | Sample | 5 | 16052405 | PAH160517 | 1605121-35A |
| 6) | Sample | 6 | 16052406 | PAH160517 | 1605121-36A |
| 7) | Sample | 7 | 16052407 | PAH160517 | 1605121-37A |
| 8) | Sample | 8 | 16052408 | PAH160517 | 1605121-38A |
| 9) | Sample | 9 | 16052409 | PAH160517 | 1605121-39A |
| 10) | Sample | 10 | 16052410 | PAH160517 | 1605121-40A |
| 11) | Sample | 11 | 16052411 | PAH160517 | 1605121-41A |
| 12) | Sample | 12 | 16052412 | PAH160517 | 1605121-42A |
| 13) | Sample | 13 | 16052413 | PAH160517 | 1605121-43A |
| 14) | Sample | 14 | 16052414 | PAH160517 | 1605121-44A |
| 15) | Sample | 15 | 16052415 | PAH160517 | 1605121-45A |
| 16) | Sample | 16 | 16052416 | PAH160517 | 1605135-01A |
| 17) | Sample | 17 | 16052417 | PAH160517 | 1605135-02A |
| 18) | Sample | 18 | 16052418 | PAH160517 | 1605135-03A |
| 19) | Sample | 19 | 16052419 | DFTPPPAH | DFTPP2-160524 |
| 20) | Sample | 20 | 16052420 | PAH160517 | ICV2-160524 |
| 21) | Sample | 21 | 16052421 | PAH160517 | SBLK |
| 22) | Sample | 22 | 16052422 | PAH160517 | SBLK-160524 |
| 23) | Sample | 23 | 16052423 | PAH160517 | 1605135-04A |
| 24) | Sample | 24 | 16052424 | PAH160517 | 1605135-05A |
| 25) | Sample | 25 | 16052425 | PAH160517 | 1605135-06A |
| 26) | Sample | 26 | 16052426 | PAH160517 | 1605135-07A |
| 27) | Sample | 27 | 16052427 | PAH160517 | 1605135-08A |
| 28) | Sample | 28 | 16052428 | PAH160517 | 1605135-09A |
| 29) | Sample | 29 | 16052429 | PAH160517 | 1605121-43AMS |
| 30) | Sample | 30 | 16052430 | PAH160517 | 1605121-43AMSD |
| 31) | Sample | 31 | 16052431 | PAH160517 | CCV-160524 |

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/19/2016 8:40:19 AM**
Digestion:
Prep End Date: **5/19/2016 11:10:00 AM**

Prep Batch **75227** Prep Code: **3550_PAHDOD** Technician: **Duston Bezner**

Prep Factor Units: **mL/g**

**Equipment List**

Turbo-Vap # 1,2,3
Balance # 25
Sonicators # 1,2,3,4

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-35A | Soil | | 10.82 | 10 | 0.924 | 1 of 1 | |
| 1605121-36A | Soil | | 10.24 | 10 | 0.977 | 1 of 1 | |
| 1605121-37A | Soil | | 10.09 | 10 | 0.991 | 1 of 1 | |
| 1605121-38A | Soil | | 10.27 | 10 | 0.974 | 1 of 1 | |
| 1605121-39A | Soil | | 10.3 | 10 | 0.971 | 1 of 1 | |
| 1605121-40A | Soil | | 10.43 | 10 | 0.959 | 1 of 1 | |
| 1605121-41A | Soil | | 10.05 | 10 | 0.995 | 1 of 1 | |
| 1605121-42A | Soil | | 10.15 | 10 | 0.985 | 1 of 1 | |
| 1605121-43A | Soil | | 10.35 | 10 | 0.966 | 1 of 1 | |
| 1605121-43AMS | Soil | | 10.24 | 10 | 0.977 | 1 of | |
| 1605121-43AMSD | Soil | | 10.12 | 10 | 0.988 | 1 of | |
| 1605121-44A | Soil | | 10.09 | 10 | 0.991 | 1 of 1 | |
| 1605121-45A | Soil | | 10.12 | 10 | 0.988 | 1 of 1 | |
| 1605135-01A | Soil | | 10.1 | 10 | 0.990 | 1 of 1 | |
| 1605135-02A | Soil | | 10.03 | 10 | 0.997 | 1 of 1 | |
| 1605135-03A | Soil | | 10.02 | 10 | 0.998 | 1 of 1 | |
| 1605135-04A | Soil | | 10.07 | 10 | 0.993 | 1 of 1 | |
| 1605135-05A | Soil | | 10.11 | 10 | 0.989 | 1 of 1 | |
| 1605135-06A | Soil | | 10.07 | 10 | 0.993 | 1 of 1 | |
| 1605135-07A | Soil | | 10.04 | 10 | 0.996 | 1 of 1 | |
| 1605135-08A | Soil | | 10.1 | 10 | 0.990 | 1 of 1 | |
| 1605135-09A | Soil | | 10.1 | 10 | 0.990 | 1 of 1 | |
| LCS-75227 | Soil | | 10 | 10 | 1.000 | 1 of | |
| MB-75227 | Soil | | 10 | 10 | 1.000 | 1 of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 10215 | Whatman 41 Filter | 1 | filter | 03/20/2026 |
| 10216 | Purified Sodium Sulfate | 10 | g | 03/30/2026 |
| 10340 | Methylene Chloride | 8 | ml | 05/05/2026 |
| 10343 | 1:1 MeCl2/Acetone | 120 | ml | 05/09/2026 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| PAHPREP160516 | 200 PPM PAH Spike Mix | LCS/MS/MSD | 0.05 | 08/16/2016 |
| SVPREP160517 | 40 PPM Surrogate Standard | ALL | 0.25 | 08/15/2016 |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 12:20:34 PM, 5/31/2016*

# DHL Analytical, Inc.

# PREP BATCH REPORT

Prep Start Date: **5/19/2016 8:40:19 AM**
Digestion:
Prep End Date: 5/19/16 11:10 AM
Prep Batch **75227** Prep Code: **3550_PAHDOD** Technician: **Duston Bezner**

Prep Factor Units: mL/g

| Equipment List |
|---|
| Turbo-Vap # 1,2,3 |
| Balance # 25 |
| Sonicators # 1,2,3,4 |

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-35A | Soil | | 10.82 | 10 | 1.000 | 1 of 1 | |
| 1605121-36A | Soil | | 10.24 | 10 | 1.000 | 1 of 1 | |
| 1605121-37A | Soil | | 10.09 | 10 | 1.000 | 1 of 1 | |
| 1605121-38A | Soil | | 10.27 | 10 | 1.000 | 1 of 1 | |
| 1605121-39A | Soil | | 10.30 | 10 | 1.000 | 1 of 1 | |
| 1605121-40A | Soil | | 10.43 | 10 | 1.000 | 1 of 1 | |
| 1605121-41A | Soil | | 10.05 | 10 | 1.000 | 1 of 1 | |
| 1605121-42A | Soil | | 10.15 | 10 | 1.000 | 1 of 1 | |
| 1605121-43A | Soil | | 10.35 | 10 | 1.000 | 1 of 1 | |
| 1605121-43AMS | Soil | | 10.24 | 10 | 1.000 | 1 of | |
| 1605121-43AMSD | Soil | | 10.12 | 10 | 1.000 | 1 of | |
| 1605121-44A | Soil | | 10.09 | 10 | 1.000 | 1 of 1 | |
| 1605121-45A | Soil | | 10.12 | 10 | 1.000 | 1 of 1 | |
| 1605135-01A | Soil | | 10.10 | 10 | 1.000 | 1 of 1 | |
| 1605135-02A | Soil | | 10.03 | 10 | 1.000 | 1 of 1 | |
| 1605135-03A | Soil | | 10.02 | 10 | 1.000 | 1 of 1 | |
| 1605135-04A | Soil | | 10.07 | 10 | 1.000 | 1 of 1 | |
| 1605135-05A | Soil | | 10.11 | 10 | 1.000 | 1 of 1 | |
| 1605135-06A | Soil | | 10.07 | 10 | 1.000 | 1 of 1 | |
| 1605135-07A | Soil | | 10.04 | 10 | 1.000 | 1 of 1 | |
| 1605135-08A | Soil | | 10.10 | 10 | 1.000 | 1 of 1 | |
| 1605135-09A | Soil | | 10.10 | 10 | 1.000 | 1 of 1 | |
| LCS-75227 | Soil | | 10 | 10 | 1.000 | of | |
| MB-75227 | Soil | | 10 | 10 | 1.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 10215 | Whatman 41 Filter | 1 | filter | 03/20/2026 |
| 10216 | Purified Sodium Sulfate | 10 | g | 03/30/2026 |
| 10340 | Methylene Chloride | 8 | ml | 05/05/2026 |
| 10343 | 1:1 MeCl2/Acetone | 120 | ml | 05/09/2026 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| PAHPREP160516 | 200 PPM PAH Spike Mix | LCS/MS/MSD | 0.05 | 08/16/2016 |
| SVPREP160517 | 40 PPM Surrogate Standard | ALL | 0.25 | 08/15/2016 |

5/19/16 AK 5/19/16 5/19/16

REVIEWED/APPROVED
By Sherri Herschmann at 12:21:20 PM, 5/31/2016

# DHL Analytical, Inc.

# PREP BATCH REPORT

Prep Start Date: **5/16/2016 5:00:00 PM**
Digestion: **Start: 5/16/2016 5:30:00 PM / Stop: 5/18/2016 9:00:00 AM**
Prep End Date:

Prep Batch **75190** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605135-16A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-17A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-18A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-19A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-20A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-21A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-22A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-23A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-24A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-25A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-26A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-27A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-28A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-29A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-30A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-31A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-32A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-33A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-34A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-35A | Soil | | 0 | 0 | #Num! | 1 of 1 | |

# DHL Analytical, Inc.

# PREP BATCH REPORT

Prep Start Date: **5/13/2016 3:00:00 PM**
Digestion: **Start: 5/13/2016 4:00:00 PM / Stop: 5/17/2016 1:30:00 PM**
Prep End Date: **5/18/2016 9:30:00 AM**

Prep Batch **75159** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-21A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-22A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay MS/MSD | | | | | | |
| 1605121-23A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-24A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-25A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-26A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-27A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-28A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-29A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-30A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-31A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-32A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-33A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-34A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-35A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-36A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-37A | Soil | | 0 | 0 | #Num! | 1 of 1 | |

# DHL Analytical, Inc.

# PREP BATCH REPORT

Prep Start Date: **5/13/2016 3:00:00 PM**
Digestion: **Start: 5/13/2016 4:00:00 PM / Stop: 5/17/2016 1:30:00 PM**
Prep End Date: **5/18/2016 9:30:00 AM**

Prep Batch **75159** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-38A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling | | | | | | |
| 1605121-39A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling | | | | | | |
| 1605121-40A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling | | | | | | |

# DHL Analytical, Inc.

# PREP BATCH REPORT

Prep Start Date: **5/16/2016 3:40:00 PM**
Digestion: **Start: 5/16/2016 4:45:00 PM / Stop: 5/18/2016 11:00:00 AM**
Prep End Date: **5/18/2016 3:00:00 PM**

Prep Batch **75188** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

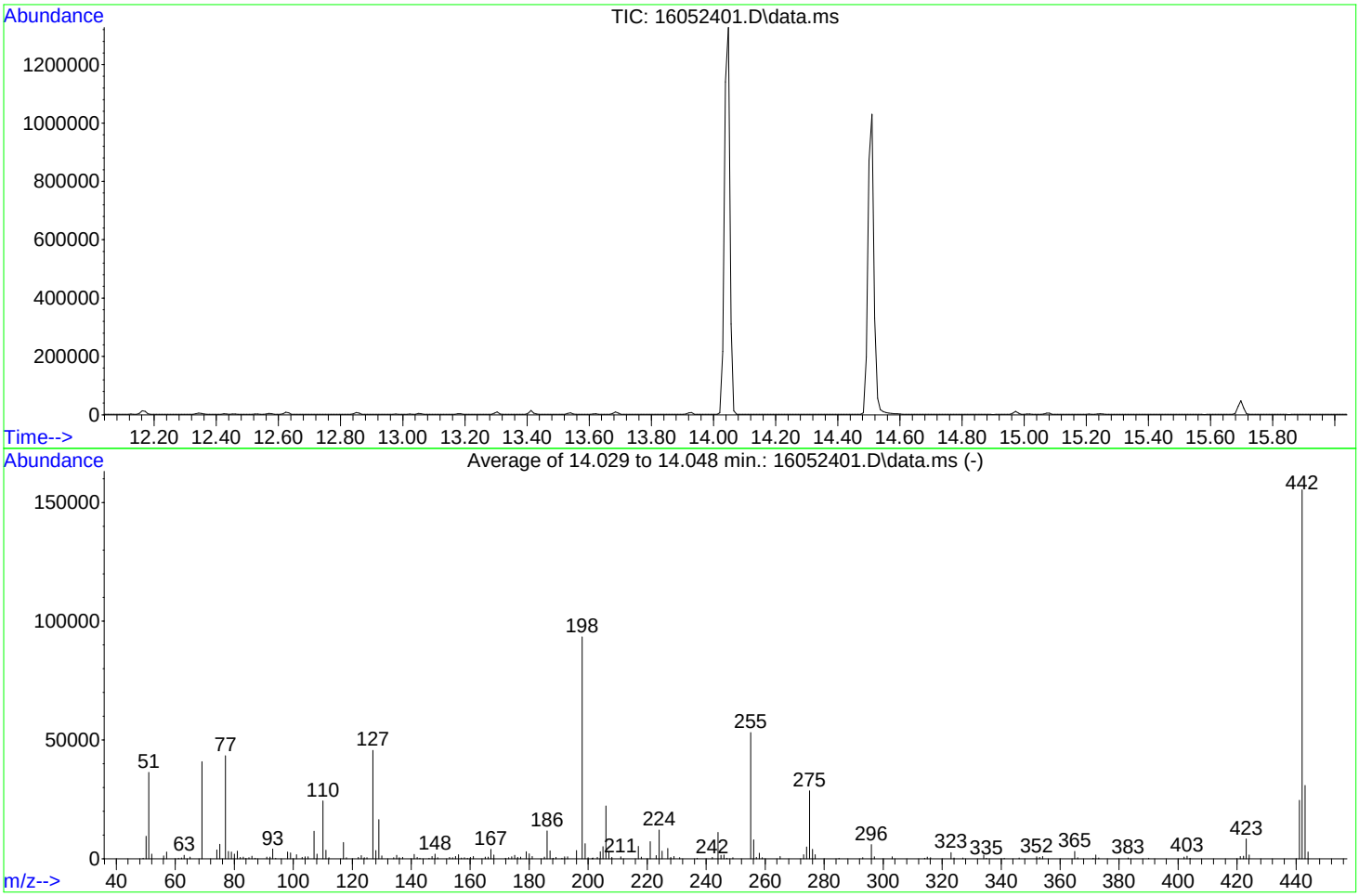
Prep Factor Units: **mL/**

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-41A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-42A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-43A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay MS/MSD | | | | | | |
| 1605121-44A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-45A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-01A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-02A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-03A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-04A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-05A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-06A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-07A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-08A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-09A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-10A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-11A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-12A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-13A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605135-14A | Soil | | 0 | 0 | #Num! | of 3 | |
| | Extra sub sampled for MS/MSD | | | | | | |
| 1605135-15A | Soil | | 0 | 0 | #Num! | 1 of 1 | |

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052401.D
Acq On : 24 May 2016 9:10 am
Operator :
Sample : DFTPP-160524
Misc : TUNE
ALS Vial : 1 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : CLP BNA Calibration - Large Volume Injection
Last Update : Thu Aug 27 07:24:43 2015



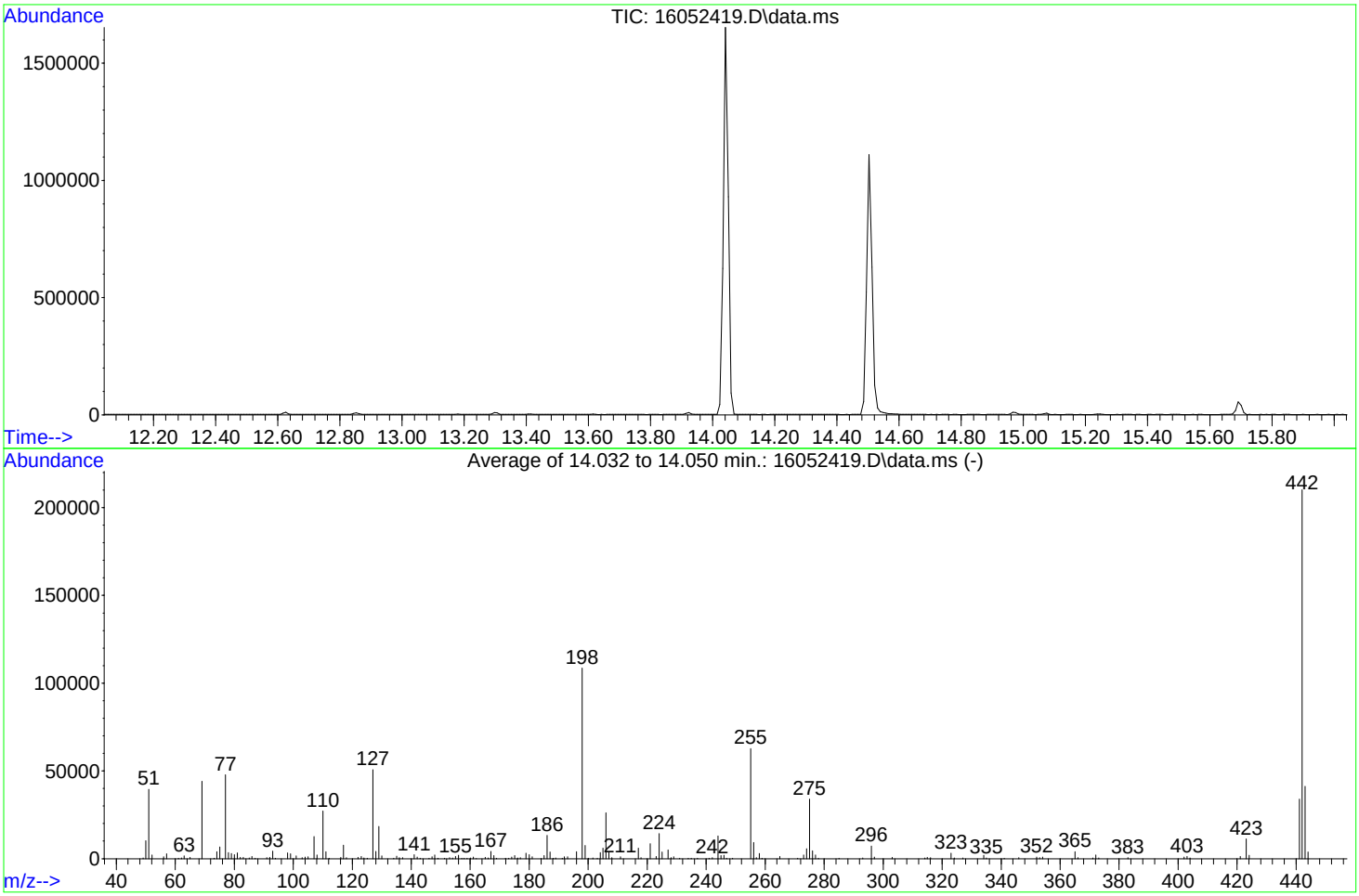

AutoFind: Scans 435, 436, 437; Background Corrected with Scan 431

| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 51 | 198 | 10 | 80 | 39.0 | 36413 | PASS |
| 68 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 69 | 198 | 0.00 | 100 | 43.8 | 40901 | PASS |
| 70 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 127 | 198 | 10 | 80 | 48.8 | 45616 | PASS |
| 197 | 198 | 0.00 | 2 | 0.0 | 0 | PASS |
| 198 | 198 | 100 | 100 | 100.0 | 93397 | PASS |
| 199 | 198 | 5 | 9 | 6.8 | 6325 | PASS |
| 275 | 198 | 10 | 60 | 30.6 | 28583 | PASS |
| 365 | 198 | 1 | 200 | 3.3 | 3036 | PASS |
| 441 | 442 | 0.01 | 24 | 15.9 | 24653 | PASS |
| 442 | 198 | 50 | 400 | 166.4 | 155410 | PASS |
| 443 | 442 | 15 | 24 | 19.9 | 30894 | PASS |

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052419.D
Acq On : 24 May 2016 8:23 pm
Operator :
Sample : DFTPP2-160524
Misc : TUNE
ALS Vial : 19 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : CLP BNA Calibration - Large Volume Injection
Last Update : Thu Aug 27 07:24:43 2015




AutoFind: Scans 435, 436, 437; Background Corrected with Scan 431

| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 51 | 198 | 10 | 80 | 36.4 | 39541 | PASS |
| 68 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 69 | 198 | 0.00 | 100 | 40.7 | 44139 | PASS |
| 70 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 127 | 198 | 10 | 80 | 46.7 | 50749 | PASS |
| 197 | 198 | 0.00 | 2 | 0.0 | 0 | PASS |
| 198 | 198 | 100 | 100 | 100.0 | 108573 | PASS |
| 199 | 198 | 5 | 9 | 6.9 | 7471 | PASS |
| 275 | 198 | 10 | 60 | 31.3 | 33985 | PASS |
| 365 | 198 | 1 | 200 | 3.7 | 3979 | PASS |
| 441 | 442 | 0.01 | 24 | 16.2 | 34008 | PASS |
| 442 | 198 | 50 | 400 | 193.6 | 210242 | PASS |
| 443 | 442 | 15 | 24 | 19.6 | 41260 | PASS |

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052402.D
Acq On : 24 May 2016 9:47 am
Operator :
Sample : ICV-160524
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 25 08:43:57 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

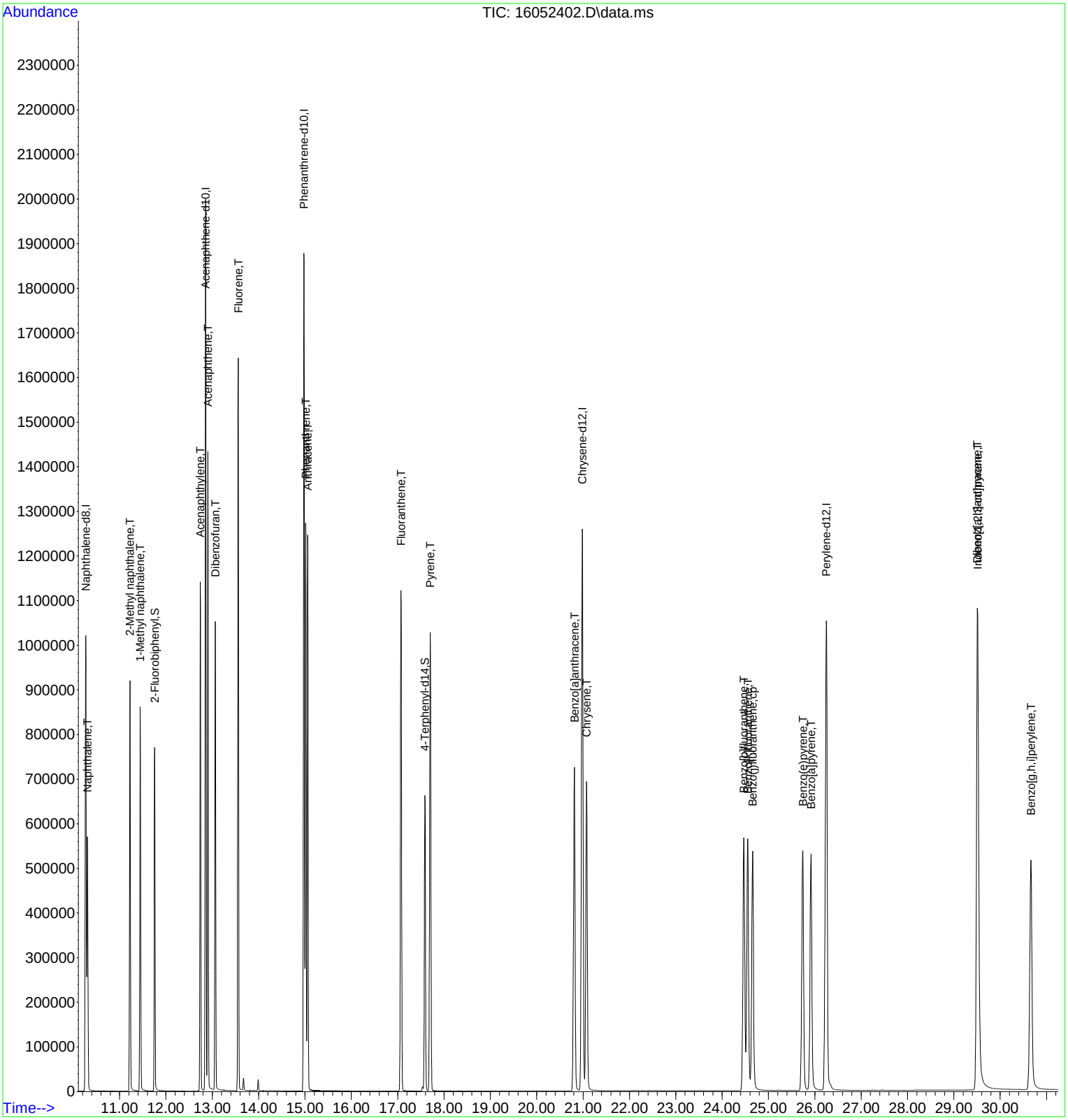
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.268 | 136 | 1457697 | 4000.00 | ug/kg | 89 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1203419 | 4000.00 | ug/kg | 96 |
| 11) Phenanthrene-d10 | 14.977 | 188 | 2345206 | 4000.00 | ug/kg | 80 |
| 16) Chrysene-d12 | 20.988 | 240 | 2181894 | 4000.00 | ug/kg | 80 |
| 20) Perylene-d12 | 26.247 | 264 | 2085122 | 4000.00 | ug/kg | 84 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.757 | 172 | 703098 | 2166.32 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 54.16% | | |
| 17) 4-Terphenyl-d14 | 17.587 | 244 | 907760 | 1965.61 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 49.14%# | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.305 | 128 | 661972 | 2027.09 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.222 | 142 | 558062 | 2198.26 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.445 | 142 | 515074 | 2144.10 | ug/kg | 99 |
| 7) Acenaphthylene | 12.739 | 152 | 1087057 | 2066.57 | ug/kg | 100 |
| 8) Acenaphthene | 12.906 | 153 | 676207 | 2037.25 | ug/kg | 99 |
| 9) Dibenzofuran | 13.063 | 168 | 996417 | 1970.65 | ug/kg | 91 |
| 10) Fluorene | 13.559 | 166 | 876381 | 1910.24 | ug/kg | 99 |
| 12) Phenanthrene | 15.015 | 178 | 1208125 | 1872.22 | ug/kg | 100 |
| 13) Anthracene | 15.059 | 178 | 1214867 | 1860.57 | ug/kg | 100 |
| 14) Fluoranthene | 17.071 | 202 | 1257561 | 2042.22 | ug/kg | 99 |
| 15) Pyrene | 17.703 | 202 | 1224917 | 2023.25 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.812 | 228 | 1135923 | 2104.88 | ug/kg | 100 |
| 19) Chrysene | 21.076 | 228 | 1049312 | 2102.86 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.467 | 252 | 1131759 | 2119.26 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.555 | 252 | 998797 | 2061.30 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.657 | 252 | 954965 | 2066.47 | ug/kg | 100 |
| 24) Benzo(e)pyrene | 25.742 | 252 | 1061897 | 2106.77 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.917 | 252 | 1044202 | 2087.53 | ug/kg | 100 |
| 26) Indeno[1,2,3-cd]pyrene | 29.521 | 276 | 1296187 | 2120.02 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.507 | 278 | 1079303 | 2124.66 | ug/kg | 100 |
| 28) Benzo[g,h,i]perylene | 30.664 | 276 | 1116041 | 2114.92 | ug/kg | 100 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052402.D
Acq On : 24 May 2016 9:47 am
Operator :
Sample : ICV-160524
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

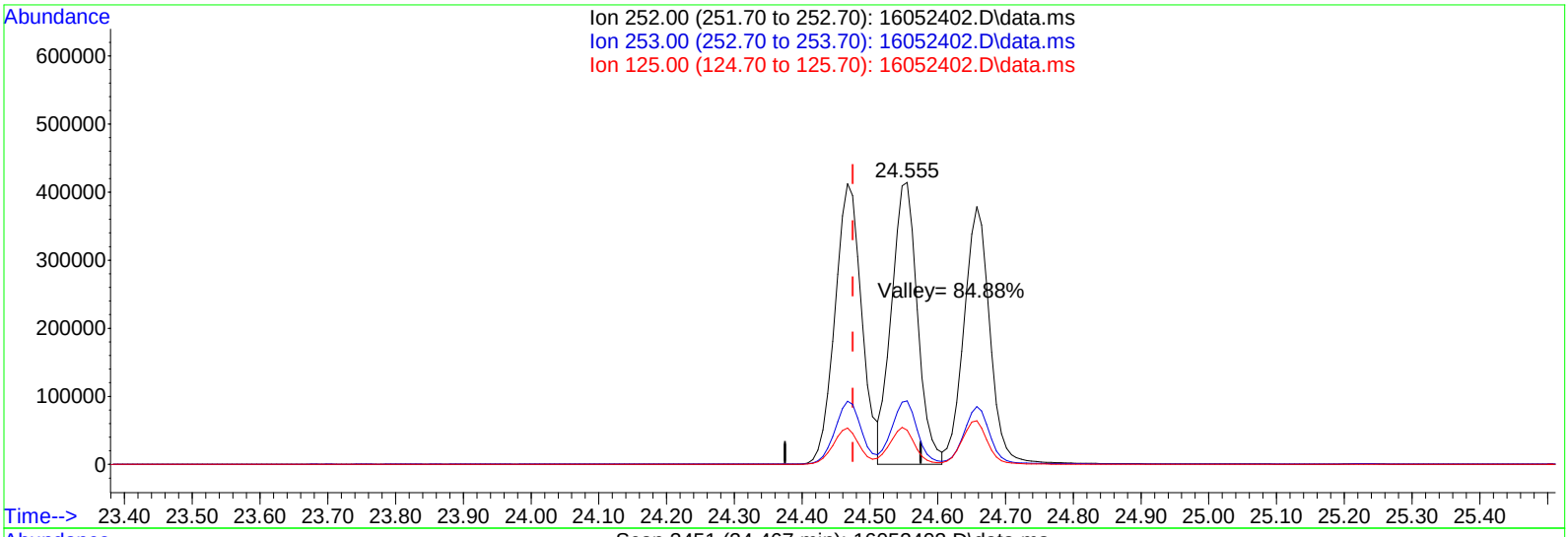
Quant Time: May 25 08:43:57 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

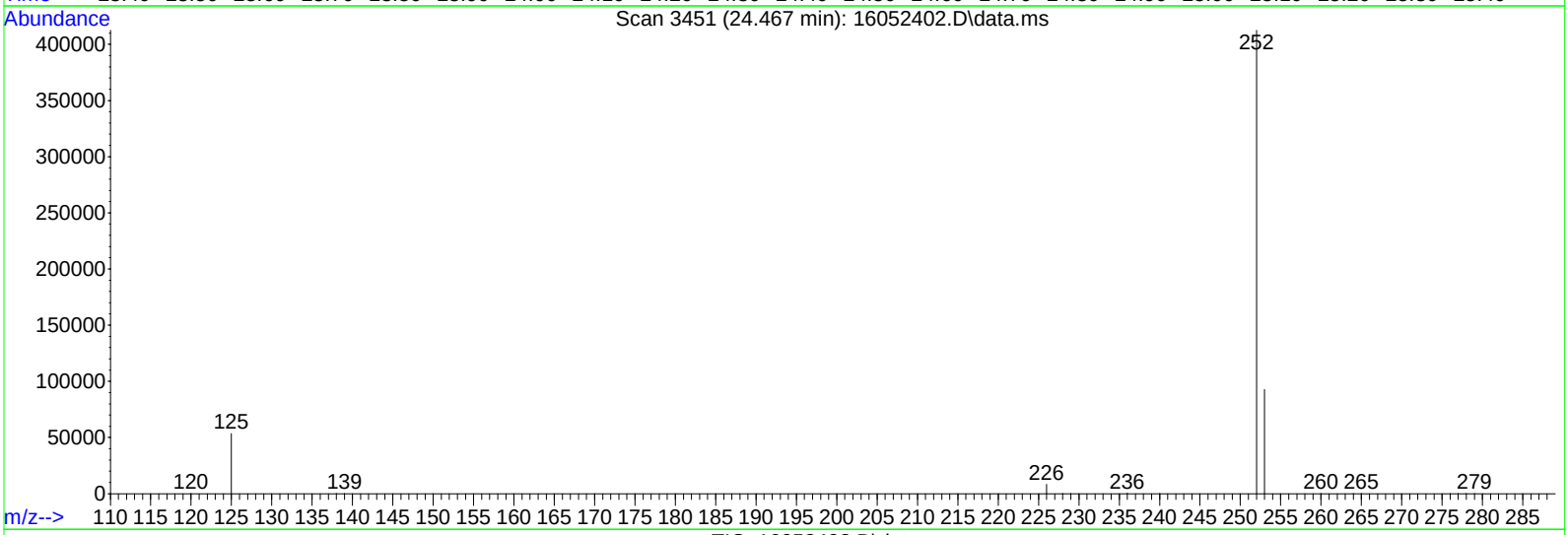


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052402.D
Acq On : 24 May 2016 9:47 am
Operator :
Sample : ICV-160524
Misc : ICV
ALS Vial : 2 Sample Multiplier: 1

Quant Time: May 24 10:18:31 2016
Quant Method : C:\MSDCHEM\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration




TIC: 16052402.D\data.ms

(21) Benzo[b]fluoranthene (T)

24.467min (-0.008) 2119.26ug/kg

response 1131759

| Ion | Exp% | Act% |
|---|---|---|
| 252.00 | 100 | 100 |
| 253.00 | 22.30 | 22.35 |
| 125.00 | 12.20 | 12.92 |
| 0.00 | 0.00 | 0.00 |

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052403.D
Acq On : 24 May 2016 10:23 am
Operator :
Sample : LCS-75227
Misc : LCS
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 25 08:44:00 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.268 | 136 | 1330475 | 4000.00 | ug/kg | 82 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1030924 | 4000.00 | ug/kg | 82 |
| 11) Phenanthrene-d10 | 14.977 | 188 | 2105440 | 4000.00 | ug/kg | 72 |
| 16) Chrysene-d12 | 20.981 | 240 | 2219835 | 4000.00 | ug/kg | 82 |
| 20) Perylene-d12 | 26.247 | 264 | 2103659 | 4000.00 | ug/kg | 85 |

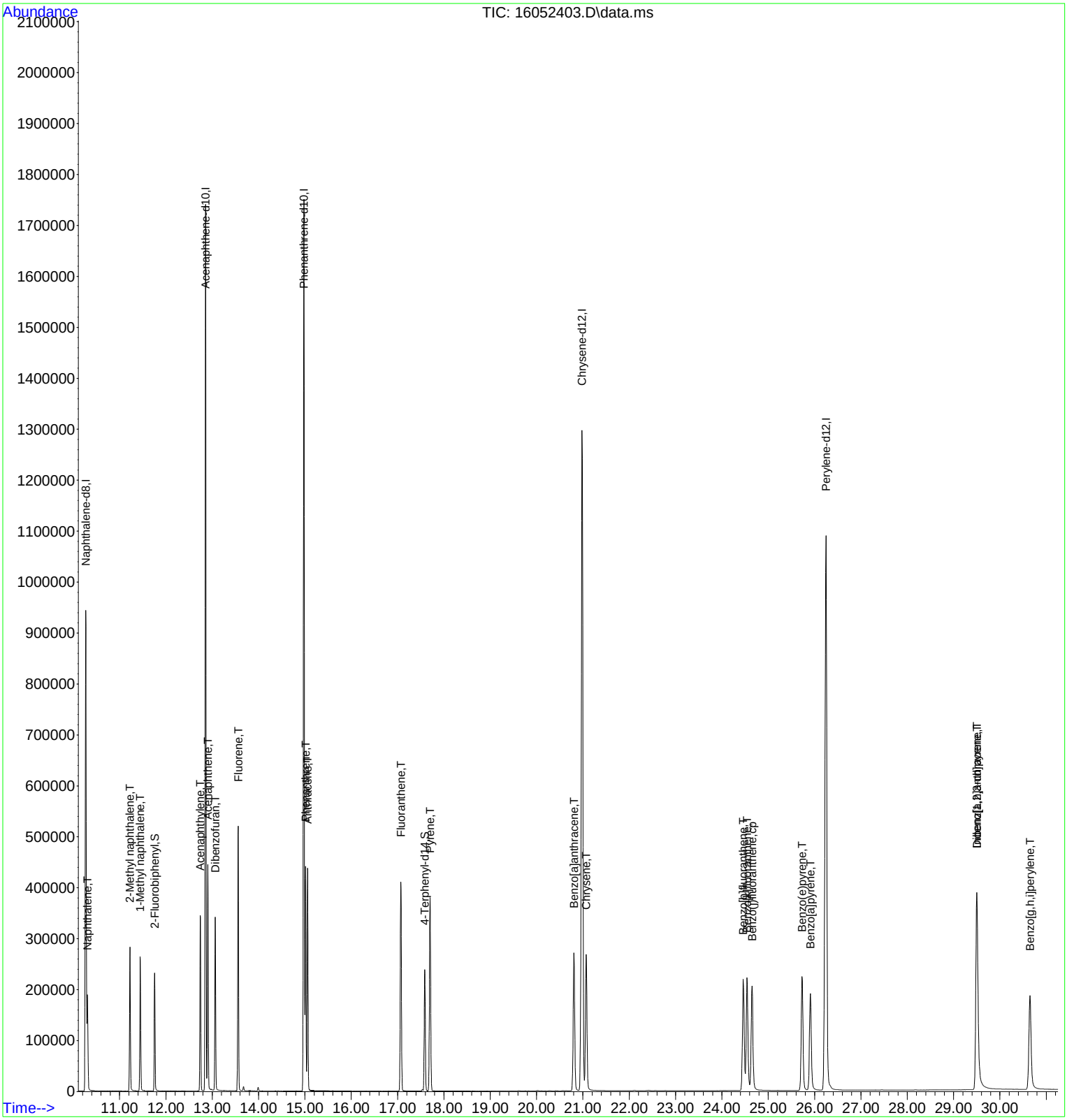
| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.757 | 172 | 215265 | 726.68 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 18.17%# | | | |
| 17) 4-Terphenyl-d14 | 17.586 | 244 | 323511 | 688.54 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 17.21%# | | | |

| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.305 | 128 | 210574 | 706.48 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.222 | 142 | 173055 | 746.86 | ug/kg | 98 |
| 4) 1-Methyl naphthalene | 11.448 | 142 | 158646 | 723.54 | ug/kg | 98 |
| 7) Acenaphthylene | 12.739 | 152 | 334445 | 742.19 | ug/kg | 99 |
| 8) Acenaphthene | 12.906 | 153 | 208240 | 732.35 | ug/kg | 98 |
| 9) Dibenzofuran | 13.063 | 168 | 320684 | 740.35 | ug/kg | 92 |
| 10) Fluorene | 13.559 | 166 | 282212 | 718.06 | ug/kg | 100 |
| 12) Phenanthrene | 15.015 | 178 | 418954 | 723.18 | ug/kg | 98 |
| 13) Anthracene | 15.057 | 178 | 426256 | 727.15 | ug/kg | 98 |
| 14) Fluoranthene | 17.070 | 202 | 461134 | 804.77 | ug/kg | 98 |
| 15) Pyrene | 17.699 | 202 | 453982 | 810.90 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.805 | 228 | 426762 | 751.68 | ug/kg | 99 |
| 19) Chrysene | 21.069 | 228 | 397717 | 758.38 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.460 | 252 | 421225 | 760.56 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.541 | 252 | 373671 | 748.44 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.651 | 252 | 369084 | 769.11 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.727 | 252 | 433705 | 829.02 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.910 | 252 | 387682 | 751.63 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.507 | 276 | 478653 | 752.91 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.492 | 278 | 395045 | 745.51 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.650 | 276 | 409435 | 746.79 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052403.D
Acq On : 24 May 2016 10:23 am
Operator :
Sample : LCS-75227
Misc : LCS
ALS Vial : 3 Sample Multiplier: 1

Quant Time: May 25 08:44:00 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052404.D
Acq On : 24 May 2016 11:04 am
Operator :
Sample : MB-75227
Misc : MBLK
ALS Vial : 4 Sample Multiplier: 1

Quant Time: May 25 08:44:03 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.270 | 136 | 1530085 | 4000.00 | ug/kg | 94 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1155009 | 4000.00 | ug/kg | 92 |
| 11) Phenanthrene-d10 | 14.979 | 188 | 2095942 | 4000.00 | ug/kg | 72 |
| 16) Chrysene-d12 | 20.988 | 240 | 2203176 | 4000.00 | ug/kg | 81 |
| 20) Perylene-d12 | 26.247 | 264 | 2136503 | 4000.00 | ug/kg | 86 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.759 | 172 | 243527 | 714.83 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 17.87%# | | | |
| 17) 4-Terphenyl-d14 | 17.587 | 244 | 326836 | 700.87 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 17.52%# | | | |

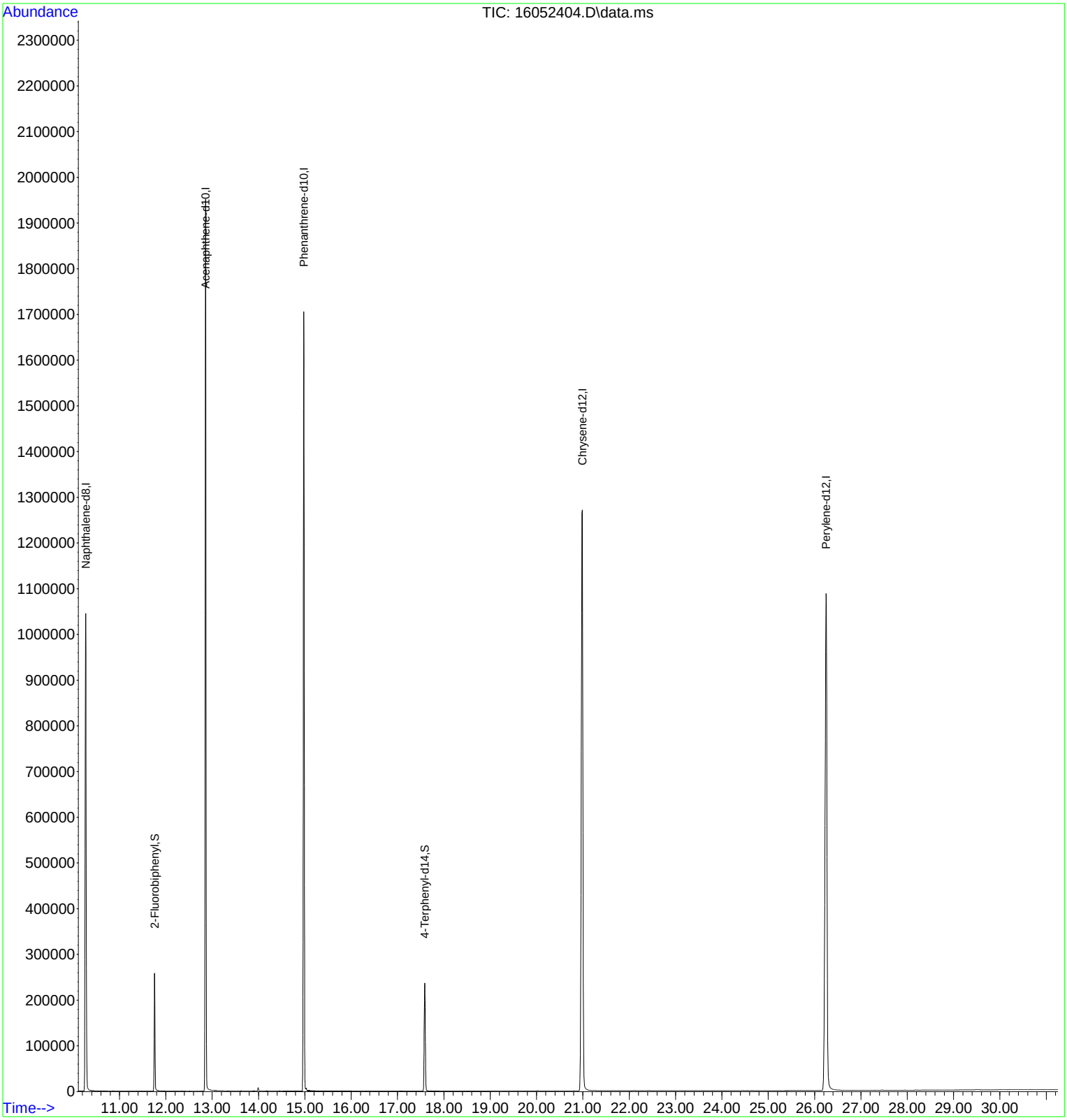
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052404.D
Acq On : 24 May 2016 11:04 am
Operator :
Sample : MB-75227
Misc : MBLK
ALS Vial : 4 Sample Multiplier: 1

Quant Time: May 25 08:44:03 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052405.D
Acq On : 24 May 2016 11:41 am
Operator :
Sample : 1605121-35A
Misc : SAMP
ALS Vial : 5 Sample Multiplier: 10

Quant Time: May 25 08:45:24 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.271 | 136 | 1582744 | 4000.00 | ug/kg | 97 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1274403 | 4000.00 | ug/kg | 102 |
| 11) Phenanthrene-d10 | 14.976 | 188 | 2230636 | 4000.00 | ug/kg | 76 |
| 16) Chrysene-d12 | 20.980 | 240 | 2248740 | 4000.00 | ug/kg | 83 |
| 20) Perylene-d12 | 26.246 | 264 | 2142337 | 4000.00 | ug/kg | 86 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.760 | 172 | 31512 | 89.42 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.24%# | | | |
| 17) 4-Terphenyl-d14 | 17.583 | 244 | 36266 | 76.19 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.90%# | | | |

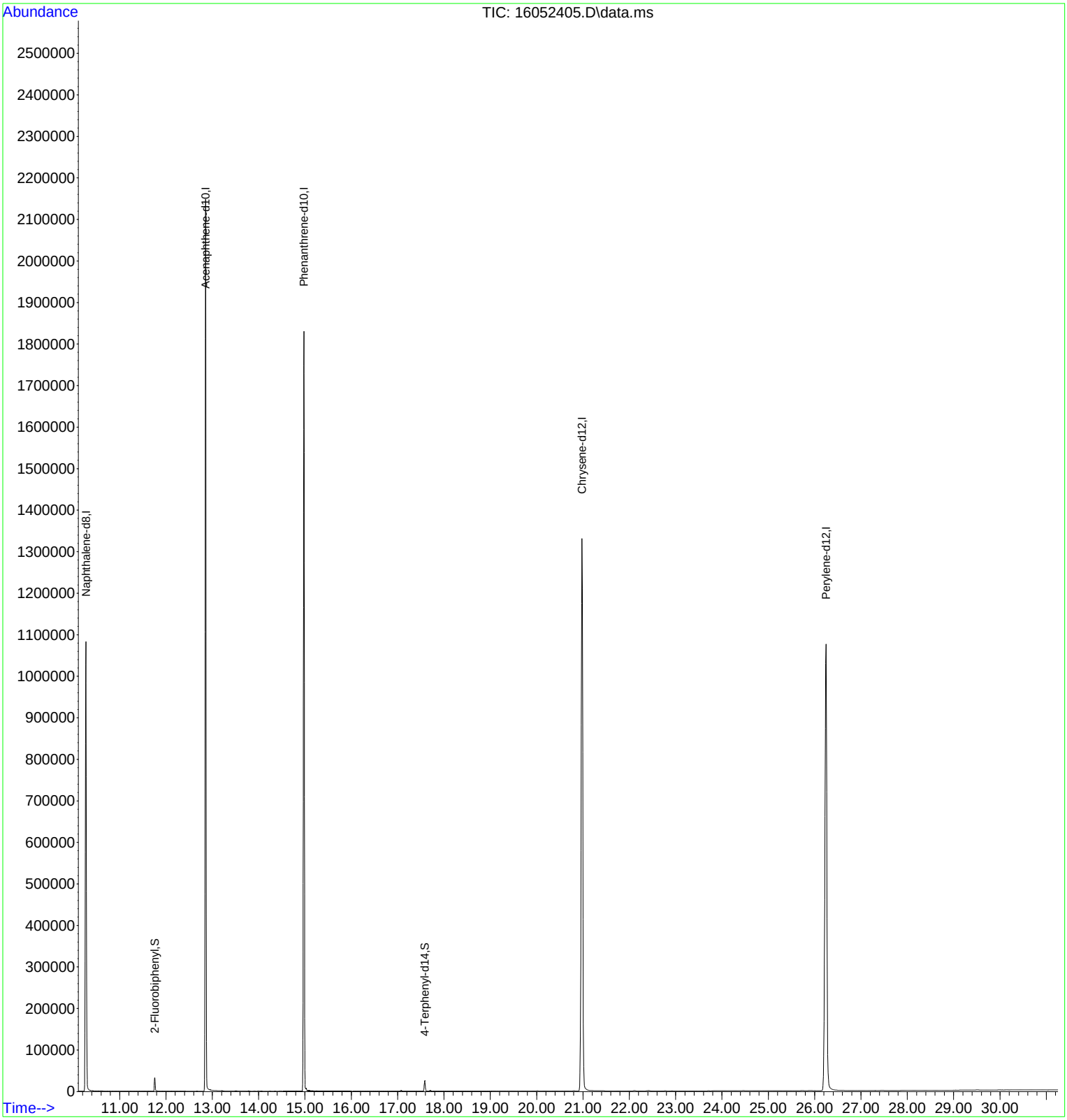
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052405.D
Acq On : 24 May 2016 11:41 am
Operator :
Sample : 1605121-35A
Misc : SAMP
ALS Vial : 5 Sample Multiplier: 10

Quant Time: May 25 08:45:24 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052406.D
Acq On : 24 May 2016 12:18 pm
Operator :
Sample : 1605121-36A
Misc : SAMP
ALS Vial : 6 Sample Multiplier: 10

Quant Time: May 25 08:45:27 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.268 | 136 | 1635828 | 4000.00 | ug/kg | 100 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1309382 | 4000.00 | ug/kg | 104 |
| 11) Phenanthrene-d10 | 14.977 | 188 | 2298938 | 4000.00 | ug/kg | 79 |
| 16) Chrysene-d12 | 20.981 | 240 | 2334595 | 4000.00 | ug/kg | 86 |
| 20) Perylene-d12 | 26.248 | 264 | 2236879 | 4000.00 | ug/kg | 90 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.757 | 172 | 33110 | 90.91 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.27%# | | | |
| 17) 4-Terphenyl-d14 | 17.584 | 244 | 38870 | 78.66 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.97%# | | | |

| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 12) Phenanthrene | 15.013 | 178 | 9393 | 14.85 | ug/kg | 98 |
| 14) Fluoranthene | 17.068 | 202 | 28125 | 42.10 | ug/kg | 98 |
| 15) Pyrene | 17.701 | 202 | 25268 | 38.47 | ug/kg | 96 |
| 18) Benzo[a]anthracene | 20.805 | 228 | 14690 | 22.45 | ug/kg | 99 |
| 19) Chrysene | 21.069 | 228 | 18384 | 30.19 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.461 | 252 | 18833 | 29.90 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.541 | 252 | 7713 | 13.28 | ug/kg | 96 |
| 23) Benzo(j)fluoranthene | 24.644 | 252 | 8118 | 12.56 | ug/kg | 90 |
| 24) Benzo(e)pyrene | 25.728 | 252 | 14984 | 24.10 | ug/kg | 93 |
| 25) Benzo[a]pyrene | 25.904 | 252 | 18114 | 30.65 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.507 | 276 | 14516 | 18.38 | ug/kg | 92 |
| 28) Benzo[g,h,i]perylene | 30.643 | 276 | 15655 | 23.56 | ug/kg | 98 |

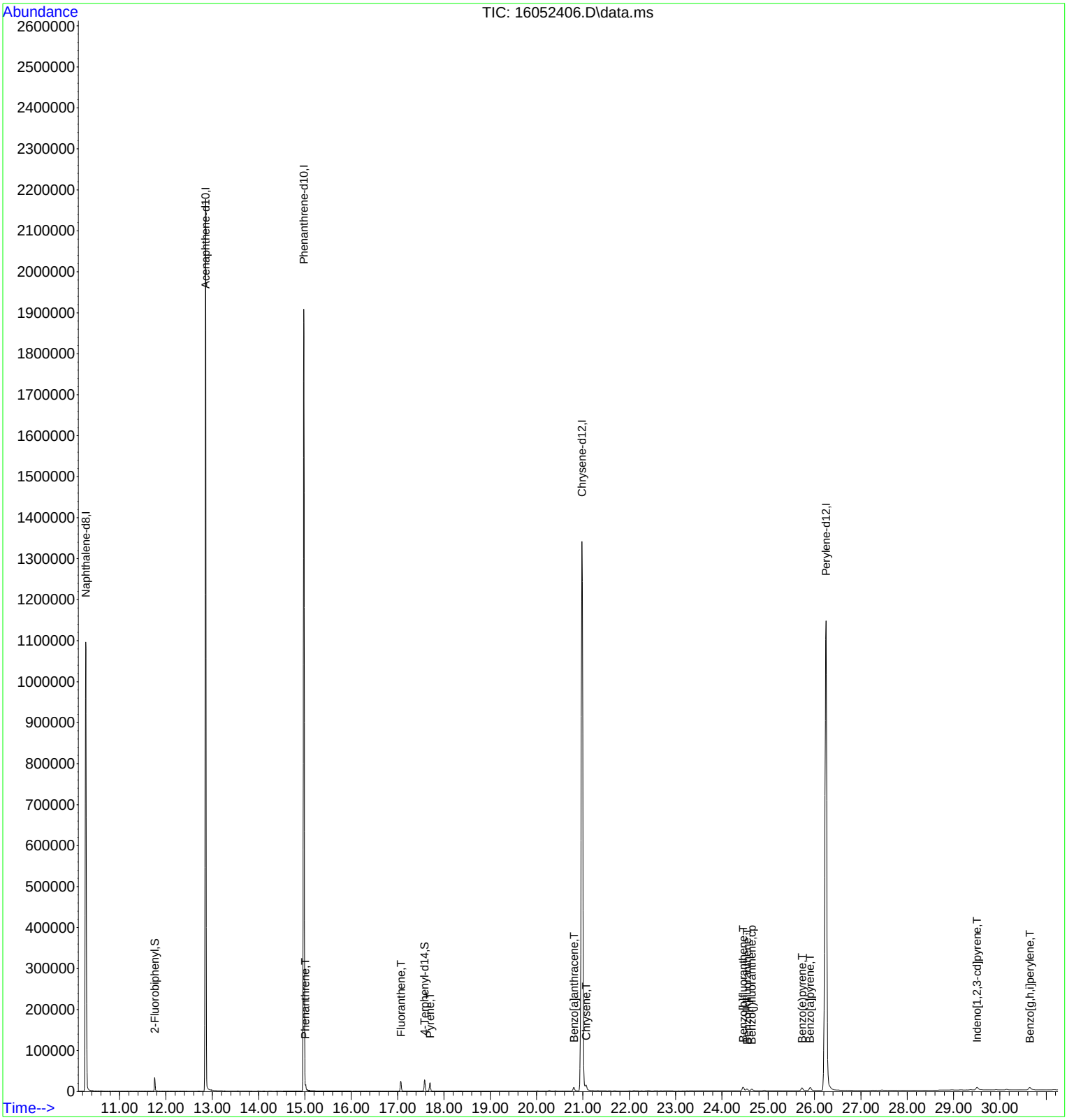
CONFIRMED
By Sherri Herschmann at 12:33:09 PM, 5/31/2016

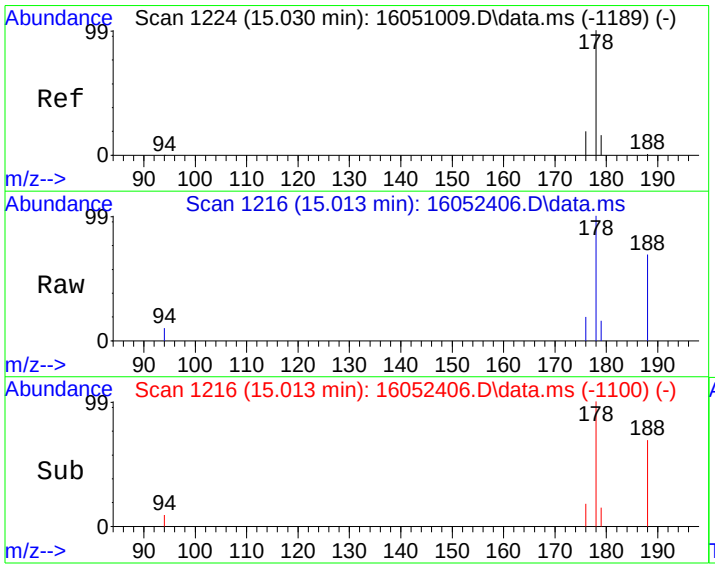
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052406.D
Acq On : 24 May 2016 12:18 pm
Operator :
Sample : 1605121-36A
Misc : SAMP
ALS Vial : 6 Sample Multiplier: 10

Quant Time: May 25 08:45:27 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

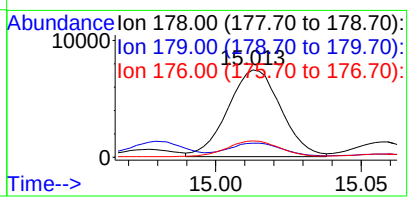


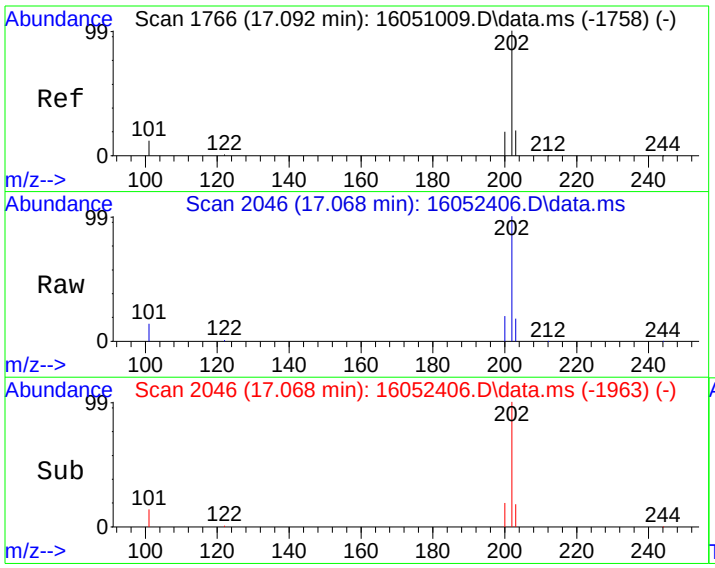



#12
Phenanthrene
Concen: 14.85 ug/kg
RT: 15.013 min Scan# 1216
Delta R.T. -0.006 min
Lab File: 16052406.D
Acq: 24 May 2016 12:18 pm

Tgt Ion:178 Resp: 9393

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 14.9 | 0.0 | 36.4 |
| 176 | 18.3 | 0.0 | 39.0 |

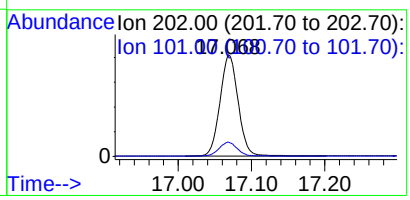


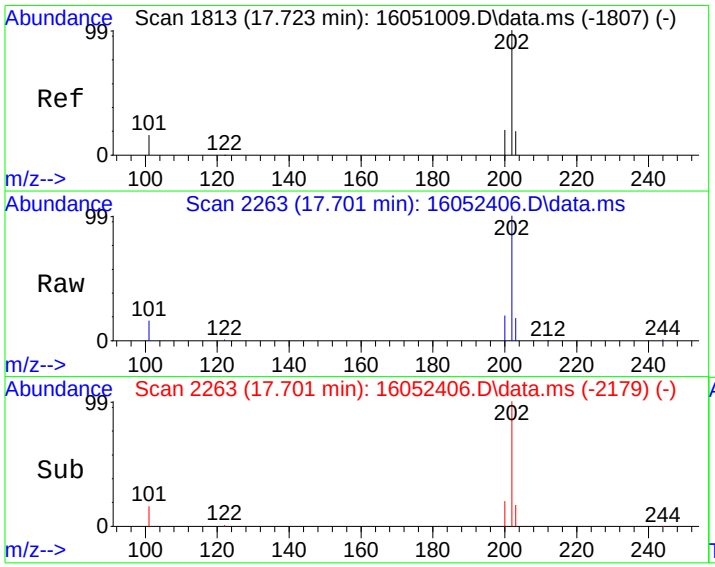




#14
Fluoranthene
Concen: 42.10 ug/kg
RT: 17.068 min Scan# 2046
Delta R.T. -0.008 min
Lab File: 16052406.D
Acq: 24 May 2016 12:18 pm

Tgt Ion:202 Resp: 28125

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 13.7 | 0.0 | 34.4 |

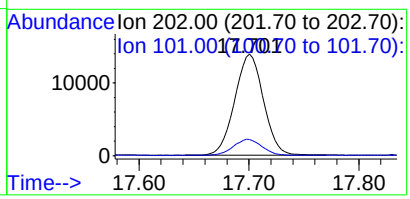


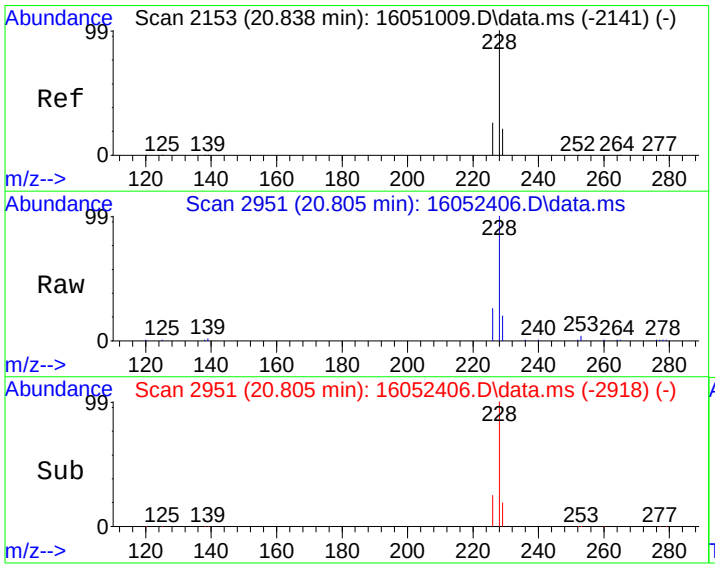




#15
Pyrene
Concen: 38.47 ug/kg
RT: 17.701 min Scan# 2263
Delta R.T. -0.005 min
Lab File: 16052406.D
Acq: 24 May 2016 12:18 pm

Tgt Ion:202 Resp: 25268

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 15.7 | 0.0 | 37.3 |

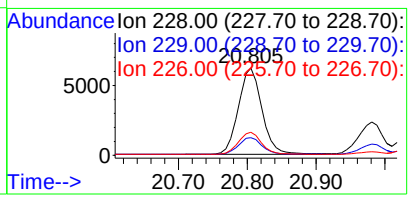


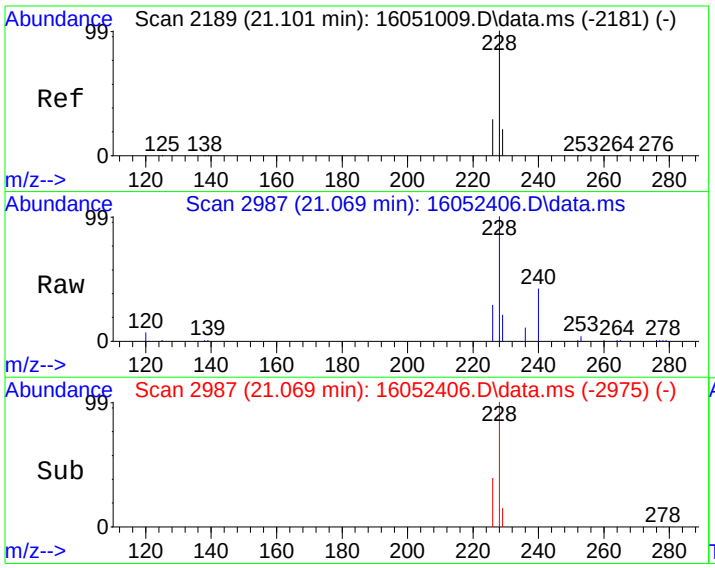



#18
Benzo[a]anthracene
Concen: 22.45 ug/kg
RT: 20.805 min Scan# 2951
Delta R.T. -0.007 min
Lab File: 16052406.D
Acq: 24 May 2016 12:18 pm

Tgt Ion:228 Resp: 14690

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.1 | 0.3 | 40.3 |
| 226 | 25.6 | 5.7 | 45.7 |

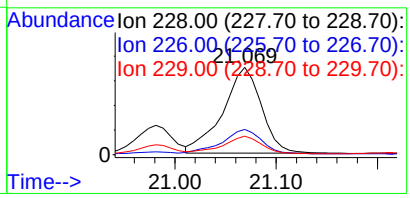


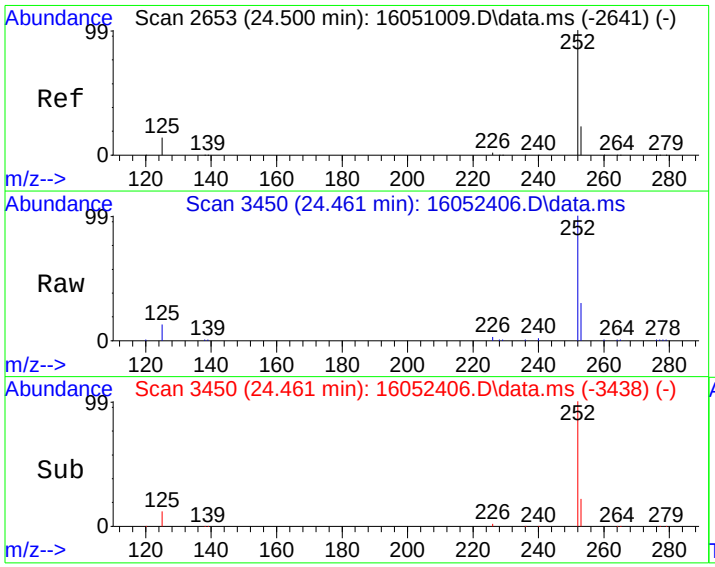




#19
Chrysene
Concen: 30.19 ug/kg
RT: 21.069 min Scan# 2987
Delta R.T. -0.014 min
Lab File: 16052406.D
Acq: 24 May 2016 12:18 pm

Tgt Ion:228 Resp: 18384

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.5 | 8.2 | 48.2 |
| 229 | 20.4 | 0.3 | 40.3 |

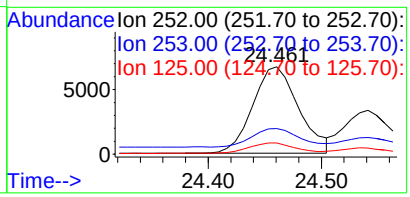


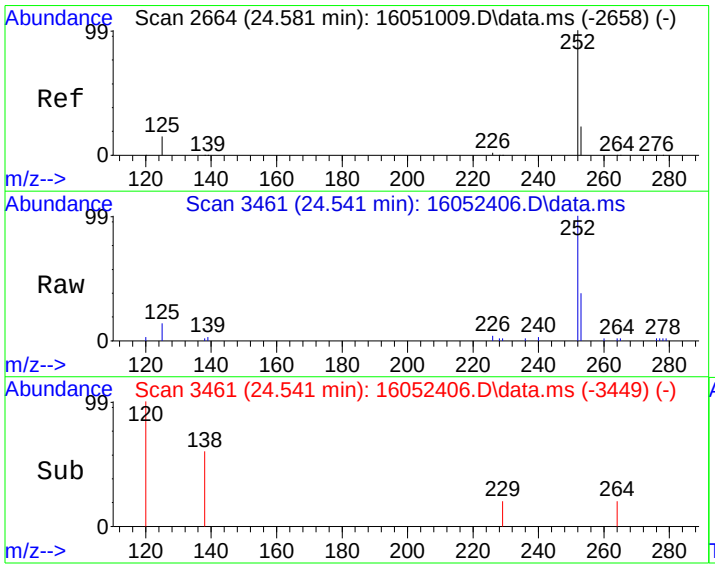




#21
Benzo[b]fluoranthene
Concen: 29.90 ug/kg
RT: 24.461 min Scan# 3450
Delta R.T. -0.014 min
Lab File: 16052406.D
Acq: 24 May 2016 12:18 pm

Tgt Ion:252 Resp: 18833

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.7 | 2.3 | 42.3 |
| 125 | 11.8 | 0.0 | 32.2 |

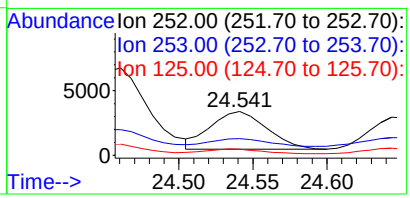


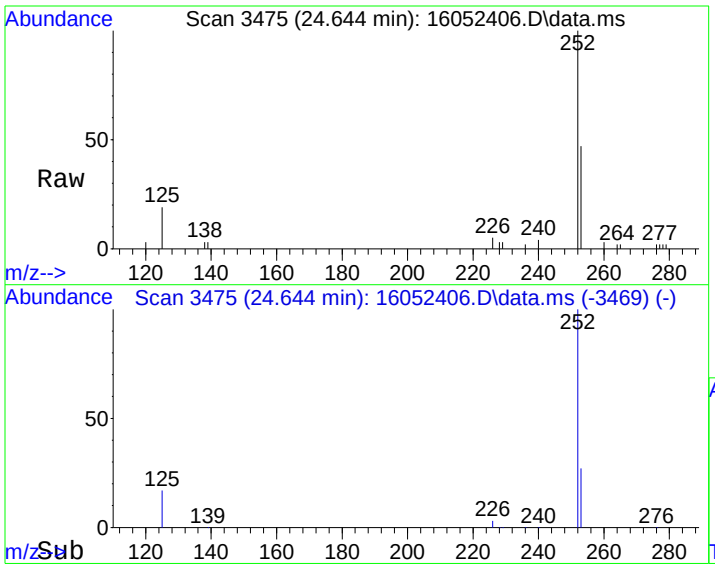



#22
Benzo[k]fluoranthene
Concen: 13.28 ug/kg
RT: 24.541 min Scan# 3461
Delta R.T. -0.014 min
Lab File: 16052406.D
Acq: 24 May 2016 12:18 pm

Tgt Ion:252 Resp: 7713

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 19.7 | 2.5 | 42.5 |
| 125 | 11.9 | 0.0 | 32.6 |

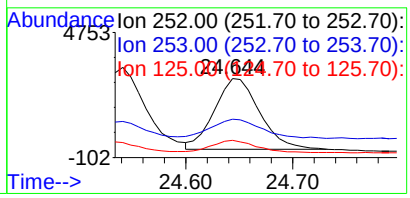


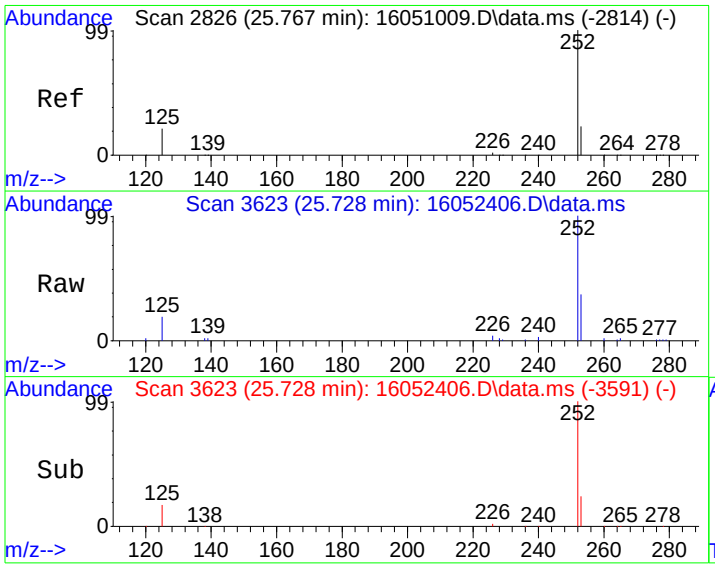




#23
Benzo(j)fluoranthene
Concen: 12.56 ug/kg
RT: 24.644 min Scan# 3475
Delta R.T. -0.021 min
Lab File: 16052406.D
Acq: 24 May 2016 12:18 pm

Tgt Ion:252 Resp: 8118

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 30.0 | 2.2 | 42.2 |
| 125 | 16.9 | 0.0 | 37.3 |

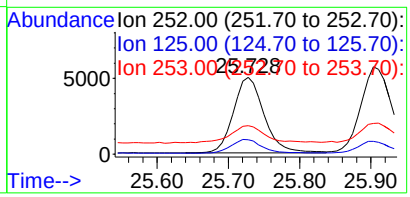


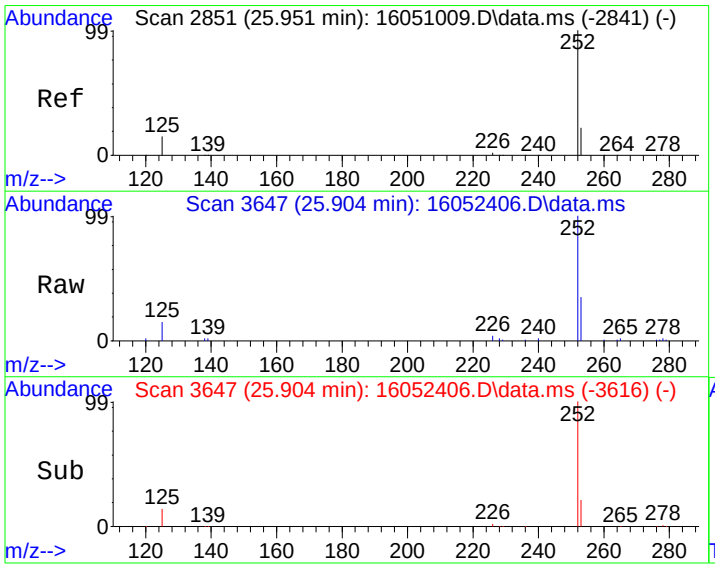




#24
Benzo(e)pyrene
Concen: 24.10 ug/kg
RT: 25.728 min Scan# 3623
Delta R.T. -0.014 min
Lab File: 16052406.D
Acq: 24 May 2016 12:18 pm

Tgt Ion:252 Resp: 14984

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 125 | 17.7 | 0.0 | 38.7 |
| 253 | 27.8 | 2.3 | 42.3 |

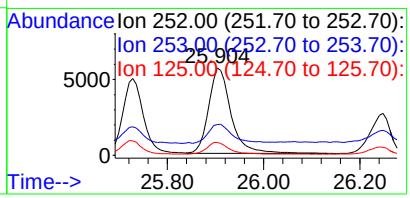


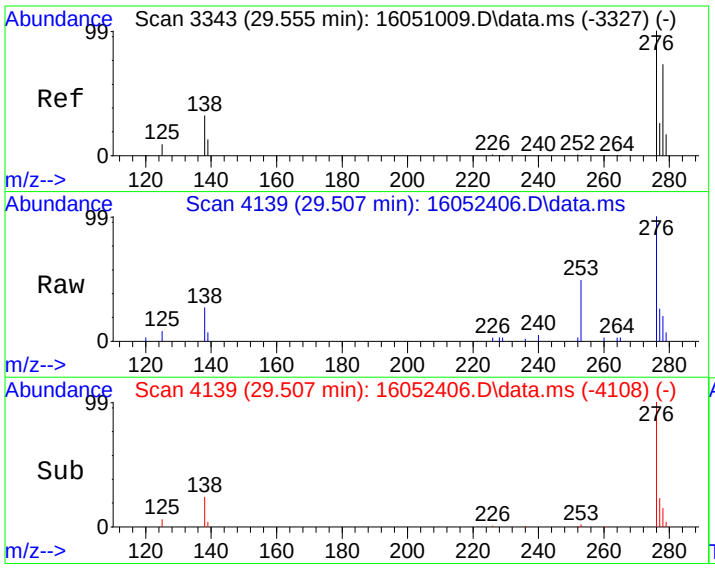



#25
Benzo[a]pyrene
Concen: 30.65 ug/kg
RT: 25.904 min Scan# 3647
Delta R.T. -0.021 min
Lab File: 16052406.D
Acq: 24 May 2016 12:18 pm

Tgt Ion:252 Resp: 18114

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.6 | 2.3 | 42.3 |
| 125 | 13.8 | 0.0 | 33.5 |

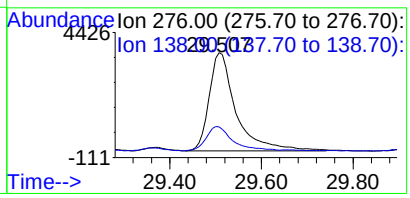


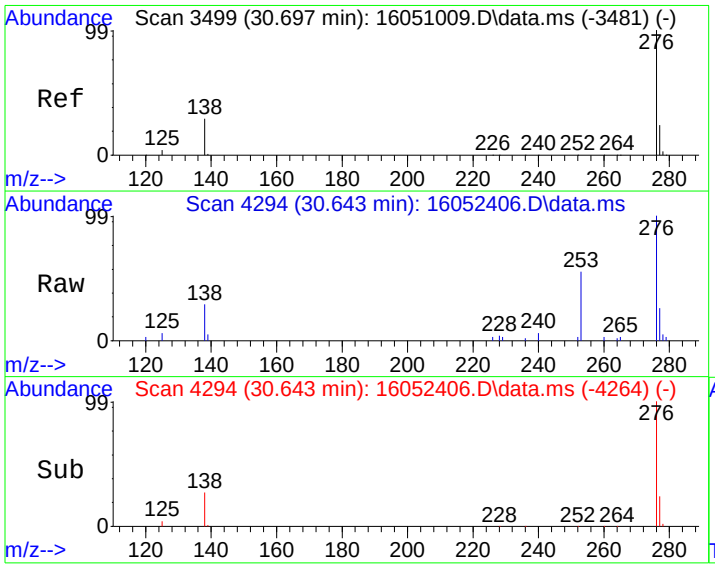




#26
Indeno[1,2,3-cd]pyrene
Concen: 18.38 ug/kg
RT: 29.507 min Scan# 4139
Delta R.T. -0.022 min
Lab File: 16052406.D
Acq: 24 May 2016 12:18 pm

Tgt Ion:276 Resp: 14516

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 24.3 | 8.3 | 48.3 |

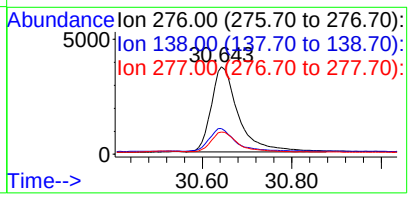



#28
Benzo[g,h,i]perylene
Concen: 23.56 ug/kg
RT: 30.643 min Scan# 4294
Delta R.T. -0.029 min
Lab File: 16052406.D
Acq: 24 May 2016 12:18 pm

Tgt Ion:276 Resp: 15655

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 26.6 | 5.8 | 45.8 |
| 277 | 23.6 | 4.4 | 44.4 |



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052407.D
Acq On : 24 May 2016 12:56 pm
Operator :
Sample : 1605121-37A
Misc : SAMP
ALS Vial : 7 Sample Multiplier: 10

Quant Time: May 25 08:45:34 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.271 | 136 | 1456372 | 4000.00 | ug/kg | 89 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1235995 | 4000.00 | ug/kg | 99 |
| 11) Phenanthrene-d10 | 14.977 | 188 | 2190921 | 4000.00 | ug/kg | 75 |
| 16) Chrysene-d12 | 20.980 | 240 | 2149945 | 4000.00 | ug/kg | 79 |
| 20) Perylene-d12 | 26.247 | 264 | 2036188 | 4000.00 | ug/kg | 82 |

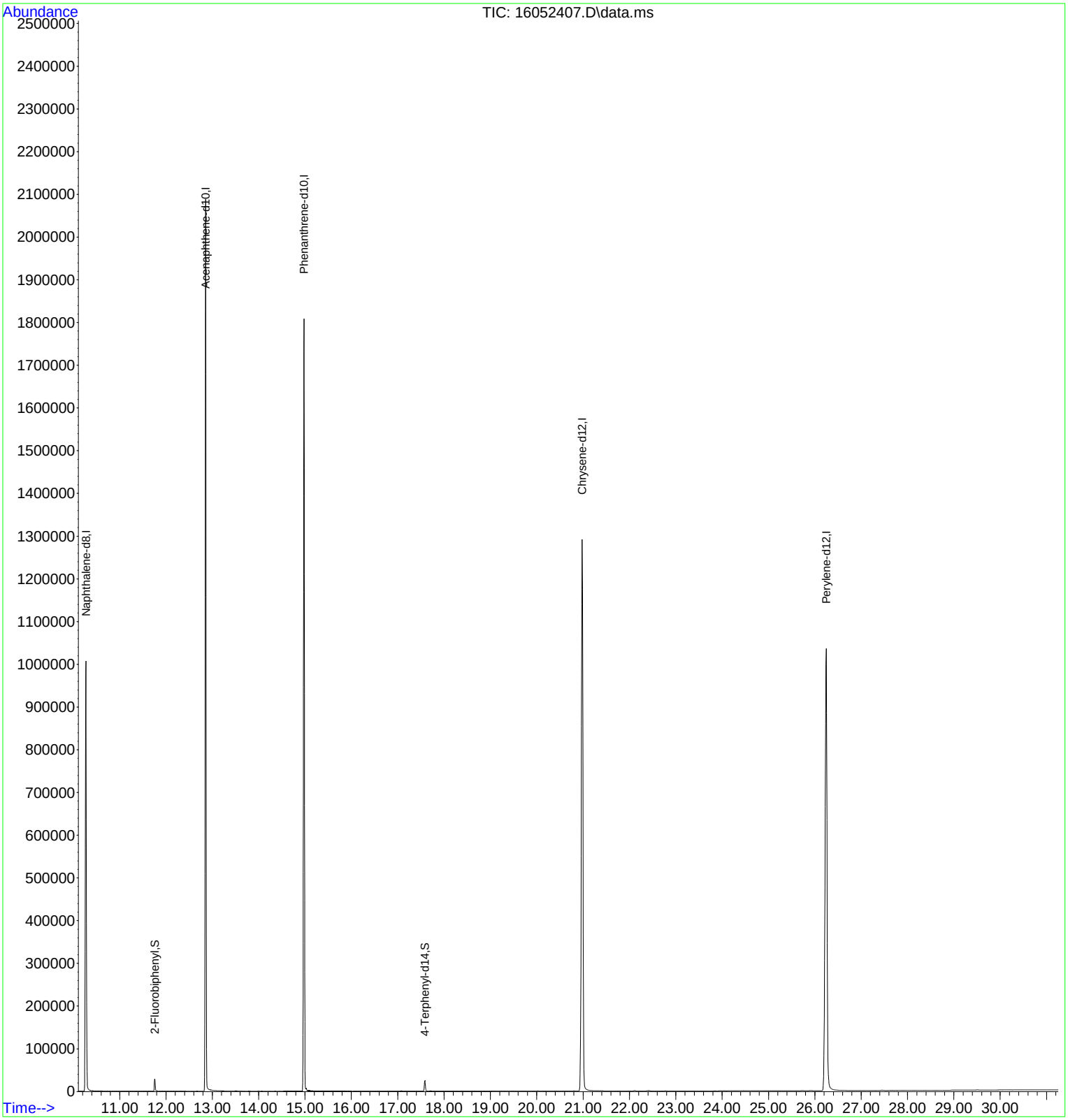
| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.756 | 172 | 29665 | 91.48 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.29%# | | | |
| 17) 4-Terphenyl-d14 | 17.587 | 244 | 35078 | 77.08 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.93%# | | | |

| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052407.D
Acq On : 24 May 2016 12:56 pm
Operator :
Sample : 1605121-37A
Misc : SAMP
ALS Vial : 7 Sample Multiplier: 10

Quant Time: May 25 08:45:34 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052408.D
Acq On : 24 May 2016 1:32 pm
Operator :
Sample : 1605121-38A
Misc : SAMP
ALS Vial : 8 Sample Multiplier: 10

Quant Time: May 25 08:45:37 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.270 | 136 | 1604949 | 4000.00 | ug/kg | 98 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1281263 | 4000.00 | ug/kg | 102 |
| 11) Phenanthrene-d10 | 14.977 | 188 | 2225274 | 4000.00 | ug/kg | 76 |
| 16) Chrysene-d12 | 20.981 | 240 | 2202821 | 4000.00 | ug/kg | 81 |
| 20) Perylene-d12 | 26.248 | 264 | 2120479 | 4000.00 | ug/kg | 85 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.759 | 172 | 32326 | 90.46 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.26%# | | | |
| 17) 4-Terphenyl-d14 | 17.583 | 244 | 36290 | 77.83 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.95%# | | | |

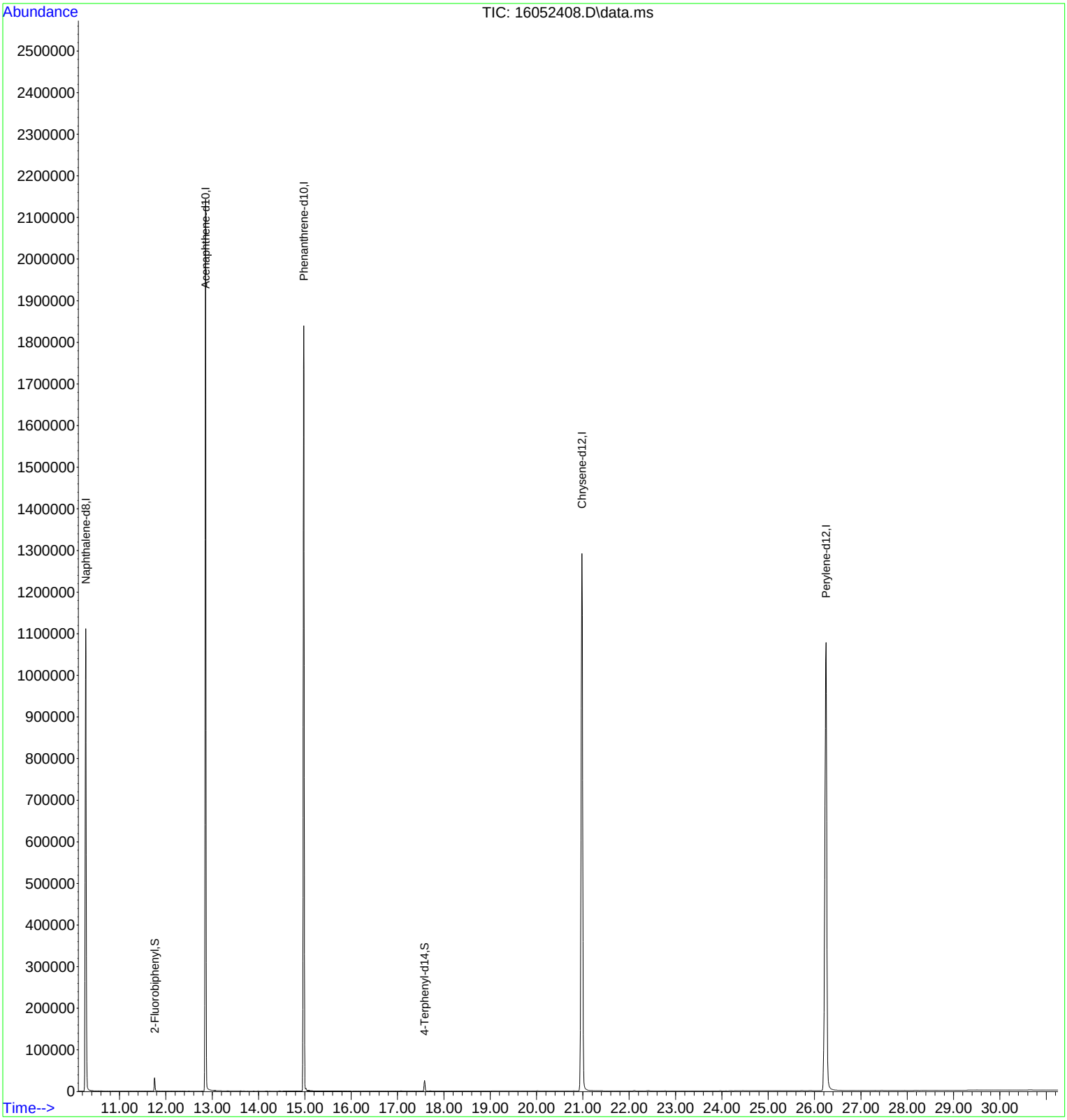
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052408.D
Acq On : 24 May 2016 1:32 pm
Operator :
Sample : 1605121-38A
Misc : SAMP
ALS Vial : 8 Sample Multiplier: 10

Quant Time: May 25 08:45:37 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052409.D
Acq On : 24 May 2016 2:10 pm
Operator :
Sample : 1605121-39A
Misc : SAMP
ALS Vial : 9 Sample Multiplier: 10

Quant Time: May 25 08:45:40 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.272 | 136 | 1630894 | 4000.00 | ug/kg | 100 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1290071 | 4000.00 | ug/kg | 103 |
| 11) Phenanthrene-d10 | 14.979 | 188 | 2265083 | 4000.00 | ug/kg | 77 |
| 16) Chrysene-d12 | 20.987 | 240 | 2260480 | 4000.00 | ug/kg | 83 |
| 20) Perylene-d12 | 26.247 | 264 | 2148271 | 4000.00 | ug/kg | 87 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.757 | 172 | 31175 | 85.85 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.15%# | | | |
| 17) 4-Terphenyl-d14 | 17.586 | 244 | 35229 | 73.63 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.84%# | | | |

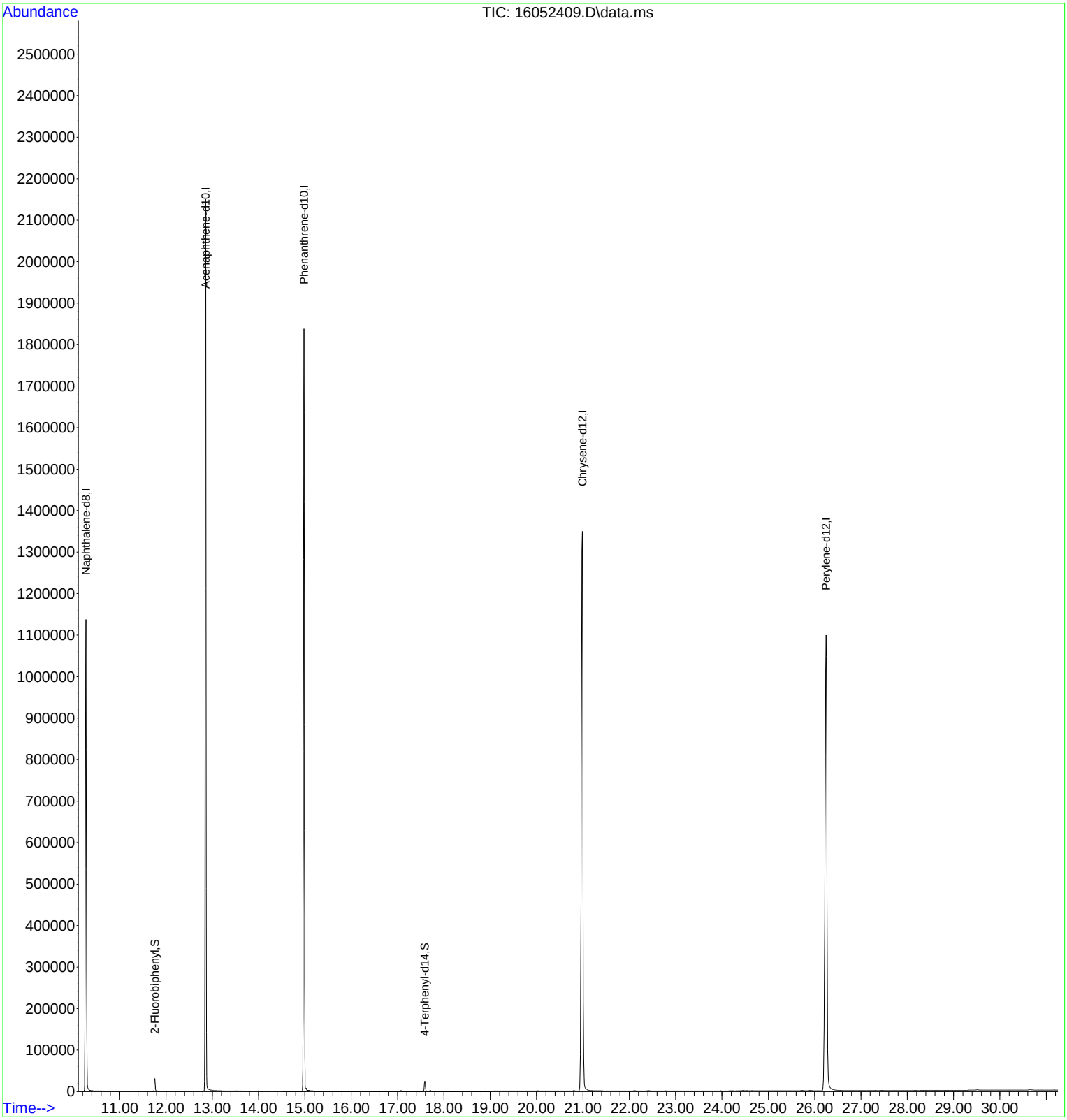
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052409.D
Acq On : 24 May 2016 2:10 pm
Operator :
Sample : 1605121-39A
Misc : SAMP
ALS Vial : 9 Sample Multiplier: 10

Quant Time: May 25 08:45:40 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052410.D
Acq On : 24 May 2016 2:46 pm
Operator :
Sample : 1605121-40A
Misc : SAMP
ALS Vial : 10 Sample Multiplier: 10

Quant Time: May 25 08:45:43 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.271 | 136 | 1632235 | 4000.00 | ug/kg | 100 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1299169 | 4000.00 | ug/kg | 104 |
| 11) Phenanthrene-d10 | 14.978 | 188 | 2295388 | 4000.00 | ug/kg | 78 |
| 16) Chrysene-d12 | 20.980 | 240 | 2211165 | 4000.00 | ug/kg | 82 |
| 20) Perylene-d12 | 26.247 | 264 | 2082868 | 4000.00 | ug/kg | 84 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.760 | 172 | 32028 | 88.13 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.20%# | | | |
| 17) 4-Terphenyl-d14 | 17.587 | 244 | 36736 | 78.49 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.96%# | | | |

| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 12) Phenanthrene | 15.014 | 178 | 3570 | 5.65 | ug/kg | 97 |
| 14) Fluoranthene | 17.071 | 202 | 20833 | 30.69 | ug/kg | 98 |
| 15) Pyrene | 17.701 | 202 | 24315 | 37.00 | ug/kg | 96 |
| 18) Benzo[a]anthracene | 20.804 | 228 | 17859 | 29.33 | ug/kg | 100 |
| 19) Chrysene | 21.068 | 228 | 26006 | 46.45 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.459 | 252 | 30275 | 52.89 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.540 | 252 | 11290 | 21.51 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.650 | 252 | 11548 | 20.87 | ug/kg | 93 |
| 24) Benzo(e)pyrene | 25.727 | 252 | 23974 | 43.20 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.910 | 252 | 31734 | 59.56 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.506 | 276 | 23270 | 33.72 | ug/kg | 94 |
| 28) Benzo[g,h,i]perylene | 30.649 | 276 | 25922 | 44.28 | ug/kg | 98 |

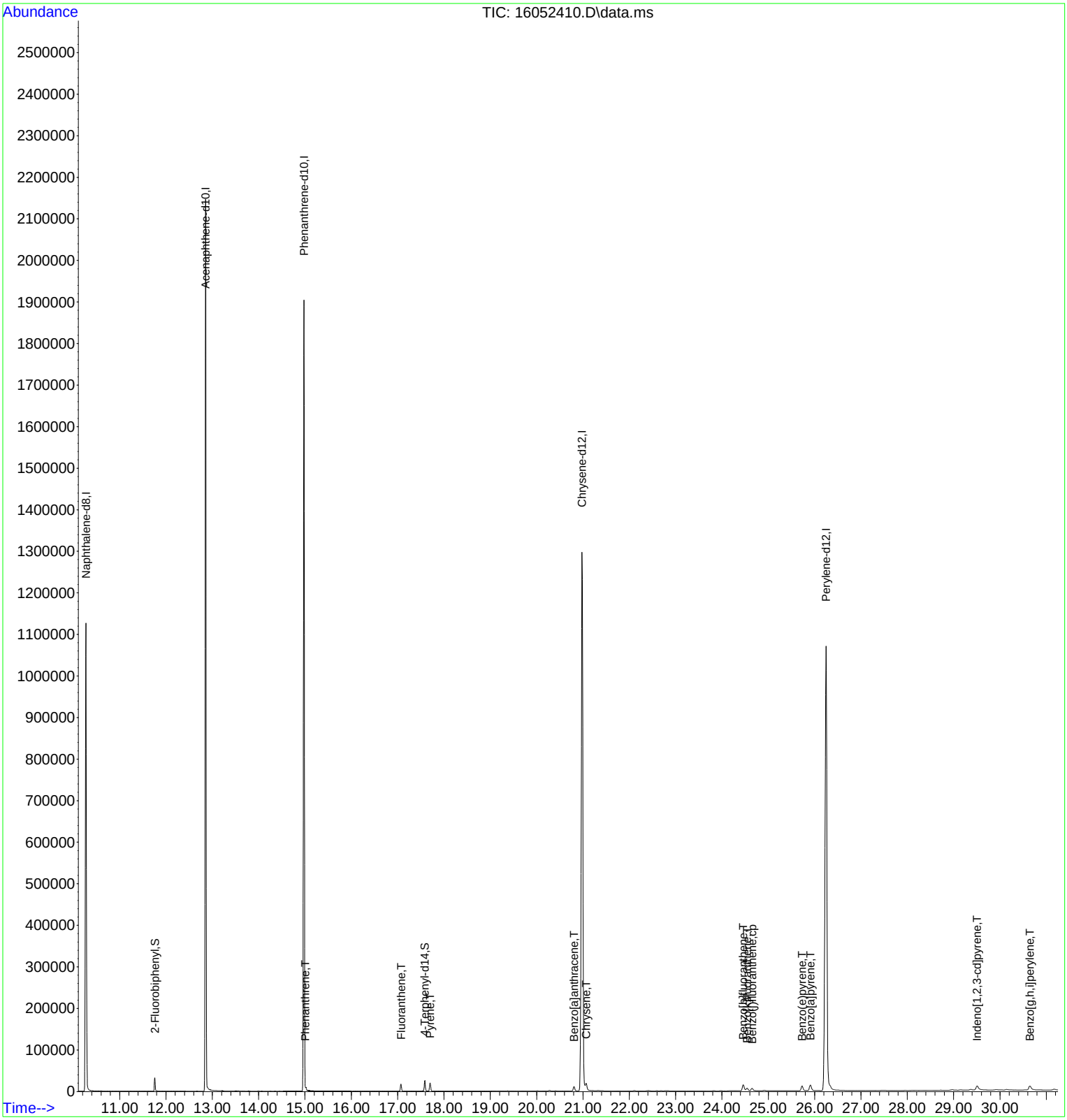
CONFIRMED
By Sherri Herschmann at 12:33:34 PM, 5/31/2016

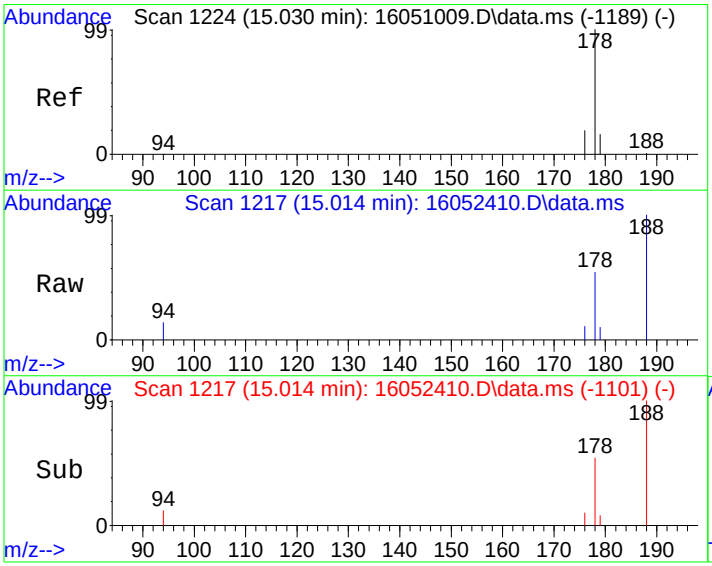
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052410.D
Acq On : 24 May 2016 2:46 pm
Operator :
Sample : 1605121-40A
Misc : SAMP
ALS Vial : 10 Sample Multiplier: 10

Quant Time: May 25 08:45:43 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

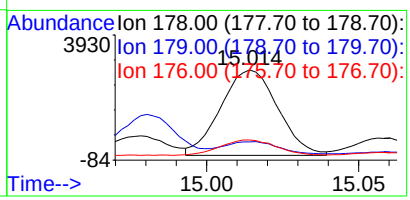


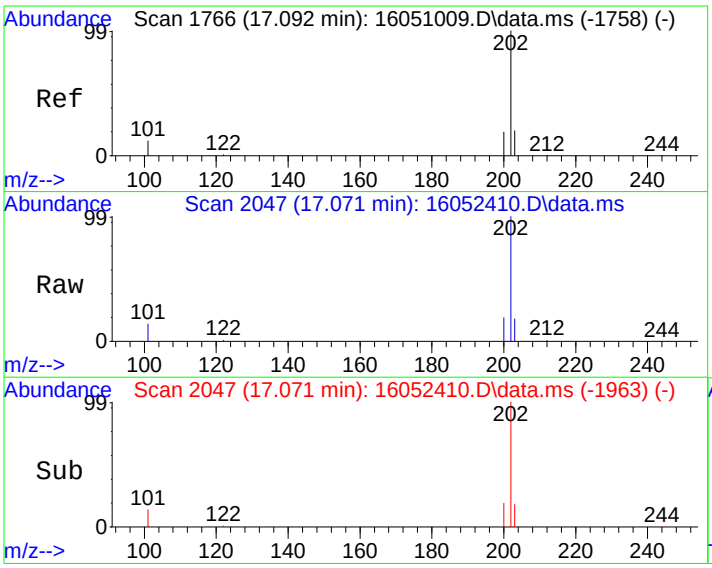



#12
Phenanthrene
Concen: 5.65 ug/kg
RT: 15.014 min Scan# 1217
Delta R.T. -0.005 min
Lab File: 16052410.D
Acq: 24 May 2016 2:46 pm

Tgt Ion:178 Resp: 3570

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 14.5 | 0.0 | 36.4 |
| 176 | 18.4 | 0.0 | 39.0 |

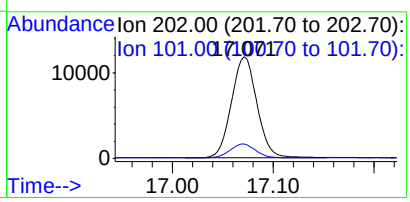


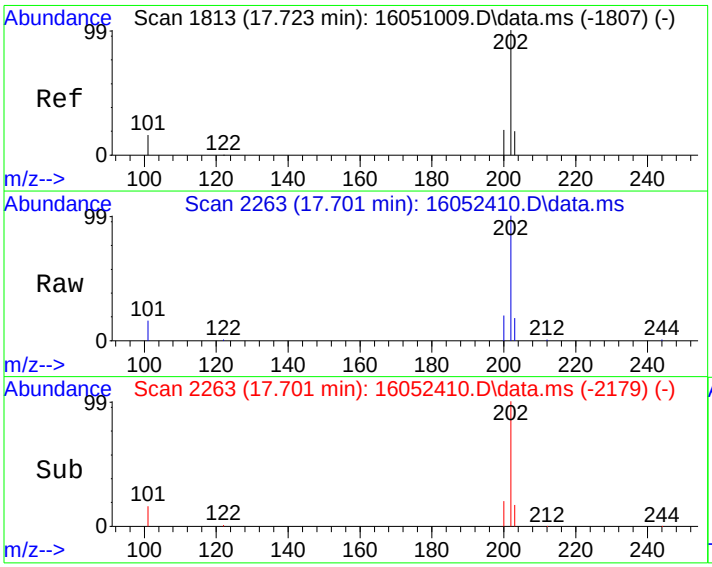




#14
Fluoranthene
Concen: 30.69 ug/kg
RT: 17.071 min Scan# 2047
Delta R.T. -0.005 min
Lab File: 16052410.D
Acq: 24 May 2016 2:46 pm

Tgt Ion:202 Resp: 20833

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 13.6 | 0.0 | 34.4 |

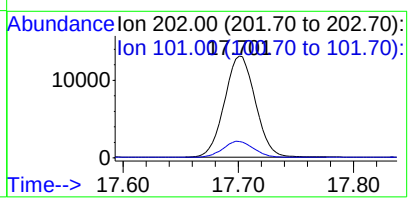


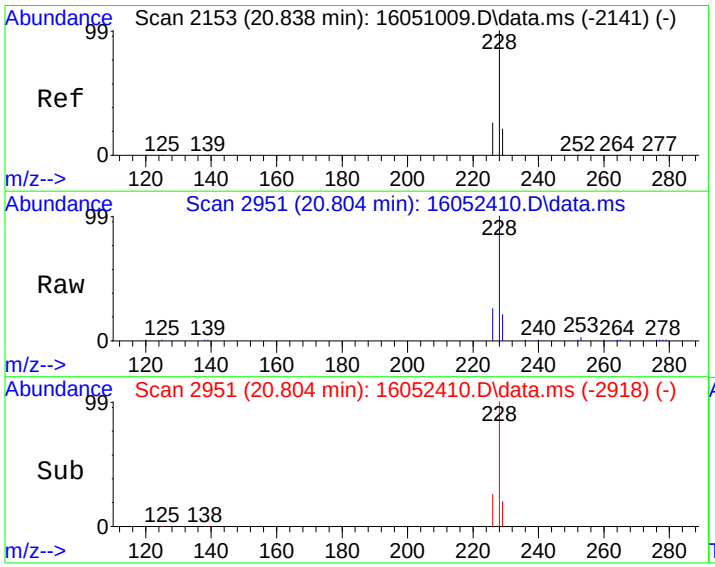




#15
Pyrene
Concen: 37.00 ug/kg
RT: 17.701 min Scan# 2263
Delta R.T. -0.005 min
Lab File: 16052410.D
Acq: 24 May 2016 2:46 pm

Tgt Ion:202 Resp: 24315

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 15.8 | 0.0 | 37.3 |

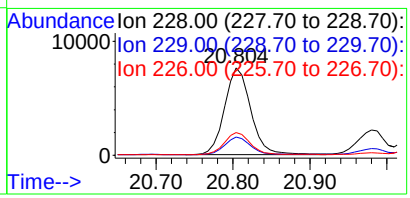


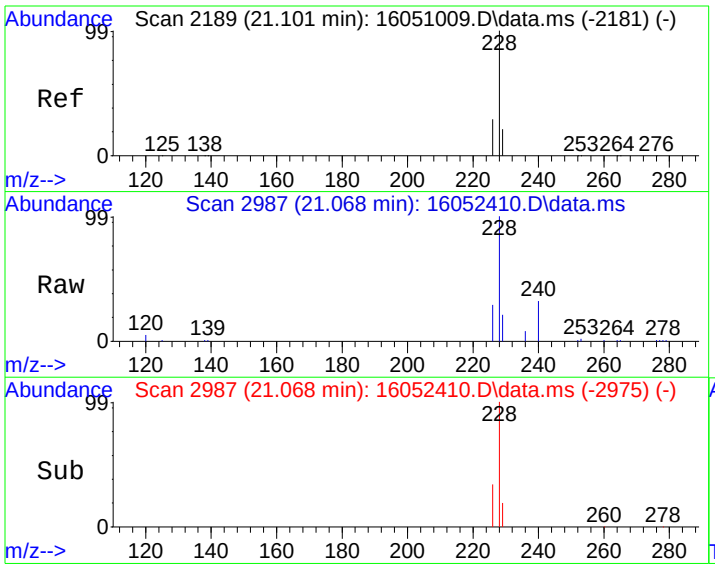



#18
Benzo[a]anthracene
Concen: 29.33 ug/kg
RT: 20.804 min Scan# 2951
Delta R.T. -0.008 min
Lab File: 16052410.D
Acq: 24 May 2016 2:46 pm

Tgt Ion:228 Resp: 17859

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 20.1 | 0.3 | 40.3 |
| 226 | 25.6 | 5.7 | 45.7 |

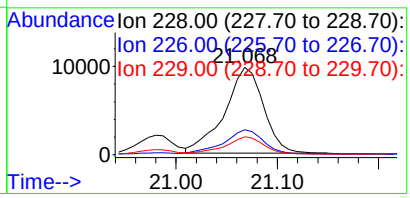


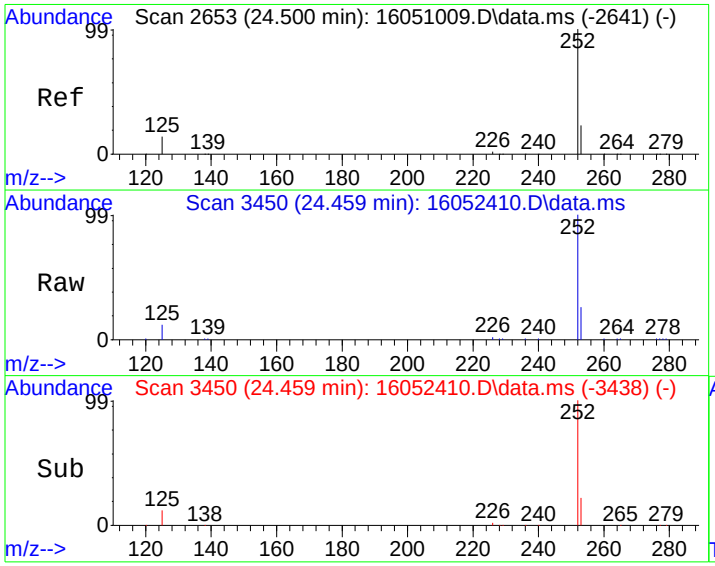




#19
Chrysene
Concen: 46.45 ug/kg
RT: 21.068 min Scan# 2987
Delta R.T. -0.015 min
Lab File: 16052410.D
Acq: 24 May 2016 2:46 pm

Tgt Ion:228 Resp: 26006

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.2 | 8.2 | 48.2 |
| 229 | 20.1 | 0.3 | 40.3 |

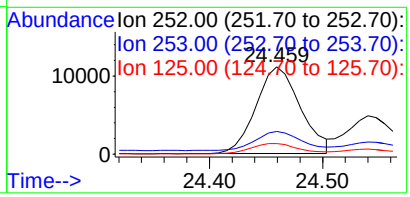


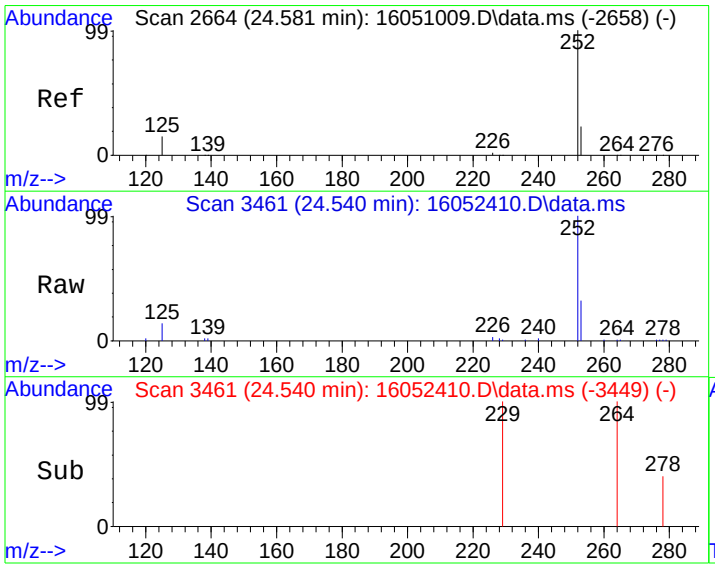




#21
Benzo[b]fluoranthene
Concen: 52.89 ug/kg
RT: 24.459 min Scan# 3450
Delta R.T. -0.016 min
Lab File: 16052410.D
Acq: 24 May 2016 2:46 pm

Tgt Ion:252 Resp: 30275

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.1 | 2.3 | 42.3 |
| 125 | 11.8 | 0.0 | 32.2 |

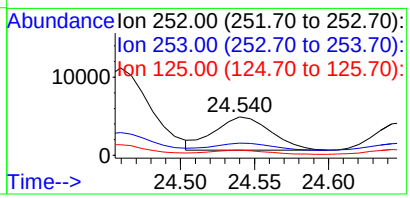


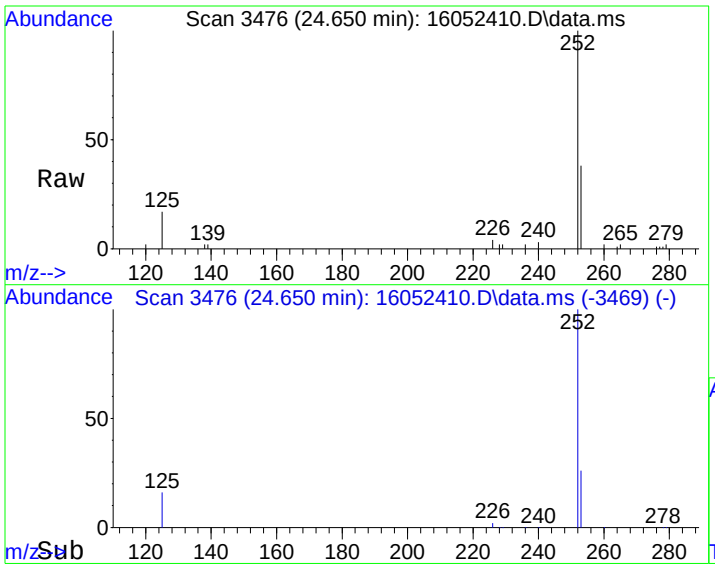



#22
Benzo[k]fluoranthene
Concen: 21.51 ug/kg
RT: 24.540 min Scan# 3461
Delta R.T. -0.015 min
Lab File: 16052410.D
Acq: 24 May 2016 2:46 pm

Tgt Ion:252 Resp: 11290

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.2 | 2.5 | 42.5 |
| 125 | 12.8 | 0.0 | 32.6 |

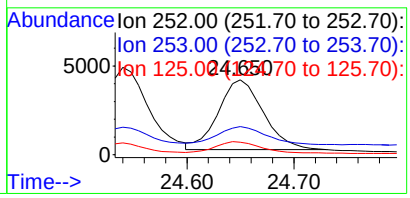


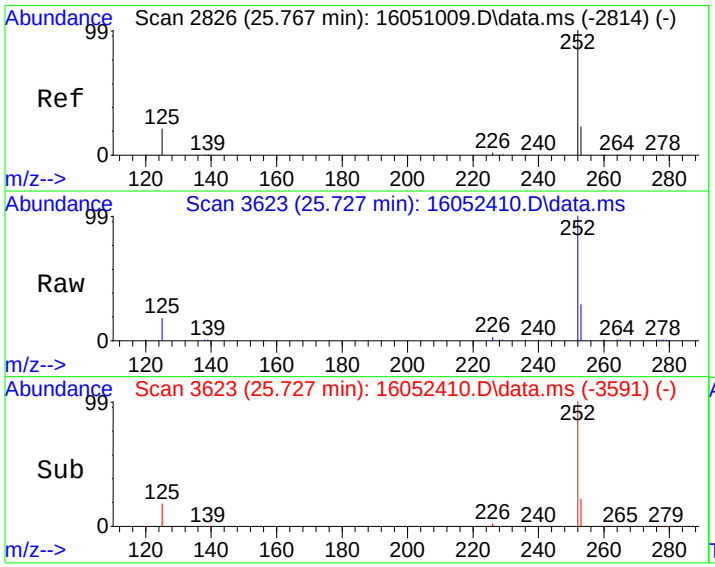




#23
Benzo(j)fluoranthene
Concen: 20.87 ug/kg
RT: 24.650 min Scan# 3476
Delta R.T. -0.015 min
Lab File: 16052410.D
Acq: 24 May 2016 2:46 pm

Tgt Ion:252 Resp: 11548

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 26.8 | 2.2 | 42.2 |
| 125 | 15.7 | 0.0 | 37.3 |

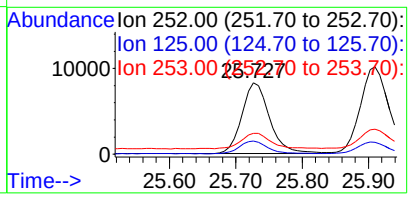


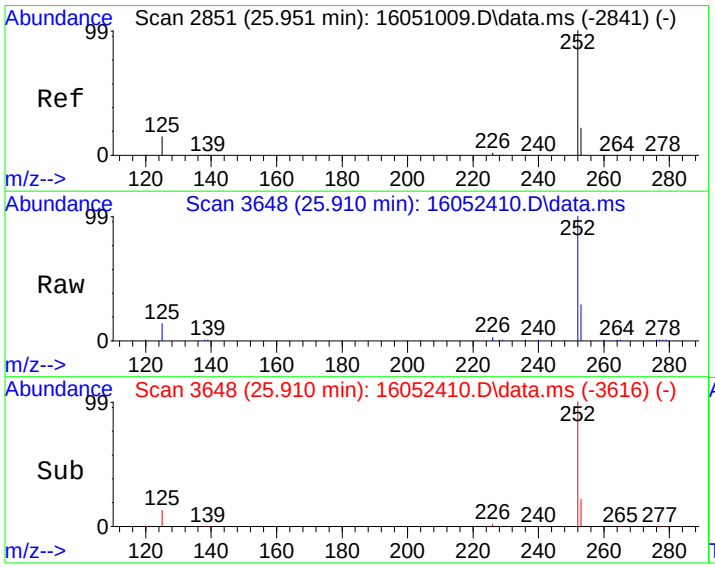




#24
Benzo(e)pyrene
Concen: 43.20 ug/kg
RT: 25.727 min Scan# 3623
Delta R.T. -0.015 min
Lab File: 16052410.D
Acq: 24 May 2016 2:46 pm

Tgt Ion:252 Resp: 23974

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 125 | 18.0 | 0.0 | 38.7 |
| 253 | 22.4 | 2.3 | 42.3 |

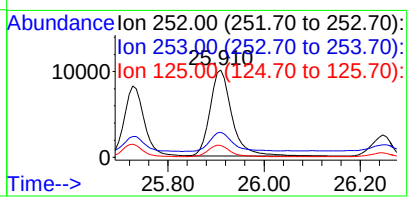


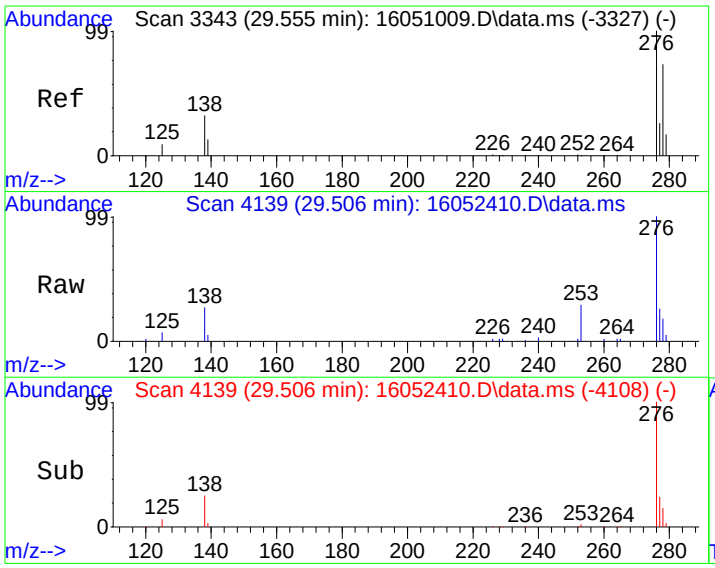



#25
Benzo[a]pyrene
Concen: 59.56 ug/kg
RT: 25.910 min Scan# 3648
Delta R.T. -0.015 min
Lab File: 16052410.D
Acq: 24 May 2016 2:46 pm

Tgt Ion:252 Resp: 31734

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.1 | 2.3 | 42.3 |
| 125 | 13.1 | 0.0 | 33.5 |

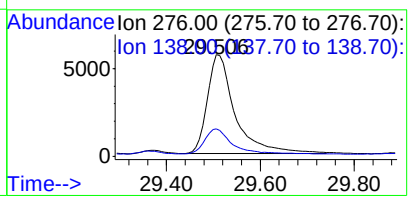


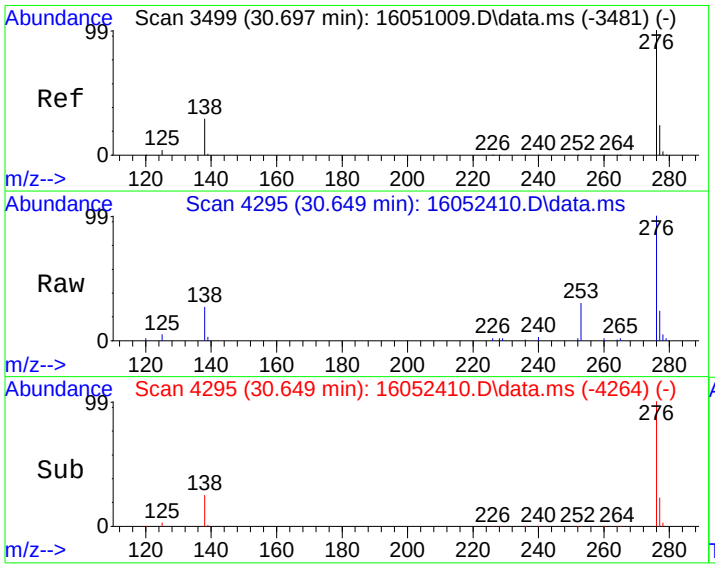




#26
Indeno[1,2,3-cd]pyrene
Concen: 33.72 ug/kg
RT: 29.506 min Scan# 4139
Delta R.T. -0.023 min
Lab File: 16052410.D
Acq: 24 May 2016 2:46 pm

Tgt Ion:276 Resp: 23270

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 25.3 | 8.3 | 48.3 |

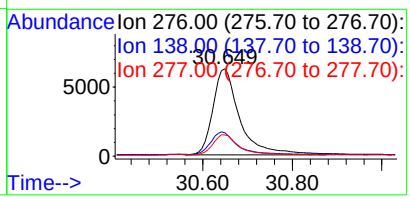



#28
Benzo[g,h,i]perylene
Concen: 44.28 ug/kg
RT: 30.649 min Scan# 4295
Delta R.T. -0.023 min
Lab File: 16052410.D
Acq: 24 May 2016 2:46 pm

Tgt Ion:276 Resp: 25922

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 25.2 | 5.8 | 45.8 |
| 277 | 23.0 | 4.4 | 44.4 |



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052411.D
Acq On : 24 May 2016 3:24 pm
Operator :
Sample : 1605121-41A
Misc : SAMP
ALS Vial : 11 Sample Multiplier: 10

Quant Time: May 25 08:45:51 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.270 | 136 | 1498198 | 4000.00 | ug/kg | 92 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1247394 | 4000.00 | ug/kg | 99 |
| 11) Phenanthrene-d10 | 14.979 | 188 | 2231127 | 4000.00 | ug/kg | 76 |
| 16) Chrysene-d12 | 20.981 | 240 | 2188037 | 4000.00 | ug/kg | 81 |
| 20) Perylene-d12 | 26.248 | 264 | 2094588 | 4000.00 | ug/kg | 84 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.759 | 172 | 28062 | 84.12 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 2.10%# | | |
| 17) 4-Terphenyl-d14 | 17.586 | 244 | 32699 | 70.61 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 1.77%# | | |

| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.307 | 128 | 5389 | 16.06 | ug/kg | 99 |
| 8) Acenaphthene | 12.906 | 153 | 4437 | 12.90 | ug/kg | 98 |
| 12) Phenanthrene | 15.015 | 178 | 61393 | 100.00 | ug/kg | 97 |
| 13) Anthracene | 15.059 | 178 | 11377 | 18.31 | ug/kg | 98 |
| 14) Fluoranthene | 17.068 | 202 | 172164 | 278.18 | ug/kg | 99 |
| 15) Pyrene | 17.700 | 202 | 161471 | 267.34 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.805 | 228 | 94415 | 165.04 | ug/kg | 99 |
| 19) Chrysene | 21.069 | 228 | 116674 | 221.13 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.461 | 252 | 109292 | 194.82 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.541 | 252 | 48699 | 96.04 | ug/kg | 97 |
| 23) Benzo(j)fluoranthene | 24.651 | 252 | 49331 | 99.12 | ug/kg | 91 |
| 24) Benzo(e)pyrene | 25.728 | 252 | 84169 | 157.38 | ug/kg | 97 |
| 25) Benzo[a]pyrene | 25.904 | 252 | 112790 | 216.38 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.508 | 276 | 83487 | 127.90 | ug/kg | 94 |
| 27) Dibenz[a,h]anthracene | 29.493 | 278 | 16892 | 27.23 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.650 | 276 | 86297 | 153.90 | ug/kg | 99 |

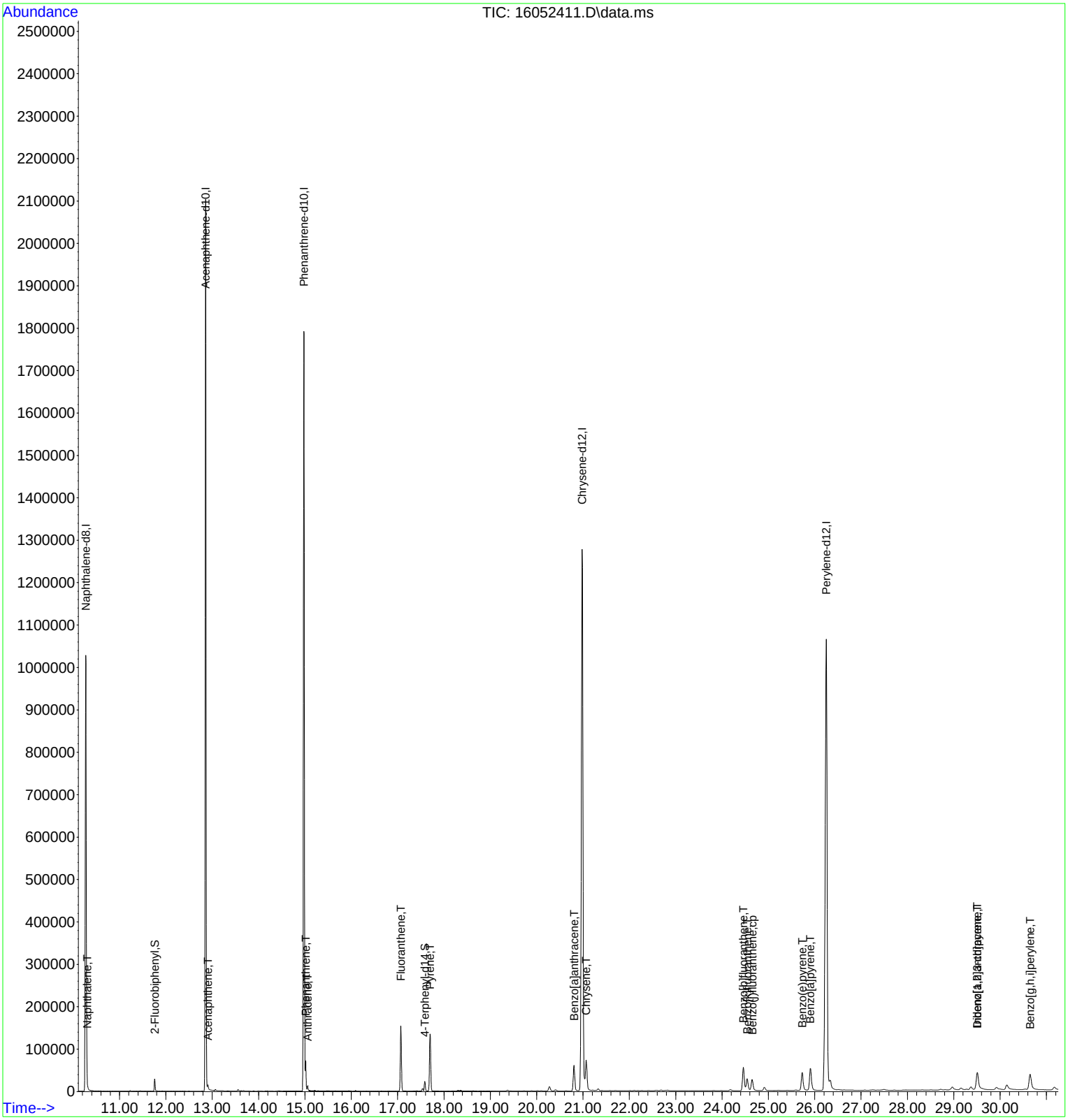
CONFIRMED
By Sherri Herschmann at 12:33:52 PM, 5/31/2016

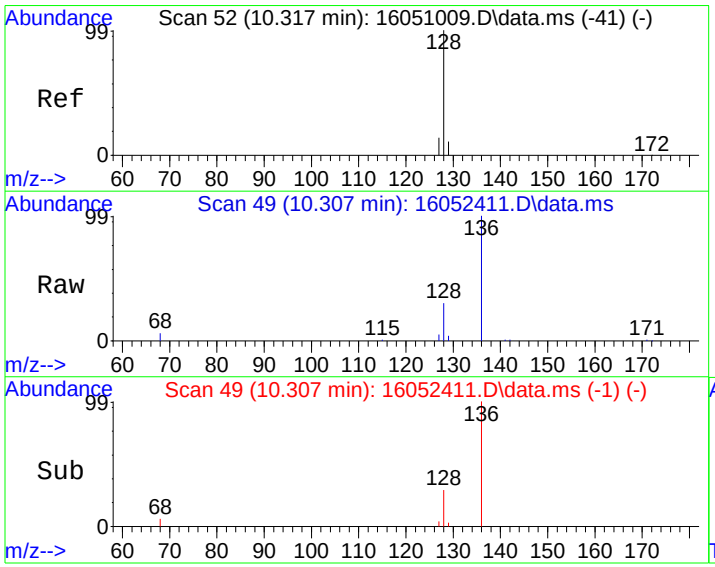
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052411.D
Acq On : 24 May 2016 3:24 pm
Operator :
Sample : 1605121-41A
Misc : SAMP
ALS Vial : 11 Sample Multiplier: 10

Quant Time: May 25 08:45:51 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

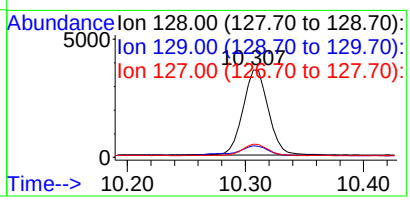


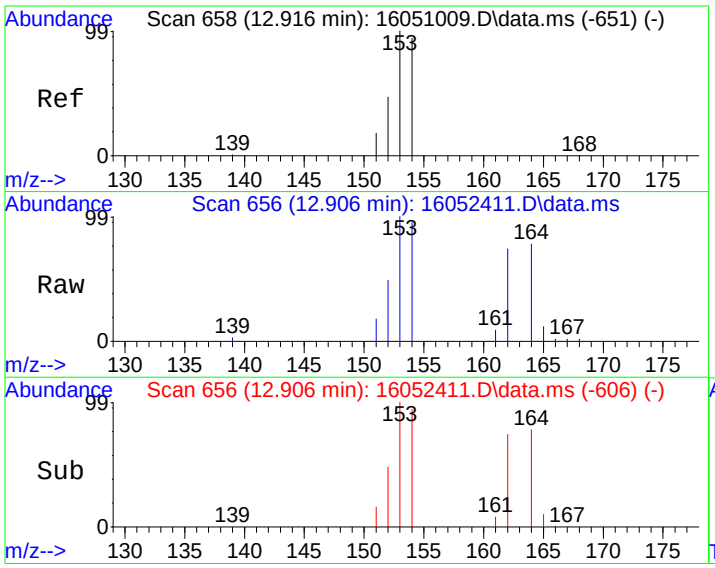



#2
Naphthalene
Concen: 16.06 ug/kg
RT: 10.307 min Scan# 49
Delta R.T. -0.003 min
Lab File: 16052411.D
Acq: 24 May 2016 3:24 pm

Tgt Ion:128 Resp: 5389

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 11.4 | 0.0 | 31.3 |
| 127 | 13.2 | 0.0 | 33.6 |

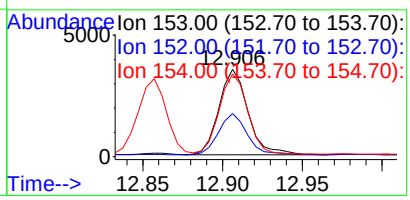


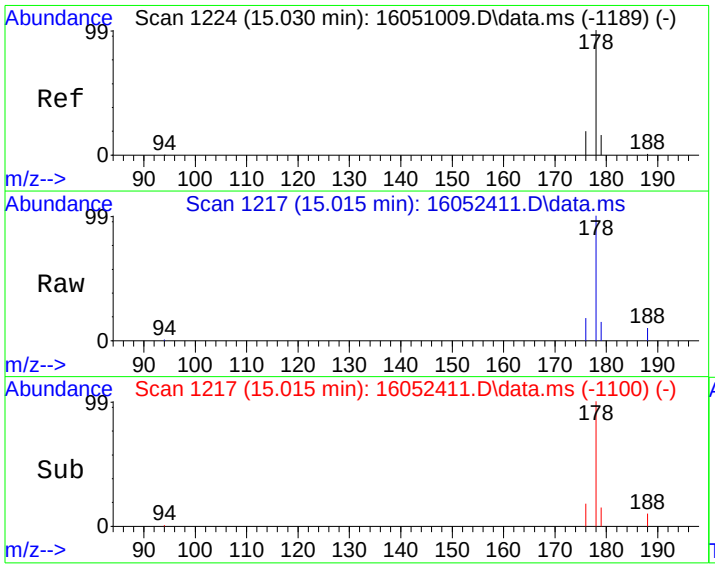




#8
Acenaphthene
Concen: 12.90 ug/kg
RT: 12.906 min Scan# 656
Delta R.T. -0.005 min
Lab File: 16052411.D
Acq: 24 May 2016 3:24 pm

Tgt Ion:153 Resp: 4437

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 153 | 100 | | |
| 152 | 48.2 | 26.5 | 66.5 |
| 154 | 94.3 | 76.3 | 116.3 |

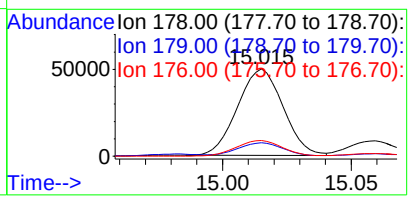


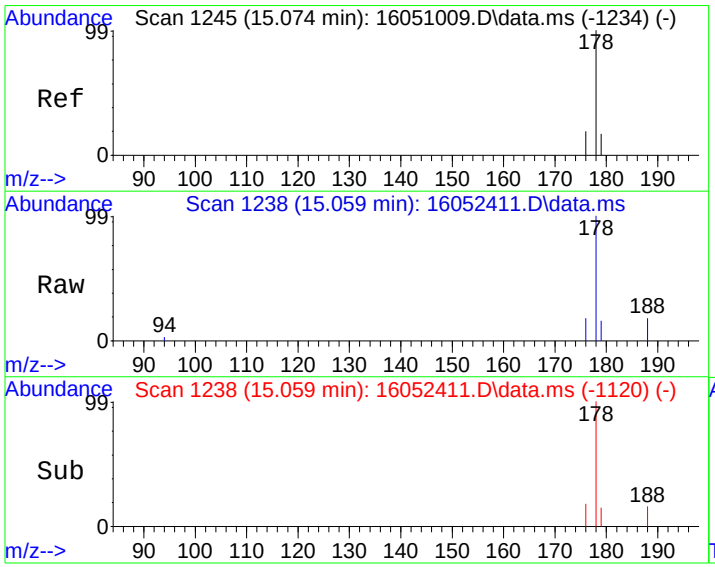




#12
Phenanthrene
Concen: 100.00 ug/kg
RT: 15.015 min Scan# 1217
Delta R.T. -0.004 min
Lab File: 16052411.D
Acq: 24 May 2016 3:24 pm

Tgt Ion:178 Resp: 61393

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 14.8 | 0.0 | 36.4 |
| 176 | 18.1 | 0.0 | 39.0 |

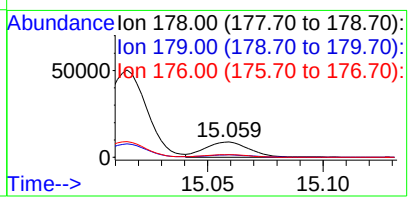


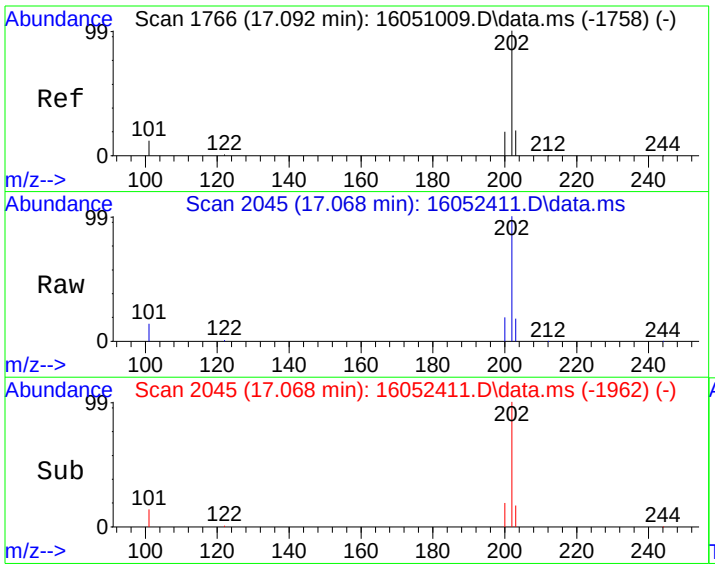



#13
Anthracene
Concen: 18.31 ug/kg
RT: 15.059 min Scan# 1238
Delta R.T. -0.002 min
Lab File: 16052411.D
Acq: 24 May 2016 3:24 pm

Tgt Ion:178 Resp: 11377

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.4 | 0.0 | 36.3 |
| 176 | 17.7 | 0.0 | 38.5 |

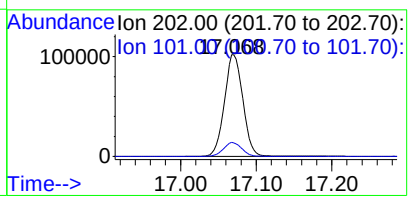


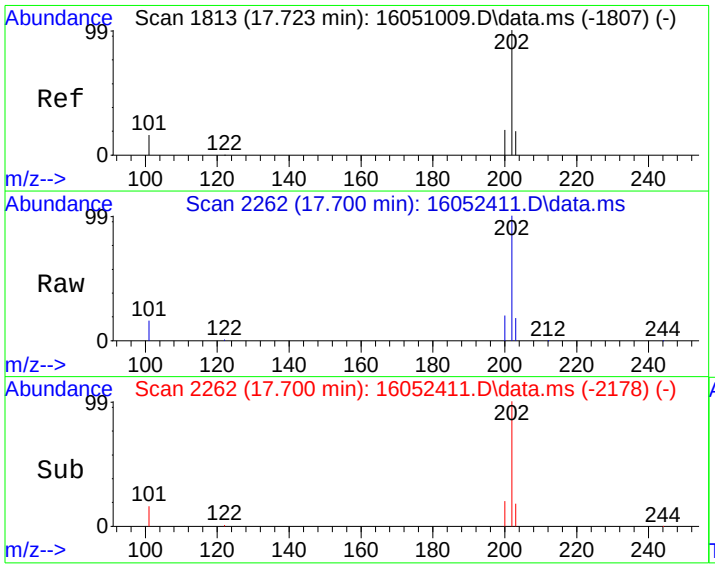




#14
Fluoranthene
Concen: 278.18 ug/kg
RT: 17.068 min Scan# 2045
Delta R.T. -0.008 min
Lab File: 16052411.D
Acq: 24 May 2016 3:24 pm

Tgt Ion:202 Resp: 172164

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 13.8 | 0.0 | 34.4 |

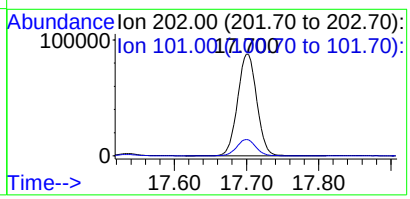


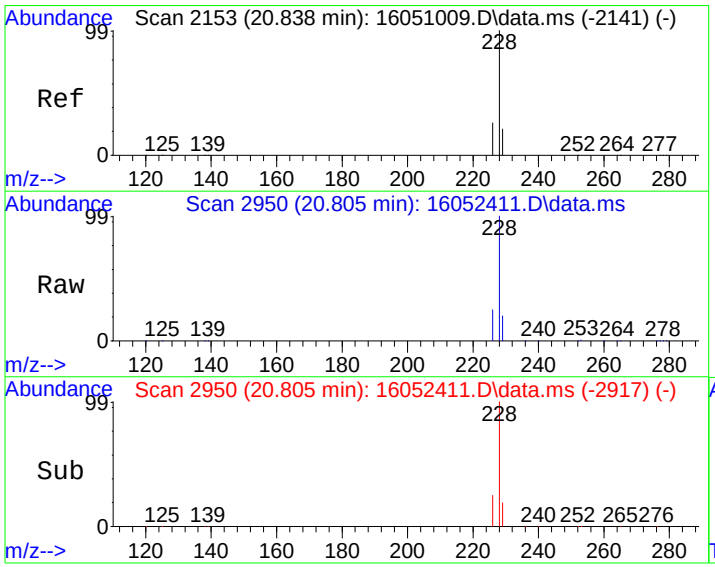




#15
Pyrene
Concen: 267.34 ug/kg
RT: 17.700 min Scan# 2262
Delta R.T. -0.006 min
Lab File: 16052411.D
Acq: 24 May 2016 3:24 pm

Tgt Ion:202 Resp: 161471

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 16.0 | 0.0 | 37.3 |

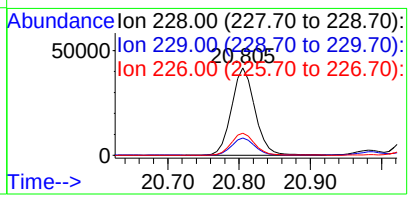


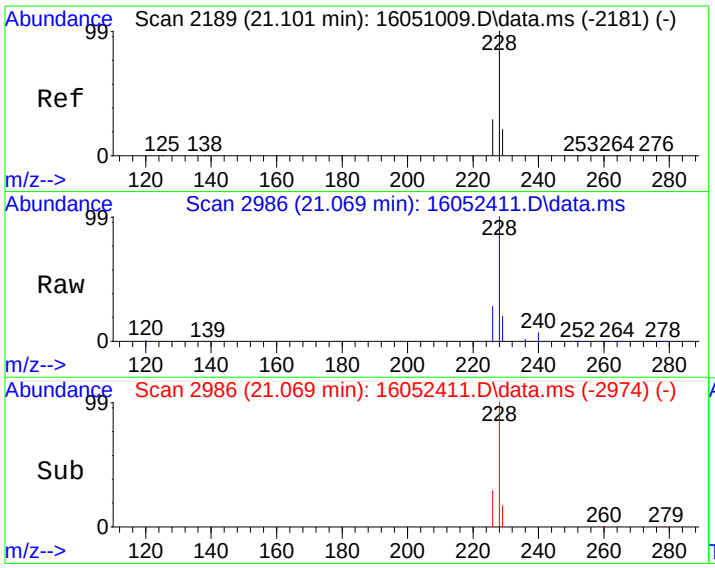



#18
Benzo[a]anthracene
Concen: 165.04 ug/kg
RT: 20.805 min Scan# 2950
Delta R.T. -0.007 min
Lab File: 16052411.D
Acq: 24 May 2016 3:24 pm

Tgt Ion:228 Resp: 94415

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.5 | 0.3 | 40.3 |
| 226 | 25.3 | 5.7 | 45.7 |

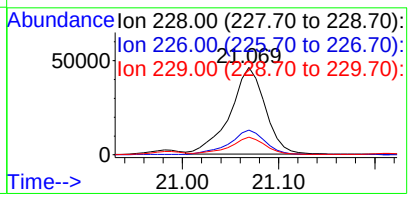


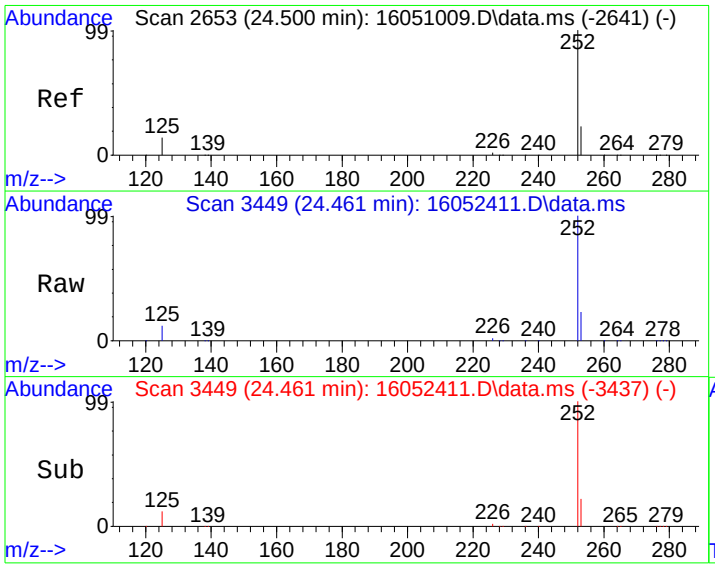




#19
Chrysene
Concen: 221.13 ug/kg
RT: 21.069 min Scan# 2986
Delta R.T. -0.014 min
Lab File: 16052411.D
Acq: 24 May 2016 3:24 pm

Tgt Ion:228 Resp: 116674

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.3 | 8.2 | 48.2 |
| 229 | 19.9 | 0.3 | 40.3 |

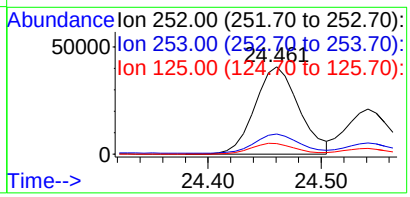


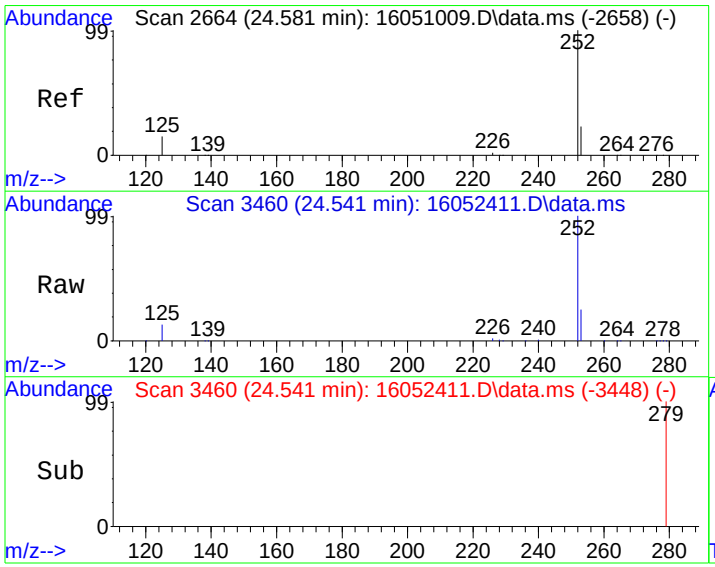




#21
Benzo[b]fluoranthene
Concen: 194.82 ug/kg
RT: 24.461 min Scan# 3449
Delta R.T. -0.014 min
Lab File: 16052411.D
Acq: 24 May 2016 3:24 pm

Tgt Ion:252 Resp: 109292

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.8 | 2.3 | 42.3 |
| 125 | 11.9 | 0.0 | 32.2 |

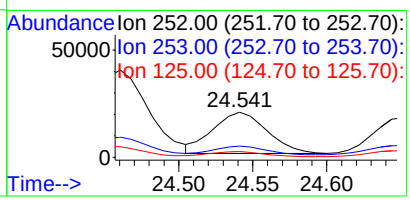


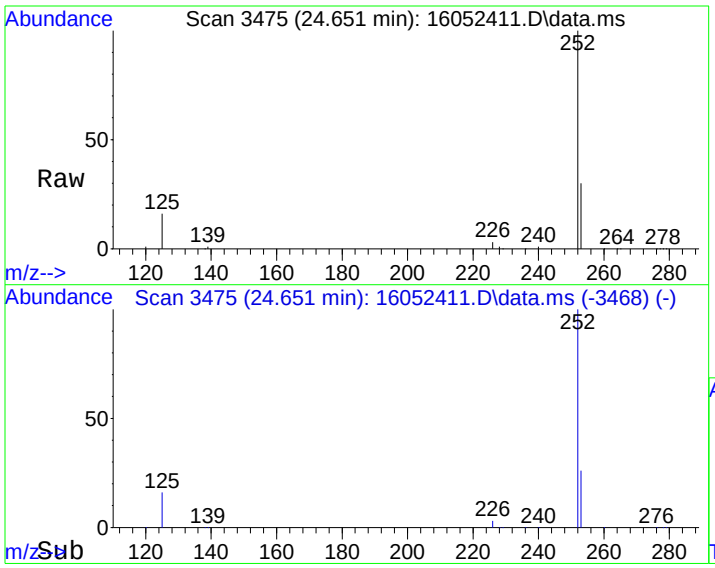



#22
Benzo[k]fluoranthene
Concen: 96.04 ug/kg
RT: 24.541 min Scan# 3460
Delta R.T. -0.014 min
Lab File: 16052411.D
Acq: 24 May 2016 3:24 pm

Tgt Ion:252 Resp: 48699

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 20.8 | 2.5 | 42.5 |
| 125 | 12.2 | 0.0 | 32.6 |

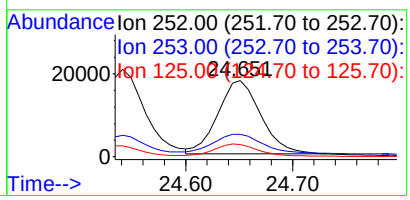


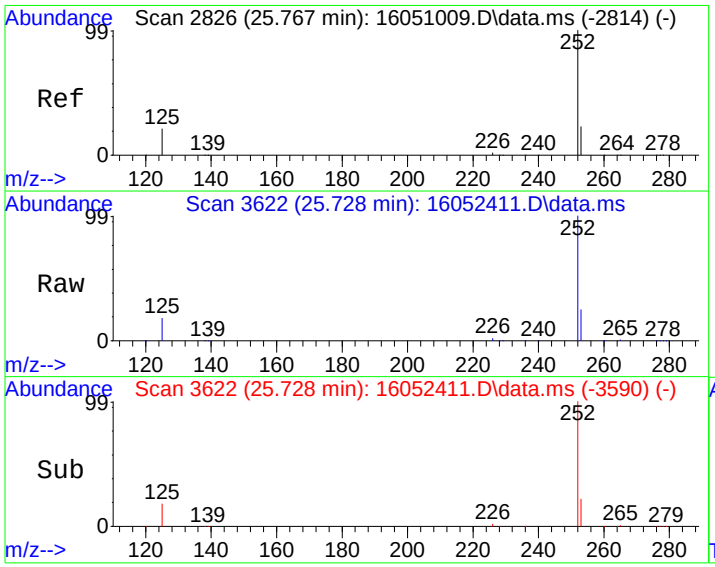




#23
Benzo(j)fluoranthene
Concen: 99.12 ug/kg
RT: 24.651 min Scan# 3475
Delta R.T. -0.014 min
Lab File: 16052411.D
Acq: 24 May 2016 3:24 pm

Tgt Ion:252 Resp: 49331

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 29.2 | 2.2 | 42.2 |
| 125 | 16.4 | 0.0 | 37.3 |

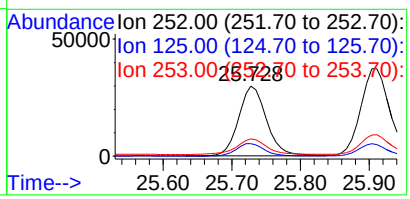


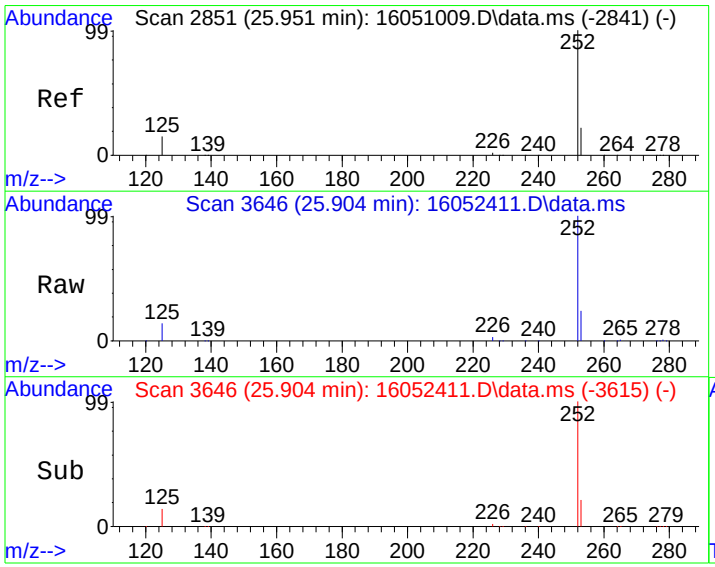




#24
Benzo(e)pyrene
Concen: 157.38 ug/kg
RT: 25.728 min Scan# 3622
Delta R.T. -0.014 min
Lab File: 16052411.D
Acq: 24 May 2016 3:24 pm

Tgt Ion:252 Resp: 84169

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 125 | 18.0 | 0.0 | 38.7 |
| 253 | 24.0 | 2.3 | 42.3 |

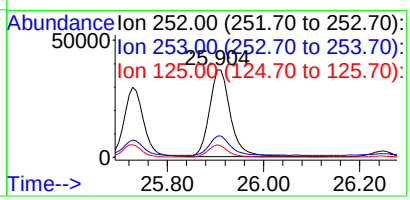


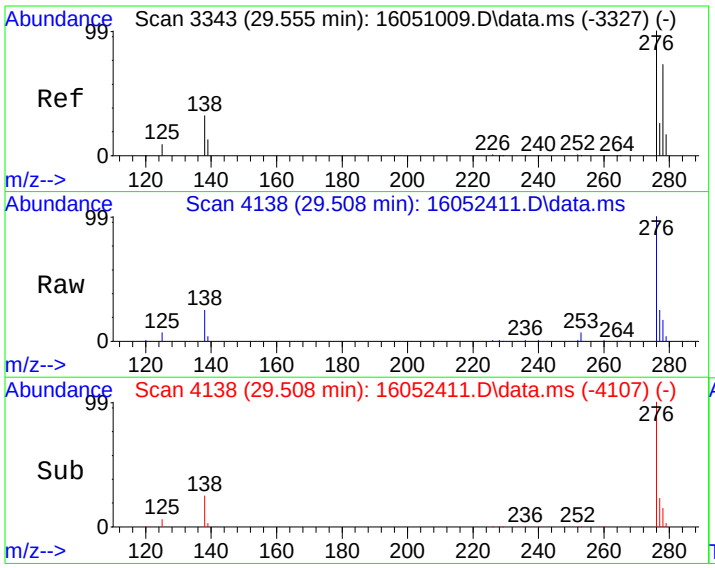



#25
Benzo[a]pyrene
Concen: 216.38 ug/kg
RT: 25.904 min Scan# 3646
Delta R.T. -0.021 min
Lab File: 16052411.D
Acq: 24 May 2016 3:24 pm

Tgt Ion:252 Resp: 112790

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.4 | 2.3 | 42.3 |
| 125 | 14.2 | 0.0 | 33.5 |

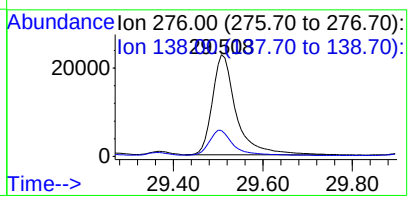


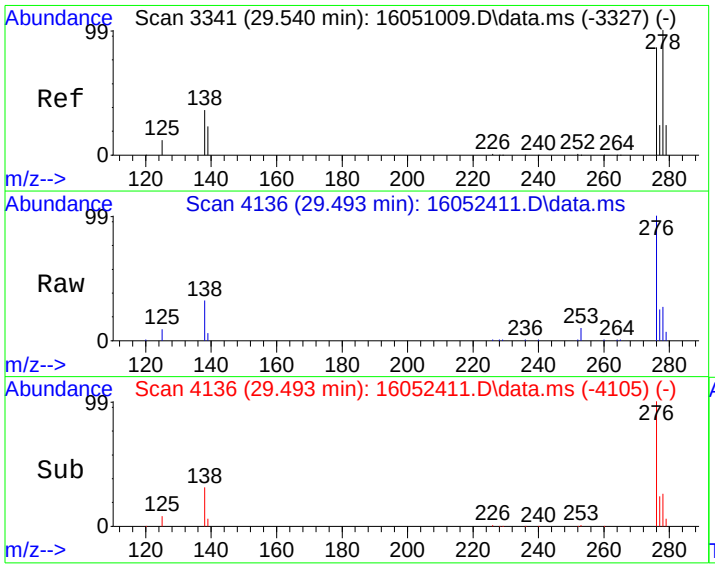




#26
Indeno[1,2,3-cd]pyrene
Concen: 127.90 ug/kg
RT: 29.508 min Scan# 4138
Delta R.T. -0.021 min
Lab File: 16052411.D
Acq: 24 May 2016 3:24 pm

Tgt Ion:276 Resp: 83487

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 24.9 | 8.3 | 48.3 |

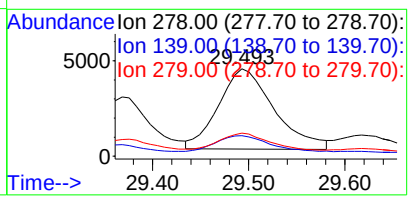


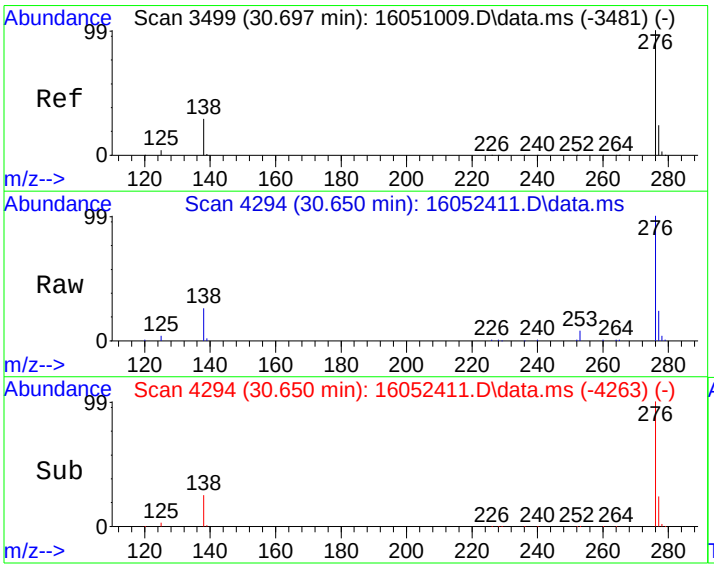




#27
Dibenz[a,h]anthracene
Concen: 27.23 ug/kg
RT: 29.493 min Scan# 4136
Delta R.T. -0.021 min
Lab File: 16052411.D
Acq: 24 May 2016 3:24 pm

Tgt Ion:278 Resp: 16892

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 21.6 | 0.0 | 40.0 |
| 279 | 23.5 | 4.2 | 44.2 |

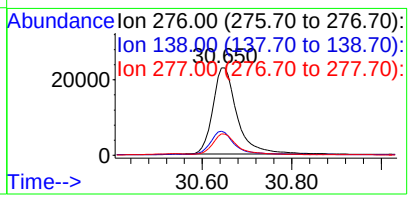





#28
Benzo[g,h,i]perylene
Concen: 153.90 ug/kg
RT: 30.650 min Scan# 4294
Delta R.T. -0.022 min
Lab File: 16052411.D
Acq: 24 May 2016 3:24 pm

Tgt Ion:276 Resp: 86297

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 25.3 | 5.8 | 45.8 |
| 277 | 23.8 | 4.4 | 44.4 |



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052412.D
Acq On : 24 May 2016 4:01 pm
Operator :
Sample : 1605121-42A
Misc : SAMP
ALS Vial : 12 Sample Multiplier: 10

Quant Time: May 25 08:46:00 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.271 | 136 | 1620175 | 4000.00 | ug/kg | 99 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1288992 | 4000.00 | ug/kg | 103 |
| 11) Phenanthrene-d10 | 14.978 | 188 | 2225784 | 4000.00 | ug/kg | 76 |
| 16) Chrysene-d12 | 20.988 | 240 | 2275331 | 4000.00 | ug/kg | 84 |
| 20) Perylene-d12 | 26.254 | 264 | 2185258 | 4000.00 | ug/kg | 88 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.760 | 172 | 31832 | 88.24 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 2.21%# | | |
| 17) 4-Terphenyl-d14 | 17.590 | 244 | 36590 | 75.98 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 1.90%# | | |

| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.308 | 128 | 2111 | 5.82 | ug/kg | 99 |
| 12) Phenanthrene | 15.014 | 178 | 20373 | 33.27 | ug/kg | 98 |
| 13) Anthracene | 15.058 | 178 | 3993 | 6.44 | ug/kg | 98 |
| 14) Fluoranthene | 17.071 | 202 | 64375 | 102.49 | ug/kg | 98 |
| 15) Pyrene | 17.703 | 202 | 55522 | 90.29 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.805 | 228 | 30787 | 50.38 | ug/kg | 99 |
| 19) Chrysene | 21.068 | 228 | 36564 | 64.50 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.460 | 252 | 33118 | 55.22 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.540 | 252 | 14201 | 26.02 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.650 | 252 | 14574 | 25.75 | ug/kg | 92 |
| 24) Benzo(e)pyrene | 25.734 | 252 | 25560 | 43.94 | ug/kg | 96 |
| 25) Benzo[a]pyrene | 25.910 | 252 | 34784 | 62.32 | ug/kg | 100 |
| 26) Indeno[1,2,3-cd]pyrene | 29.507 | 276 | 24052 | 33.18 | ug/kg | 93 |
| 27) Dibenz[a,h]anthracene | 29.499 | 278 | 5598 | 5.57 | ug/kg | 97 |
| 28) Benzo[g,h,i]perylene | 30.650 | 276 | 26027 | 42.24 | ug/kg | 99 |

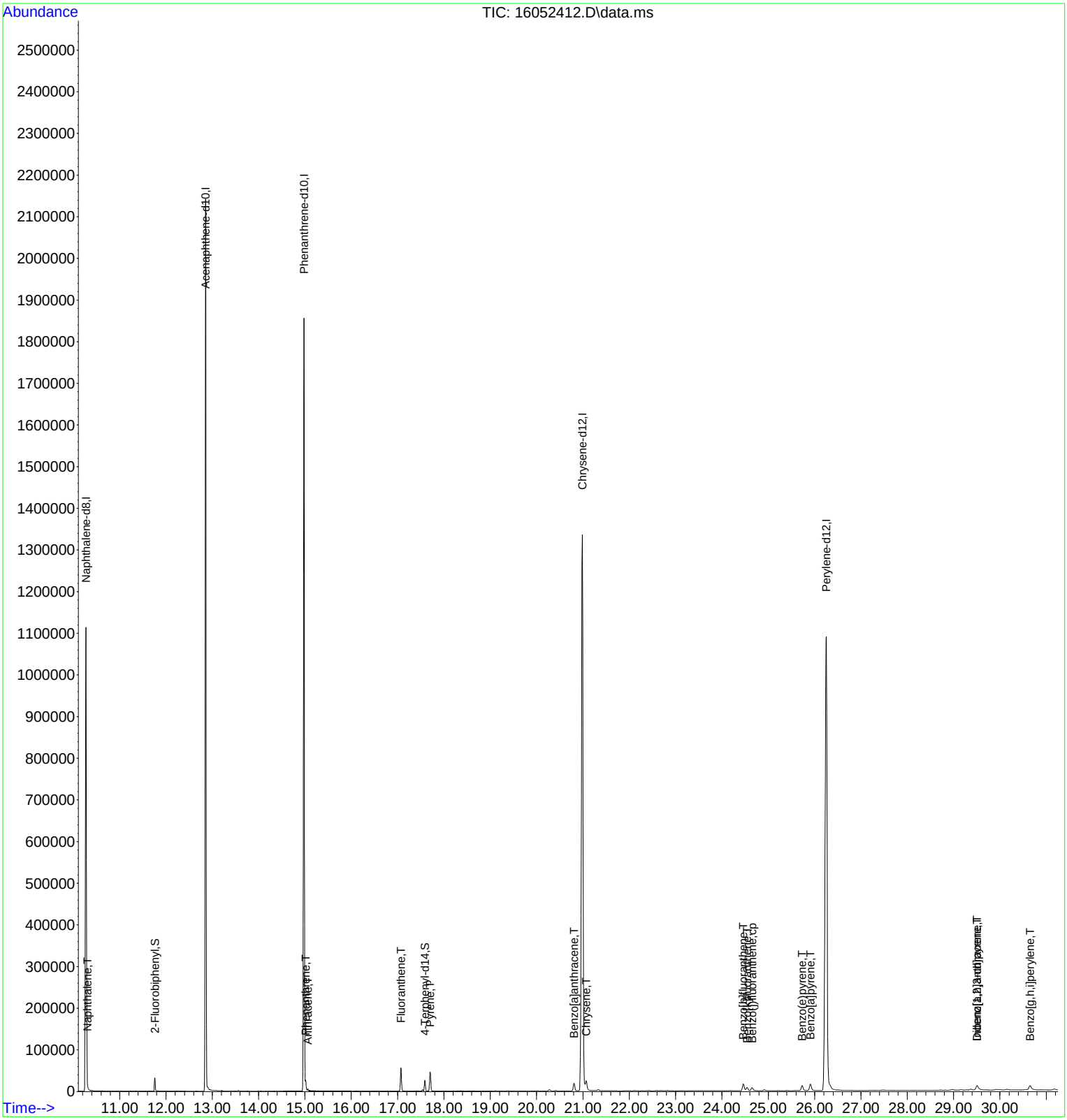
CONFIRMED
By Sherri Herschmann at 12:34:10 PM, 5/31/2016

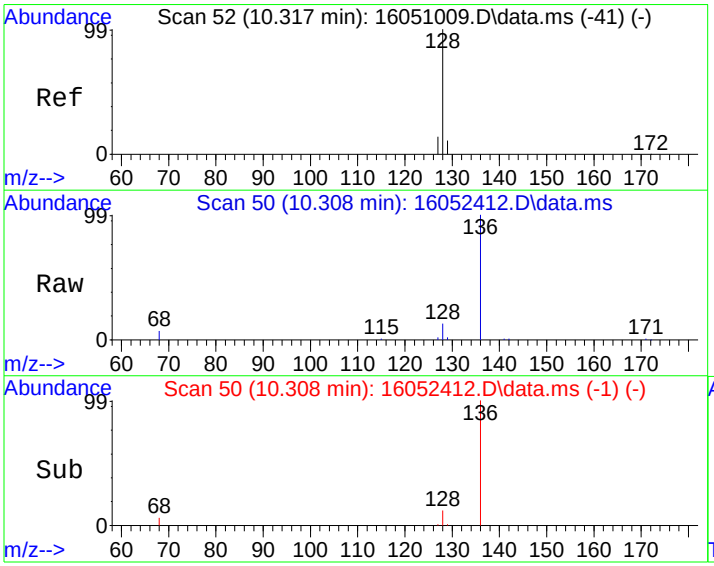
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052412.D
Acq On : 24 May 2016 4:01 pm
Operator :
Sample : 1605121-42A
Misc : SAMP
ALS Vial : 12 Sample Multiplier: 10

Quant Time: May 25 08:46:00 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

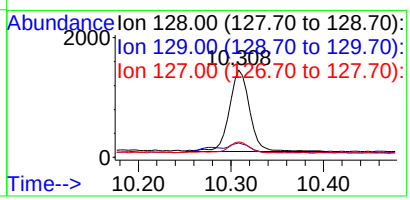


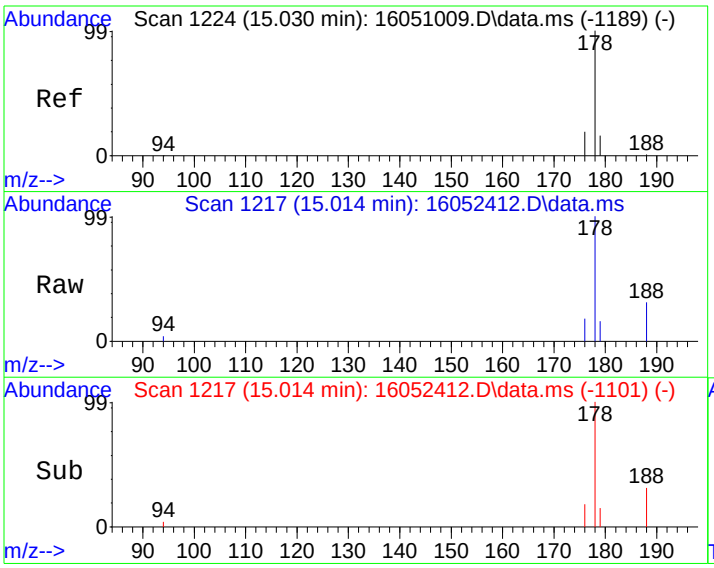



#2
Naphthalene
Concen: 5.82 ug/kg
RT: 10.308 min Scan# 50
Delta R.T. -0.001 min
Lab File: 16052412.D
Acq: 24 May 2016 4:01 pm

Tgt Ion:128 Resp: 2111

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 128 | 100 | | |
| 129 | 11.8 | 0.0 | 31.3 |
| 127 | 13.2 | 0.0 | 33.6 |

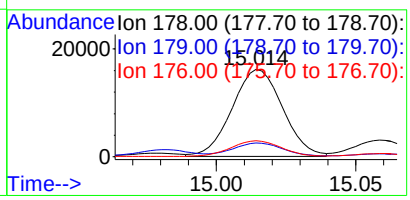


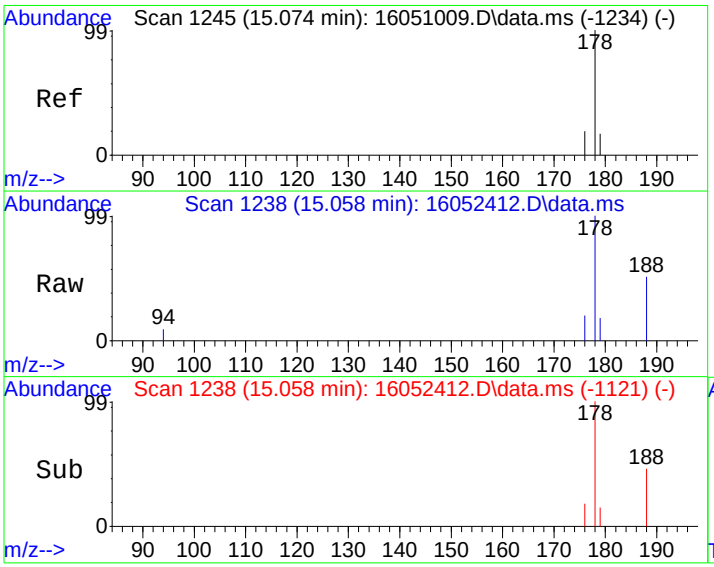




#12
Phenanthrene
Concen: 33.27 ug/kg
RT: 15.014 min Scan# 1217
Delta R.T. -0.005 min
Lab File: 16052412.D
Acq: 24 May 2016 4:01 pm

Tgt Ion:178 Resp: 20373

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.3 | 0.0 | 36.4 |
| 176 | 18.4 | 0.0 | 39.0 |

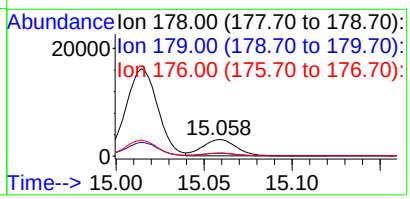


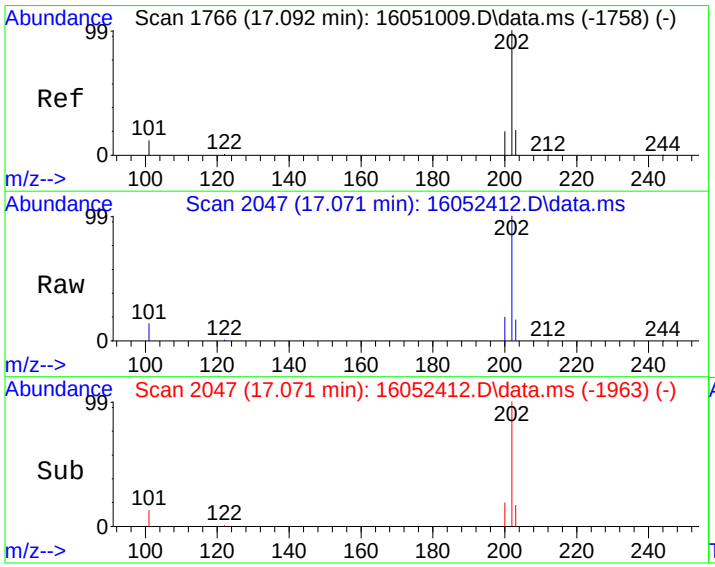




#13
Anthracene
Concen: 6.44 ug/kg
RT: 15.058 min Scan# 1238
Delta R.T. -0.003 min
Lab File: 16052412.D
Acq: 24 May 2016 4:01 pm

Tgt Ion:178 Resp: 3993

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 178 | 100 | | |
| 179 | 15.0 | 0.0 | 36.3 |
| 176 | 17.9 | 0.0 | 38.5 |

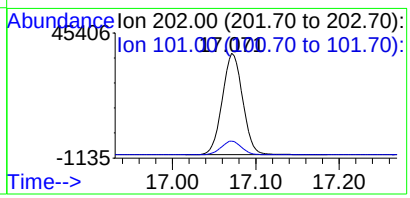


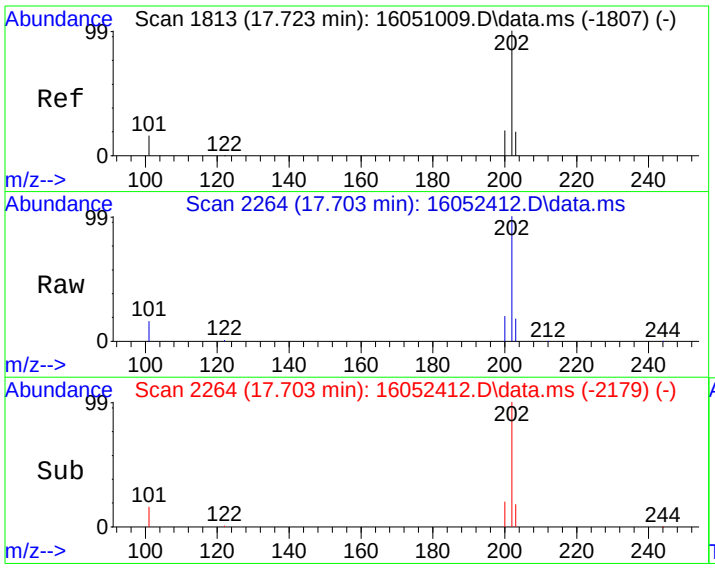



#14
Fluoranthene
Concen: 102.49 ug/kg
RT: 17.071 min Scan# 2047
Delta R.T. -0.005 min
Lab File: 16052412.D
Acq: 24 May 2016 4:01 pm

Tgt Ion:202 Resp: 64375

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 13.5 | 0.0 | 34.4 |

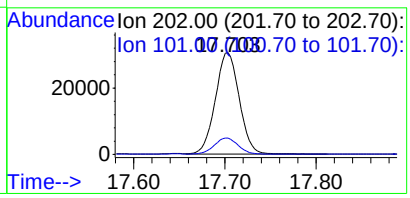


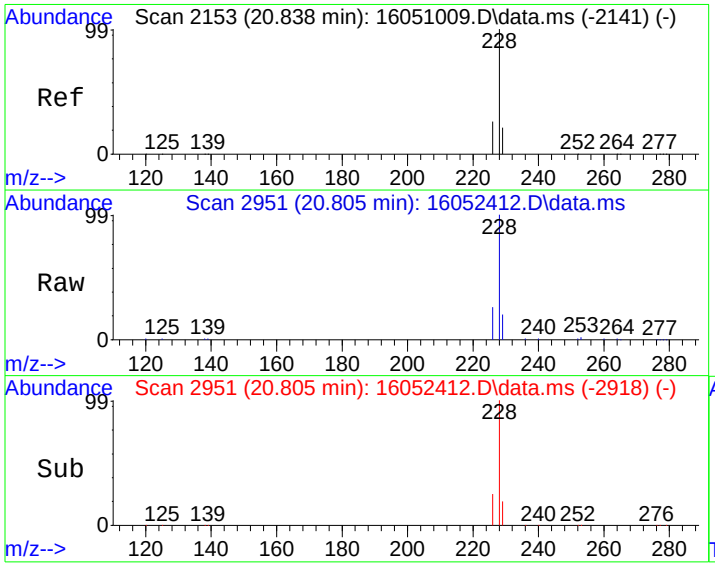




#15
Pyrene
Concen: 90.29 ug/kg
RT: 17.703 min Scan# 2264
Delta R.T. -0.003 min
Lab File: 16052412.D
Acq: 24 May 2016 4:01 pm

Tgt Ion:202 Resp: 55522

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 202 | 100 | | |
| 101 | 15.8 | 0.0 | 37.3 |

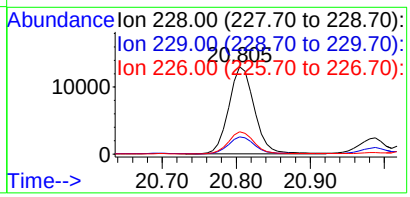


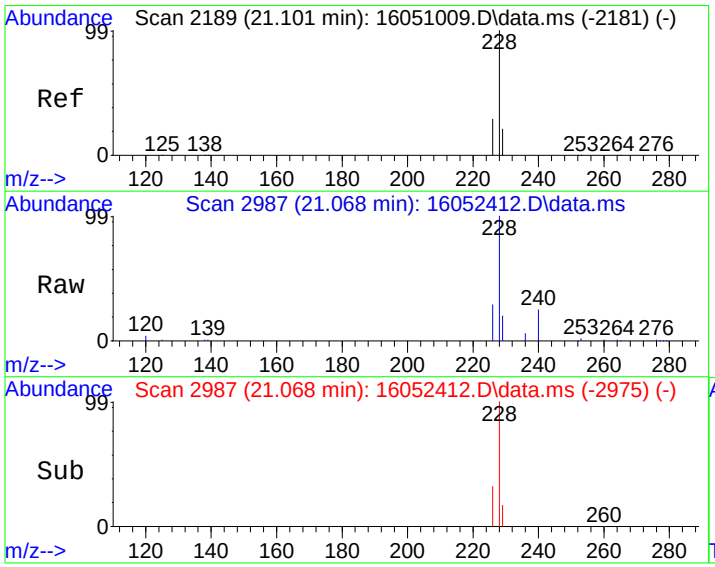




#18
Benzo[a]anthracene
Concen: 50.38 ug/kg
RT: 20.805 min Scan# 2951
Delta R.T. -0.007 min
Lab File: 16052412.D
Acq: 24 May 2016 4:01 pm

Tgt Ion:228 Resp: 30787

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 19.4 | 0.3 | 40.3 |
| 226 | 25.3 | 5.7 | 45.7 |

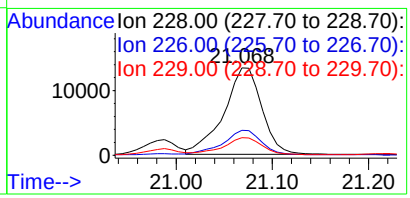


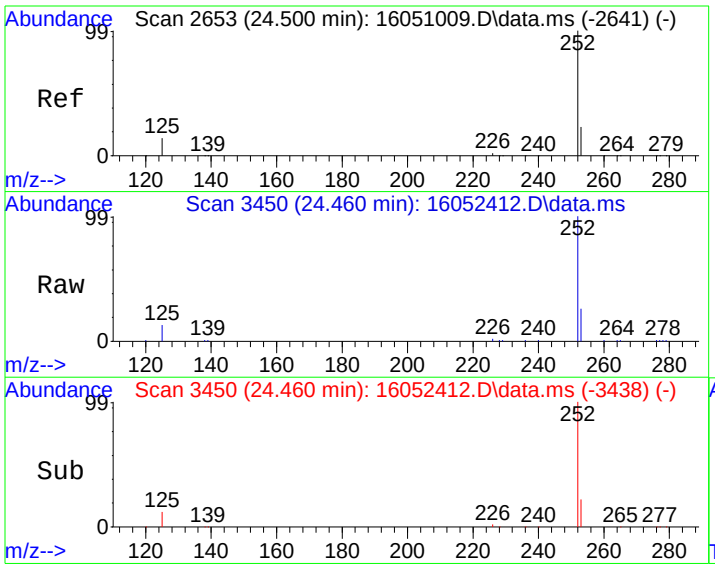



#19
Chrysene
Concen: 64.50 ug/kg
RT: 21.068 min Scan# 2987
Delta R.T. -0.015 min
Lab File: 16052412.D
Acq: 24 May 2016 4:01 pm

Tgt Ion:228 Resp: 36564

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 226 | 28.2 | 8.2 | 48.2 |
| 229 | 19.8 | 0.3 | 40.3 |

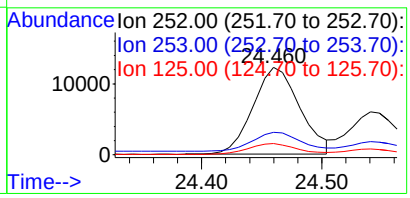


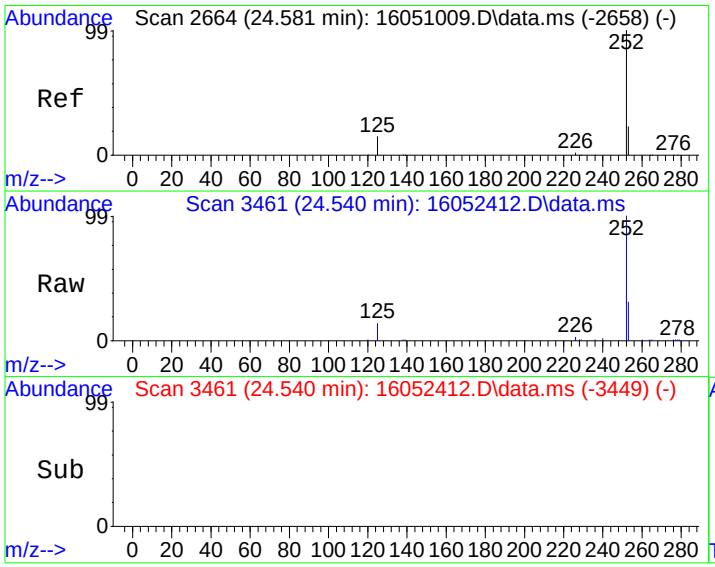




#21
Benzo[b]fluoranthene
Concen: 55.22 ug/kg
RT: 24.460 min Scan# 3450
Delta R.T. -0.015 min
Lab File: 16052412.D
Acq: 24 May 2016 4:01 pm

Tgt Ion:252 Resp: 33118

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.9 | 2.3 | 42.3 |
| 125 | 12.2 | 0.0 | 32.2 |

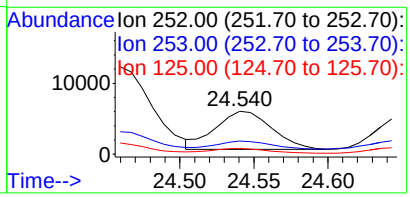


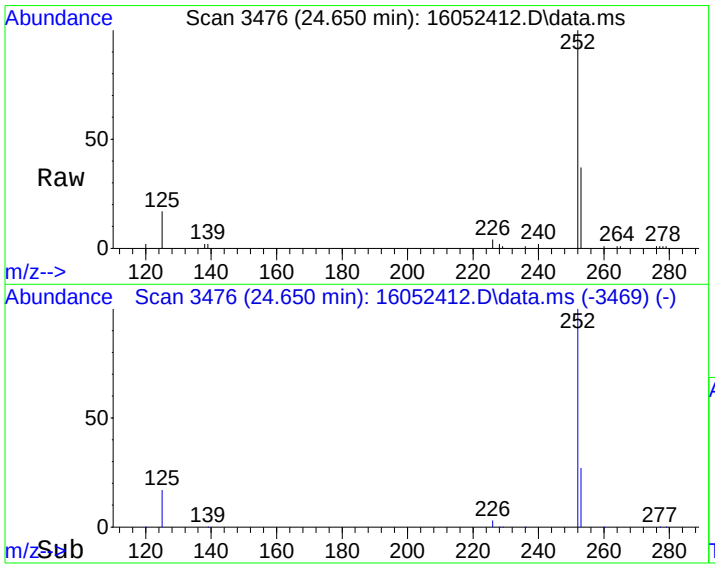




#22
Benzo[k]fluoranthene
Concen: 26.02 ug/kg
RT: 24.540 min Scan# 3461
Delta R.T. -0.015 min
Lab File: 16052412.D
Acq: 24 May 2016 4:01 pm

Tgt Ion:252 Resp: 14201

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 21.1 | 2.5 | 42.5 |
| 125 | 12.6 | 0.0 | 32.6 |

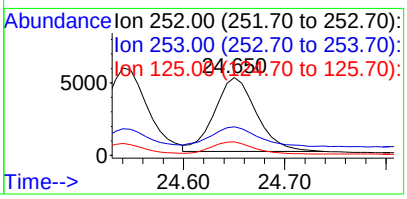


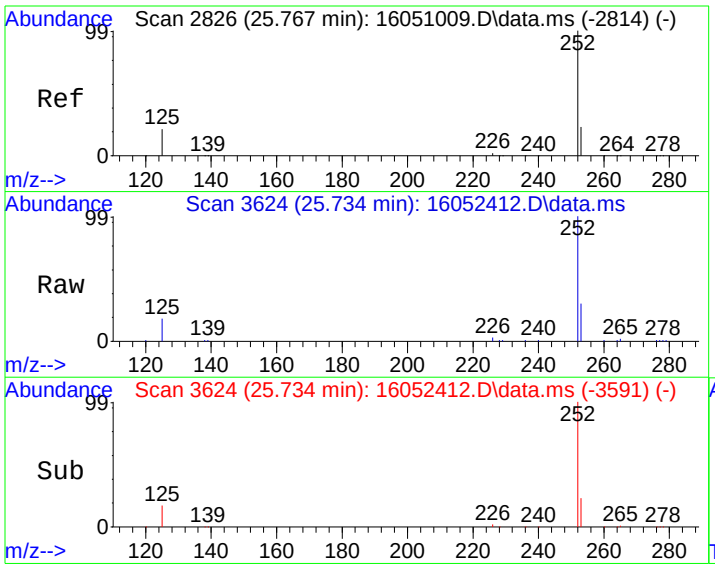



#23
Benzo(j)fluoranthene
Concen: 25.75 ug/kg
RT: 24.650 min Scan# 3476
Delta R.T. -0.015 min
Lab File: 16052412.D
Acq: 24 May 2016 4:01 pm

Tgt Ion:252 Resp: 14574

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 28.7 | 2.2 | 42.2 |
| 125 | 16.6 | 0.0 | 37.3 |

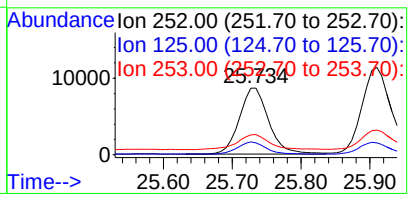


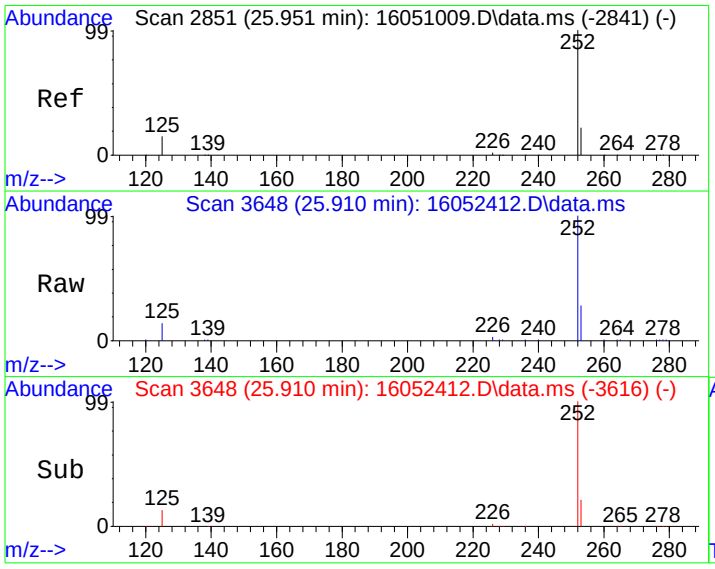




#24
Benzo(e)pyrene
Concen: 43.94 ug/kg
RT: 25.734 min Scan# 3624
Delta R.T. -0.008 min
Lab File: 16052412.D
Acq: 24 May 2016 4:01 pm

Tgt Ion:252 Resp: 25560

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 125 | 18.1 | 0.0 | 38.7 |
| 253 | 25.7 | 2.3 | 42.3 |

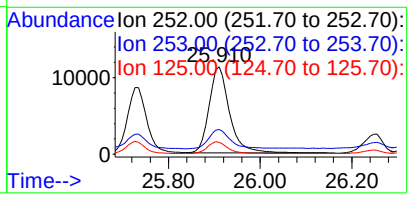


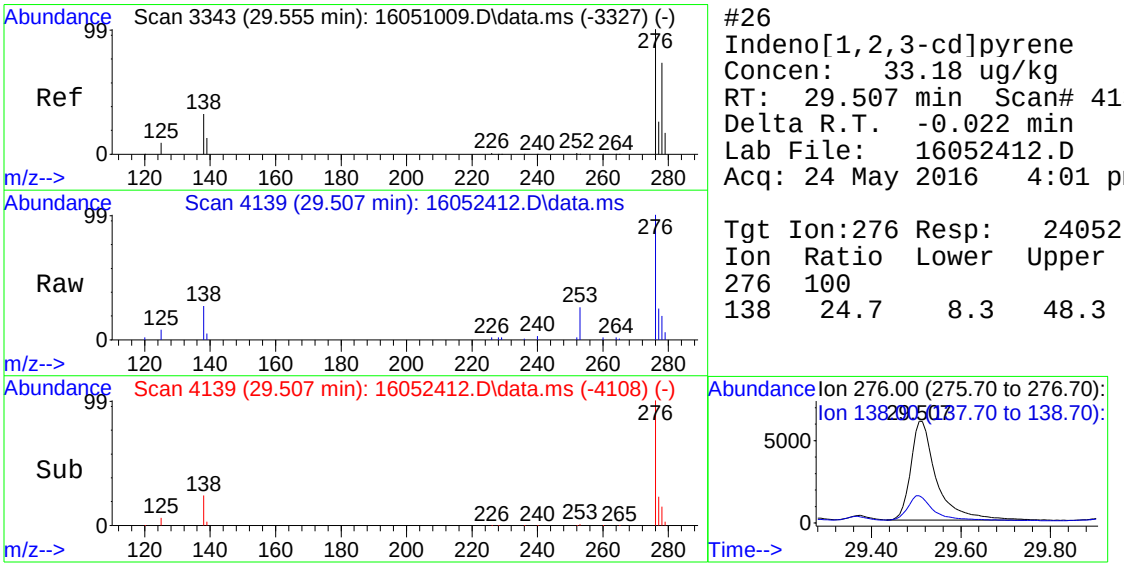




#25
Benzo[a]pyrene
Concen: 62.32 ug/kg
RT: 25.910 min Scan# 3648
Delta R.T. -0.015 min
Lab File: 16052412.D
Acq: 24 May 2016 4:01 pm

Tgt Ion:252 Resp: 34784

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 252 | 100 | | |
| 253 | 22.2 | 2.3 | 42.3 |
| 125 | 13.2 | 0.0 | 33.5 |



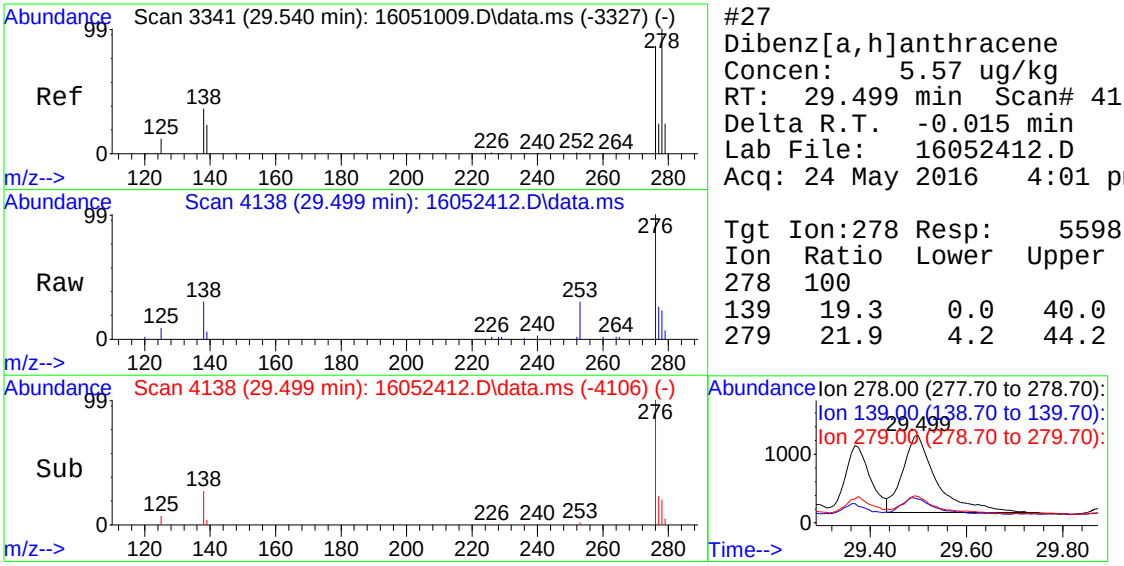



#26
Indeno[1,2,3-cd]pyrene
Concen: 33.18 ug/kg
RT: 29.507 min Scan# 4139
Delta R.T. -0.022 min
Lab File: 16052412.D
Acq: 24 May 2016 4:01 pm

Tgt Ion:276 Resp: 24052

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 24.7 | 8.3 | 48.3 |



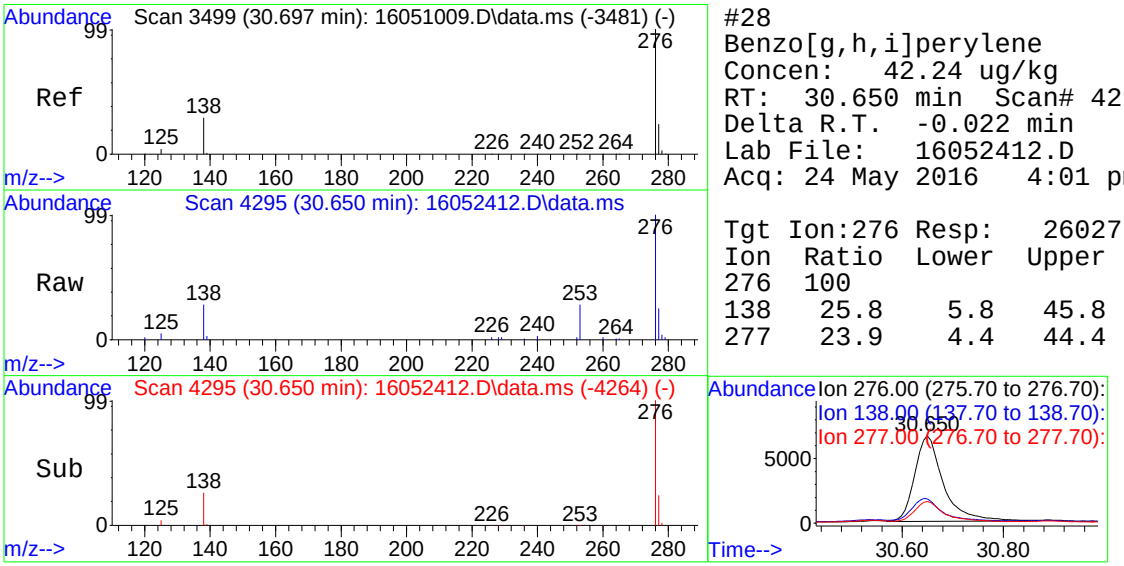




#27
Dibenz[a,h]anthracene
Concen: 5.57 ug/kg
RT: 29.499 min Scan# 4138
Delta R.T. -0.015 min
Lab File: 16052412.D
Acq: 24 May 2016 4:01 pm

Tgt Ion:278 Resp: 5598

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 278 | 100 | | |
| 139 | 19.3 | 0.0 | 40.0 |
| 279 | 21.9 | 4.2 | 44.2 |




#28
Benzo[g,h,i]perylene
Concen: 42.24 ug/kg
RT: 30.650 min Scan# 4295
Delta R.T. -0.022 min
Lab File: 16052412.D
Acq: 24 May 2016 4:01 pm

Tgt Ion:276 Resp: 26027

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 276 | 100 | | |
| 138 | 25.8 | 5.8 | 45.8 |
| 277 | 23.9 | 4.4 | 44.4 |

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052413.D
Acq On : 24 May 2016 4:38 pm
Operator :
Sample : 1605121-43A
Misc : SAMP
ALS Vial : 13 Sample Multiplier: 10

Quant Time: May 25 08:46:08 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.270 | 136 | 1608487 | 4000.00 | ug/kg | 99 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1302113 | 4000.00 | ug/kg | 104 |
| 11) Phenanthrene-d10 | 14.979 | 188 | 2258558 | 4000.00 | ug/kg | 77 |
| 16) Chrysene-d12 | 20.988 | 240 | 2213949 | 4000.00 | ug/kg | 82 |
| 20) Perylene-d12 | 26.248 | 264 | 2130950 | 4000.00 | ug/kg | 86 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.759 | 172 | 31838 | 88.90 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.22%# | | | |
| 17) 4-Terphenyl-d14 | 17.589 | 244 | 34536 | 73.70 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.84%# | | | |

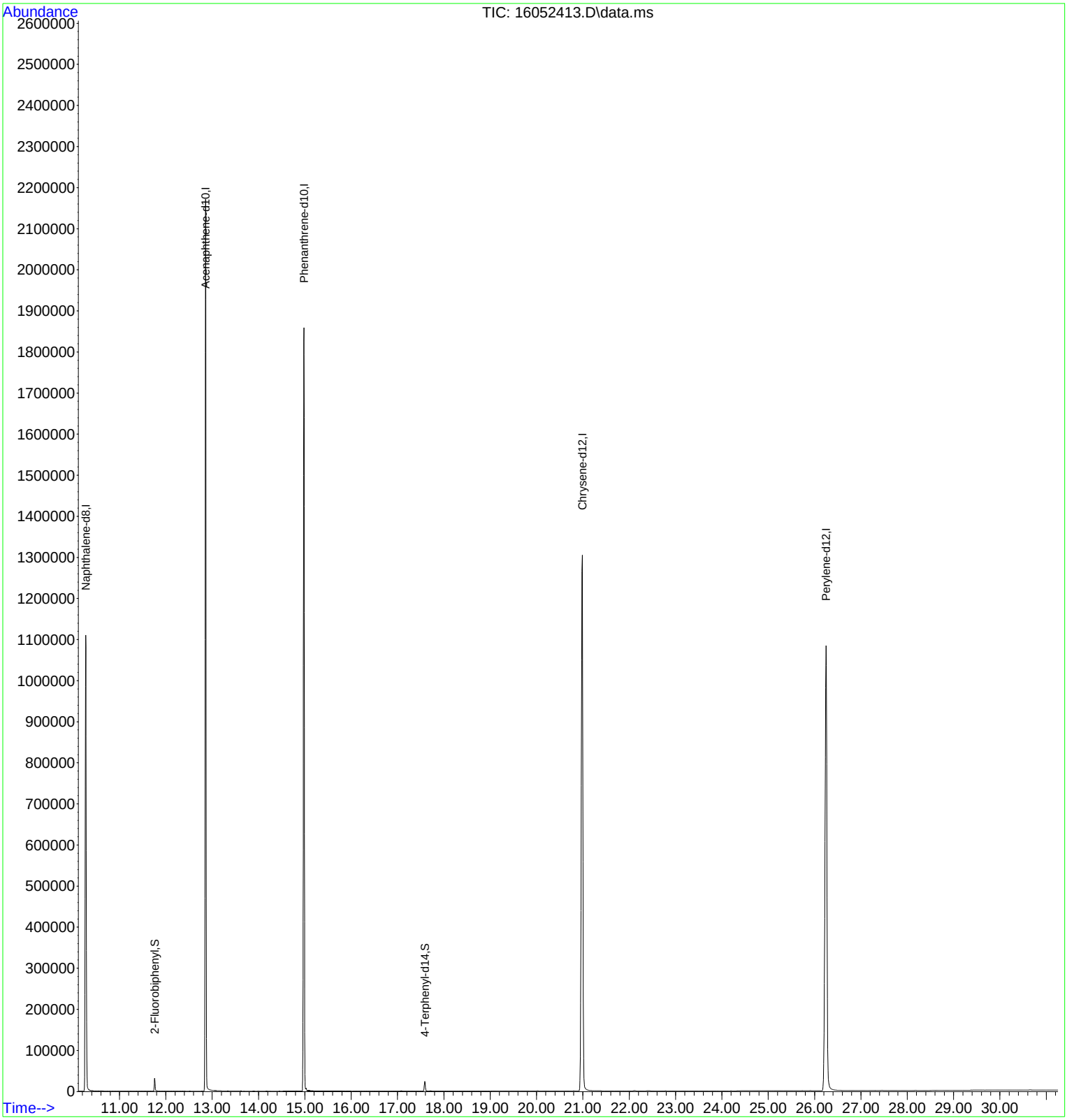
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052413.D
Acq On : 24 May 2016 4:38 pm
Operator :
Sample : 1605121-43A
Misc : SAMP
ALS Vial : 13 Sample Multiplier: 10

Quant Time: May 25 08:46:08 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052414.D
Acq On : 24 May 2016 5:16 pm
Operator :
Sample : 1605121-44A
Misc : SAMP
ALS Vial : 14 Sample Multiplier: 10

Quant Time: May 25 08:46:12 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.273 | 136 | 1654527 | 4000.00 | ug/kg | 102 |
| 6) Acenaphthene-d10 | 12.860 | 164 | 1313459 | 4000.00 | ug/kg | 105 |
| 11) Phenanthrene-d10 | 14.978 | 188 | 2313427 | 4000.00 | ug/kg | 79 |
| 16) Chrysene-d12 | 20.982 | 240 | 2342019 | 4000.00 | ug/kg | 86 |
| 20) Perylene-d12 | 26.248 | 264 | 2226207 | 4000.00 | ug/kg | 90 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.758 | 172 | 30788 | 83.58 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.09%# | | | |
| 17) 4-Terphenyl-d14 | 17.589 | 244 | 34579 | 69.76 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.74%# | | | |

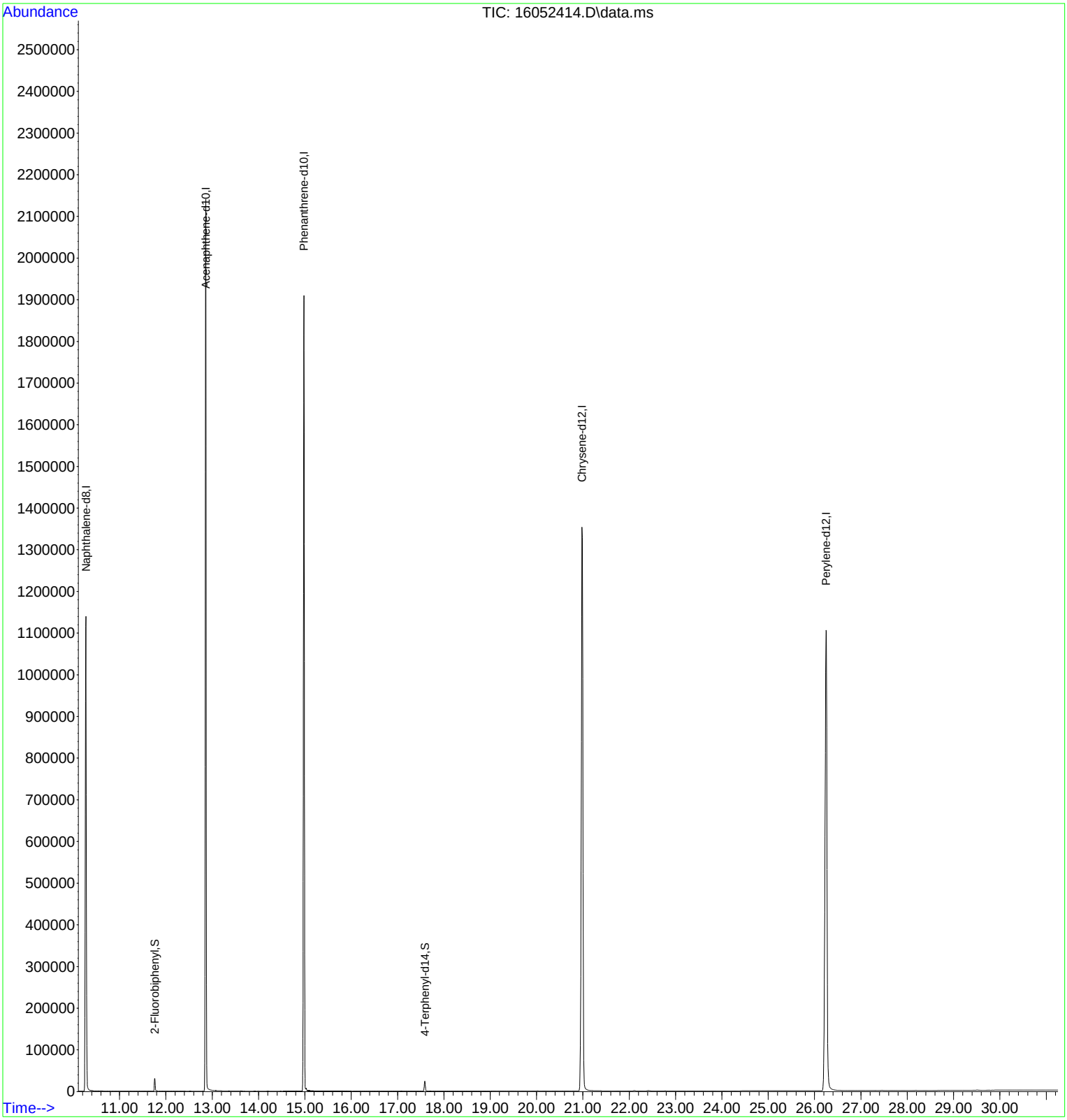
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052414.D
Acq On : 24 May 2016 5:16 pm
Operator :
Sample : 1605121-44A
Misc : SAMP
ALS Vial : 14 Sample Multiplier: 10

Quant Time: May 25 08:46:12 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052415.D
Acq On : 24 May 2016 5:54 pm
Operator :
Sample : 1605121-45A
Misc : SAMP
ALS Vial : 15 Sample Multiplier: 10

Quant Time: May 25 08:46:15 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.272 | 136 | 1704083 | 4000.00 | ug/kg | 105 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1338988 | 4000.00 | ug/kg | 107 |
| 11) Phenanthrene-d10 | 14.978 | 188 | 2306992 | 4000.00 | ug/kg | 79 |
| 16) Chrysene-d12 | 20.988 | 240 | 2354577 | 4000.00 | ug/kg | 87 |
| 20) Perylene-d12 | 26.254 | 264 | 2264447 | 4000.00 | ug/kg | 91 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.761 | 172 | 31331 | 82.58 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.06%# | | | |
| 17) 4-Terphenyl-d14 | 17.589 | 244 | 34925 | 70.08 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.75%# | | | |

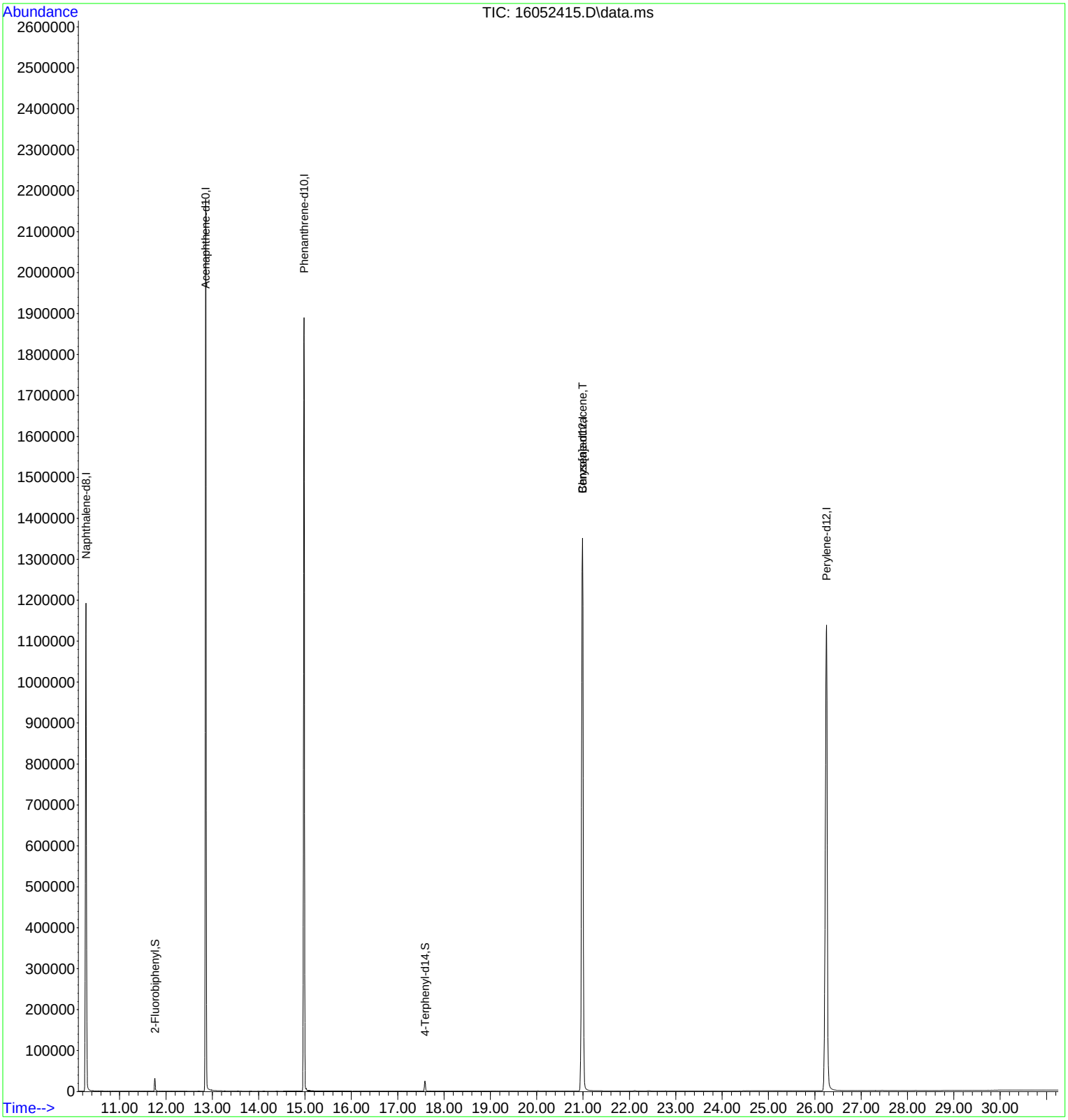
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 18) Benzo[a]anthracene | 20.988 | 228 | 5389 | 7.02 | ug/kg | 76 |

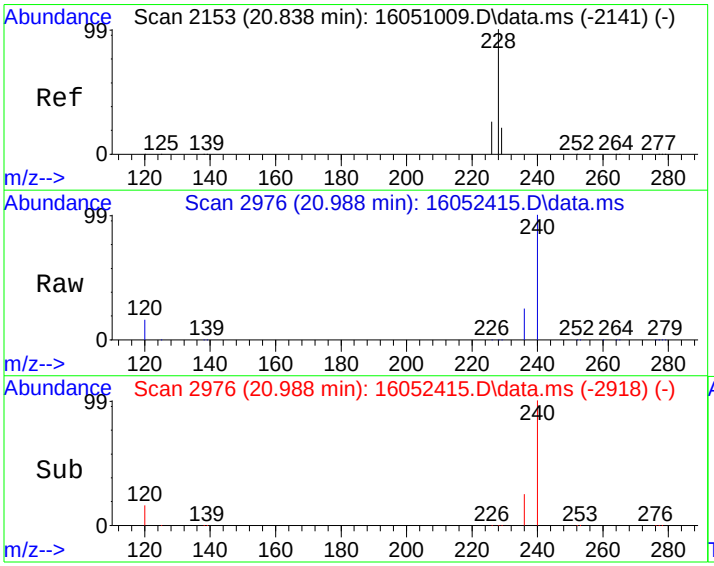
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052415.D
Acq On : 24 May 2016 5:54 pm
Operator :
Sample : 1605121-45A
Misc : SAMP
ALS Vial : 15 Sample Multiplier: 10

Quant Time: May 25 08:46:15 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

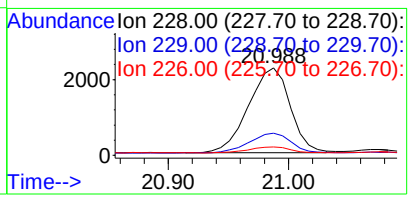





#18
Benzo[a]anthracene
Concen: 7.02 ug/kg
RT: 20.988 min Scan# 2976
Delta R.T. 0.176 min
Lab File: 16052415.D
Acq: 24 May 2016 5:54 pm

Tgt Ion:228 Resp: 5389

| Ion | Ratio | Lower | Upper |
|---|---|---|---|
| 228 | 100 | | |
| 229 | 23.2 | 0.3 | 40.3 |
| 226 | 6.7 | 5.7 | 45.7 |



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052420.D
Acq On : 24 May 2016 9:00 pm
Operator :
Sample : ICV2-160524
Misc : ICV
ALS Vial : 20 Sample Multiplier: 1

Quant Time: May 25 08:44:06 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.268 | 136 | 1494253 | 4000.00 | ug/kg | 92 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1251422 | 4000.00 | ug/kg | 100 |
| 11) Phenanthrene-d10 | 14.978 | 188 | 2366495 | 4000.00 | ug/kg | 81 |
| 16) Chrysene-d12 | 20.981 | 240 | 2146772 | 4000.00 | ug/kg | 79 |
| 20) Perylene-d12 | 26.247 | 264 | 2049858 | 4000.00 | ug/kg | 83 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.757 | 172 | 736001 | 2212.22 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = | 55.31% | | |
| 17) 4-Terphenyl-d14 | 17.587 | 244 | 906542 | 1995.09 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = | 49.88%# | | |

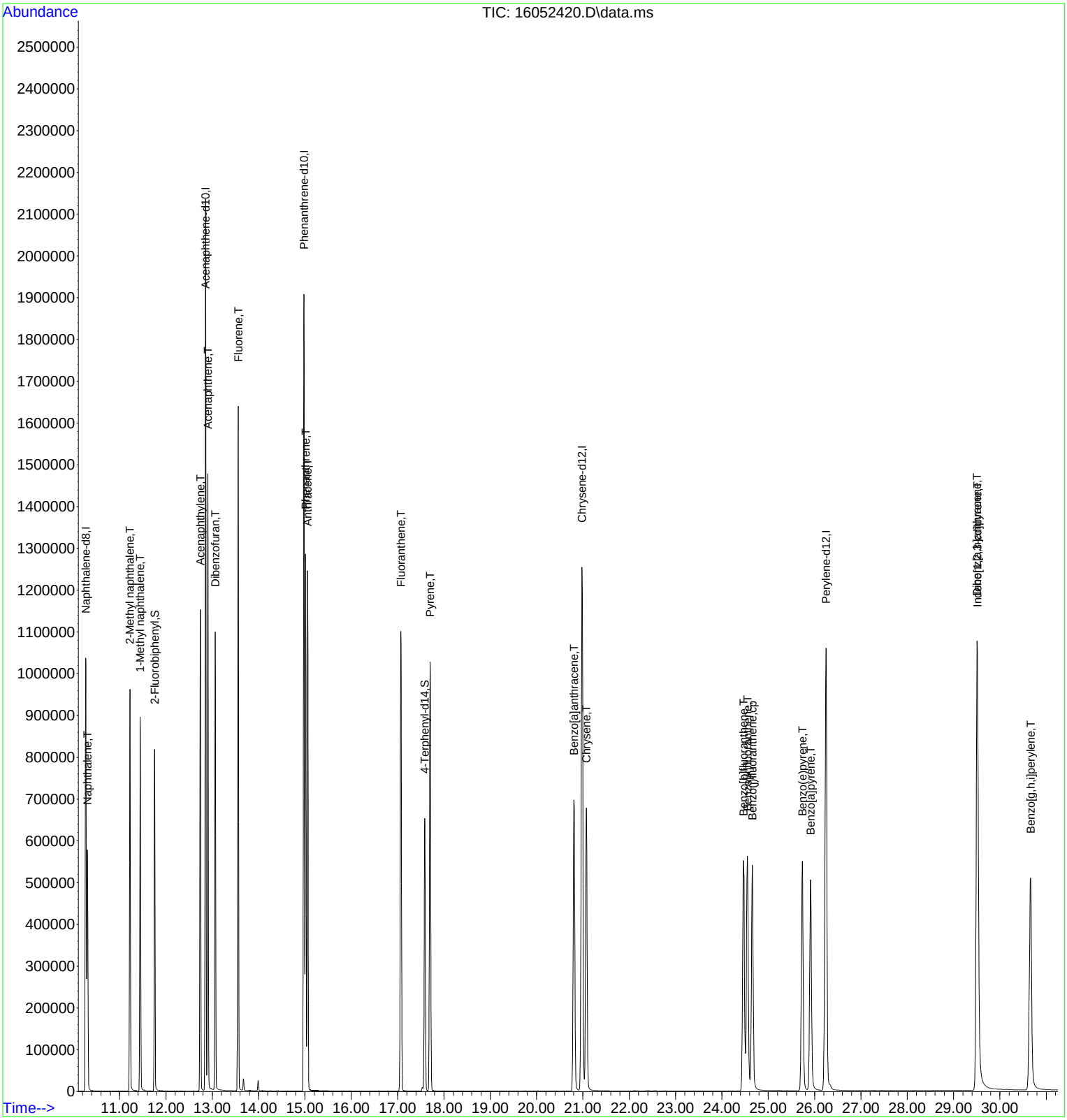
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.305 | 128 | 679816 | 2030.80 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.222 | 142 | 581218 | 2233.46 | ug/kg | 98 |
| 4) 1-Methyl naphthalene | 11.445 | 142 | 535963 | 2176.47 | ug/kg | 99 |
| 7) Acenaphthylene | 12.744 | 152 | 1125849 | 2058.22 | ug/kg | 99 |
| 8) Acenaphthene | 12.906 | 153 | 701428 | 2032.18 | ug/kg | 99 |
| 9) Dibenzofuran | 13.063 | 168 | 1028862 | 1956.76 | ug/kg | 90 |
| 10) Fluorene | 13.559 | 166 | 901726 | 1890.09 | ug/kg | 99 |
| 12) Phenanthrene | 15.016 | 178 | 1220581 | 1874.50 | ug/kg | 100 |
| 13) Anthracene | 15.058 | 178 | 1208948 | 1834.85 | ug/kg | 100 |
| 14) Fluoranthene | 17.071 | 202 | 1241817 | 1995.86 | ug/kg | 99 |
| 15) Pyrene | 17.703 | 202 | 1208493 | 1975.93 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.805 | 228 | 1117064 | 2103.74 | ug/kg | 100 |
| 19) Chrysene | 21.076 | 228 | 1029517 | 2096.64 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.467 | 252 | 1090402 | 2075.12 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.548 | 252 | 995221 | 2090.20 | ug/kg | 100 |
| 23) Benzo(j)fluoranthene | 24.658 | 252 | 941383 | 2072.38 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.735 | 252 | 1049431 | 2118.38 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.918 | 252 | 1030344 | 2095.53 | ug/kg | 100 |
| 26) Indeno[1,2,3-cd]pyrene | 29.522 | 276 | 1290396 | 2148.14 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.507 | 278 | 1072491 | 2148.75 | ug/kg | 100 |
| 28) Benzo[g,h,i]perylene | 30.664 | 276 | 1106145 | 2133.02 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052420.D
Acq On : 24 May 2016 9:00 pm
Operator :
Sample : ICV2-160524
Misc : ICV
ALS Vial : 20 Sample Multiplier: 1

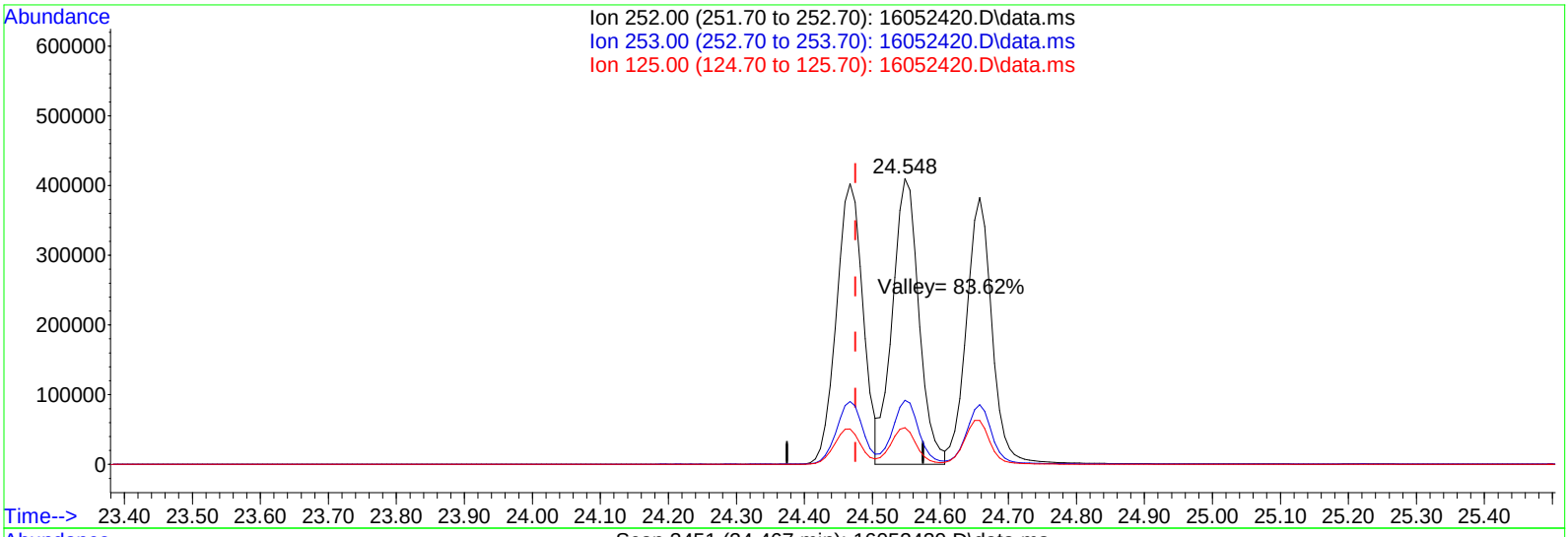
Quant Time: May 25 08:44:06 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

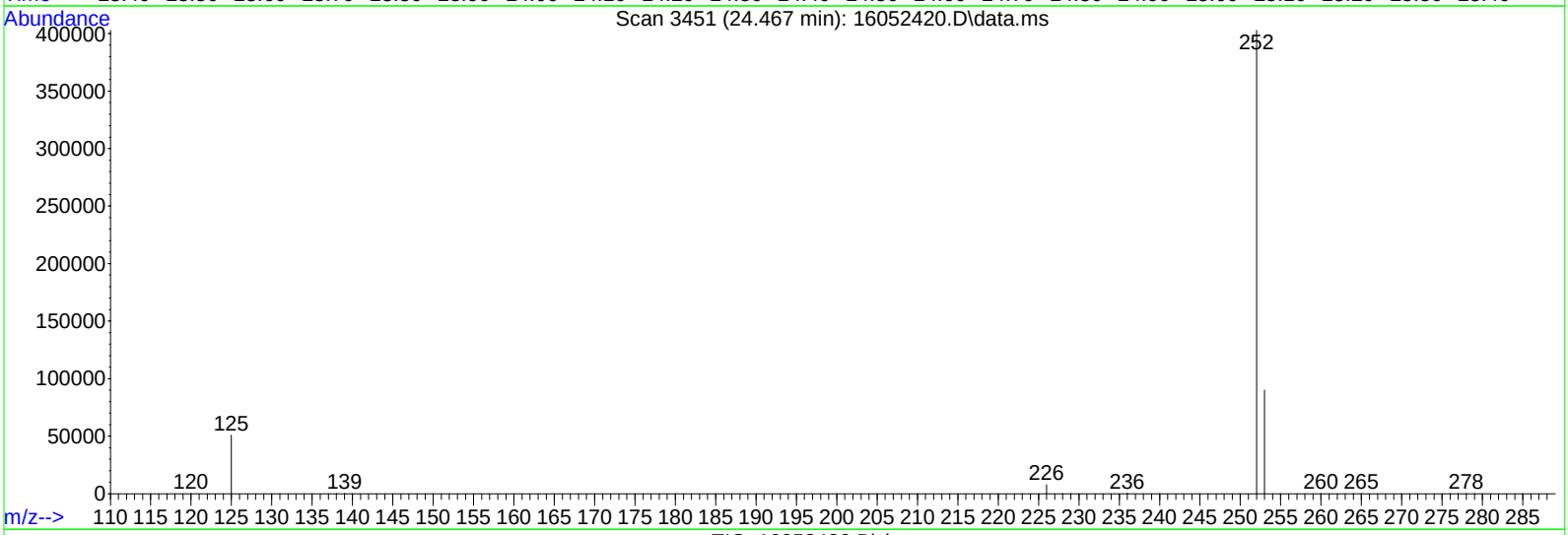


Quantitation Report (Qedit)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052420.D
Acq On : 24 May 2016 9:00 pm
Operator :
Sample : ICV2-160524
Misc : ICV
ALS Vial : 20 Sample Multiplier: 1

Quant Time: May 24 21:31:47 2016
Quant Method : C:\MSDCHEM\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration




TIC: 16052420.D\data.ms

(21) Benzo[b]fluoranthene (T)

24.467min (-0.008) 2075.12ug/kg

response 1090402

| Ion | Exp% | Act% |
|---|---|---|
| 252.00 | 100 | 100 |
| 253.00 | 22.30 | 22.22 |
| 125.00 | 12.20 | 12.58 |
| 0.00 | 0.00 | 0.00 |

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052422.D
Acq On : 24 May 2016 10:15 pm
Operator :
Sample : SBLK-160524
Misc : SBLK
ALS Vial : 22 Sample Multiplier: 1

Quant Time: May 25 08:44:09 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.271 | 136 | 1729854 | 4000.00 | ug/kg | 106 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1414012 | 4000.00 | ug/kg | 113 |
| 11) Phenanthrene-d10 | 14.978 | 188 | 2398318 | 4000.00 | ug/kg | 82 |
| 16) Chrysene-d12 | 20.981 | 240 | 2366115 | 4000.00 | ug/kg | 87 |
| 20) Perylene-d12 | 26.248 | 264 | 2293170 | 4000.00 | ug/kg | 92 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.760 | 172 | 36 | 0.09 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 0.00%# | | | |
| 17) 4-Terphenyl-d14 | 17.590 | 244 | 326 | 0.65 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 0.02%# | | | |

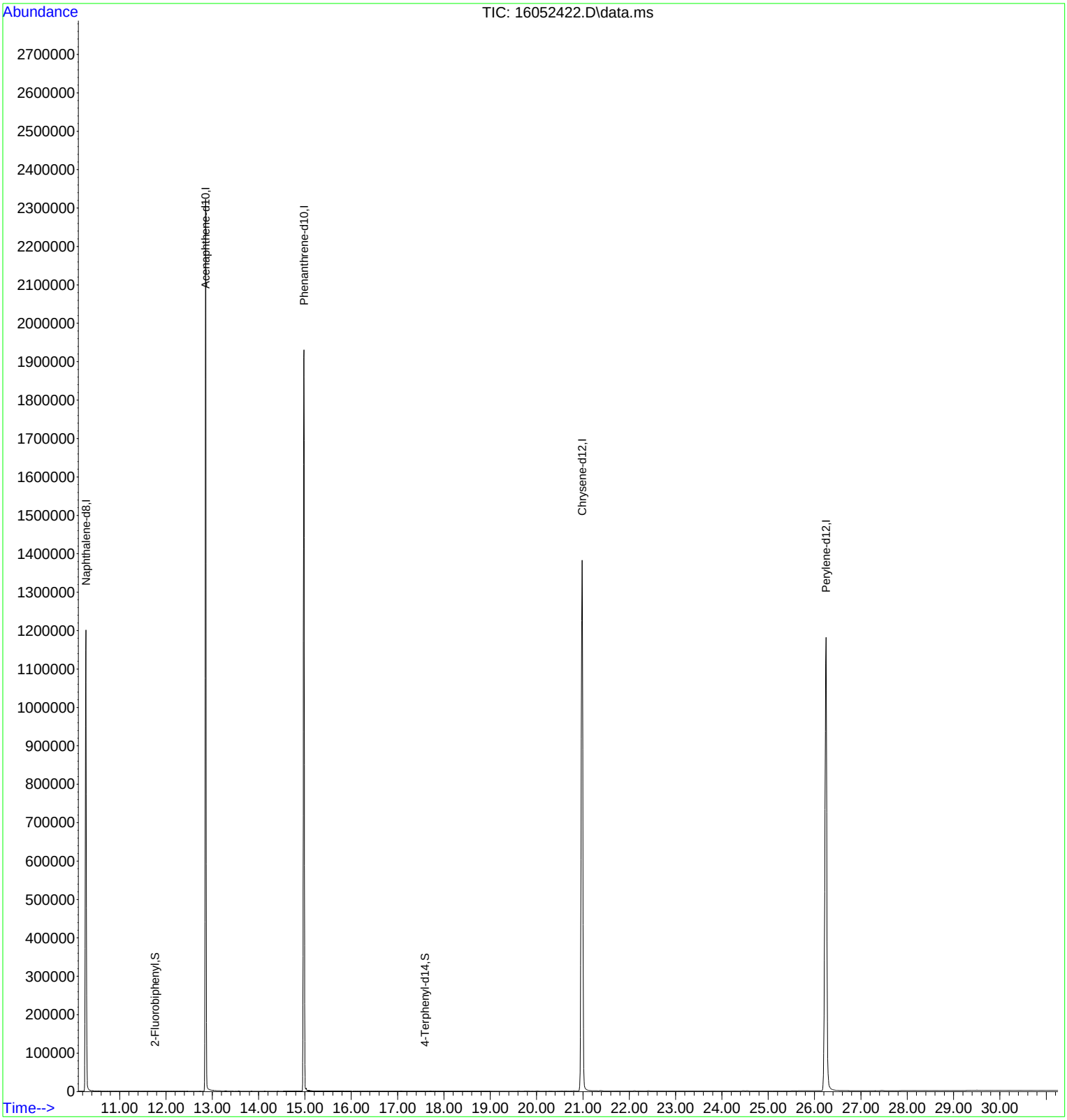
| Target Compounds | Qvalue |
|---|---|

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052422.D
Acq On : 24 May 2016 10:15 pm
Operator :
Sample : SBLK-160524
Misc : SBLK
ALS Vial : 22 Sample Multiplier: 1

Quant Time: May 25 08:44:09 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052429.D
Acq On : 25 May 2016 2:34 am
Operator :
Sample : 1605121-43AMS
Misc : MS
ALS Vial : 29 Sample Multiplier: 10

Quant Time: May 25 08:44:12 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.272 | 136 | 1599503 | 4000.00 | ug/kg | 98 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1293623 | 4000.00 | ug/kg | 103 |
| 11) Phenanthrene-d10 | 14.977 | 188 | 2234890 | 4000.00 | ug/kg | 76 |
| 16) Chrysene-d12 | 20.980 | 240 | 2149762 | 4000.00 | ug/kg | 79 |
| 20) Perylene-d12 | 26.247 | 264 | 2079683 | 4000.00 | ug/kg | 84 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.756 | 172 | 29446 | 82.68 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.07%# | | | |
| 17) 4-Terphenyl-d14 | 17.586 | 244 | 31501 | 69.23 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.73%# | | | |

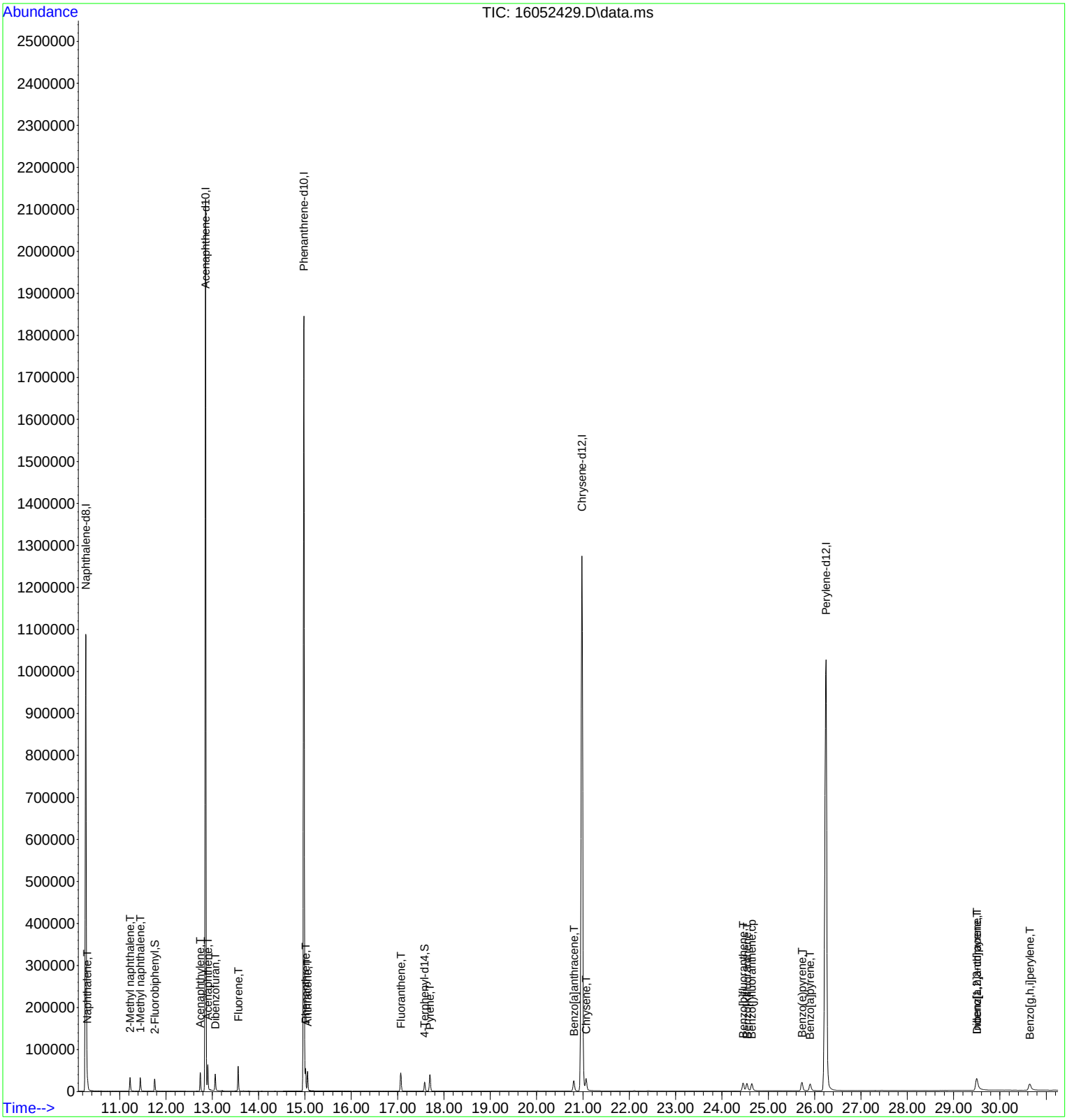
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.304 | 128 | 25807 | 72.02 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.226 | 142 | 23046 | 82.73 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.448 | 142 | 21455 | 81.39 | ug/kg | 98 |
| 7) Acenaphthylene | 12.739 | 152 | 42863 | 75.80 | ug/kg | 99 |
| 8) Acenaphthene | 12.906 | 153 | 26988 | 75.64 | ug/kg | 99 |
| 9) Dibenzofuran | 13.063 | 168 | 39979 | 73.55 | ug/kg | 93 |
| 10) Fluorene | 13.559 | 166 | 33530 | 67.99 | ug/kg | 99 |
| 12) Phenanthrene | 15.012 | 178 | 45702 | 74.32 | ug/kg | 97 |
| 13) Anthracene | 15.057 | 178 | 45214 | 72.66 | ug/kg | 98 |
| 14) Fluoranthene | 17.067 | 202 | 49221 | 77.50 | ug/kg | 98 |
| 15) Pyrene | 17.697 | 202 | 47898 | 77.24 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.804 | 228 | 39870 | 69.75 | ug/kg | 99 |
| 19) Chrysene | 21.068 | 228 | 38400 | 72.01 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.459 | 252 | 37661 | 66.33 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.540 | 252 | 31433 | 62.01 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.643 | 252 | 33462 | 66.66 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.727 | 252 | 41806 | 77.36 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.902 | 252 | 36780 | 69.49 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.506 | 276 | 45073 | 68.15 | ug/kg | 97 |
| 27) Dibenz[a,h]anthracene | 29.492 | 278 | 34409 | 60.64 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.642 | 276 | 39915 | 69.96 | ug/kg | 98 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052429.D
Acq On : 25 May 2016 2:34 am
Operator :
Sample : 1605121-43AMS
Misc : MS
ALS Vial : 29 Sample Multiplier: 10

Quant Time: May 25 08:44:12 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052430.D
Acq On : 25 May 2016 3:11 am
Operator :
Sample : 1605121-43AMSD
Misc : MSD
ALS Vial : 30 Sample Multiplier: 10

Quant Time: May 25 08:44:15 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.272 | 136 | 1638457 | 4000.00 | ug/kg | 101 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1307736 | 4000.00 | ug/kg | 104 |
| 11) Phenanthrene-d10 | 14.976 | 188 | 2269709 | 4000.00 | ug/kg | 78 |
| 16) Chrysene-d12 | 20.980 | 240 | 2178416 | 4000.00 | ug/kg | 80 |
| 20) Perylene-d12 | 26.247 | 264 | 2109130 | 4000.00 | ug/kg | 85 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.757 | 172 | 29577 | 81.08 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.03%# | | | |
| 17) 4-Terphenyl-d14 | 17.583 | 244 | 33026 | 71.63 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.79%# | | | |

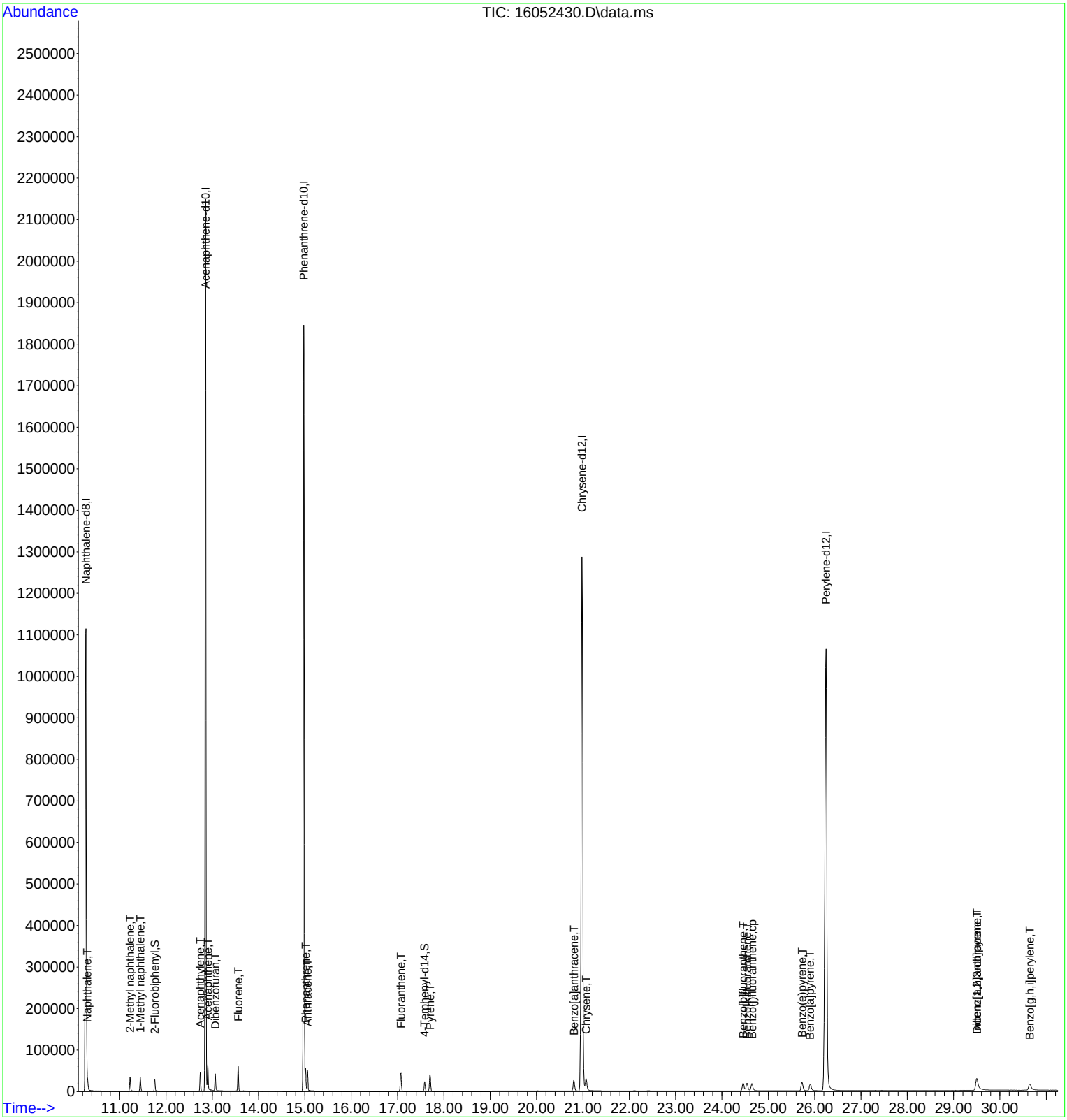
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.305 | 128 | 26674 | 72.67 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.226 | 142 | 23289 | 81.62 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.448 | 142 | 21872 | 81.00 | ug/kg | 99 |
| 7) Acenaphthylene | 12.739 | 152 | 43506 | 76.11 | ug/kg | 99 |
| 8) Acenaphthene | 12.906 | 153 | 27223 | 75.47 | ug/kg | 98 |
| 9) Dibenzofuran | 13.063 | 168 | 40202 | 73.17 | ug/kg | 93 |
| 10) Fluorene | 13.559 | 166 | 34199 | 68.60 | ug/kg | 99 |
| 12) Phenanthrene | 15.012 | 178 | 47307 | 75.75 | ug/kg | 97 |
| 13) Anthracene | 15.056 | 178 | 46702 | 73.90 | ug/kg | 98 |
| 14) Fluoranthene | 17.070 | 202 | 50239 | 77.91 | ug/kg | 97 |
| 15) Pyrene | 17.700 | 202 | 48943 | 77.73 | ug/kg | 96 |
| 18) Benzo[a]anthracene | 20.804 | 228 | 41312 | 71.37 | ug/kg | 99 |
| 19) Chrysene | 21.068 | 228 | 39315 | 72.79 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.459 | 252 | 38493 | 66.87 | ug/kg | 98 |
| 22) Benzo[k]fluoranthene | 24.540 | 252 | 32279 | 62.81 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.650 | 252 | 34281 | 67.38 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.727 | 252 | 42907 | 78.32 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.910 | 252 | 37618 | 70.09 | ug/kg | 98 |
| 26) Indeno[1,2,3-cd]pyrene | 29.506 | 276 | 45872 | 68.40 | ug/kg | 100 |
| 27) Dibenz[a,h]anthracene | 29.492 | 278 | 35314 | 61.42 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.649 | 276 | 40556 | 70.10 | ug/kg | 98 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052430.D
Acq On : 25 May 2016 3:11 am
Operator :
Sample : 1605121-43AMSD
Misc : MSD
ALS Vial : 30 Sample Multiplier: 10

Quant Time: May 25 08:44:15 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052431.D
Acq On : 25 May 2016 3:48 am
Operator :
Sample : CCV-160524
Misc : CCV
ALS Vial : 31 Sample Multiplier: 1

Quant Time: May 25 08:44:19 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.269 | 136 | 1822525 | 4000.00 | ug/kg | 112 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1494617 | 4000.00 | ug/kg | 119 |
| 11) Phenanthrene-d10 | 14.978 | 188 | 2715127 | 4000.00 | ug/kg | 93 |
| 16) Chrysene-d12 | 20.988 | 240 | 2531072 | 4000.00 | ug/kg | 93 |
| 20) Perylene-d12 | 26.254 | 264 | 2428547 | 4000.00 | ug/kg | 98 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.754 | 172 | 448343 | 1104.87 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 27.62%# | | | |
| 17) 4-Terphenyl-d14 | 17.587 | 244 | 526173 | 982.16 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 24.55%# | | | |

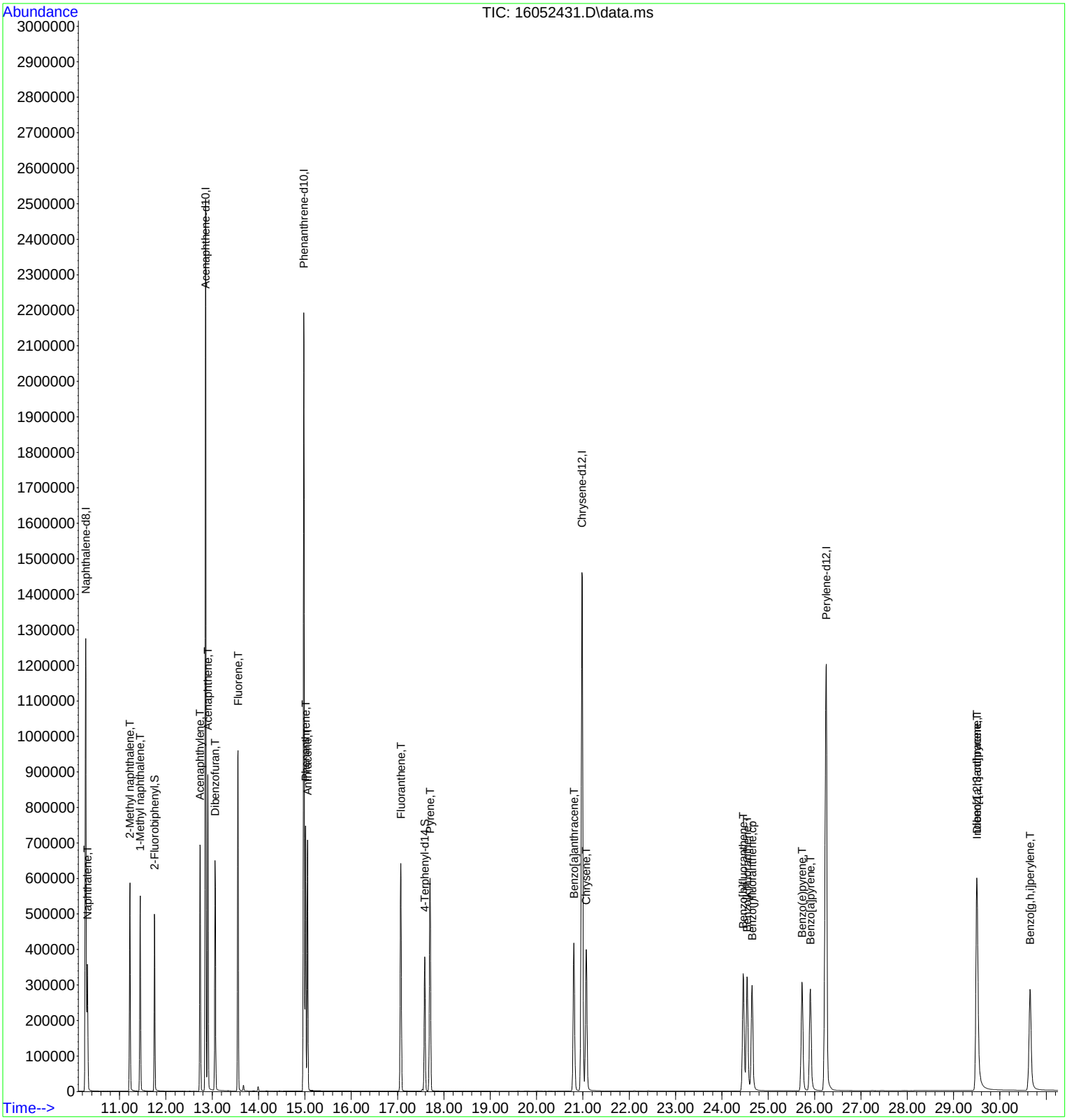
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.306 | 128 | 408400 | 1000.26 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.224 | 142 | 354418 | 1116.62 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.446 | 142 | 323536 | 1077.19 | ug/kg | 100 |
| 7) Acenaphthylene | 12.738 | 152 | 672354 | 1029.16 | ug/kg | 99 |
| 8) Acenaphthene | 12.905 | 153 | 414494 | 1005.47 | ug/kg | 99 |
| 9) Dibenzofuran | 13.062 | 168 | 608478 | 968.95 | ug/kg | 92 |
| 10) Fluorene | 13.558 | 166 | 529839 | 929.88 | ug/kg | 99 |
| 12) Phenanthrene | 15.014 | 178 | 704158 | 942.55 | ug/kg | 99 |
| 13) Anthracene | 15.056 | 178 | 695501 | 920.04 | ug/kg | 99 |
| 14) Fluoranthene | 17.071 | 202 | 721739 | 981.92 | ug/kg | 98 |
| 15) Pyrene | 17.701 | 202 | 709025 | 986.49 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.804 | 228 | 650569 | 1011.70 | ug/kg | 100 |
| 19) Chrysene | 21.075 | 228 | 603587 | 1016.13 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.460 | 252 | 635451 | 998.92 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.540 | 252 | 558854 | 973.26 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.650 | 252 | 550898 | 999.96 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.727 | 252 | 601908 | 1000.65 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.910 | 252 | 593368 | 1000.91 | ug/kg | 100 |
| 26) Indeno[1,2,3-cd]pyrene | 29.514 | 276 | 737576 | 1011.18 | ug/kg | 97 |
| 27) Dibenz[a,h]anthracene | 29.499 | 278 | 608552 | 1001.72 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.649 | 276 | 627565 | 997.35 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160524\
Data File : 16052431.D
Acq On : 25 May 2016 3:48 am
Operator :
Sample : CCV-160524
Misc : CCV
ALS Vial : 31 Sample Multiplier: 1

Quant Time: May 25 08:44:19 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



# GCMS8
# Calibration Curve
# For

# DHL Work Order
# 1605121

CAL ID: 660

# Method 8270 PAH Calibration Curve Sheet

**Instrument ID:** GCMS #8 **Calibration File Name:** PP160517.CAL

| Target Concentration | Solvent Amount mL | Standard Preparation Stocks and Surrogate (µL/mL) | Final Volume mL |
|---|---|---|---|
| 5 ppb | 0.999 | 0.001 mL of 5000 ppb | 1 |
| 10 ppb | 0.998 | 0.002 mL of 5000 ppb | 1 |
| 50 ppb | 0.990 | 0.01 mL of 5000 ppb | 1 |
| 100 ppb | 0.980 | 0.02 mL of 5000 ppb | 1 |
| 500 ppb | 0.900 | 0.10 mL of 5000 ppb | 1 |
| 1000 ppb | 0.800 | 0.20 mL of 5000 ppb | 1 |
| 2000 ppb | 0.600 | 0.40 mL of 5000 ppb | 1 |
| 5000 ppb | ---- | PAHCAL160510 | 10 |
| SSCV 2500 ppb | 0.500 | 0.50 mL of PAHSSCV160510-1 | 1 |
| SSCV 2500 ppb | ---- | PAHSSCV160510-2 | 1 |

## Standards Used for the Calibration Curve

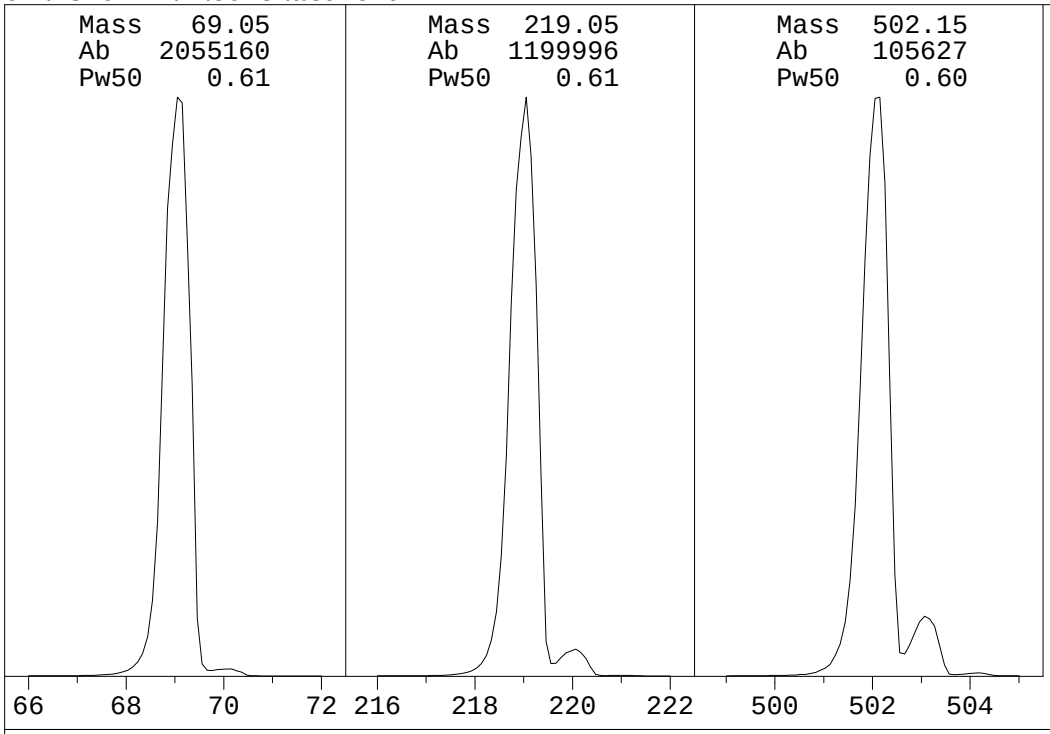
| Primary Stock STDs | DHL Standard ID | Second Source (SS) Stock STDs | DHL Standard ID |
|---|---|---|---|
| 5 PPM (5000 PPB) PAH CAL STD | **PAHCAL160510** | 5PPM (5000PPB) PAH SSCV STD | **PAHSSCV160510-1** |
| | | 5PPM (5000PPB) PAH SSCV STD | **PAHSSCV160510-2** |

| Review Item | Acceptance Criteria | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|---|
| 1. Are all standards within expiration dates? | Primary Stocks = 1 year<br>Intermediate Standards = 6 months | X | | | X |
| 2. Are all manual integrations listed on MI tracking form? **(DoD Projects only)** | Manual Integration Tracking Form | | | X | X |
| 3. Does the tune and resolution check meet criteria? | Benzo(b) / Benzo(k)phenanthrene Valley > 50%<br>See Tune Eval Report | X | | | X |
| 4. Does the ICAL curve meet criteria? Use average CF only if %RSD < 15% | %RSD < 15%<br>COD ≥ 0.990 | X | | | X |
| 5. Has the low point been reprocessed under the new ICAL curve and meets criteria? | 70-130% recovery | X | | | X |
| 6. Has the SSCV been analyzed and meets criteria? | 80-120% recovery | X | | | X |

Analyst: Karyn Lane Date: 05/18/16

Second-Level Review: Date: 05/19/2016

Tue May 17 15:37:19 2016 Instrument: GCMS #8
C:\MSDCHEM\1\5973\atune.u

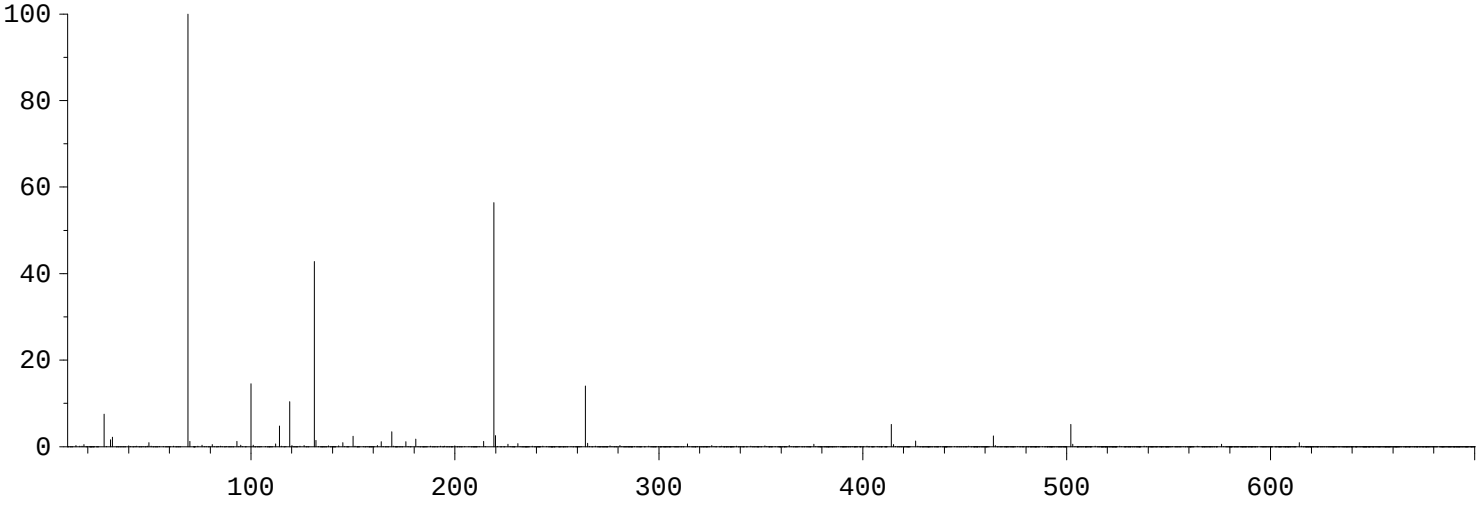



| | | | |
|---|---|---|---|
| Ion Pol | POS | MassGain | 48 |
| | | MassOffs | -11 |
| Emission | 34.6 | AmuGain | 2098 |
| EIEnrgy | 69.9 | AmuOffs | 132 |
| Filament | 2 | Wid219 | -0.001 |
| | | DC Pol | NEG |
| Repeller | 37.83 | | |
| IonFcus | 95.9 | HEDEnab | ON |
| EntLens | 12.0 | EMVolts | 1506 |
| EntOffs | 19.33 | | |
| | | Samples | 8 |
| PFTBA | OPEN | Averages | 3 |
| | | Stepsize | 0.10 |

Zones:

| | | | |
|---|---|---|---|
| MS Source | 230 | Foreline | 41 |
| MS Quad | 150 | | |

Scan: 10.00 - 700.00 Samples: 8 Thresh: 0 Step: 0.10
862 peaks Base: 69.05 Abundance: 1927168




| Mass | Abund | Rel Abund | Iso Mass | Iso Abund | Iso Ratio |
|---|---|---|---|---|---|
| 69.05 | 1927168 | 100.00 | 70.05 | 23616 | 1.23 |
| 219.05 | 1086464 | 56.38 | 219.95 | 49704 | 4.57 |
| 502.05 | 98928 | 5.13 | 503.05 | 10766 | 10.88 |

Air/Water Check: H20~0.48% N2~7.48% O2~2.21% CO2~0.12% N2/H2O~1565.94%

Column Flow: Front: 0 Back: 1.887 ml/min. Interface Temp: 310

Ramp Criteria:
Ion Focus Maximum 125 volts using ion 219; EM Gain 34065
Repeller Maximum 38 volts using ion 502;

MassGain Values @Samples: 45@3 45@2 45@1 45@0 48@FS

| TARGET MASS: | 50 | 69 | 131 | 219 | 414 | 502 | 800 |
|---|---|---|---|---|---|---|---|
| Amu Offset: | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 | 132.0 |
| Entrance Lens Offset: | 19.3 | 19.3 | 19.3 | 19.3 | 19.3 | 19.3 | 19.3 |

# Response Factor Report GCMS #8

Method Path : C:\msdchem\1\METHODS\
Method File : PAH160517.M
Title : CLP BNA Calibration - Large Volume Injection
Last Update : Wed May 18 08:55:04 2016
Response Via : Initial Calibration

Calibration Files
1 =16051715.D 2 =16051716.D 3 =16051717.D 4 =16051718.D 5 =16051719.D 6 =16051720.D 7 =16051721.D
8 =16051722.D

| | | Compound | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Avg | %RSD | Fit | RSD/CF | Constant | Linear | Quad |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | I | Naphthalene-d8 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 2) | T | Naphthalene | 0.971 | 0.931 | 0.909 | 0.923 | 0.896 | 0.882 | 0.854 | 0.803 | 0.896 | 5.70 | A | 0.0570 | 0.0000 | 0.8961 | 0.0000 |
| 3) | T | 2-Methyl napht... | 0.668 | 0.737 | 0.723 | 0.752 | 0.728 | 0.704 | 0.661 | 0.601 | 0.697 | 7.19 | A | 0.0719 | 0.0000 | 0.6966 | 0.0000 |
| 4) | T | 1-Methyl napht... | 0.697 | 0.702 | 0.687 | 0.699 | 0.676 | 0.648 | 0.610 | 0.555 | 0.659 | 7.98 | A | 0.0798 | 0.0000 | 0.6592 | 0.0000 |
| 5) | S | 2-Fluorobiphenyl | 0.930 | 0.951 | 0.942 | 0.982 | 0.925 | 0.877 | 0.808 | 0.711 | 0.891 | 10.09 | A | 0.1009 | 0.0000 | 0.8906 | 0.0000 |
| 6) | I | Acenaphthene-d10 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 7) | T | Acenaphthylene | 1.873 | 1.811 | 1.779 | 1.812 | 1.778 | 1.749 | 1.659 | 1.526 | 1.748 | 6.23 | A | 0.0623 | 0.0000 | 1.7484 | 0.0000 |
| 8) | T | Acenaphthene | 1.167 | 1.152 | 1.126 | 1.146 | 1.113 | 1.099 | 1.051 | 0.972 | 1.103 | 5.81 | A | 0.0581 | 0.0000 | 1.1033 | 0.0000 |
| 9) | T | Dibenzofuran | 1.723 | 1.773 | 1.714 | 1.766 | 1.706 | 1.690 | 1.606 | 1.468 | 1.681 | 5.96 | A | 0.0596 | 0.0000 | 1.6806 | 0.0000 |
| 10) | T | Fluorene | 1.574 | 1.580 | 1.544 | 1.570 | 1.557 | 1.539 | 1.475 | 1.360 | 1.525 | 4.88 | A | 0.0488 | 0.0000 | 1.5249 | 0.0000 |
| 11) | I | Phenanthrene-d10 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 12) | T | Phenanthrene | 1.343 | 1.225 | 1.137 | 1.093 | 1.075 | 1.049 | 0.987 | 0.896 | 1.101 | 12.58 | A | 0.1258 | 0.0000 | 1.1006 | 0.0000 |
| 13) | T | Anthracene | 1.350 | 1.221 | 1.143 | 1.125 | 1.092 | 1.066 | 1.009 | 0.903 | 1.114 | 12.07 | A | 0.1207 | 0.0000 | 1.1137 | 0.0000 |
| 14) | T | Fluoranthene | 1.583 | 1.275 | 1.196 | 1.123 | 1.107 | 1.088 | 1.044 | 0.963 | 1.172 | 16.25 | *Q | 1.0000 | 0.0006 | 1.1096 | -0.1184 |
| 15) | T | Pyrene | 1.586 | 1.256 | 1.180 | 1.100 | 1.074 | 1.064 | 1.028 | 0.961 | 1.156 | 16.94 | *Q | 1.0000 | 0.0006 | 1.0802 | -0.0964 |
| 16) | I | Chrysene-d12 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 17) | S | 4-Terphenyl-d14 | 0.872 | 0.888 | 0.864 | 0.856 | 0.860 | 0.858 | 0.821 | 0.754 | 0.847 | 4.97 | A | 0.0497 | 0.0000 | 0.8466 | 0.0000 |
| 18) | T | Benzo[a]anthra... | 1.506 | 1.204 | 1.026 | 1.022 | 1.027 | 1.032 | 0.987 | 0.920 | 1.091 | 17.03 | *Q | 0.9999 | 0.0005 | 1.0384 | -0.0949 |
| 19) | T | Chrysene | 1.521 | 1.202 | 0.989 | 0.969 | 0.955 | 0.951 | 0.910 | 0.854 | 1.044 | 20.85 | *Q | 1.0000 | 0.0007 | 0.9573 | -0.0833 |
| 20) | I | Perylene-d12 | ----------ISTD---------- | | | | | | | | | | | | | | |
| 21) | T | Benzo[b]fluora... | 1.525 | 1.225 | 1.056 | 1.050 | 1.055 | 1.058 | 1.026 | 0.966 | 1.120 | 15.99 | *Q | 1.0000 | 0.0005 | 1.0659 | -0.0797 |
| 22) | T | Benzo[k]fluora... | 1.318 | 1.047 | 0.912 | 0.909 | 0.937 | 0.953 | 0.939 | 0.886 | 0.987 | 14.39 | *Q | 0.9999 | 0.0003 | 0.9587 | -0.0575 |
| 23) | cp | Benzo(j)fluora... | 1.597 | 1.138 | 0.982 | 0.939 | 0.908 | 0.923 | 0.883 | 0.833 | 1.025 | 24.19# | *Q | 0.9999 | 0.0007 | 0.9226 | -0.0727 |
| 24) | T | Benzo(e)pyrene | 1.554 | 1.244 | 1.042 | 1.019 | 0.993 | 1.003 | 0.966 | 0.907 | 1.091 | 19.34 | *Q | 1.0000 | 0.0006 | 1.0086 | -0.0814 |
| 25) | T | Benzo[a]pyrene | 1.491 | 1.168 | 1.005 | 0.982 | 0.978 | 0.983 | 0.962 | 0.916 | 1.061 | 17.79 | *Q | 1.0000 | 0.0005 | 0.9888 | -0.0580 |
| 26) | T | Indeno[1,2,3-c... | 1.996 | 1.545 | 1.257 | 1.238 | 1.216 | 1.208 | 1.175 | 1.102 | 1.342 | 21.92 | *Q | 1.0000 | 0.0009 | 1.2223 | -0.0964 |
| 27) | T | Dibenz[a,h]ant... | 2.036 | 1.480 | 1.029 | 1.030 | 1.006 | 1.007 | 0.982 | 0.912 | 1.185 | 32.52 | *Q | 0.9999 | 0.0011 | 1.0172 | -0.0844 |
| 28) | T | Benzo[g,h,i]pe... | 1.728 | 1.360 | 1.090 | 1.080 | 1.051 | 1.040 | 1.013 | 0.954 | 1.164 | 22.12 | *Q | 1.0000 | 0.0008 | 1.0532 | -0.0802 |

(#) = Out of Range

Sequence Name: C:\msdchem\1\sequence\160517.S
Comment:
Operator:
Data Path: C:\MSDCHEM\1\DATA\160517\
Instrument Name: GCMS #8
Instrument Control Pre-Seq Cmd:
Data Analysis Pre-Seq Cmd:

Instrument Control Post-Seq Cmd:
Data Analysis Post-Seq Cmd:

Method Sections To Run
(X) Full Method
( ) Reprocessing Only

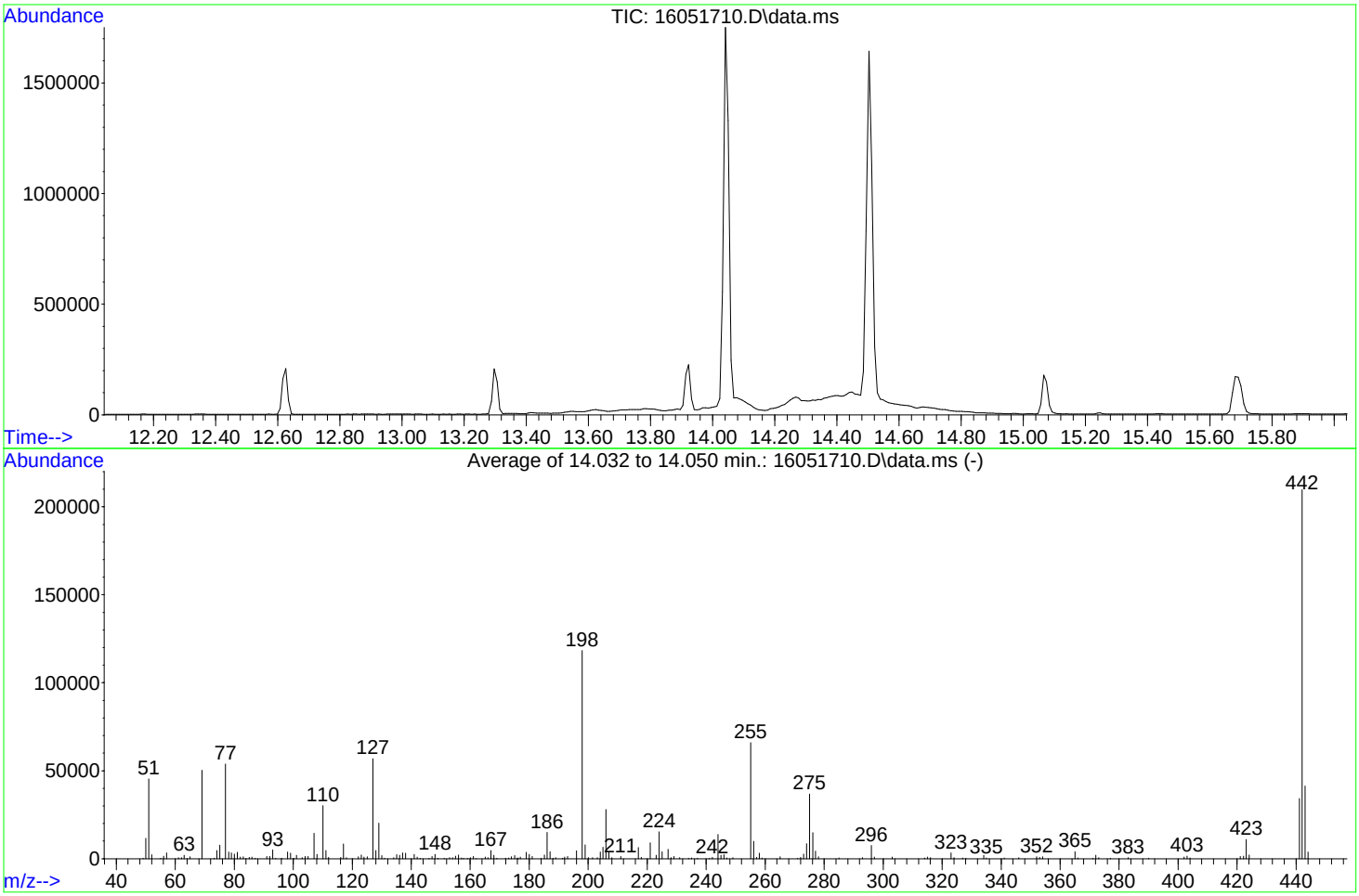
On A Barcode Mismatch
(X) Inject Anyway
( ) Don't Inject

| Line | | Sample Name/Misc Info | | |
|---|---|---|---|---|
| 1) | Sample | 1 | 16051601 DFTPPPCB | DFTPP-160517 |
| 2) | Sample | 2 | 16051602 1660-160511 | ICV-160517 |
| 3) | Sample | 3 | 16051703 1660-160511 | LCS-75186 |
| 4) | Sample | 4 | 16051704 1660-160511 | LCSD-75186 |
| 5) | Sample | 5 | 16051705 1660-160511 | MB-75186 |
| 6) | Sample | 6 | 16051706 1660-160511 | 1605115-01B |
| 7) | Sample | 7 | 16051707 1660-160511 | 1605115-02B |
| 8) | Sample | 1 | 16051708 DFTPPPAH | DFTPP-160517 |
| 9) | Sample | 2 | 16051709 PAH160510 | ICV-160517 |
| 10) | Sample | 1 | 16051710 DFTPPPAH | DFTPP-160517 |
| 11) | Sample | 2 | 16051711 PAH160510 | ICV-160517 |
| 12) | Sample | 3 | 16051712 PAH160510 | SBLK |
| 13) | Sample | 3 | 16051713 PAH160510 | SBLK |
| 14) | Sample | 3 | 16051714 PAH160510 | SBLK |
| 15) | Sample | 4 | 16051715 PAH160510 | P1-160517 5 |
| 16) | Sample | 5 | 16051716 PAH160510 | P2-160517 10 |
| 17) | Sample | 6 | 16051717 PAH160510 | P3-160517 50 |
| 18) | Sample | 7 | 16051718 PAH160510 | P4-160517 100 |
| 19) | Sample | 8 | 16051719 PAH160510 | P5-160517 500 |
| 20) | Sample | 9 | 16051720 PAH160510 | P6-160517 1000 |
| 21) | Sample | 10 | 16051721 PAH160510 | P7-160517 2000 |
| 22) | Sample | 11 | 16051722 PAH160510 | P8-160517 5000 |
| 23) | Sample | 12 | 16051723 PAH160510 | SSCV-160517 |
| 24) | Sample | 13 | 16051724 PAH160510 | SSCV-160517 |

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051710.D
Acq On : 17 May 2016 1:34 pm
Operator :
Sample : DFTPP-160517
Misc : TUNE
ALS Vial : 1 Sample Multiplier: 1

Integration File: RTEINT.P

Method : C:\msdchem\1\METHODS\DFTPPPAH.M
Title : CLP BNA Calibration - Large Volume Injection
Last Update : Thu Aug 27 07:24:43 2015




AutoFind: Scans 435, 436, 437; Background Corrected with Scan 431

| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 51 | 198 | 10 | 80 | 38.3 | 45352 | PASS |
| 68 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 69 | 198 | 0.00 | 100 | 42.4 | 50218 | PASS |
| 70 | 69 | 0.00 | 2 | 0.0 | 0 | PASS |
| 127 | 198 | 10 | 80 | 48.0 | 56837 | PASS |
| 197 | 198 | 0.00 | 2 | 0.0 | 0 | PASS |
| 198 | 198 | 100 | 100 | 100.0 | 118309 | PASS |
| 199 | 198 | 5 | 9 | 6.7 | 7917 | PASS |
| 275 | 198 | 10 | 60 | 31.0 | 36677 | PASS |
| 365 | 198 | 1 | 200 | 3.4 | 4059 | PASS |
| 441 | 442 | 0.01 | 24 | 16.3 | 34164 | PASS |
| 442 | 198 | 50 | 400 | 177.3 | 209768 | PASS |
| 443 | 442 | 15 | 24 | 19.7 | 41255 | PASS |

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051715.D
Acq On : 17 May 2016 4:58 pm
Operator :
Sample : P1-160517 5
Misc : CAL1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: May 18 14:55:15 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.276 | 136 | 1615408 | 4000.00 | ug/kg | 99 |
| 6) Acenaphthene-d10 | 12.862 | 164 | 1299470 | 4000.00 | ug/kg | 104 |
| 11) Phenanthrene-d10 | 14.983 | 188 | 2692201 | 4000.00 | ug/kg | 92 |
| 16) Chrysene-d12 | 20.996 | 240 | 2729963 | 4000.00 | ug/kg | 101 |
| 20) Perylene-d12 | 26.262 | 264 | 2530056 | 4000.00 | ug/kg | 102 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.765 | 172 | 1877 | 5.22 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 0.13%# | | | |
| 17) 4-Terphenyl-d14 | 17.598 | 244 | 2976 | 5.15 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 0.13%# | | | |

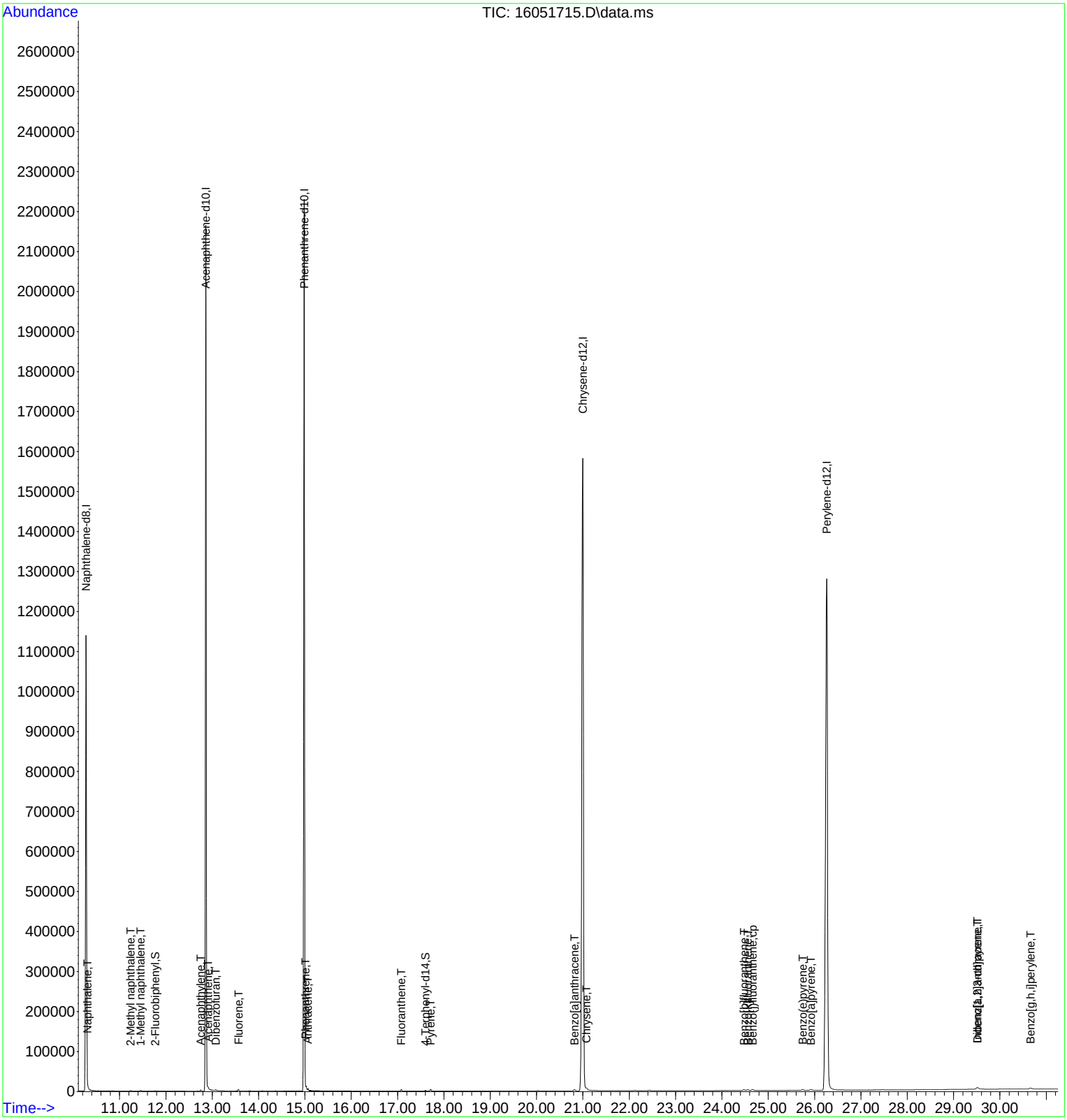
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.313 | 128 | 1960 | 5.42 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.234 | 142 | 1349 | 4.80 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.457 | 142 | 1407 | 5.29 | ug/kg | 95 |
| 7) Acenaphthylene | 12.749 | 152 | 3043 | 5.36 | ug/kg | 98 |
| 8) Acenaphthene | 12.911 | 153 | 1895 | 5.29 | ug/kg | 96 |
| 9) Dibenzofuran | 13.073 | 168 | 2799 | 5.13 | ug/kg | 93 |
| 10) Fluorene | 13.564 | 166 | 2556 | 5.16 | ug/kg | 99 |
| 12) Phenanthrene | 15.019 | 178 | 4521 | 6.10 | ug/kg | 97 |
| 13) Anthracene | 15.063 | 178 | 4542 | 6.06 | ug/kg | 98 |
| 14) Fluoranthene | 17.079 | 202 | 5328 | 5.09 | ug/kg | 100 |
| 15) Pyrene | 17.709 | 202 | 5338 | 5.08 | ug/kg | 96 |
| 18) Benzo[a]anthracene | 20.812 | 228 | 5140 | 5.45 | ug/kg | 99 |
| 19) Chrysene | 21.083 | 228 | 5190 | 5.21 | ug/kg | 98 |
| 21) Benzo[b]fluoranthene | 24.475 | 252 | 4824 | 5.45 | ug/kg | 98 |
| 22) Benzo[k]fluoranthene | 24.556 | 252 | 4169 | 5.77 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.665 | 252 | 5051 | 5.48 | ug/kg | 98 |
| 24) Benzo(e)pyrene | 25.742 | 252 | 4914 | 5.22 | ug/kg | 97 |
| 25) Benzo[a]pyrene | 25.918 | 252 | 4715 | 5.41 | ug/kg | 98 |
| 26) Indeno[1,2,3-cd]pyrene | 29.522 | 276 | 6312 | 5.30 | ug/kg | 97 |
| 27) Dibenz[a,h]anthracene | 29.507 | 278 | 6440 | 5.51 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.657 | 276 | 5466 | 5.18 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051715.D
Acq On : 17 May 2016 4:58 pm
Operator :
Sample : P1-160517 5
Misc : CAL1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: May 18 14:55:15 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051716.D
Acq On : 17 May 2016 5:34 pm
Operator :
Sample : P2-160517 10
Misc : CAL
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 18 14:21:49 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

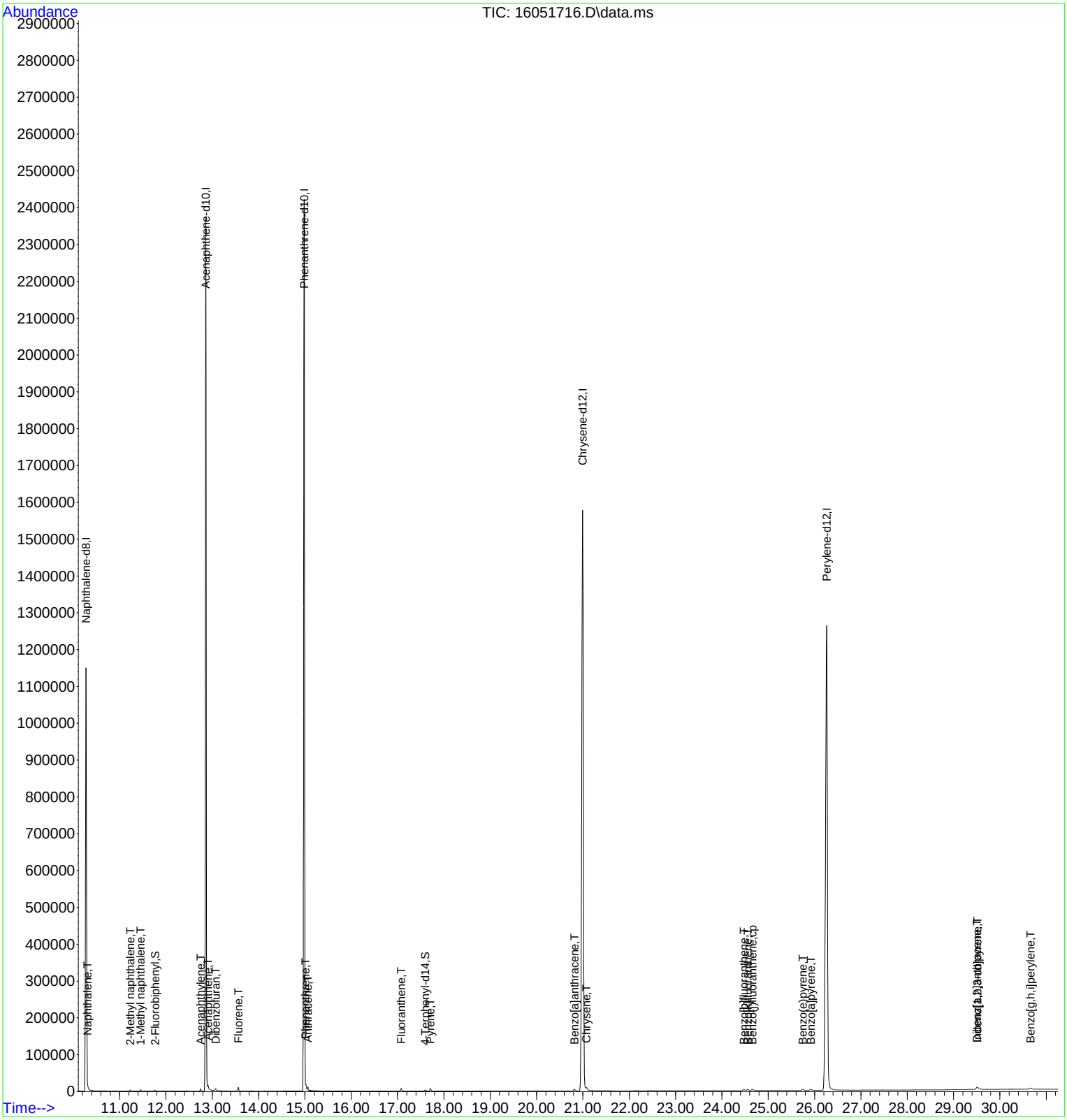
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.277 | 136 | 1669821 | 4000.00 | ug/kg | 102 |
| 6) Acenaphthene-d10 | 12.862 | 164 | 1410989 | 4000.00 | ug/kg | 113 |
| 11) Phenanthrene-d10 | 14.983 | 188 | 2926710 | 4000.00 | ug/kg | 100 |
| 16) Chrysene-d12 | 20.995 | 240 | 2655348 | 4000.00 | ug/kg | 98 |
| 20) Perylene-d12 | 26.262 | 264 | 2418020 | 4000.00 | ug/kg | 97 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.766 | 172 | 3970 | 10.68 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 0.27%# | | | |
| 17) 4-Terphenyl-d14 | 17.595 | 244 | 5897 | 10.49 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 0.26%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.314 | 128 | 3887 | 10.39 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.231 | 142 | 3075 | 10.57 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.453 | 142 | 2932 | 10.65 | ug/kg | 98 |
| 7) Acenaphthylene | 12.749 | 152 | 6390 | 10.36 | ug/kg | 98 |
| 8) Acenaphthene | 12.911 | 153 | 4063 | 10.44 | ug/kg | 98 |
| 9) Dibenzofuran | 13.073 | 168 | 6254 | 10.55 | ug/kg | 99 |
| 10) Fluorene | 13.564 | 166 | 5573 | 10.36 | ug/kg | 99 |
| 12) Phenanthrene | 15.019 | 178 | 8966 | 11.13 | ug/kg | 98 |
| 13) Anthracene | 15.063 | 178 | 8936 | 10.97 | ug/kg | 98 |
| 14) Fluoranthene | 17.079 | 202 | 9332 | 9.45 | ug/kg | 98 |
| 15) Pyrene | 17.708 | 202 | 9188 | 9.36 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.820 | 228 | 7990 | 9.79 | ug/kg | 98 |
| 19) Chrysene | 21.083 | 228 | 7982 | 9.83 | ug/kg | 98 |
| 21) Benzo[b]fluoranthene | 24.475 | 252 | 7404 | 9.78 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.555 | 252 | 6327 | 9.81 | ug/kg | 96 |
| 23) Benzo(j)fluoranthene | 24.658 | 252 | 6882 | 9.16 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.742 | 252 | 7518 | 9.85 | ug/kg | 95 |
| 25) Benzo[a]pyrene | 25.918 | 252 | 7061 | 9.69 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.522 | 276 | 9340 | 9.78 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.507 | 278 | 8949 | 10.05 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.657 | 276 | 8222 | 9.89 | ug/kg | 98 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051716.D
Acq On : 17 May 2016 5:34 pm
Operator :
Sample : P2-160517 10
Misc : CAL
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 18 14:21:49 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051717.D
Acq On : 17 May 2016 6:12 pm
Operator :
Sample : P3-160517 50
Misc : CAL
ALS Vial : 6 Sample Multiplier: 1

Quant Time: May 18 14:21:53 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

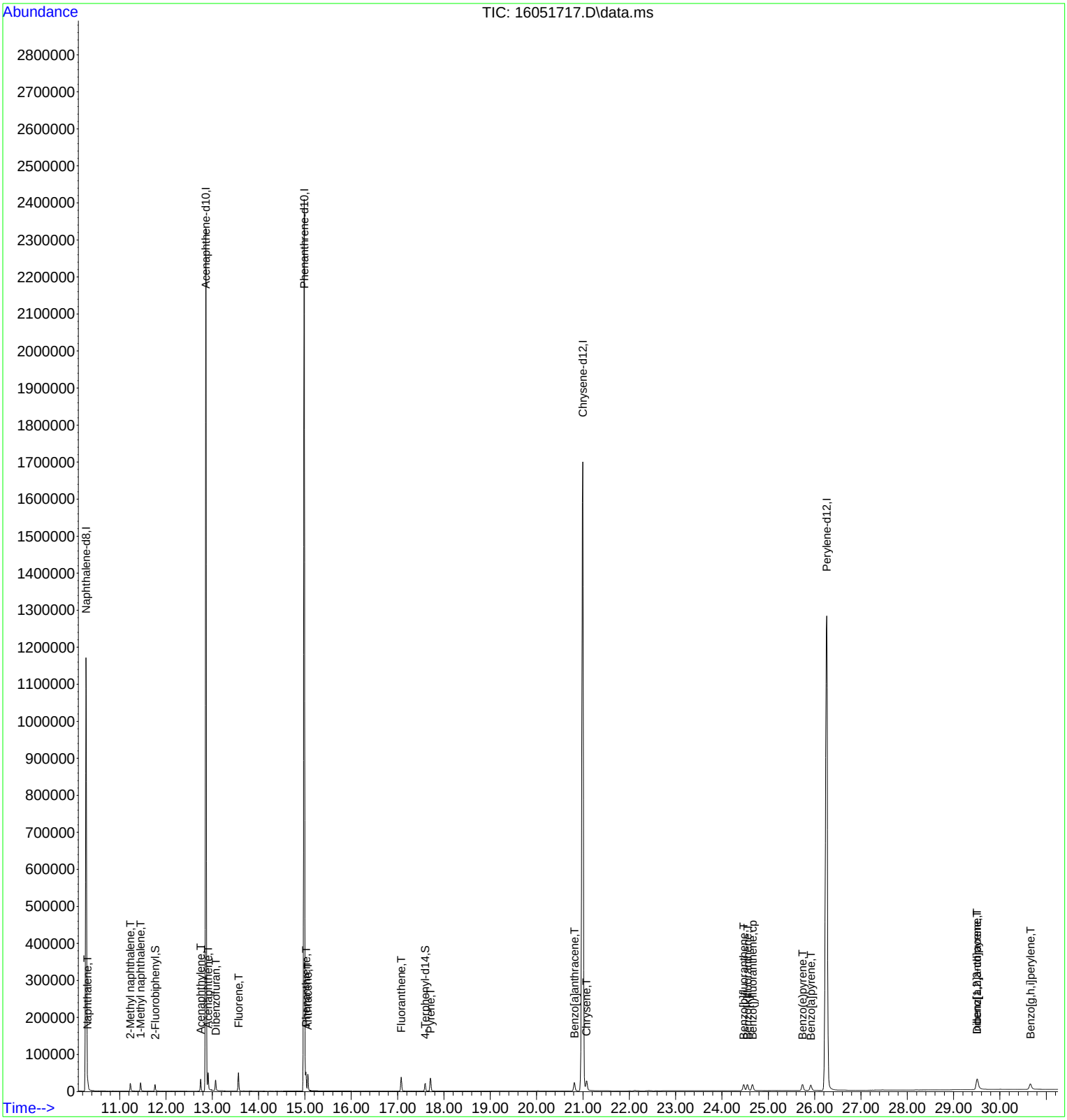
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.275 | 136 | 1691963 | 4000.00 | ug/kg | 104 |
| 6) Acenaphthene-d10 | 12.861 | 164 | 1420682 | 4000.00 | ug/kg | 113 |
| 11) Phenanthrene-d10 | 14.984 | 188 | 2974690 | 4000.00 | ug/kg | 102 |
| 16) Chrysene-d12 | 20.995 | 240 | 2826915 | 4000.00 | ug/kg | 104 |
| 20) Perylene-d12 | 26.262 | 264 | 2545051 | 4000.00 | ug/kg | 102 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.765 | 172 | 19916 | 52.87 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 1.32%# | | | |
| 17) 4-Terphenyl-d14 | 17.596 | 244 | 30536 | 51.03 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 1.28%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.313 | 128 | 19225 | 50.72 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.230 | 142 | 15281 | 51.86 | ug/kg | 98 |
| 4) 1-Methyl naphthalene | 11.452 | 142 | 14530 | 52.11 | ug/kg | 98 |
| 7) Acenaphthylene | 12.748 | 152 | 31599 | 50.89 | ug/kg | 98 |
| 8) Acenaphthene | 12.910 | 153 | 20004 | 51.05 | ug/kg | 97 |
| 9) Dibenzofuran | 13.072 | 168 | 30435 | 50.99 | ug/kg | 97 |
| 10) Fluorene | 13.563 | 166 | 27428 | 50.64 | ug/kg | 100 |
| 12) Phenanthrene | 15.020 | 178 | 42270 | 51.64 | ug/kg | 97 |
| 13) Anthracene | 15.062 | 178 | 42517 | 51.34 | ug/kg | 98 |
| 14) Fluoranthene | 17.077 | 202 | 44464 | 51.91 | ug/kg | 98 |
| 15) Pyrene | 17.709 | 202 | 43861 | 52.40 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.812 | 228 | 36261 | 47.66 | ug/kg | 98 |
| 19) Chrysene | 21.083 | 228 | 34959 | 48.99 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.467 | 252 | 33604 | 47.88 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.548 | 252 | 29005 | 46.47 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.658 | 252 | 31228 | 50.07 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.742 | 252 | 33142 | 49.21 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.918 | 252 | 31972 | 48.73 | ug/kg | 98 |
| 26) Indeno[1,2,3-cd]pyrene | 29.514 | 276 | 39995 | 48.61 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.500 | 278 | 32742 | 46.13 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.657 | 276 | 34676 | 48.76 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051717.D
Acq On : 17 May 2016 6:12 pm
Operator :
Sample : P3-160517 50
Misc : CAL
ALS Vial : 6 Sample Multiplier: 1

Quant Time: May 18 14:21:53 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051718.D
Acq On : 17 May 2016 6:49 pm
Operator :
Sample : P4-160517 100
Misc : CAL
ALS Vial : 7 Sample Multiplier: 1

Quant Time: May 18 14:21:56 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

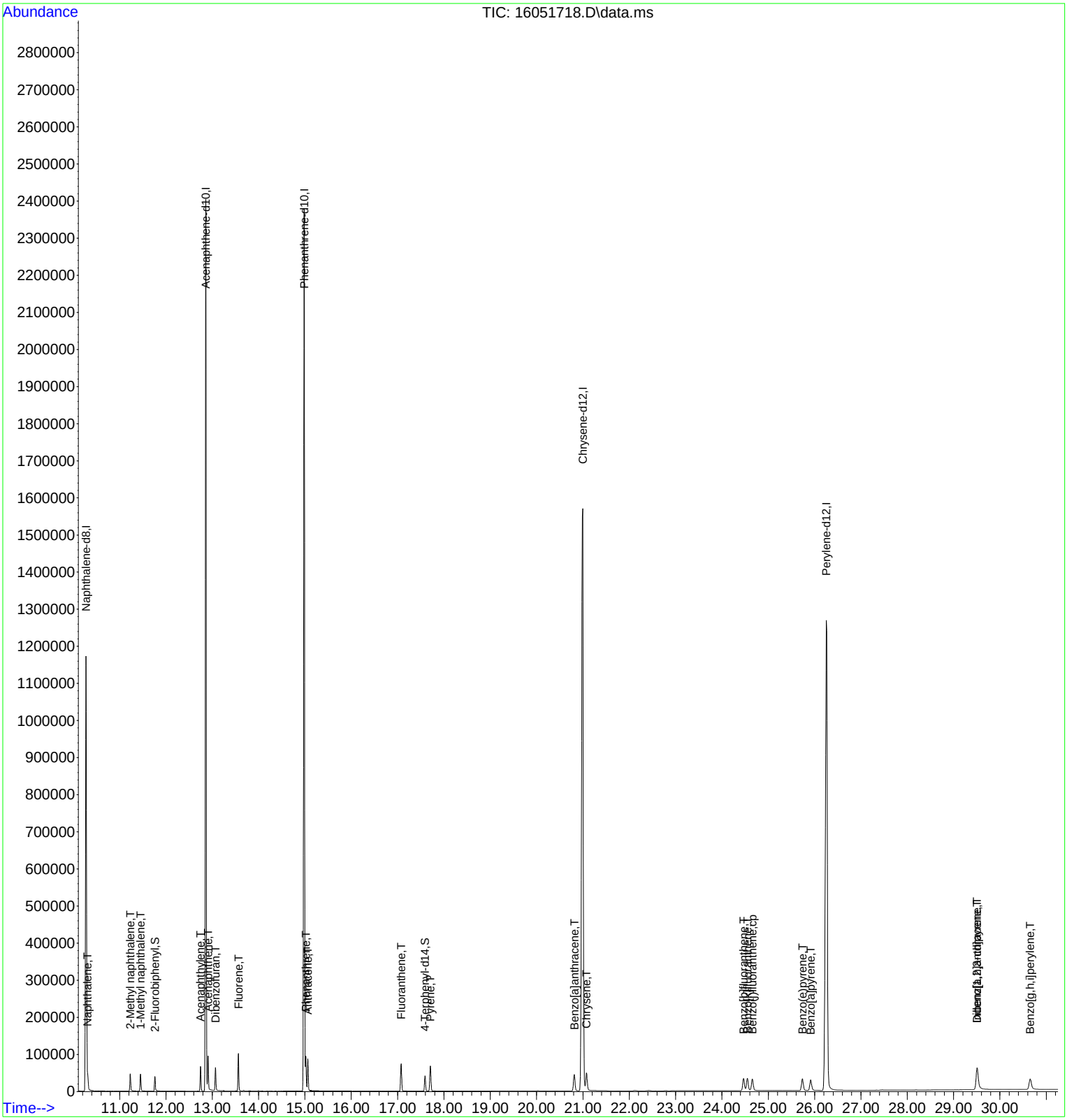
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.276 | 136 | 1693906 | 4000.00 | ug/kg | 104 |
| 6) Acenaphthene-d10 | 12.861 | 164 | 1440728 | 4000.00 | ug/kg | 115 |
| 11) Phenanthrene-d10 | 14.983 | 188 | 2966427 | 4000.00 | ug/kg | 101 |
| 16) Chrysene-d12 | 20.994 | 240 | 2706021 | 4000.00 | ug/kg | 100 |
| 20) Perylene-d12 | 26.254 | 264 | 2498423 | 4000.00 | ug/kg | 101 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.760 | 172 | 41597 | 110.29 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 2.76%# | | | |
| 17) 4-Terphenyl-d14 | 17.592 | 244 | 57884 | 101.06 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 2.53%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.313 | 128 | 39101 | 103.04 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.230 | 142 | 31845 | 107.95 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.452 | 142 | 29622 | 106.11 | ug/kg | 99 |
| 7) Acenaphthylene | 12.743 | 152 | 65260 | 103.63 | ug/kg | 99 |
| 8) Acenaphthene | 12.910 | 153 | 41268 | 103.85 | ug/kg | 98 |
| 9) Dibenzofuran | 13.067 | 168 | 63596 | 105.06 | ug/kg | 94 |
| 10) Fluorene | 13.563 | 166 | 56542 | 102.94 | ug/kg | 100 |
| 12) Phenanthrene | 15.019 | 178 | 81029 | 99.27 | ug/kg | 97 |
| 13) Anthracene | 15.061 | 178 | 83432 | 101.02 | ug/kg | 98 |
| 14) Fluoranthene | 17.076 | 202 | 83259 | 99.39 | ug/kg | 99 |
| 15) Pyrene | 17.705 | 202 | 81588 | 99.81 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.811 | 228 | 69165 | 96.87 | ug/kg | 99 |
| 19) Chrysene | 21.075 | 228 | 65585 | 98.75 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.467 | 252 | 65590 | 96.99 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.547 | 252 | 56746 | 93.79 | ug/kg | 100 |
| 23) Benzo(j)fluoranthene | 24.657 | 252 | 58663 | 98.81 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.734 | 252 | 63628 | 98.71 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.917 | 252 | 61356 | 97.35 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.514 | 276 | 77335 | 98.62 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.499 | 278 | 64324 | 96.94 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.656 | 276 | 67436 | 99.67 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051718.D
Acq On : 17 May 2016 6:49 pm
Operator :
Sample : P4-160517 100
Misc : CAL
ALS Vial : 7 Sample Multiplier: 1

Quant Time: May 18 14:21:56 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051719.D
Acq On : 17 May 2016 7:26 pm
Operator :
Sample : P5-160517 500
Misc : CAL
ALS Vial : 8 Sample Multiplier: 1

Quant Time: May 18 14:22:00 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

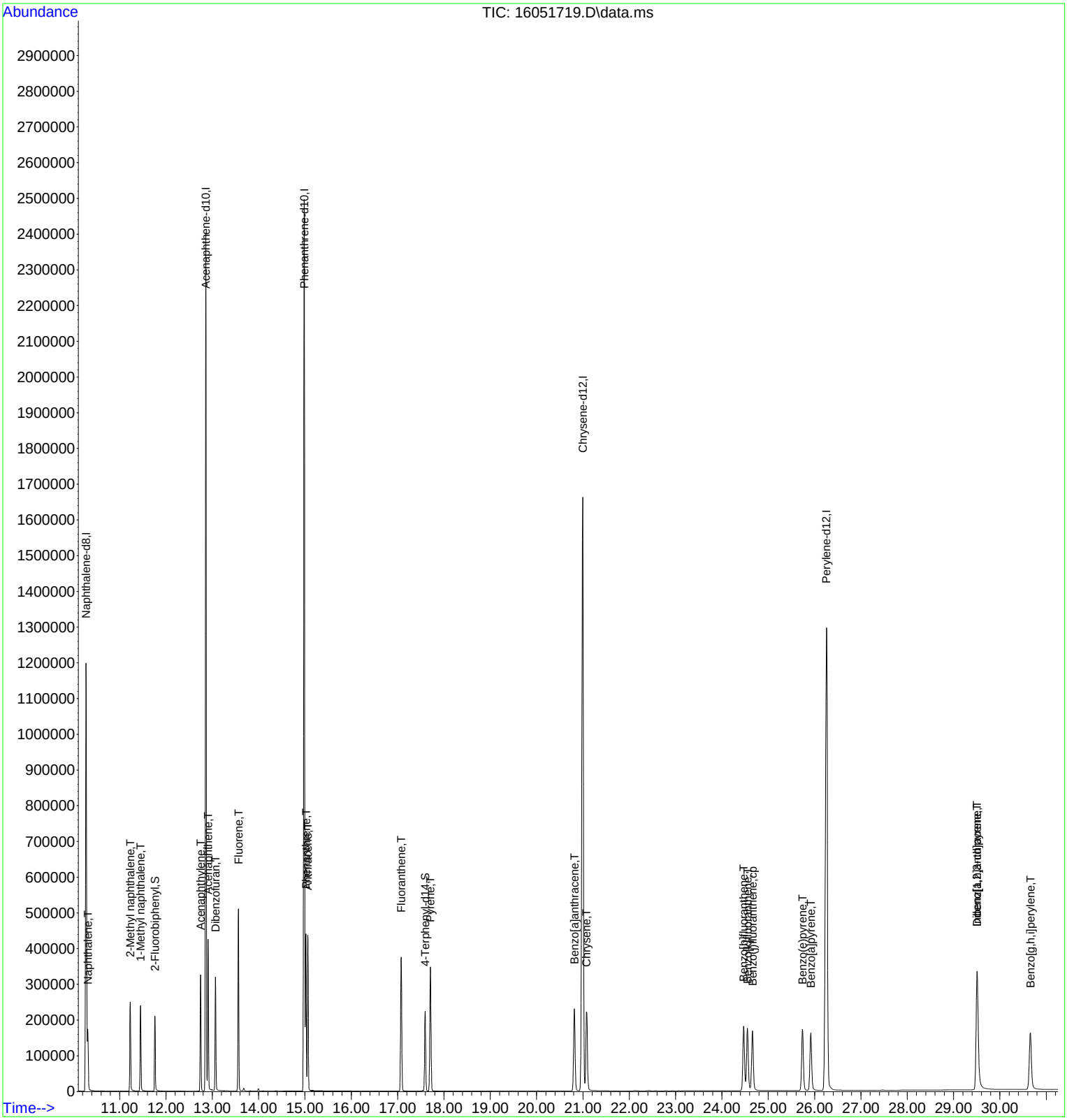
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.275 | 136 | 1716888 | 4000.00 | ug/kg | 105 |
| 6) Acenaphthene-d10 | 12.861 | 164 | 1420427 | 4000.00 | ug/kg | 113 |
| 11) Phenanthrene-d10 | 14.984 | 188 | 3065132 | 4000.00 | ug/kg | 105 |
| 16) Chrysene-d12 | 20.996 | 240 | 2806740 | 4000.00 | ug/kg | 104 |
| 20) Perylene-d12 | 26.255 | 264 | 2612071 | 4000.00 | ug/kg | 105 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.760 | 172 | 198425 | 519.07 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 12.98%# | | | |
| 17) 4-Terphenyl-d14 | 17.593 | 244 | 301886 | 508.16 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 12.70%# | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.312 | 128 | 192186 | 499.67 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.229 | 142 | 156202 | 522.41 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.451 | 142 | 144981 | 512.40 | ug/kg | 99 |
| 7) Acenaphthylene | 12.748 | 152 | 315668 | 508.42 | ug/kg | 99 |
| 8) Acenaphthene | 12.910 | 153 | 197655 | 504.51 | ug/kg | 98 |
| 9) Dibenzofuran | 13.067 | 168 | 302969 | 507.65 | ug/kg | 91 |
| 10) Fluorene | 13.563 | 166 | 276455 | 510.53 | ug/kg | 99 |
| 12) Phenanthrene | 15.020 | 178 | 411797 | 488.27 | ug/kg | 98 |
| 13) Anthracene | 15.062 | 178 | 418563 | 490.47 | ug/kg | 98 |
| 14) Fluoranthene | 17.077 | 202 | 424180 | 503.59 | ug/kg | 99 |
| 15) Pyrene | 17.709 | 202 | 411312 | 500.25 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.812 | 228 | 360174 | 498.19 | ug/kg | 99 |
| 19) Chrysene | 21.076 | 228 | 335004 | 501.45 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.468 | 252 | 344489 | 497.86 | ug/kg | 99 |
| 22) Benzo[k]fluoranthene | 24.548 | 252 | 306053 | 491.39 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.658 | 252 | 296427 | 493.61 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.735 | 252 | 324231 | 494.73 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.918 | 252 | 319375 | 496.08 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.515 | 276 | 396879 | 499.27 | ug/kg | 98 |
| 27) Dibenz[a,h]anthracene | 29.500 | 278 | 328543 | 495.21 | ug/kg | 99 |
| 28) Benzo[g,h,i]perylene | 30.657 | 276 | 343154 | 500.70 | ug/kg | 99 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051719.D
Acq On : 17 May 2016 7:26 pm
Operator :
Sample : P5-160517 500
Misc : CAL
ALS Vial : 8 Sample Multiplier: 1

Quant Time: May 18 14:22:00 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051720.D
Acq On : 17 May 2016 8:03 pm
Operator :
Sample : P6-160517 1000
Misc : CAL
ALS Vial : 9 Sample Multiplier: 1

Quant Time: May 18 14:22:03 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.276 | 136 | 1672746 | 4000.00 | ug/kg | 103 |
| 6) Acenaphthene-d10 | 12.862 | 164 | 1335900 | 4000.00 | ug/kg | 107 |
| 11) Phenanthrene-d10 | 14.983 | 188 | 3005081 | 4000.00 | ug/kg | 103 |
| 16) Chrysene-d12 | 20.996 | 240 | 2748497 | 4000.00 | ug/kg | 101 |
| 20) Perylene-d12 | 26.263 | 264 | 2515463 | 4000.00 | ug/kg | 101 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.761 | 172 | 366689 | 984.56 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 24.61%# | | | |
| 17) 4-Terphenyl-d14 | 17.592 | 244 | 589485 | 1013.30 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 25.33%# | | | |

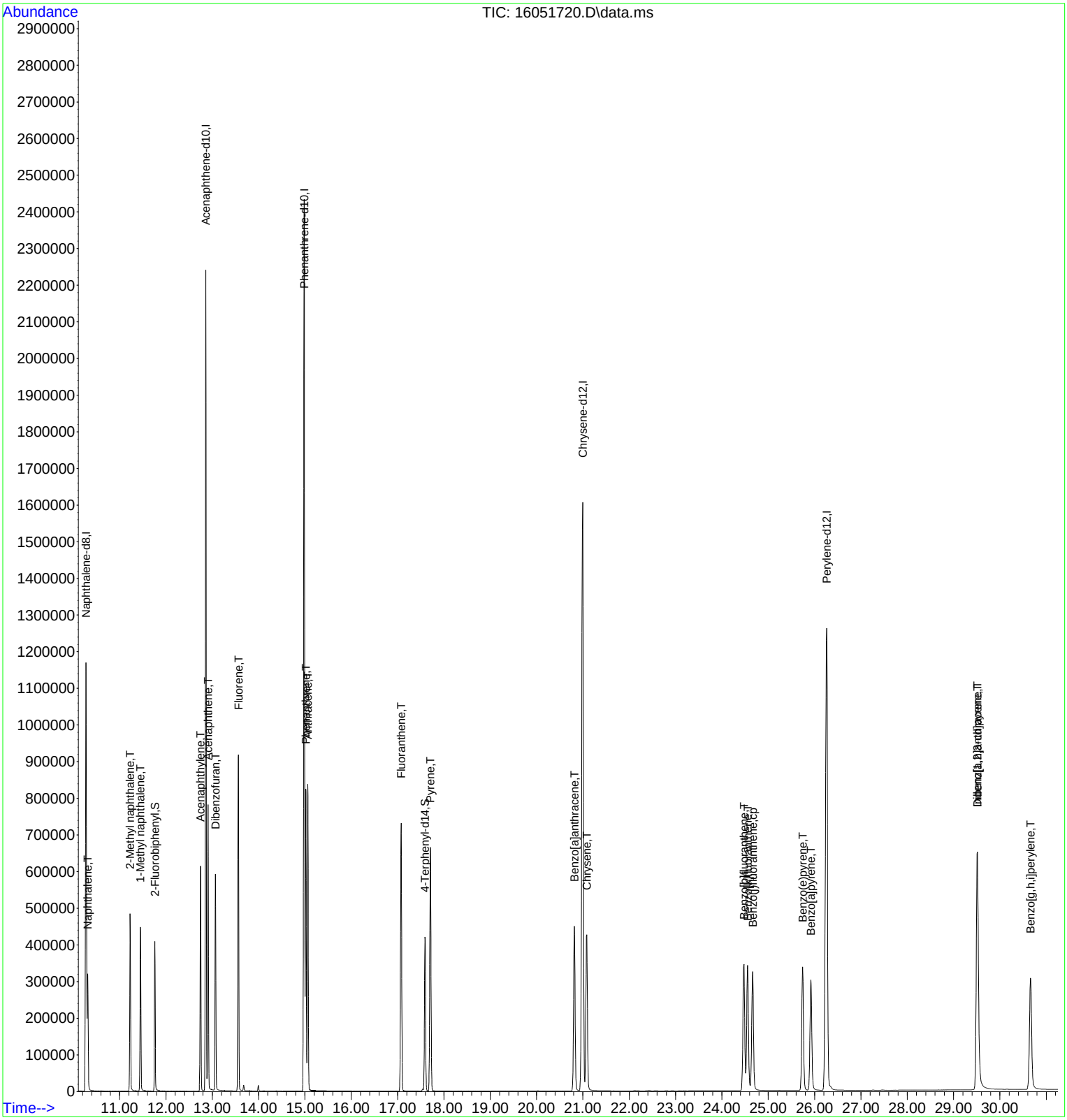
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.313 | 128 | 368948 | 984.54 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.227 | 142 | 294264 | 1010.11 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.449 | 142 | 270777 | 982.25 | ug/kg | 98 |
| 7) Acenaphthylene | 12.744 | 152 | 584017 | 1000.15 | ug/kg | 99 |
| 8) Acenaphthene | 12.911 | 153 | 367052 | 996.17 | ug/kg | 99 |
| 9) Dibenzofuran | 13.068 | 168 | 564260 | 1005.29 | ug/kg | 95 |
| 10) Fluorene | 13.564 | 166 | 514152 | 1009.56 | ug/kg | 99 |
| 12) Phenanthrene | 15.019 | 178 | 788028 | 953.04 | ug/kg | 99 |
| 13) Anthracene | 15.063 | 178 | 800602 | 956.88 | ug/kg | 99 |
| 14) Fluoranthene | 17.076 | 202 | 817359 | 1005.41 | ug/kg | 99 |
| 15) Pyrene | 17.709 | 202 | 799661 | 1005.73 | ug/kg | 98 |
| 18) Benzo[a]anthracene | 20.813 | 228 | 709426 | 1016.07 | ug/kg | 100 |
| 19) Chrysene | 21.084 | 228 | 653281 | 1012.70 | ug/kg | 99 |
| 21) Benzo[b]fluoranthene | 24.475 | 252 | 665603 | 1010.40 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.556 | 252 | 599301 | 1008.21 | ug/kg | 99 |
| 23) Benzo(j)fluoranthene | 24.666 | 252 | 580263 | 1017.28 | ug/kg | 99 |
| 24) Benzo(e)pyrene | 25.743 | 252 | 630968 | 1013.00 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.918 | 252 | 618328 | 1007.08 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.522 | 276 | 759719 | 1005.42 | ug/kg | 99 |
| 27) Dibenz[a,h]anthracene | 29.508 | 278 | 633064 | 1006.18 | ug/kg | 100 |
| 28) Benzo[g,h,i]perylene | 30.665 | 276 | 654258 | 1003.99 | ug/kg | 100 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051720.D
Acq On : 17 May 2016 8:03 pm
Operator :
Sample : P6-160517 1000
Misc : CAL
ALS Vial : 9 Sample Multiplier: 1

Quant Time: May 18 14:22:03 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051721.D
Acq On : 17 May 2016 8:40 pm
Operator :
Sample : P7-160517 2000
Misc : CAL
ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 18 14:22:07 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.273 | 136 | 1630045 | 4000.00 | ug/kg | 100 |
| 6) Acenaphthene-d10 | 12.862 | 164 | 1254060 | 4000.00 | ug/kg | 100 |
| 11) Phenanthrene-d10 | 14.981 | 188 | 2926310 | 4000.00 | ug/kg | 100 |
| 16) Chrysene-d12 | 20.989 | 240 | 2710742 | 4000.00 | ug/kg | 100 |
| 20) Perylene-d12 | 26.255 | 264 | 2483020 | 4000.00 | ug/kg | 100 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.762 | 172 | 658153 | 1813.43 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 45.34% | | | |
| 17) 4-Terphenyl-d14 | 17.593 | 244 | 1112679 | 1939.28 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 48.48%# | | | |

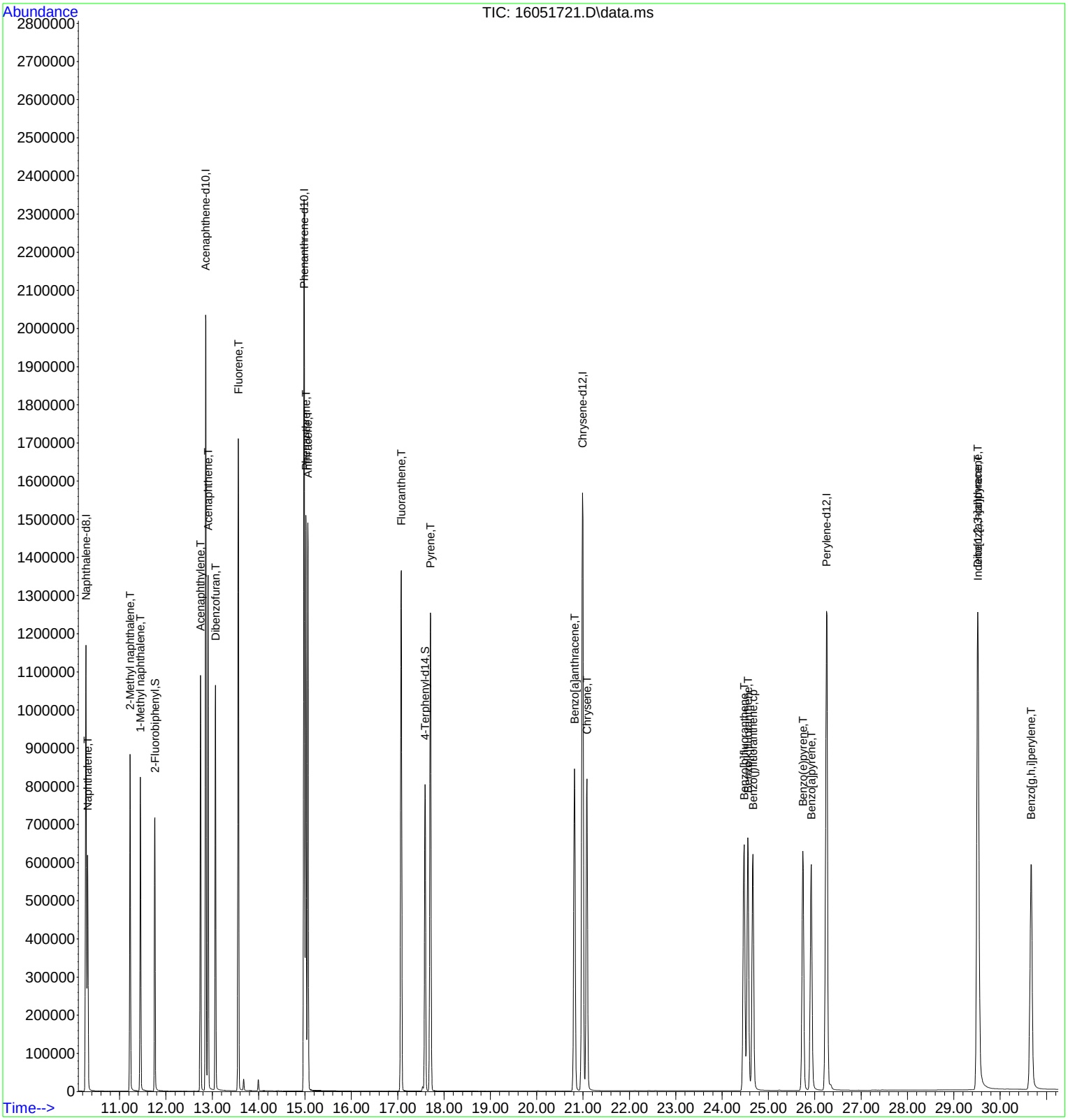
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.310 | 128 | 695769 | 1905.31 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.227 | 142 | 538753 | 1897.81 | ug/kg | 100 |
| 4) 1-Methyl naphthalene | 11.449 | 142 | 497158 | 1850.70 | ug/kg | 100 |
| 7) Acenaphthylene | 12.744 | 152 | 1039945 | 1897.17 | ug/kg | 100 |
| 8) Acenaphthene | 12.911 | 153 | 659005 | 1905.25 | ug/kg | 100 |
| 9) Dibenzofuran | 13.068 | 168 | 1007003 | 1911.16 | ug/kg | 100 |
| 10) Fluorene | 13.559 | 166 | 925041 | 1934.89 | ug/kg | 100 |
| 12) Phenanthrene | 15.019 | 178 | 1444658 | 1794.20 | ug/kg | 100 |
| 13) Anthracene | 15.061 | 178 | 1476119 | 1811.76 | ug/kg | 100 |
| 14) Fluoranthene | 17.077 | 202 | 1527667 | 1984.95 | ug/kg | 100 |
| 15) Pyrene | 17.706 | 202 | 1503502 | 1988.60 | ug/kg | 100 |
| 18) Benzo[a]anthracene | 20.813 | 228 | 1337835 | 1989.79 | ug/kg | 100 |
| 19) Chrysene | 21.084 | 228 | 1233351 | 1983.94 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.475 | 252 | 1273446 | 1997.62 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.556 | 252 | 1165290 | 2018.15 | ug/kg | 100 |
| 23) Benzo(j)fluoranthene | 24.666 | 252 | 1096280 | 1988.83 | ug/kg | 100 |
| 24) Benzo(e)pyrene | 25.742 | 252 | 1199708 | 1993.89 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.926 | 252 | 1194718 | 2003.05 | ug/kg | 100 |
| 26) Indeno[1,2,3-cd]pyrene | 29.530 | 276 | 1458740 | 1998.39 | ug/kg | 100 |
| 27) Dibenz[a,h]anthracene | 29.515 | 278 | 1219313 | 2010.42 | ug/kg | 100 |
| 28) Benzo[g,h,i]perylene | 30.672 | 276 | 1257350 | 1996.01 | ug/kg | 100 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051721.D
Acq On : 17 May 2016 8:40 pm
Operator :
Sample : P7-160517 2000
Misc : CAL
ALS Vial : 10 Sample Multiplier: 1

Quant Time: May 18 14:22:07 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051722.D
Acq On : 17 May 2016 9:17 pm
Operator :
Sample : P8-160517 5000
Misc : CAL
ALS Vial : 11 Sample Multiplier: 1

Quant Time: May 18 14:22:11 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

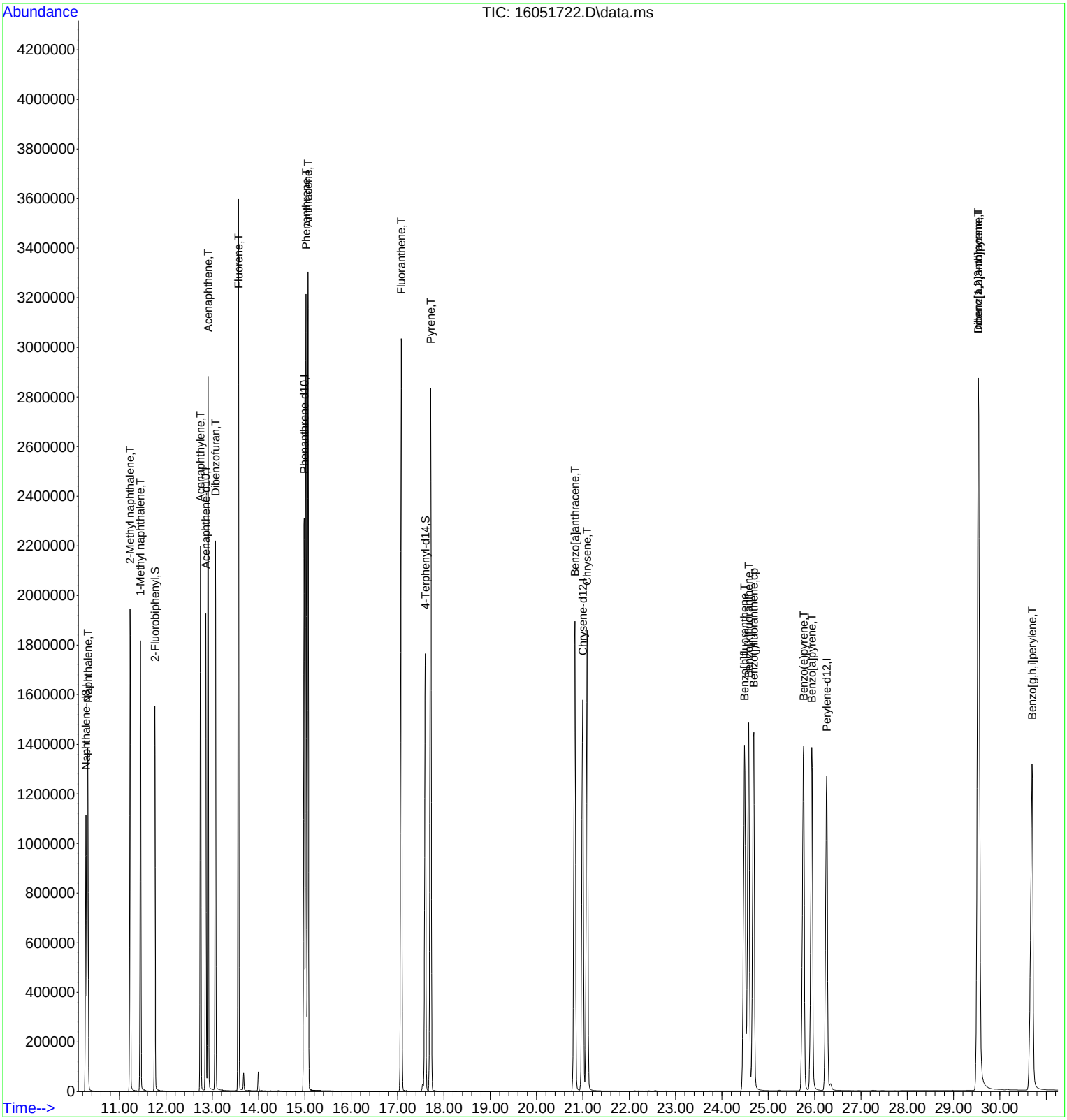
| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.276 | 136 | 1589455 | 4000.00 | ug/kg | 98 |
| 6) Acenaphthene-d10 | 12.862 | 164 | 1157466 | 4000.00 | ug/kg | 92 |
| 11) Phenanthrene-d10 | 14.984 | 188 | 2872086 | 4000.00 | ug/kg | 98 |
| 16) Chrysene-d12 | 20.995 | 240 | 2715512 | 4000.00 | ug/kg | 100 |
| 20) Perylene-d12 | 26.262 | 264 | 2467636 | 4000.00 | ug/kg | 99 |
| **System Monitoring Compounds** | | | | | | Dev(Min) |
| 5) 2-Fluorobiphenyl | 11.761 | 172 | 1413417 | 3993.89 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 99.85% | | | |
| 17) 4-Terphenyl-d14 | 17.598 | 244 | 2558145 | 4450.75 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 111.27% | | | |
| **Target Compounds** | | | | | | Qvalue |
| 2) Naphthalene | 10.313 | 128 | 1596025 | 4482.20 | ug/kg | 99 |
| 3) 2-Methyl naphthalene | 11.226 | 142 | 1194581 | 4315.50 | ug/kg | 98 |
| 4) 1-Methyl naphthalene | 11.453 | 142 | 1102506 | 4208.96 | ug/kg | 98 |
| 7) Acenaphthylene | 12.749 | 152 | 2208060 | 4364.33 | ug/kg | 99 |
| 8) Acenaphthene | 12.911 | 153 | 1406596 | 4405.99 | ug/kg | 99 |
| 9) Dibenzofuran | 13.068 | 168 | 2123466 | 4366.39 | ug/kg | 87 |
| 10) Fluorene | 13.564 | 166 | 1967421 | 4458.63 | ug/kg | 100 |
| 12) Phenanthrene | 15.024 | 178 | 3215270 | 4068.60 | ug/kg | 97 |
| 13) Anthracene | 15.068 | 178 | 3242032 | 4054.33 | ug/kg | 97 |
| 14) Fluoranthene | 17.080 | 202 | 3457212 | 5005.46 | ug/kg | 96 |
| 15) Pyrene | 17.715 | 202 | 3449381 | 5003.88 | ug/kg | 97 |
| 18) Benzo[a]anthracene | 20.827 | 228 | 3123986 | 5001.18 | ug/kg | 98 |
| 19) Chrysene | 21.090 | 228 | 2900176 | 5004.26 | ug/kg | 98 |
| 21) Benzo[b]fluoranthene | 24.489 | 252 | 2980787 | 4998.98 | ug/kg | 98 |
| 22) Benzo[k]fluoranthene | 24.577 | 252 | 2731461 | 4991.28 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.687 | 252 | 2544105 | 4948.79 | ug/kg | 98 |
| 24) Benzo(e)pyrene | 25.764 | 252 | 2799050 | 5000.38 | ug/kg | 99 |
| 25) Benzo[a]pyrene | 25.940 | 252 | 2826486 | 4997.57 | ug/kg | 97 |
| 26) Indeno[1,2,3-cd]pyrene | 29.544 | 276 | 3400603 | 4999.58 | ug/kg | 88 |
| 27) Dibenz[a,h]anthracene | 29.536 | 278 | 2812177 | 4994.40 | ug/kg | 97 |
| 28) Benzo[g,h,i]perylene | 30.694 | 276 | 2941935 | 5000.81 | ug/kg | 97 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051722.D
Acq On : 17 May 2016 9:17 pm
Operator :
Sample : P8-160517 5000
Misc : CAL
ALS Vial : 11 Sample Multiplier: 1

Quant Time: May 18 14:22:11 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051723.D
Acq On : 17 May 2016 9:54 pm
Operator :
Sample : SSCV-160517
Misc : ICV
ALS Vial : 12 Sample Multiplier: 1

Quant Time: May 18 14:22:14 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.273 | 136 | 1550711 | 4000.00 | ug/kg | 95 |
| 6) Acenaphthene-d10 | 12.856 | 164 | 1014776 | 4000.00 | ug/kg | 81 |
| 11) Phenanthrene-d10 | 14.978 | 188 | 2298444 | 4000.00 | ug/kg | 79 |
| 16) Chrysene-d12 | 20.987 | 240 | 2487435 | 4000.00 | ug/kg | 92 |
| 20) Perylene-d12 | 26.254 | 264 | 2286057 | 4000.00 | ug/kg | 92 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.762 | 172 | 122 | 0.35 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 0.01%# | | | |
| 17) 4-Terphenyl-d14 | 17.592 | 244 | 528 | 1.00 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 0.03%# | | | |

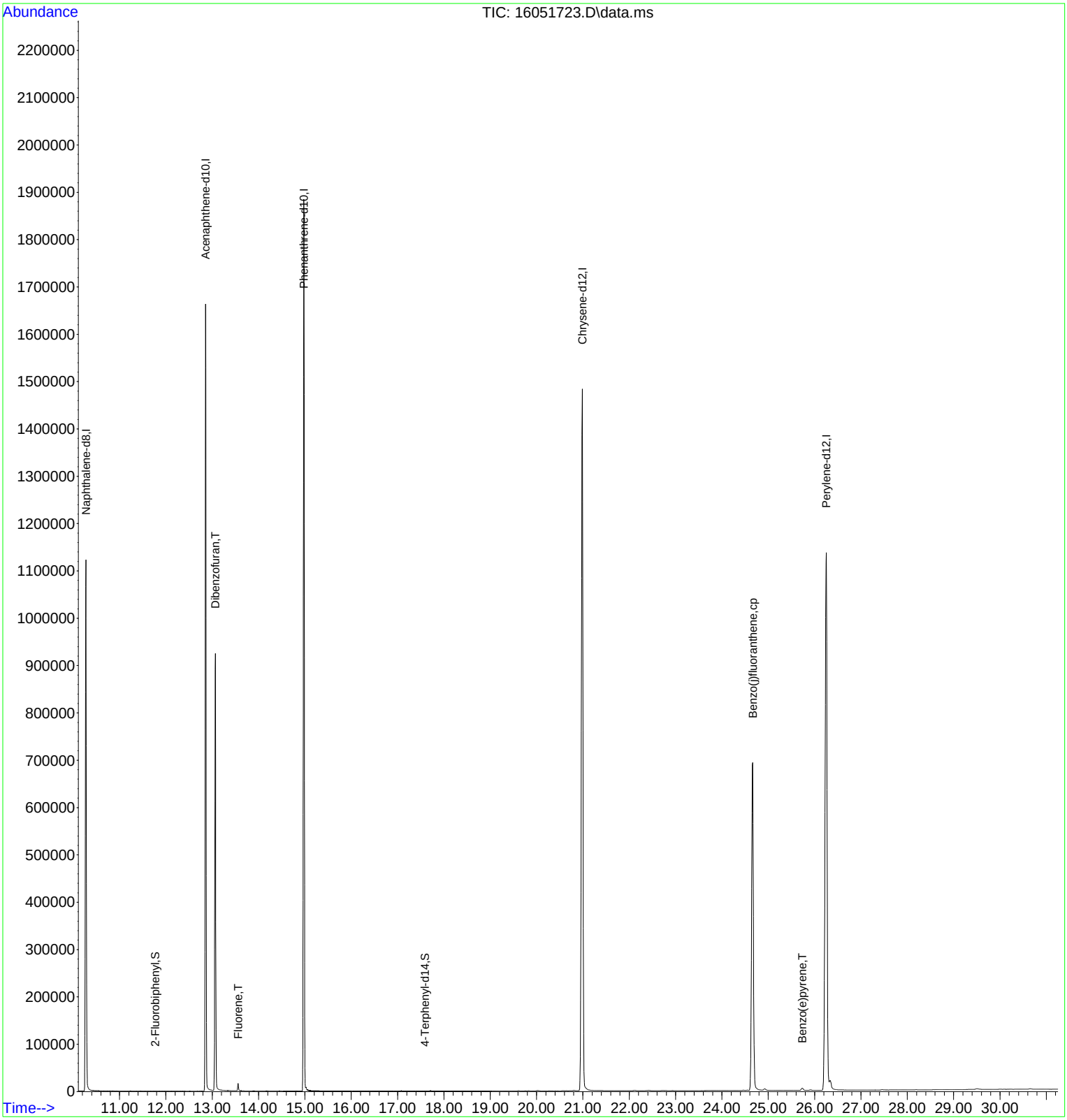
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 9) Dibenzofuran | 13.067 | 168 | 911536 | 2137.91 | ug/kg | 99 |
| 10) Fluorene | 13.558 | 166 | 9200 | 23.78 | ug/kg | 98 |
| 23) Benzo(j)fluoranthene | 24.664 | 252 | 1314135 | 2624.66 | ug/kg | 100 |
| 24) Benzo(e)pyrene | 25.734 | 252 | 9708 | 14.36 | ug/kg | 97 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051723.D
Acq On : 17 May 2016 9:54 pm
Operator :
Sample : SSCV-160517
Misc : ICV
ALS Vial : 12 Sample Multiplier: 1

Quant Time: May 18 14:22:14 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051724.D
Acq On : 17 May 2016 10:30 pm
Operator :
Sample : SSCV-160517
Misc : ICV
ALS Vial : 13 Sample Multiplier: 1

Quant Time: May 18 14:22:18 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration

| Internal Standards | R.T. | QIon | Response | Conc | Units | %Rec |
|---|---|---|---|---|---|---|
| 1) Naphthalene-d8 | 10.272 | 136 | 1465767 | 4000.00 | ug/kg | 90 |
| 6) Acenaphthene-d10 | 12.857 | 164 | 1139119 | 4000.00 | ug/kg | 91 |
| 11) Phenanthrene-d10 | 14.979 | 188 | 2615766 | 4000.00 | ug/kg | 89 |
| 16) Chrysene-d12 | 20.988 | 240 | 2355864 | 4000.00 | ug/kg | 87 |
| 20) Perylene-d12 | 26.254 | 264 | 2172980 | 4000.00 | ug/kg | 88 |

| System Monitoring Compounds | | | | | | Dev(Min) |
|---|---|---|---|---|---|---|
| 5) 2-Fluorobiphenyl | 11.757 | 172 | 752192 | 2304.82 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 40 - 140 | | Recovery = 57.62% | | | |
| 17) 4-Terphenyl-d14 | 17.590 | 244 | 1171361 | 2349.09 | ug/kg | 0.00 |
| Spiked Amount 4000.000 | Range 51 - 135 | | Recovery = 58.73% | | | |

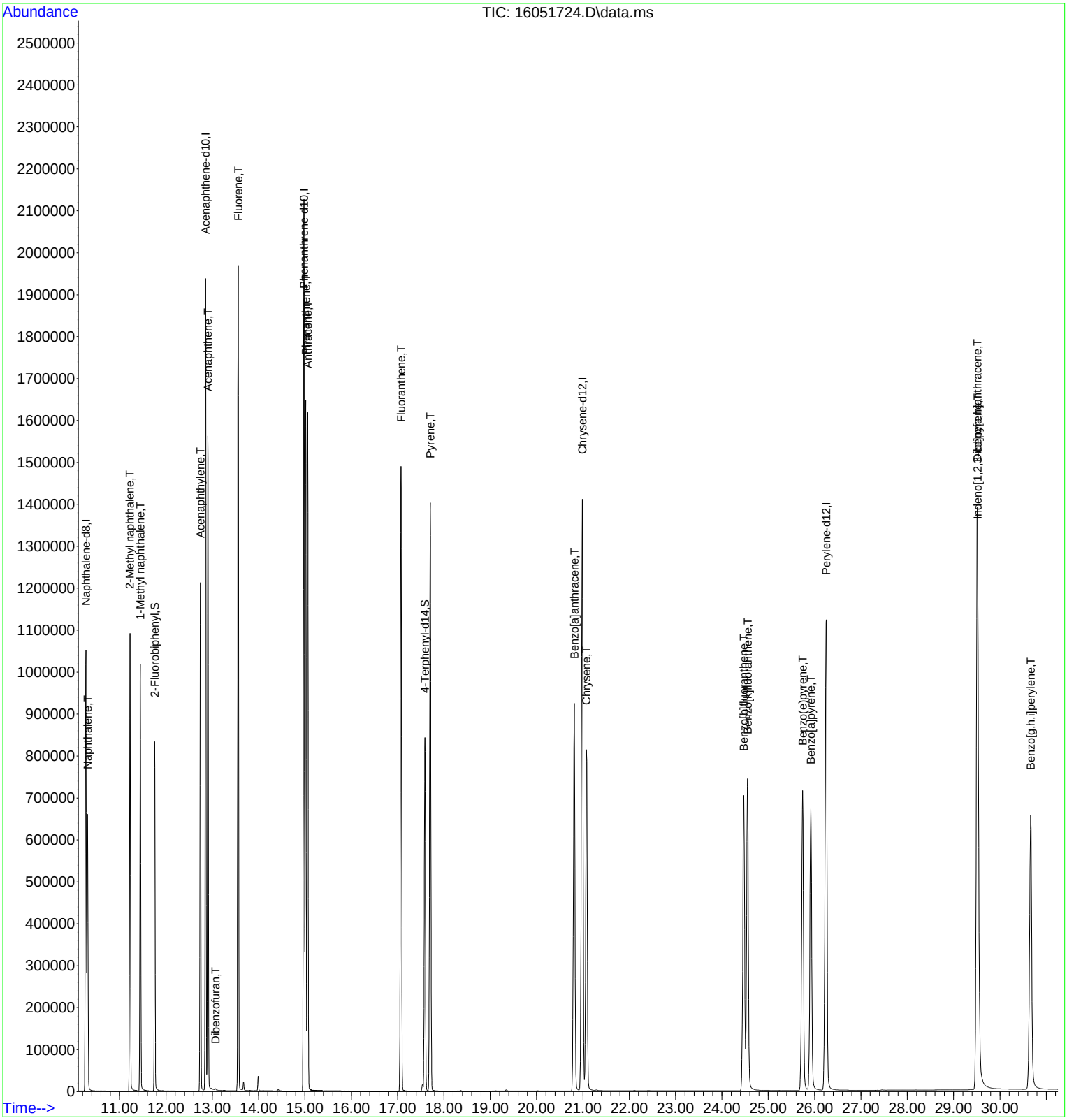
| Target Compounds | | | | | | Qvalue |
|---|---|---|---|---|---|---|
| 2) Naphthalene | 10.309 | 128 | 777437 | 2367.56 | ug/kg | 100 |
| 3) 2-Methyl naphthalene | 11.226 | 142 | 679588 | 2662.22 | ug/kg | 99 |
| 4) 1-Methyl naphthalene | 11.449 | 142 | 612646 | 2536.22 | ug/kg | 99 |
| 7) Acenaphthylene | 12.744 | 152 | 1159951 | 2329.62 | ug/kg | 100 |
| 8) Acenaphthene | 12.906 | 153 | 767350 | 2442.34 | ug/kg | 98 |
| 9) Dibenzofuran | 13.068 | 168 | 3474 | 7.26 | ug/kg | 96 |
| 10) Fluorene | 13.559 | 166 | 1054874 | 2429.09 | ug/kg | 99 |
| 12) Phenanthrene | 15.017 | 178 | 1585495 | 2202.88 | ug/kg | 100 |
| 13) Anthracene | 15.061 | 178 | 1575915 | 2163.88 | ug/kg | 100 |
| 14) Fluoranthene | 17.074 | 202 | 1676150 | 2470.73 | ug/kg | 99 |
| 15) Pyrene | 17.706 | 202 | 1652248 | 2473.32 | ug/kg | 99 |
| 18) Benzo[a]anthracene | 20.812 | 228 | 1439635 | 2494.31 | ug/kg | 100 |
| 19) Chrysene | 21.075 | 228 | 1238892 | 2310.65 | ug/kg | 100 |
| 21) Benzo[b]fluoranthene | 24.474 | 252 | 1404261 | 2544.63 | ug/kg | 100 |
| 22) Benzo[k]fluoranthene | 24.555 | 252 | 1350774 | 2702.15 | ug/kg | 100 |
| 24) Benzo(e)pyrene | 25.741 | 252 | 1385526 | 2670.03 | ug/kg | 100 |
| 25) Benzo[a]pyrene | 25.917 | 252 | 1334073 | 2578.87 | ug/kg | 99 |
| 26) Indeno[1,2,3-cd]pyrene | 29.529 | 276 | 1609547 | 2549.19 | ug/kg | 98 |
| 27) Dibenz[a,h]anthracene | 29.507 | 278 | 1345063 | 2566.28 | ug/kg | 98 |
| 28) Benzo[g,h,i]perylene | 30.664 | 276 | 1389147 | 2548.55 | ug/kg | 98 |

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\160517\
Data File : 16051724.D
Acq On : 17 May 2016 10:30 pm
Operator :
Sample : SSCV-160517
Misc : ICV
ALS Vial : 13 Sample Multiplier: 1

Quant Time: May 18 14:22:18 2016
Quant Method : C:\msdchem\1\METHODS\PAH160517.M
Quant Title : CLP BNA Calibration - Large Volume Injection
QLast Update : Wed May 18 08:55:04 2016
Response via : Initial Calibration



# ICP-MS3
# For

# DHL Work Order
# 1605121

# ICP-MS3_160526A
# For

# DHL Work Order
# 1605121

# Lab Data Review Check List
## EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

| PROJECT AND BATCH NUMBERS ARE LISTED ON THE RUN LOG | Run ID: ICP-MS3_160526A<br>SOP: Metals-ICP-MS-01 | | | |
|---|---|---|---|---|
| **Review Item** | **Yes** | **No** | **N/A** | **2nd Level Review** |
| **Data Folder Contents**<br>1. Is the Prep Batch Report included?<br>***Check the Prep Start/End Dates, Sample Amounts, Bottle #s*** | X | | | |
| 2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date?<br>***All standard/QC sample preparations shall be documented in LIMS*** | X | | | X |
| 3. Is the Run Log and instrument sequence included?<br>***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time*** | X | | | |

## Daily Demonstration of Performance

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.**

| Review Item | Frequency | Limits | Pass | Fail (List Batch/Sample) **See Run Log** | | 2nd Level Review |
|---|---|---|---|---|---|---|
| Tune | Before ICAL | RSD ≤ 5% / Peak Width@10% <0.9amu | X | | | |
| P/A Factor | Before ICAL | Increasing trend | X | | | X |
| Initial Calibration Curve (ICAL) (Blank + 4 Standards) | Prior to samples and when ICV fails | R ≥ 0.995 (DoD)<br>R ≥ 0.998 (6020A) | X | | | |
| **Review Item** | **Frequency** | **Limits** | **Pass** | **Fail** | **N/A** | **Review** |
| ICSA (N/A for Method 200.8+U) | After calibration & every 12 hours | < RL (except Mn & Zn) | X | | | X |
| ICSAB (N/A for Method 200.8+U) | After calibration & every 12 hours | 80-120% (correct for ICSA result) | X | | | |
| **Note: LCVLs and ICSA/ICSAB are N/A for Method 200.8 or project-specific exceptions** | | | | | | |
| ICV (Second Source Verification) | After ICAL | 90-110% | X | | | |
| ICB | After calibration | < MDL | X | | | |
| CCV | Every 10 samples | 90-110% | X | | | |
| CCB | Every 10 samples | < MDL (ALL + DoD) | X | | | |
| Internal Standards | Every sample and QC sample | > 70% (6020A)<br>60-125% (200.8)<br>30-120% (DoD) | X | | | |
| LCVL (6020A test code) | After ICAL, every 10 samples and end of run | 70-130% | | | X | |
| LCVL (All metals test codes except 200.8/6020A) | After ICAL and end of run | 70-130% | X | | | X |
| Method Blank (MB) | Every Batch | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | X | | | |
| Filter/TCLP/SPLP Blank | Filter-Dissolved only TCLP / SPLP | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | | | X | |
| Lab Control Sample (LCS) | Every Batch | 80-120% | X | | | |
| Lab Control Sample Dup (LCSD) | Every Batch | 80-120% | X | | | |
| LCSD - RPD | Every LCS/LCSD | 15 (H2O) / 20 (Soil) | X | | | |
| Matrix Spike/ Matrix Spike Duplicate (MS/MSD) | Every Batch | 80-120% | X | | | |
| MSD - RPD | Every MS/MSD | 15 (H2O) / 20 (Soil) | X | | | |
| Dilution Test (SD) - RPD | Every Batch | 10 | X | | | |
| Post Digestion Spike (PDS) | Every Batch | 75-125 / 80-120 (6020A) | X | | | |

# Lab Data Review Check List
## EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

| Review Item | Criteria | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|---|
| **Sample Analysis**<br>1. Are all sample hold times met? | 6 months | X | | | X |
| 2. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed? | All results > high point of ICAL must be diluted | X | | | |
| **3. Are ALL reported analytes and reported results > MDL highlighted by the analyst?** | | X | **Confirm with analyst if LIMS result does not match Labcore** | | |

## VARIANCE REPORT

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.**

| NON-CONFORMANCES / VARIANCE | Criteria | Yes | No | N/A | 2nd Level |
|---|---|---|---|---|---|
| 1. Are all non-conformances and corrective actions included and noted? | All deviations from the method and SOP that affect data quality | | | X | X |
| 2. Does the variance require approval by the Technical Director/General Manager/QA Manager? | | | | X | |

TECHNICAL DIRECTOR / QA MANAGER APPROVAL
SIGNATURE AND DATE STAMP:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

| VARIANCE ITEM | REASON | CORRECTIVE ACTION |
|---|---|---|
| __ CCV out of control (± 10%) | __ Carryover from previous run | __ Reanalyze QC to confirm |
| __ CCB out of control (> MDL / >½ RL) | __ Cross contamination | __ Recalibrate |
| __ MB out of control (> RL / >½ RL) | __ Lab Artifact | __ Reprep/Reanalyze sample |
| __ LCS __ LCSD out of control (± 20%) | __ Prep Spike error (describe) | __ Reprep/Reanalyze Batch |
| __ MS __ MSD out of control (± 20%) | __ Matrix Effect | __ Reanalyze Batch/Sample/QC |
| __ RPD out of control for MS/MSD (15/25) | __ High Levels of Target Metals | __ Verify reagents are clean |
| __ Internal Standard(s) out of control (see Method) | __ Insufficient sample for QC | __ Reanalyze sample to confirm |
| __ No MS/MSD prepared - LCS/LCSD used instead | __ Digestion/Prep Error | __ Sample results ND w/ dilution |
| __ Missing QC (other than MS/MSD) | __ Analytical Error | __ Client notified and approved |
| __ QC sample(s) was mis-spiked | __ Client Request | __ Flag data / Case narrative |
| __ ICSA/ICSAB missing or out of control (± 20%) | | __ Accept data |
| __ LCVL out of control (± 30%) | | __ Cal Std high and sample ND |
| __ Other (describe below) | __ Other (describe below) | __ Other (describe below) |

**General Comments and Impact on Data**:

Analyst: Karyn Lane  Date of Completion: 05/27/2016

Second-Level Review: Sherri Herschmann  Date Stamp: 05/31/2016

***REVIEWED/APPROVED***
*By Sherri Herschmann at 10:44:03 AM, 5/31/2016*

**DHL Analytical, Inc.**

**Run ID:** **ICP-MS3_160526A** **Run No.:** 86047

**Analytical Run Date:** 5/26/2016 **InstrumentID:** ICP-MS3

**Analyst:** Karyn Lane

| SampID | DF | TestCode | SampType | Batch ID | Analysis Date/Time | Q | Comments |
|---|---|---|---|---|---|---|---|
| BLANK STD 1 | 1 | ICPMS_TWDOD | CAL | R86047 | 5/26/2016 11:35:00 AM | | |
| L2-160526 | 1 | ICPMS_TWDOD | CAL | R86047 | 5/26/2016 11:41:00 AM | | |
| L-160526 | 1 | ICPMS_TWDOD | CAL | R86047 | 5/26/2016 11:47:00 AM | | |
| 10X-160526 | 1 | ICPMS_TWDOD | CAL | R86047 | 5/26/2016 11:53:00 AM | | |
| 5X-160526 | 1 | ICPMS_TWDOD | CAL | R86047 | 5/26/2016 12:00:00 PM | | |
| 2X-160526 | 1 | ICPMS_TWDOD | CAL | R86047 | 5/26/2016 12:06:00 PM | | |
| H-160526 | 1 | ICPMS_TWDOD | CAL | R86047 | 5/26/2016 12:11:00 PM | | |
| H2-160526 | 1 | ICPMS_TWDOD | CAL | R86047 | 5/26/2016 12:17:00 PM | | |
| ICSA-160526 | 1 | ICPMS_TWDOD | ICSA | R86047 | 5/26/2016 12:35:00 PM | | |
| ICSAB-160526 | 1 | ICPMS_TWDOD | ICSB | R86047 | 5/26/2016 12:41:00 PM | | |
| ICV1-160526 | 1 | ICPMS_TWDOD | ICV | R86047 | 5/26/2016 12:59:00 PM | | |
| ICB1-160526 | 1 | ICPMS_TWDOD | ICB | R86047 | 5/26/2016 1:05:00 PM | | |
| ILCVL-160526 | 1 | ICPMS_TWDOD | LCVL | R86047 | 5/26/2016 1:11:00 PM | | |
| MB-75258 | 5 | ICPMS_TSDOD1 | MBLK | 75258 | 5/26/2016 1:17:00 PM | | |
| LCS-75258 | 5 | ICPMS_TSDOD1 | LCS | 75258 | 5/26/2016 1:23:00 PM | | |
| LCSD-75258 | 5 | ICPMS_TSDOD1 | LCSD | 75258 | 5/26/2016 1:29:00 PM | | |
| 1605121-43A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 1:42:00 PM | | |
| 1605121-43A SD | 25 | ICPMS_TSDOD1 | SD | 75258 | 5/26/2016 1:48:00 PM | | |
| 1605121-38A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 1:54:00 PM | | |
| 1605121-39A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 2:00:00 PM | | |
| 1605121-40A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 2:06:00 PM | | |
| 1605121-41A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 2:12:00 PM | | |
| 1605121-42A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 2:17:00 PM | | |
| 1605121-44A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 2:23:00 PM | | |
| 1605121-45A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 2:29:00 PM | | |
| 1605135-01A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 2:35:00 PM | | |
| 1605135-02A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 2:41:00 PM | | |
| 1605121-43A PDS | 5 | ICPMS_TSDOD1 | PDS | 75258 | 5/26/2016 2:47:00 PM | | |
| 1605121-43A MS | 5 | ICPMS_TSDOD1 | MS | 75258 | 5/26/2016 2:53:00 PM | | |
| 1605121-43A MSD | 5 | ICPMS_TSDOD1 | MSD | 75258 | 5/26/2016 2:59:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160502- | 10 PPM Ag+Sb PDS | | 07/31/2016 |
| MET-PDS-160502- | 10 PPM CUSTOM PDS SOLUTI | | 07/31/2016 |
| MET-PDS-160502- | 250 PPM Naturals+Al+Fe PDS | | 07/31/2016 |

**DHL Analytical, Inc.**

**Run ID: ICP-MS3_160526A** **Run No.:** 86047

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| CCV1-160526 | 1 | ICPMS_TWDOD | CCV | R86047 | 5/26/2016 3:05:00 PM | | |
| CCB1-160526 | 1 | ICPMS_TWDOD | CCB | R86047 | 5/26/2016 3:11:00 PM | | |
| LCVL1-160526 | 1 | ICPMS_TWDOD | LCVL | R86047 | 5/26/2016 3:17:00 PM | | |
| 1605135-03A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 3:23:00 PM | | |
| 1605135-04A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 3:29:00 PM | | |
| 1605135-05A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 3:35:00 PM | | |
| 1605135-06A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 3:41:00 PM | | |
| 1605135-07A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 3:47:00 PM | | |
| 1605135-08A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 3:53:00 PM | | |
| 1605135-09A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 3:59:00 PM | | |
| 1605135-10A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 4:05:00 PM | | |
| 1605135-11A | 5 | ICPMS_TSDOD1 | SAMP | 75258 | 5/26/2016 4:11:00 PM | | |
| CCV2-160526 | 1 | ICPMS_TWDOD | CCV | R86047 | 5/26/2016 4:17:00 PM | | |
| CCB2-160526 | 1 | ICPMS_TWDOD | CCB | R86047 | 5/26/2016 4:23:00 PM | | |
| LCVL2-160526 | 1 | ICPMS_TWDOD | LCVL | R86047 | 5/26/2016 4:29:00 PM | | |
| MB-75286 | 5 | ICPMS_TSDOD1 | MBLK | 75286 | 5/26/2016 4:35:00 PM | | |
| LCS-75286 | 5 | ICPMS_TSDOD1 | LCS | 75286 | 5/26/2016 4:41:00 PM | | |
| LCSD-75286 | 5 | ICPMS_TSDOD1 | LCSD | 75286 | 5/26/2016 4:48:00 PM | | |
| 1605135-14A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 5:00:00 PM | | |
| 1605135-14A SD | 25 | ICPMS_TSDOD1 | SD | 75286 | 5/26/2016 5:06:00 PM | | |
| 1605135-12A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 5:12:00 PM | | |
| 1605135-13A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 5:18:00 PM | | |
| 1605135-15A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 5:24:00 PM | | |
| 1605135-16A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 5:29:00 PM | | |
| 1605135-17A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 5:35:00 PM | | |
| 1605135-18A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 5:41:00 PM | | |
| 1605135-19A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 5:47:00 PM | | |
| 1605135-20A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 5:53:00 PM | | |
| 1605135-21A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 5:59:00 PM | | |
| 1605135-14A PDS | 5 | ICPMS_TSDOD1 | PDS | 75286 | 5/26/2016 6:05:00 PM | | |
| 1605135-14A MS | 5 | ICPMS_TSDOD1 | MS | 75286 | 5/26/2016 6:11:00 PM | | |
| 1605135-14A MSD | 5 | ICPMS_TSDOD1 | MSD | 75286 | 5/26/2016 6:17:00 PM | | |
| CCV3-160526 | 1 | ICPMS_TWDOD | CCV | R86047 | 5/26/2016 6:29:00 PM | | |
| LCVL3-160526 | 1 | ICPMS_TWDOD | LCVL | R86047 | 5/26/2016 6:41:00 PM | | |
| CCB3-160526 | 1 | ICPMS_TWDOD | CCB | R86047 | 5/26/2016 6:47:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160502- | 10 PPM Ag+Sb PDS | | 07/31/2016 |
| MET-PDS-160502- | 10 PPM CUSTOM PDS SOLUTI | | 07/31/2016 |
| MET-PDS-160502- | 250 PPM Naturals+Al+Fe PDS | | 07/31/2016 |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 10:50:08 AM, 5/31/2016*

**Run ID: ICP-MS3_160526A** **Run No.:** 86047

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1605135-22A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 6:53:00 PM | | |
| 1605135-23A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 6:59:00 PM | | |
| 1605135-24A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 7:05:00 PM | | |
| 1605135-25A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 7:11:00 PM | | |
| 1605135-26A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 7:17:00 PM | | |
| 1605135-27A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 7:23:00 PM | | |
| 1605135-28A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 7:29:00 PM | | |
| 1605135-29A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 7:35:00 PM | | |
| 1605135-30A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 7:41:00 PM | | |
| 1605135-31A | 5 | ICPMS_TSDOD1 | SAMP | 75286 | 5/26/2016 7:47:00 PM | | |
| CCV4-160526 | 1 | ICPMS_TWDOD | CCV | R86047 | 5/26/2016 7:53:00 PM | | |
| LCVL4-160526 | 1 | ICPMS_TWDOD | LCVL | R86047 | 5/26/2016 8:05:00 PM | | |
| CCB4-160526 | 1 | ICPMS_TWDOD | CCB | R86047 | 5/26/2016 8:12:00 PM | | |
| MB-75292 | 5 | ICPMS_TSDOD1 | MBLK | 75292 | 5/26/2016 8:18:00 PM | | |
| LCS-75292 | 5 | ICPMS_TSDOD1 | LCS | 75292 | 5/26/2016 8:24:00 PM | | |
| LCSD-75292 | 5 | ICPMS_TSDOD1 | LCSD | 75292 | 5/26/2016 8:30:00 PM | | |
| 1605144-13A | 5 | ICPMS_TSDOD1 | SAMP | 75292 | 5/26/2016 8:42:00 PM | | |
| 1605144-13A SD | 25 | ICPMS_TSDOD1 | SD | 75292 | 5/26/2016 8:48:00 PM | | |
| 1605144-07A | 5 | ICPMS_TSDOD1 | SAMP | 75292 | 5/26/2016 8:54:00 PM | | |
| 1605144-08A | 5 | ICPMS_TSDOD1 | SAMP | 75292 | 5/26/2016 9:00:00 PM | | |
| 1605144-09A | 5 | ICPMS_TSDOD1 | SAMP | 75292 | 5/26/2016 9:06:00 PM | | |
| 1605144-10A | 5 | ICPMS_TSDOD1 | SAMP | 75292 | 5/26/2016 9:12:00 PM | | |
| 1605144-11A | 5 | ICPMS_TSDOD1 | SAMP | 75292 | 5/26/2016 9:18:00 PM | | |
| 1605144-12A | 5 | ICPMS_TSDOD1 | SAMP | 75292 | 5/26/2016 9:24:00 PM | | |
| 1605144-14A | 5 | ICPMS_TSDOD1 | SAMP | 75292 | 5/26/2016 9:30:00 PM | | |
| 1605144-15A | 5 | ICPMS_TSDOD1 | SAMP | 75292 | 5/26/2016 9:36:00 PM | | |
| 1605144-17A | 5 | ICPMS_TSDOD1 | SAMP | 75292 | 5/26/2016 9:42:00 PM | | |
| 1605144-13A PDS | 5 | ICPMS_TSDOD1 | PDS | 75292 | 5/26/2016 9:48:00 PM | | |
| 1605144-13A MS | 5 | ICPMS_TSDOD1 | MS | 75292 | 5/26/2016 9:54:00 PM | | |
| 1605144-13A MSD | 5 | ICPMS_TSDOD1 | MSD | 75292 | 5/26/2016 10:00:00 PM | | |
| CCV5-160526 | 1 | ICPMS_TWDOD | CCV | R86047 | 5/26/2016 10:12:00 PM | | |
| LCVL5-160526 | 1 | ICPMS_TWDOD | LCVL | R86047 | 5/26/2016 10:24:00 PM | | |
| CCB5-160526 | 1 | ICPMS_TWDOD | CCB | R86047 | 5/26/2016 10:30:00 PM | | |
| 1605144-18A | 5 | ICPMS_TSDOD1 | SAMP | 75292 | 5/26/2016 10:36:00 PM | | |
| 1605144-19A | 5 | ICPMS_TSDOD1 | SAMP | 75292 | 5/26/2016 10:42:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160502- | 10 PPM Ag+Sb PDS | | 07/31/2016 |
| MET-PDS-160502- | 10 PPM CUSTOM PDS SOLUTI | | 07/31/2016 |
| MET-PDS-160502- | 250 PPM Naturals+Al+Fe PDS | | 07/31/2016 |

**Run ID: ICP-MS3_160526A** **Run No.:** 86047

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1605144-20A | 5 | ICPMS_TSDOD1 | SAMP | 75292 | 5/26/2016 10:48:00 PM | | |
| 1605144-21A | 5 | ICPMS_TSDOD1 | SAMP | 75292 | 5/26/2016 10:54:00 PM | | |
| CCV6-160526 | 1 | ICPMS_TWDOD | CCV | R86047 | 5/26/2016 11:00:00 PM | | |
| LCVL6-160526 | 1 | ICPMS_TWDOD | LCVL | R86047 | 5/26/2016 11:12:00 PM | | |
| CCB6-160526 | 1 | ICPMS_TWDOD | CCB | R86047 | 5/26/2016 11:18:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160502- | 10 PPM Ag+Sb PDS | | 07/31/2016 |
| MET-PDS-160502- | 10 PPM CUSTOM PDS SOLUTI | | 07/31/2016 |
| MET-PDS-160502- | 250 PPM Naturals+Al+Fe PDS | | 07/31/2016 |

| | Method | Type | Vial | Data File | Sample | Comment | Dil/Lvl | ISTD Conc | Action on Failure | Skip | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Keyword | | CALBEG | Start of CALIB | | | | | | |
| 2 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1101 | | BLANK | CAL ICPMS_TW | 1.000 | | | | |
| 3 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1102 | | BLANK | CAL ICPMS_TW | 1.000 | | | | |
| 4 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1103 | | BLANK | CAL ICPMS_TW | 1.000 | | | | |
| 5 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1104 | | BLANK | CAL ICPMS_TW | 1.000 | | | | |
| 6 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | BLANK | CAL ICPMS_TW | 1.000 | | | | |
| 7 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CalBlk | 2101 | | BLANK STD 1 | CAL ICPMS_TW | Level 1 | | | | |
| 8 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CalStd | 2102 | | L2-160526 | CAL ICPMS_TW | Level 2 | | | | |
| 9 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CalStd | 2103 | | L-160526 | CAL ICPMS_TW | Level 3 | | | | |
| 10 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CalStd | 2104 | | 10X-160526 | CAL ICPMS_TW | Level 4 | | | | |
| 11 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CalStd | 2105 | | 5X-160526 | CAL ICPMS_TW | Level 5 | | | | |
| 12 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CalStd | 2106 | | 2X-160526 | CAL ICPMS_TW | Level 6 | | | | |
| 13 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CalStd | 2107 | | H-160526 | CAL ICPMS_TW | Level 7 | | | | |
| 14 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CalStd | 2108 | | H2-160526 | CAL ICPMS_TW | Level 8 | | | | |
| 15 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1104 | | BLANK | CAL ICPMS_TW | 1.000 | | | | |
| 16 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | BLANK | CAL ICPMS_TW | 1.000 | | | | |
| 17 | | Keyword | | CALEND | End of CALIB | | | | | | |
| 18 | | Keyword | | ICSBEG | Start of ICS | | | | | | |
| 19 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | ICS-A | 2109 | | ICSA-160526 | ICSAICPMS_TW | 1.000 | | | | |
| 20 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | ICS-AB | 2110 | | ICSAB-160526 | ICSBICPMS_TW | 1.000 | | | | |
| 21 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1103 | | RINSE | CAL ICPMS_TW | 1.000 | | | | |
| 22 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1104 | | RINSE | CAL ICPMS_TW | 1.000 | | | | |
| 23 | | Keyword | | ICSEND | End of ICS | | | | | | |
| 24 | | Keyword | | SMPLBEG | Start of SMPL | | | | | | |
| 25 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | ICV | 2111 | | ICV1-160526 | ICV ICPMS_TW | 1.000 | | | | |

| | Method | Type | Vial | Data File | Sample | Comment | Dil/Lvl | ISTD Conc | Action on Failure | Skip | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | ICB | 1104 | | ICB1-160526 | ICB ICPMS_TW | 1.000 | | | | |
| 27 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCVL5 | 2112 | | ILCVL-160526 | LCVLICPMS_TW | 1.000 | | | | |
| 28 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | PB | 2201 | | MB-75258 | MBLKICPMS_TSDOD1 | 5.000 | | | | |
| 29 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCS | 2202 | | LCS-75258 | LCS ICPMS_TSDOD1 | 5.000 | | | | |
| 30 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCS | 2203 | | LCSD-75258 | LCSDICPMS_TSDOD1 | 5.000 | | | | |
| 31 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1101 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 32 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | AllRef | 2204 | | 1605121-43A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 33 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | DT | 2205 | | 1605121-43A SD | SD ICPMS_TSDOD1 | 25.00 | | | | |
| 34 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2206 | | 1605121-38A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 35 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2207 | | 1605121-39A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 36 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2208 | | 1605121-40A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 37 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2209 | | 1605121-41A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 38 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2210 | | 1605121-42A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 39 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2211 | | 1605121-44A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 40 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2212 | | 1605121-45A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 41 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2301 | | 1605135-01A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 42 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2302 | | 1605135-02A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 43 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | PDS | 2303 | | 1605121-43A PDS | PDS ICPMS_TSDOD1 | 5.000 | | | | |
| 44 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | MS_S | 2304 | | 1605121-43A MS | MS ICPMS_TSDOD1 | 5.000 | | | | |
| 45 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | MS_S | 2305 | | 1605121-43A MSD | MSD ICPMS_TSDOD1 | 5.000 | | | | |
| 46 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCV1 | 1307 | | CCV1-160526 | CCV ICPMS_TW | 1.000 | | | | |
| 47 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | CCB1-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 48 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCVL5 | 2512 | | LCVL1-160526 | LCVLICPMS_TW | 1.000 | | | | |

| | Method | Type | Vial | Data File | Sample | Comment | Dil/Lvl | ISTD Conc | Action on Failure | Skip | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2401 | | 1605135-03A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 50 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2402 | | 1605135-04A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 51 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2403 | | 1605135-05A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 52 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2404 | | 1605135-06A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 53 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2405 | | 1605135-07A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 54 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2406 | | 1605135-08A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 55 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2407 | | 1605135-09A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 56 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2408 | | 1605135-10A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 57 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 2409 | | 1605135-11A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 58 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCV1 | 1307 | | CCV2-160526 | CCV ICPMS_TW | 1.000 | | | | |
| 59 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | CCB2-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 60 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCVL5 | 2511 | | LCVL2-160526 | LCVLICPMS_TW | 1.000 | | | | |
| 61 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | PB | 3101 | | MB-75286 | MBLKICPMS_TSDOD1 | 5.000 | | | | |
| 62 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCS | 3102 | | LCS-75286 | LCS ICPMS_TSDOD1 | 5.000 | | | | |
| 63 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCS | 3103 | | LCSD-75286 | LCSDICPMS_TSDOD1 | 5.000 | | | | |
| 64 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1101 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 65 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | AllRef | 3104 | | 1605135-14A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 66 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | DT | 3105 | | 1605135-14A SD | SD ICPMS_TSDOD1 | 25.00 | | | | |
| 67 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3106 | | 1605135-12A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 68 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3107 | | 1605135-13A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 69 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3108 | | 1605135-15A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 70 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3109 | | 1605135-16A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 71 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3110 | | 1605135-17A | SAMPICPMS_TSDOD1 | 5.000 | | | | |

| | Method | Type | Vial | Data File | Sample | Comment | Dil/Lvl | ISTD Conc | Action on Failure | Skip | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 72 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3111 | | 1605135-18A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 73 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3112 | | 1605135-19A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 74 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3201 | | 1605135-20A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 75 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3202 | | 1605135-21A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 76 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | PDS | 3203 | | 1605135-14A PDS | PDS ICPMS_TSDOD1 | 5.000 | | | | |
| 77 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | MS_S | 3204 | | 1605135-14A MS | MS_ICPMS_TSDOD1 | 5.000 | | | | |
| 78 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | MS_S | 3205 | | 1605135-14A MSD | MSD ICPMS_TSDOD1 | 5.000 | | | | |
| 79 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1103 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 80 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCV1 | 1307 | | CCV3-160526 | CCV ICPMS_TW | 1.000 | | | | |
| 81 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1104 | | CCB3-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 82 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCVL5 | 2512 | | LCVL3-160526 | LCVLICPMS_TW | 1.000 | | | | |
| 83 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | CCB3-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 84 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3301 | | 1605135-22A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 85 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3302 | | 1605135-23A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 86 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3303 | | 1605135-24A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 87 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3304 | | 1605135-25A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 88 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3305 | | 1605135-26A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 89 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3306 | | 1605135-27A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 90 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3307 | | 1605135-28A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 91 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3308 | | 1605135-29A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 92 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3309 | | 1605135-30A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 93 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3310 | | 1605135-31A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 94 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCV1 | 1307 | | CCV4-160526 | CCV ICPMS_TW | 1.000 | | | | |

| | Method | Type | Vial | Data File | Sample | Comment | Dil/Lvl | ISTD Conc | Action on Failure | Skip | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 95 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1104 | | CCB4-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 96 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCVL5 | 2112 | | LCVL4-160526 | LCVLICPMS_TW | 1.000 | | | | |
| 97 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | CCB4-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 98 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | PB | 3401 | | MB-75292 | MBLKICPMS_TSDOD1 | 5.000 | | | | |
| 99 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCS | 3402 | | LCS-75292 | LCS ICPMS_TSDOD1 | 5.000 | | | | |
| 100 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCS | 3403 | | LCSD-75292 | LCSDICPMS_TSDOD1 | 5.000 | | | | |
| 101 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1101 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 102 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | AllRef | 3404 | | 1605144-13A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 103 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | DT | 3405 | | 1605144-13A SD | SD ICPMS_TSDOD1 | 25.00 | | | | |
| 104 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3406 | | 1605144-07A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 105 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3407 | | 1605144-08A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 106 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3408 | | 1605144-09A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 107 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3409 | | 1605144-10A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 108 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3410 | | 1605144-11A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 109 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3411 | | 1605144-12A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 110 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3412 | | 1605144-14A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 111 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3501 | | 1605144-15A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 112 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3502 | | 1605144-17A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 113 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | PDS | 3503 | | 1605144-13A PDS | PDS ICPMS_TSDOD1 | 5.000 | | | | |
| 114 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | MS_S | 3504 | | 1605144-13A MS | MS ICPMS_TSDOD1 | 5.000 | | | | |
| 115 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | MS_S | 3505 | | 1605144-13A MSD | MSD ICPMS_TSDOD1 | 5.000 | | | | |
| 116 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1101 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 117 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCV1 | 1307 | | CCV5-160526 | CCV ICPMS_TW | 1.000 | | | | |

| | Method | Type | Vial | Data File | Sample | Comment | Dil/Lvl | ISTD Conc | Action on Failure | Skip | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 118 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1104 | | CCB5-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 119 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCVL5 | 2511 | | LCVL5-160526 | LCVLICPMS_TW | 1.000 | | | | |
| 120 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | CCB5-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 121 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3506 | | 1605144-18A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 122 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3507 | | 1605144-19A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 123 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3508 | | 1605144-20A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 124 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | SampleS | 3509 | | 1605144-21A | SAMPICPMS_TSDOD1 | 5.000 | | | | |
| 125 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCV1 | 1307 | | CCV6-160526 | CCV ICPMS_TW | 1.000 | | | | |
| 126 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | CCB6-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 127 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | LCVL5 | 2112 | | LCVL6-160526 | LCVLICPMS_TW | 1.000 | | | | |
| 128 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | CCB6-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 129 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1103 | | IDL1-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 130 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1104 | | IDL2-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 131 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | IDL3-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 132 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1103 | | IDL4-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 133 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1104 | | IDL5-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 134 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | IDL6-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 135 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1105 | | IDL7-160526 | CCB ICPMS_TW | 1.000 | | | | |
| 136 | C:\ICPCHEM\1\METHODS\DHL_3Fe.M | CCB | 1103 | | RINSE | CCB ICPMS_TW | 1.000 | | | | |
| 137 | | Keyword | | StandBy | | | | | | | |
| 138 | | Keyword | | SMPLEND | End of SMPL | | | | | | |
| 139 | | Keyword | | End | End of Sequence | | | | | | |
| 140 | | Keyword | | CCVBEG | Start of CCV | | | | | | |
| 141 | | Keyword | | CCVEND | End of CCV | | | | | | |
| 142 | | Keyword | | BLKBEG | Start of BLANK | | | | | | |
| 143 | | Keyword | | BLKEND | End of BLANK | | | | | | |

| | Method | Type | Vial | Data File | Sample | Comment | Dil/Lvl | ISTD Conc | Action on Failure | Skip | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 144 | | Keyword | | ERRBEG | Start of ERRTERM | | | | | | |
| 145 | | Keyword | | ERREND | End of ERRTERM | | | | | | |

# MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

| | | | | |
|---|---|---|---|---|
| **ANALYST:** | KL | **BALANCE #:** | 26 | |
| **TEST DATE:** | 05/26/2016 | **Water is at Room Temperatue (70-73°F) / (21-23°C)** | | |
| **PIPETTER LAB ID:** | See Below | **WATER TEMP (°C):** | **21-23°C** | |
| **TEST VOLUME:** | See Below | **WATER DENSITY:** | **0.998** | **(0.9980-0.9976)** |

| | |
|---|---|
| **REFERENCE:** | DoD QSM 5.0 |
| **# of REPLICATES:** | 3 |
| **LABWARE TYPE:** | MECHANICAL VOLUMETRIC PIPETTE |
| **FREQUENCY:** | DAILY BEFORE USE |
| **MEAN CRITERIA:** | ± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME) |
| **RSD CRITERIA:** | < 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS) |

| | |
|---|---|
| **1) RECORD ROOM AND WATER TEMPERATURE** | **% TEST VOL = Volume of H2O at °C/Test Volume * 100** |
| **2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.** | **%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100** |
| **3) WEIGH 3 REPLICATES AT THE TEST VOLUME.** | |
| **4) DETERMINE TOTAL WT.** | |
| **5) CALCULATE VOLUME OF H2O AT °C (in mL)** | **VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY** |

| | | | | | BIAS | PRECISION |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-31** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | **4.00** | 3.9943 | 3.9863 | 99.66 | **PASS** | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| 2 | | 3.9791 | 3.9711 | 99.28 | | |
| 3 | | 3.9750 | 3.9671 | 99.18 | | |
| **AVERAGE (MEAN)** | | **3.983** | **3.975** | **99.37** | | **0.255** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-21** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | **0.50** | 0.4971 | 0.4961 | 99.22 | **PASS** | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| 2 | | 0.4962 | 0.4952 | 99.04 | | |
| 3 | | 0.4950 | 0.4940 | 98.80 | | |
| **AVERAGE (MEAN)** | | **0.496** | **0.495** | **99.02** | | **0.212** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-39** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | **0.200** | 0.2003 | 0.1999 | 99.95 | **PASS** | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| 2 | | 0.1994 | 0.1990 | 99.50 | | |
| 3 | | 0.1993 | 0.1989 | 99.45 | | |
| **AVERAGE (MEAN)** | | **0.200** | **0.199** | **99.63** | | **0.276** |
| | | | | | | **PASS** |

Karyn Jane 5/26/16
Analyst / Date

05/31/2016
Review and Approved / Date

**REVIEWED/APPROVED**
By Sherri Herschmann at 10:44:06 AM, 5/31/2016

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/20/2016 9:40:12 AM**
Digestion: **Start: 5/20/2016 11:55:00 AM / Stop: 5/20/2016 5:10:00 PM**
Prep End Date: **5/20/2016 5:12:20 PM**

Prep Batch **75258** Prep Code: **3050_IDOD** Technician: **Cassie Van Dyke**

Prep Factor Units: **mL/g**

**Equipment List**

Hot Block #3
Thermometer #71
Balance #20
Pipette #P-01
Pipette#-P-09

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-38A | Soil | | 1.09 | 50 | 45.872 | 1 of 1 | |
| 1605121-39A | Soil | | 1.13 | 50 | 44.248 | 1 of 1 | |
| 1605121-40A | Soil | | 1 | 50 | 50.000 | 1 of 1 | |
| 1605121-41A | Soil | | 1.03 | 50 | 48.544 | 1 of 1 | |
| 1605121-42A | Soil | | 1.1 | 50 | 45.455 | 1 of 1 | |
| 1605121-43A | Soil | | 1.03 | 50 | 48.544 | 1 of 1 | |
| 1605121-43A MS | Soil | | 1.02 | 50 | 49.020 | of | |
| 1605121-43A MSD | Soil | | 1.06 | 50 | 47.170 | of | |
| 1605121-43A PDS | Soil | | 1.03 | 50 | 48.544 | of | |
| 1605121-43A SD | Soil | | 1.03 | 50 | 48.544 | of | |
| 1605121-44A | Soil | | 1.17 | 50 | 42.735 | 1 of 1 | |
| 1605121-45A | Soil | | 1.17 | 50 | 42.735 | 1 of 1 | |
| 1605135-01A | Soil | | 1.1 | 50 | 45.455 | 1 of 1 | |
| 1605135-02A | Soil | | 1.03 | 50 | 48.544 | 1 of 1 | |
| 1605135-03A | Soil | | 1.12 | 50 | 44.643 | 1 of 1 | |
| 1605135-04A | Soil | | 1.15 | 50 | 43.478 | 1 of 1 | |
| 1605135-05A | Soil | | 1.15 | 50 | 43.478 | 1 of 1 | |
| 1605135-06A | Soil | | 1.12 | 50 | 44.643 | 1 of 1 | |
| 1605135-07A | Soil | | 1.05 | 50 | 47.619 | 1 of 1 | |
| 1605135-08A | Soil | | 1.18 | 50 | 42.373 | 1 of 1 | |
| 1605135-09A | Soil | | 1 | 50 | 50.000 | 1 of 1 | |
| 1605135-10A | Soil | | 1.16 | 50 | 43.103 | 1 of 1 | |
| 1605135-11A | Soil | | 1.11 | 50 | 45.045 | 1 of 1 | |
| LCS-75258 | Soil | | 1 | 50 | 50.000 | of | |
| LCSD-75258 | Soil | | 1 | 50 | 50.000 | of | |
| MB-75258 | Soil | | 1 | 50 | 50.000 | of | |

Precipitate form on top of samples overnight, after prep. Does not seem to have effect on Pb.

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 10056 | Digestion Vessels | 1 | vessel | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 10 | ml | 01/10/2026 |
| 10137 | Hydrochloric Acid (trace metal grade) | 5 | ml | 01/10/2026 |
| 10318 | Hydrogen Peroxide, 30% | 3 | ml | 11/30/2017 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160519-3 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.5 | 08/17/2016 |
| MET-SPIKE-160519-4 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 1 | 08/17/2016 |
| MET-SPIKE-160520-5 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 1 | 08/18/2016 |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 10:54:25 AM, 5/31/2016*

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/20/2016 9:40:12 AM**
Digestion:
Prep End Date:

Prep Batch **75258** Prep Code: **3050_IDOD** Technician: **Cassie Van Dyke** Prep Factor Units: **mL/g**

| Equipment List |
|---|
| Hot Block #3 |
| Thermometer #71 |
| Balance #20 |
| Pipette #P-01 |
| Pipette#-P-09 |

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-38A | Soil | | 1.09 | 50 | 50.000 | 1 of 1 | |
| 1605121-39A | Soil | | 1.13 | 50 | 50.000 | 1 of 1 | |
| 1605121-40A | Soil | | 1.00 | 50 | 50.000 | 1 of 1 | |
| 1605121-41A | Soil | | 1.03 | 50 | 50.000 | 1 of 1 | |
| 1605121-42A | Soil | | 1.10 | 50 | 50.000 | 1 of 1 | |
| 1605121-43A | Soil | | 1.03 | 50 | 50.000 | 1 of 1 | |
| 1605121-43A MS | Soil | | 1.02 | 50 | 50.000 | of | |
| 1605121-43A MSD | Soil | | 1.06 | 50 | 50.000 | of | |
| 1605121-44A | Soil | | 1.17 | 50 | 50.000 | 1 of 1 | |
| 1605121-45A | Soil | | 1.17 | 50 | 50.000 | 1 of 1 | |
| 1605135-01A | Soil | | 1.10 | 50 | 50.000 | 1 of 1 | |
| 1605135-02A | Soil | | 1.03 | 50 | 50.000 | 1 of 1 | |
| 1605135-03A | Soil | | 1.12 | 50 | 50.000 | 1 of 1 | |
| 1605135-04A | Soil | | 1.15 | 50 | 50.000 | 1 of 1 | |
| 1605135-05A | Soil | | 1.15 | 50 | 50.000 | 1 of 1 | |
| 1605135-06A | Soil | | 1.12 | 50 | 50.000 | 1 of 1 | |
| 1605135-07A | Soil | | 1.05 | 50 | 50.000 | 1 of 1 | |
| 1605135-08A | Soil | | 1.18 | 50 | 50.000 | 1 of 1 | |
| 1605135-09A | Soil | | 1.00 | 50 | 50.000 | 1 of 1 | |
| 1605135-10A | Soil | | 1.16 | 50 | 50.000 | 1 of 1 | |
| 1605135-11A | Soil | | 1.11 | 50 | 50.000 | 1 of 1 | |
| [redacted] | Soil | | 1 | 50 | 50.000 | 1 of 1 | |
| LCS-75258 | Soil | | 1 | 50 | 50.000 | of | |
| LCSD-75258 | Soil | | 1 | 50 | 50.000 | of | |
| MB-75258 | Soil | | 1 | 50 | 50.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 10056 | Digestion Vessels | 1 | vessel | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 10 | ml | 01/10/2026 |
| 10137 | Hydrochloric Acid (trace metal grade) | 5 | ml | 01/10/2026 |
| 10318 | Hydrogen Peroxide, 30% | 3 | ml | 10/29/2016 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160519-3 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.5 | 08/17/2016 |
| MET-SPIKE-160519-4 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 1 | 08/17/2016 |
| MET-SPIKE-160520-5 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 1 | 08/18/2016 |

[redacted]
11:55-12:05
12:12-14:12
14:35-16:35
16:55-17:10

REVIEWED/APPROVED
By Sherri Herschmann at 10:51:33 AM, 5/31/2016

5/20/16

# DHL Analytical, Inc.

# PREP BATCH REPORT

Prep Start Date: **5/16/2016 3:40:00 PM**
Digestion: **Start: 5/16/2016 4:45:00 PM / Stop: 5/18/2016 11:00:00 AM**
Prep End Date: **5/18/2016 3:00:00 PM**

Prep Batch **75188** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: mL/

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | | | Cleanup |
|---|---|---|---|---|---|---|---|---|---|
| 1605121-41A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| 1605121-42A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| 1605121-43A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| | Sieve only no subsampling hard clay MS/MSD | | | | | | | | |
| 1605121-44A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| | Sieve only no subsampling hard clay | | | | | | | | |
| 1605121-45A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| 1605135-01A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| 1605135-02A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| 1605135-03A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| 1605135-04A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| 1605135-05A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| 1605135-06A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| 1605135-07A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| 1605135-08A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| 1605135-09A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| 1605135-10A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| 1605135-11A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| 1605135-12A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| 1605135-13A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |
| 1605135-14A | Soil | | 0 | 0 | #Num! | | of | 3 | |
| | Extra sub sampled for MS/MSD | | | | | | | | |
| 1605135-15A | Soil | | 0 | 0 | #Num! | 1 | of | 1 | |

# DHL Analytical, Inc.

# PREP BATCH REPORT

Prep Start Date: **5/13/2016 3:00:00 PM**
Digestion: **Start: 5/13/2016 4:00:00 PM / Stop: 5/17/2016 1:30:00 PM**
Prep End Date: **5/18/2016 9:30:00 AM**

Prep Batch **75159** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-21A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-22A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay MS/MSD | | | | | | |
| 1605121-23A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-24A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-25A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-26A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-27A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-28A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-29A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-30A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-31A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-32A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-33A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-34A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-35A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-36A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-37A | Soil | | 0 | 0 | #Num! | 1 of 1 | |

**DHL Analytical, Inc.**

# PREP BATCH REPORT

Prep Start Date: **5/13/2016 3:00:00 PM**
Digestion: **Start: 5/13/2016 4:00:00 PM / Stop: 5/17/2016 1:30:00 PM**
Prep End Date: **5/18/2016 9:30:00 AM**

Prep Batch **75159** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-38A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling | | | | | | |
| 1605121-39A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling | | | | | | |
| 1605121-40A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling | | | | | | |

# MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

| | | | | |
|---|---|---|---|---|
| **ANALYST:** | CVD | **BALANCE #:** | 26 | |
| **TEST DATE:** | 05/20/2016 | **Water is at Room Temperatue (70-73°F) / (21-23°C)** | | |
| **PIPETTER LAB ID:** | P-01, P-09 | **WATER TEMP (°C):** | **21-23°C** | |
| **TEST VOLUME:** | See Below | **WATER DENSITY:** | **0.998** | **(0.9980-0.9976)** |

| | |
|---|---|
| **REFERENCE:** | DoD QSM 5.0 |
| **# of REPLICATES:** | 3 |
| **LABWARE TYPE:** | MECHANICAL VOLUMETRIC PIPETTE |
| **FREQUENCY:** | DAILY BEFORE USE |
| **MEAN CRITERIA:** | ± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME) |
| **RSD CRITERIA:** | < 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS) |

**1) RECORD ROOM AND WATER TEMPERATURE**
**2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.**
**3) WEIGH 3 REPLICATES AT THE TEST VOLUME.**
**4) DETERMINE TOTAL WT.**
**5) CALCULATE VOLUME OF H2O AT °C (in mL)**

**% TEST VOL = Volume of H2O at °C/Test Volume * 100**

**%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100**

**VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY**

| | | | | | BIAS | PRECISION |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-01** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| **1** | **5.00** | 4.9912 | 4.9812 | **99.62** | **PASS** | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| **2** | | 4.9993 | 4.9893 | **99.79** | | |
| **3** | | 4.9957 | 4.9857 | **99.71** | | |
| **AVERAGE (MEAN)** | | **4.995** | **4.985** | **99.71** | | **0.081** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-09** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| **1** | **0.20** | 0.2002 | 0.1998 | **99.90** | **PASS** | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| **2** | | 0.2012 | 0.2008 | **100.40** | | |
| **3** | | 0.2005 | 0.2001 | **100.05** | | |
| **AVERAGE (MEAN)** | | **0.201** | **0.200** | **100.12** | | **0.256** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID:** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| **1** | | | | | | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| **2** | | | | | | |
| **3** | | | | | | |
| **AVERAGE (MEAN)** | | | | | | |
| | | | | | | |

5/20/16
Analyst / Date

05/31/2016
Review and Approved / Date

# Calibration Summary Report

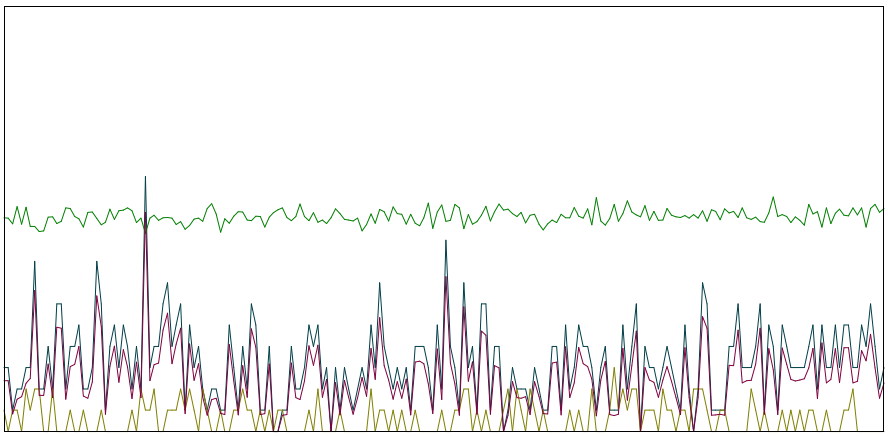
**Instrument:** ICPMS3
**Current Method:** C:\ICPCHEM\1\METHODS\DHL_3Fe.M
**Calibration:** C:\ICPCHEM\1\CALIB\DHL_3Fe.C
**Last Update:** May 26 2016 12:20 pm
**Cal Type:** Y=aX+[blank]

| Standard | Date Acquired | File |
|---|---|---|
| BLANK STD 1 | May 26 2016 11:35 am | c:\icpchem\1\data\16e26l01.b\006calb.d\ |
| L2-160526 | May 26 2016 11:41 am | c:\icpchem\1\data\16e26l01.b\007cals.d\ |
| L-160526 | May 26 2016 11:47 am | c:\icpchem\1\data\16e26l01.b\008cals.d\ |
| 10X-160526 | May 26 2016 11:53 am | c:\icpchem\1\data\16e26l01.b\009cals.d\ |
| 5X-160526 | May 26 2016 12:00 pm | c:\icpchem\1\data\16e26l01.b\010cals.d\ |
| 2X-160526 | May 26 2016 12:06 pm | c:\icpchem\1\data\16e26l01.b\011cals.d\ |

| Element Name | Corr Coef | Coef A | Coef B | Lvl 2 | Lvl 6 | Lvl 7 | L7 %R | Lvl 8 | L8 %R |
|---|---|---|---|---|---|---|---|---|---|
| Li | 1.0000 | 0.3366 | 0.02913 | 1.01 | 254 | 499 | | 2000 | |
| Be | 0.9998 | 0.08368 | 0.0005551 | 1.04 | 258 | 495 | 99% | -------- | ###### |
| B | 0.9999 | 0.06756 | 0.1378 | 1.13 | 255 | 523 | 105% | 1,994 | 100% |
| Na | 1.0000 | 0.2752 | 2.928 | 18.60 | 5,041 | 10,030 | 100% | 24,980 | 100% |
| Mg | 1.0000 | 0.1278 | 0.2399 | 20.28 | 4,922 | 10,020 | 100% | 25,010 | 100% |
| Al | 1.0000 | 0.03286 | 0.223 | 21.41 | 5,021 | 9,994 | 100% | -------- | ###### |
| K | 0.9999 | 0.07297 | 2.879 | 17.62 | 4,884 | 9,752 | 98% | 25,130 | 101% |
| Ca | 1.0000 | 0.008501 | 0.1555 | 18.59 | 4,930 | 10,140 | 101% | 24,970 | 100% |
| Ti | 1.0000 | 0.02844 | 0.00105 | 1.04 | 253 | 502 | 100% | 1,999 | 100% |
| V | 1.0000 | 1.192 | 0.1319 | 0.98 | 245 | 487 | 97% | 2,004 | 100% |
| Cr | 1.0000 | 1.555 | 0.05859 | 1.00 | 248 | 496 | 99% | 2,001 | 100% |
| Mn | 1.0000 | 0.6224 | 0.04795 | 1.02 | 255 | 504 | 101% | 1,998 | 100% |
| Fe | 1.0000 | 1.978 | 3.526 | 20.00 | 4,973 | 10,000 | 100% | -------- | ###### |
| Co | 0.9999 | 4.849 | 0.156 | 1.02 | 252 | 523 | 105% | 1,994 | 100% |
| Ni | 1.0000 | 1.456 | 0.1004 | 0.95 | 244 | 489 | 98% | 2,004 | 100% |
| Cu | 1.0000 | 3.942 | 0.2957 | 0.98 | 253 | 506 | 101% | 1,998 | 100% |
| Zn | 1.0000 | 0.3815 | 0.1666 | 1.02 | 261 | 511 | 102% | 1,996 | 100% |
| As | 1.0000 | 0.2183 | 0.01784 | 0.98 | 253 | 501 | 100% | 1,999 | 100% |
| Se | 1.0000 | 0.01243 | 0.005578 | 1.14 | 262 | 506 | 101% | 1,997 | 100% |
| Sr | 1.0000 | 0.303 | 0.03115 | 0.99 | 259 | 500 | 100% | 1,999 | 100% |
| Mo | 0.9999 | 0.05615 | 0.001224 | 0.95 | 240 | 481 | 96% | 2,006 | 100% |
| Ag | 0.9999 | 0.149 | 0.0009176 | 0.99 | 254 | 498 | 100% | -------- | ###### |
| Cd | 1.0000 | 0.03237 | 0.0006313 | 1.07 | 247 | 486 | 97% | 2,004 | 100% |
| Sn | 1.0000 | 0.08914 | 0.007554 | 0.96 | 246 | 516 | 103% | 1,997 | 100% |
| Sb | 0.9999 | 0.1041 | 0.003608 | 0.95 | 245 | 503 | 101% | -------- | ###### |
| Ba | 0.9999 | 0.04368 | 0.002479 | 0.94 | 238 | 476 | 95% | 2,008 | 100% |
| Tl | 1.0000 | 0.3286 | 0.00266 | 0.92 | 253 | 509 | 102% | 1,998 | 100% |
| Pb | 1.0000 | 0.4377 | 0.008346 | 0.97 | 249 | 510 | 102% | 1,998 | 100% |

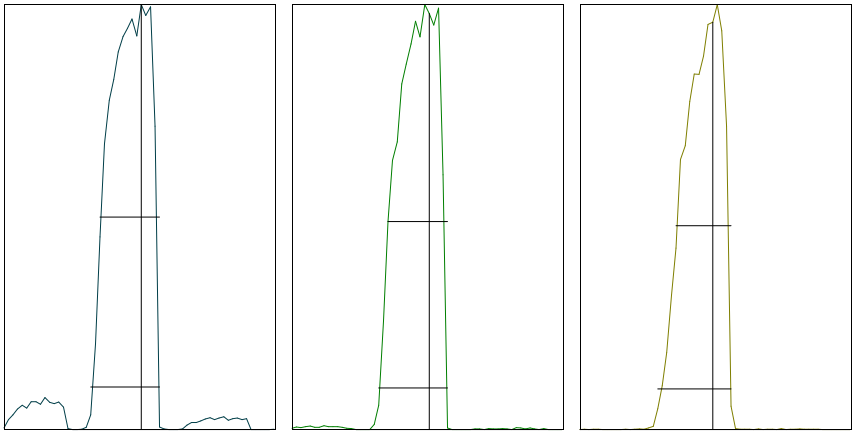
# Tune Report

Tune File : He.U
Comment :



| | | |
|---|---|---|
| Integration Time: | 0.1000 sec | |
| Sampling Period: | 0.3100 sec | |
| n: | 200 | |
| Oxide: | 156/140 | 0.337% |
| Doubly Charged: | 70/140 | 2.927% |

| m/z | Range | Count | Mean | RSD% | Background |
|---|---|---|---|---|---|
| 51 | 20 | 3.0 | 3.2 | 58.08 | 0.10 |
| 59 | 5,000 | 2622.0 | 2529.1 | 3.21 | 0.30 |
| 75 | 20 | 0.0 | 0.6 | 119.43 | 0.30 |
| 51/59 | 1 | 0.114% | 0.128% | 59.20 | |



| m/z: | 59 | 89 | 205 |
|---|---|---|---|
| Height: | 2,619 | 1,156 | 2,499 |
| Axis: | 59.05 | 89.05 | 205.00 |
| W-50%: | 0.65 | 0.65 | 0.60 |
| W-10%: | 0.7500 | 0.7500 | 0.800 |

| | |
|---|---|
| Integration Time: | 0.1000 sec |
| Acquisition Time: | 22.5600 sec |

Y axis : Linear



Generated : May 26, 2016 10:44:33
Printed : May 26, 2016 10:44:36

# Tune Report

Tune File : He.U
Comment :

## Tuning Parameters

| ===Plasma Condition=== | | | | ===Ion Lenses=== | | | | ===Q-Pole Parameters=== | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RF Power | : | 1600 | W | Extract 1 | : | 0 | V | AMU Gain | : | 121 | |
| RF Matching | : | 1.6 | V | Extract 2 | : | -110 | V | AMU Offset | : | 121 | |
| Smpl Depth | : | 9 | mm | Omega Bias-ce | : | -24 | V | Axis Gain | : | 0.9993 | |
| Torch-H | : | 0 | mm | Omega Lens-ce | : | -2 | V | Axis Offset | : | -0.03 | |
| Torch-V | : | 0.5 | mm | Cell Entrance | : | -40 | V | QP Bias | : | -15 | V |
| Carrier Gas | : | 1.2 | L/min | QP Focus | : | -10 | V | | | | |
| Makeup Gas | : | 0 | L/min | Cell Exit | : | -40 | V | ===Detector Parameters=== | | | |
| Optional Gas | : | --- | % | | | | | Discriminator | : | 8 | mV |
| Nebulizer Pump | : | 0.1 | rps | ===Octopole Parameters=== | | | | Analog HV | : | 1740 | V |
| Sample Pump | : | --- | rps | OctP RF | : | 170 | V | Pulse HV | : | 1460 | V |
| S/C Temp | : | 2 | degC | OctP Bias | : | -18 | V | | | | |

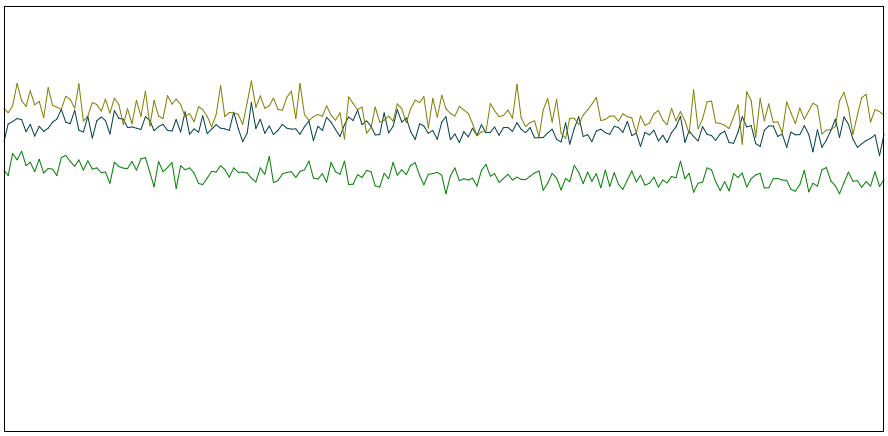
| ===Reaction Cell=== | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Reaction Mode | : | ON | | | | | | | | | |
| H2 Gas | : | 0 | mL/min | He Gas | : | 4.8 | mL/min | Optional Gas | : | --- | % |



Generated : May 26, 2016 10:44:33
Printed : May 26, 2016 10:44:38

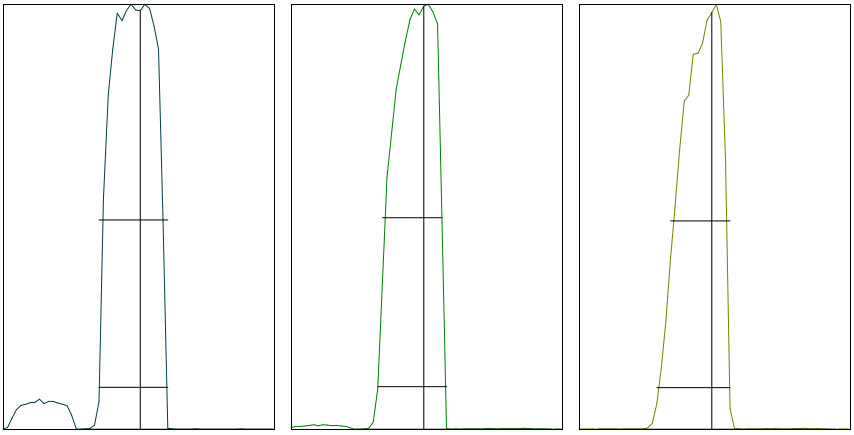
# Tune Report

Tune File : nogas.u
Comment :



| | | |
|---|---|---|
| Integration Time: | 0.1000 sec | |
| Sampling Period: | 0.8200 sec | |
| n: | 200 | |
| Oxide: | 156/140 | 1.040% |
| Doubly Charged: | 70/140 | 1.312% |

| m/z | Range | Count | Mean | RSD% | Background |
|---|---|---|---|---|---|
| 7 | 10,000 | 6992.0 | 7099.4 | 2.91 | 2.00 |
| 89 | 20,000 | 11841.0 | 12054.4 | 3.39 | 4.00 |
| 205 | 10,000 | 7437.0 | 7508.7 | 3.86 | 11.60 |
| 156/140 | 2 | 0.851% | 1.014% | 11.65 | |
| 70/140 | 2 | 1.169% | 1.169% | 10.03 | |
| 63 | 500 | 222.0 | 280.8 | 7.45 | 2.40 |
| 23 | 20,000 | 10169.0 | 10894.1 | 3.85 | 2.40 |



| m/z: | 7 | 89 | 205 |
|---|---|---|---|
| Height: | 6,839 | 11,728 | 7,449 |
| Axis: | 7.05 | 89.00 | 205.00 |
| W-50%: | 0.75 | 0.65 | 0.65 |
| W-10%: | 0.7500 | 0.7500 | 0.800 |

| | |
|---|---|
| Integration Time: | 0.1000 sec |
| Acquisition Time: | 22.7600 sec |

Y axis : Linear



Generated : May 26, 2016 10:40:54
Printed : May 26, 2016 10:40:56

# Tune Report

Tune File : nogas.u
Comment :

## Tuning Parameters

| ===Plasma Condition=== | | | | ===Ion Lenses=== | | | | ===Q-Pole Parameters=== | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RF Power | : | 1600 | W | Extract 1 | : | 0 | V | AMU Gain | : | 121 | |
| RF Matching | : | 1.6 | V | Extract 2 | : | -110 | V | AMU Offset | : | 121 | |
| Smpl Depth | : | 9 | mm | Omega Bias-ce | : | -20 | V | Axis Gain | : | 0.9993 | |
| Torch-H | : | 0 | mm | Omega Lens-ce | : | -1 | V | Axis Offset | : | -0.03 | |
| Torch-V | : | 0.5 | mm | Cell Entrance | : | -30 | V | QP Bias | : | -1 | V |
| Carrier Gas | : | 1.2 | L/min | QP Focus | : | 4 | V | | | | |
| Makeup Gas | : | 0 | L/min | Cell Exit | : | -40 | V | ===Detector Parameters=== | | | |
| Optional Gas | : | --- | % | | | | | Discriminator | : | 8 | mV |
| Nebulizer Pump | : | 0.1 | rps | ===Octopole Parameters=== | | | | Analog HV | : | 1740 | V |
| Sample Pump | : | --- | rps | OctP RF | : | 170 | V | Pulse HV | : | 1460 | V |
| S/C Temp | : | 2 | degC | OctP Bias | : | -6 | V | | | | |

===Reaction Cell===

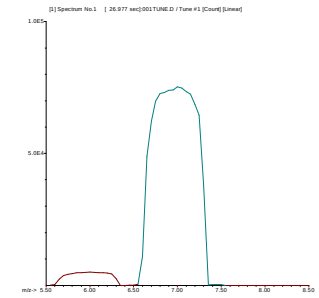
| Reaction Mode | : | OFF | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| H2 Gas | : | 0 | mL/min | He Gas | : | 0 | mL/min | Optional Gas | : | --- | % |

# 6020 QC Tune Report

Data File: C:\ICPCHEM\1\DATA\16E26k00.B\001TUNE.D
Date Acquired: May 26 2016 10:52 am
Acq. Method: TN6020.M
Operator: KL
Sample Name: TUNE CHECK
Misc Info:
Vial Number: 1301
Current Method: C:\ICPCHEM\1\METHODS\TN6020.M

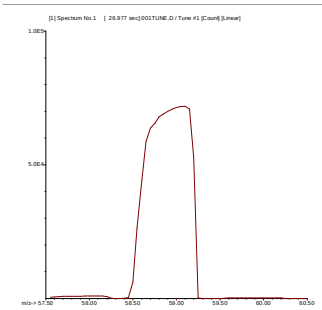
**RSD (%)**

| Element | Actual | Required | Flag |
|---|---|---|---|
| 7 Li | 2.69 | 5.00 | |
| 59 Co | 4.86 | 5.00 | |
| 115 In | 2.79 | 5.00 | |
| 205 Tl | 2.70 | 5.00 | |

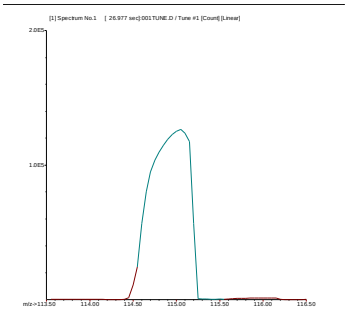


7 Li
**Mass Calib.**
Actual: 7.00
Required: 6.90 - 7.10
Flag:
**Peak Width**
Actual: 0.70
Required: 0.90
Flag:

REVIEWED/APPROVED
By Sherri Herschmann at 11:22:22 AM, 5/31/2016



59 Co
**Mass Calib.**
Actual: 59.05
Required: 58.90 - 59.10
Flag:
**Peak Width**
Actual: 0.65
Required: 0.90
Flag:



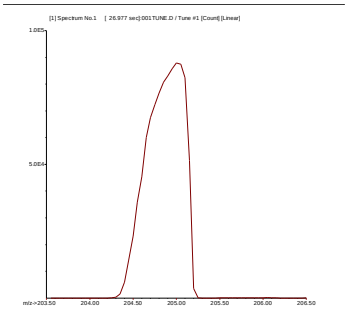
115 In

**Mass Calib.**

| | | |
|---|---|---|
| Actual: | 115.00 | |
| Required: | 114.90 - | 115.10 |
| Flag: | | |

**Peak Width**

| | |
|---|---|
| Actual: | 0.65 |
| Required: | 0.90 |
| Flag: | |



205 Tl

**Mass Calib.**

| | | |
|---|---|---|
| Actual: | 205.00 | |
| Required: | 204.90 - | 205.10 |
| Flag: | | |

**Peak Width**

| | |
|---|---|
| Actual: | 0.60 |
| Required: | 0.90 |
| Flag: | |

P/A Factor Tuning Report

Acquired:May 26 2016  10:49 am

| Mass[amu] | Element | P/A Factor |
|---|---|---|
| 6 | Li | 0.071167 |
| 23 | Na | 0.086629 |
| 24 | Mg | 0.091020 |
| 27 | Al | 0.094920 |
| 39 | K | 0.095510 |
| 44 | Ca | Sensitivity too low |
| 45 | Sc | 0.096377 |
| 47 | Ti | Sensitivity too low |
| 51 | V | 0.098935 |
| 52 | Cr | 0.101915 |
| 55 | Mn | 0.103383 |
| 59 | Co | 0.107147 |
| 60 | Ni | 0.109965 |
| 63 | Cu | 0.112207 |
| 66 | Zn | 0.111739 |
| 72 | Ge | 0.110602 |
| 75 | As | 0.109640 |
| 78 | Se | Sensitivity too low |
| 88 | Sr | 0.110320 |
| 95 | Mo | 0.109090 |
| 106 | (Cd) | 0.115897 |
| 107 | Ag | Sensitivity too low |
| 108 | (Cd) | 0.116123 |
| 111 | Cd | 0.117892 |
| 115 | In | 0.116952 |
| 118 | Sn | 0.116558 |
| 121 | Sb | 0.116308 |
| 137 | Ba | Sensitivity too low |
| 205 | Tl | 0.126999 |
| 206 | (Pb) | 0.126840 |
| 207 | (Pb) | 0.127005 |
| 208 | Pb | 0.126839 |
| 209 | Bi | 0.126647 |
| 238 | | 0.125660 |

===Detector Parameters===
  Discriminator: 8.0 mV
      Analog HV: 1740 V
       Pulse HV: 1460 V

# Calibration Blank QC Report

Acq. Method: DHL_3Fe.M Sample Name: BLANK STD 1
Operator: KL Instrument: ICPMS3
Last Cal. Update: May 26 2016 11:39 am
Date Acquired: May 26 2016 11:35 am

**QC&ISTD Elements**

| Element | | | | CPS Mean | | SD | RSD(%) |
|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | --- | 22.89 | P | 11.75 | 51.33 |
| 7 | Li | 2 | 45 | 642.26 | P | 12.62 | 1.96 |
| 9 | Be | 2 | 45 | 12.22 | P | 6.94 | 56.77 |
| 11 | B | 2 | 45 | 3037.17 | P | 36.06 | 1.19 |
| 23 | Na | 1 | 45 | 2469.24 | P | 95.33 | 3.86 |
| 24 | Mg | 1 | 45 | 202.23 | P | 32.89 | 16.26 |
| 27 | Al | 1 | 45 | 188.00 | P | 3.53 | 1.88 |
| 39 | K | 1 | 45 | 2428.12 | P | 89.25 | 3.68 |
| 44 | Ca | 2 | 45 | 3431.72 | P | 159.90 | 4.66 |
| 45 | Sc | 1 | --- | 168636.09 | P | 1517.00 | 0.90 |
| 45 | Sc | 2 | --- | 4411245.00 | A | 91060.00 | 2.06 |
| 47 | Ti | 1 | 45 | 0.89 | P | 0.77 | 86.60 |
| 51 | V | 1 | 45 | 111.11 | P | 10.36 | 9.32 |
| 51 | V | 2 | --- | | P | | |
| 52 | Cr | 1 | 45 | 49.33 | P | 11.62 | 23.55 |
| 55 | Mn | 1 | 45 | 40.45 | P | 6.01 | 14.87 |
| 56 | Fe | 1 | 72 | 1777.94 | P | 176.90 | 9.95 |
| 59 | Co | 1 | 72 | 78.67 | P | 4.62 | 5.87 |
| 60 | Ni | 1 | 72 | 50.67 | P | 6.11 | 12.06 |
| 60 | Ni | 2 | --- | | P | | |
| 63 | Cu | 1 | 72 | 149.34 | P | 19.37 | 12.97 |
| 63 | Cu | 2 | --- | | P | | |
| 66 | Zn | 1 | 72 | 84.00 | P | 7.42 | 8.84 |
| 66 | Zn | 2 | --- | | P | | |
| 72 | Ge | 1 | --- | 100925.70 | P | 970.30 | 0.96 |
| 72 | Ge | 2 | --- | | P | | |
| 75 | As | 1 | 72 | 9.00 | P | 0.38 | 4.28 |
| 78 | Se | 1 | 72 | 2.81 | P | 0.17 | 6.03 |
| 88 | Sr | 2 | ### | 1017.86 | P | 16.44 | 1.62 |
| 95 | Mo | 2 | ### | 40.00 | P | 0.00 | 0.00 |
| 107 | Ag | 2 | ### | 30.00 | P | 3.33 | 11.11 |
| 111 | Cd | 2 | ### | 20.61 | P | 10.46 | 50.75 |
| 115 | In | 2 | --- | 6534497.00 | A | 74010.00 | 1.13 |
| 118 | Sn | 2 | ### | 246.68 | P | 16.67 | 6.76 |
| 121 | Sb | 2 | ### | 117.78 | P | 12.62 | 10.72 |
| 137 | Ba | 2 | ### | 81.11 | P | 22.20 | 27.37 |
| 205 | Tl | 2 | ### | 64.45 | P | 3.85 | 5.97 |
| 208 | Pb | 2 | ### | 202.23 | P | 48.57 | 24.02 |
| 209 | Bi | 2 | --- | 4845836.00 | A | 5263.00 | 0.11 |

# Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: L2-160526
Operator: KL Instrument: ICPMS3
Date Acquired: May 26 2016 11:41 am
Last Cal. Update: May 26 2016 11:39 am

**QC&ISTD Elements**

| Element | | | | CPS Mean | | SD | RSD(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | --- | -227.07 | P | 55.37 | 24.39 | ISFail |
| 7 | Li | 2 | 45 | 8054.00 | P | 134.90 | 1.67 | |
| 9 | Be | 2 | 45 | 1902.44 | P | 74.13 | 3.90 | |
| 11 | B | 2 | 45 | 4649.92 | P | 67.38 | 1.45 | |
| 23 | Na | 1 | 45 | 6889.97 | P | 45.29 | 0.66 | |
| 24 | Mg | 1 | 45 | 2425.90 | P | 75.00 | 3.09 | |
| 27 | Al | 1 | 45 | 793.37 | P | 9.33 | 1.18 | |
| 39 | K | 1 | 45 | 3566.22 | P | 30.98 | 0.87 | |
| 44 | Ca | 2 | 45 | 6817.75 | P | 166.80 | 2.45 | |
| 45 | Sc | 1 | --- | 171268.80 | P | 1426.00 | 0.83 | |
| 45 | Sc | 2 | --- | 4348096.00 | A | 24070.00 | 0.55 | |
| 47 | Ti | 1 | 45 | 26.22 | P | 8.15 | 31.07 | |
| 51 | V | 1 | 45 | 1112.07 | P | 34.64 | 3.11 | |
| 51 | V | 2 | --- | | P | | | |
| 52 | Cr | 1 | 45 | 1377.88 | P | 104.70 | 7.60 | |
| 55 | Mn | 1 | 45 | 584.91 | P | 26.14 | 4.47 | |
| 56 | Fe | 1 | 72 | 21962.82 | P | 531.10 | 2.42 | |
| 59 | Co | 1 | 72 | 2609.21 | P | 49.49 | 1.90 | |
| 60 | Ni | 1 | 72 | 758.70 | P | 17.33 | 2.28 | |
| 60 | Ni | 2 | --- | | P | | | |
| 63 | Cu | 1 | 72 | 2110.44 | P | 60.02 | 2.84 | |
| 63 | Cu | 2 | --- | | P | | | |
| 66 | Zn | 1 | 72 | 283.12 | P | 14.26 | 5.04 | |
| 66 | Zn | 2 | --- | | P | | | |
| 72 | Ge | 1 | --- | 101930.60 | P | 160.20 | 0.16 | |
| 72 | Ge | 2 | --- | | P | | | |
| 75 | As | 1 | 72 | 117.78 | P | 1.93 | 1.64 | |
| 78 | Se | 1 | 72 | 10.04 | P | 0.74 | 7.37 | |
| 88 | Sr | 2 | 115 | 10552.80 | P | 188.60 | 1.79 | |
| 95 | Mo | 2 | 115 | 1743.53 | P | 58.13 | 3.33 | |
| 107 | Ag | 2 | 115 | 4742.24 | P | 236.60 | 4.99 | |
| 111 | Cd | 2 | 115 | 1129.57 | P | 79.02 | 7.00 | |
| 115 | In | 2 | --- | 6399852.00 | A | 71650.00 | 1.12 | |
| 118 | Sn | 2 | 115 | 2970.51 | P | 140.00 | 4.71 | |
| 121 | Sb | 2 | 115 | 3295.05 | P | 126.20 | 3.83 | |
| 137 | Ba | 2 | 115 | 1392.37 | P | 63.02 | 4.53 | |
| 205 | Tl | 2 | 209 | 7480.56 | P | 22.20 | 0.30 | |
| 208 | Pb | 2 | 209 | 10592.39 | P | 243.70 | 2.30 | |
| 209 | Bi | 2 | --- | 4892523.00 | A | 32760.00 | 0.67 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -227.07 | 24.39 | 22.89 | -991.9 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 171268.78 | 0.83 | 168636.11 | 101.6 | 70 - 120 | |
| 45 | Sc | 2 | 4348096.00 | 0.55 | 4411244.50 | 98.6 | 70 - 120 | |
| 72 | Ge | 1 | 101930.59 | 0.16 | 100925.69 | 101.0 | 70 - 120 | |
| 115 | In | 2 | 6399852.50 | 1.12 | 6534497.50 | 97.9 | 70 - 120 | |
| 209 | Bi | 2 | 4892523.00 | 0.67 | 4845836.50 | 101.0 | 70 - 120 | |

# Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: L-160526
Operator: KL Instrument: ICPMS3
Date Acquired: May 26 2016 11:47 am
Last Cal. Update: May 26 2016 11:45 am

**QC&ISTD Elements**

| Element | | | | CPS Mean | | SD | RSD(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | --- | -2853.03 | P | 197.30 | 6.92 | ISFail |
| 7 | Li | 2 | 45 | 74406.89 | P | 1183.00 | 1.59 | Fail |
| 9 | Be | 2 | 45 | 18379.55 | P | 334.00 | 1.82 | Fail |
| 11 | B | 2 | 45 | 17512.86 | P | 404.30 | 2.31 | Fail |
| 23 | Na | 1 | 45 | 48760.43 | P | 422.10 | 0.87 | Fail |
| 24 | Mg | 1 | 45 | 21735.13 | P | 291.70 | 1.34 | Fail |
| 27 | Al | 1 | 45 | 5678.71 | P | 62.30 | 1.10 | Fail |
| 39 | K | 1 | 45 | 14016.23 | P | 113.90 | 0.81 | Fail |
| 44 | Ca | 2 | 45 | 39486.07 | P | 974.50 | 2.47 | Fail |
| 45 | Sc | 1 | --- | 168489.80 | P | 862.70 | 0.51 | |
| 45 | Sc | 2 | --- | 4346676.00 | A | 83690.00 | 1.93 | |
| 47 | Ti | 1 | 45 | 250.23 | P | 9.08 | 3.63 | Fail |
| 51 | V | 1 | 45 | 9816.04 | P | 119.80 | 1.22 | Fail |
| 51 | V | 2 | --- | | P | | | |
| 52 | Cr | 1 | 45 | 13241.91 | P | 131.80 | 1.00 | Fail |
| 55 | Mn | 1 | 45 | 5455.06 | P | 96.32 | 1.77 | Fail |
| 56 | Fe | 1 | 72 | 200825.91 | P | 2321.00 | 1.16 | Fail |
| 59 | Co | 1 | 72 | 24544.59 | P | 237.90 | 0.97 | Fail |
| 60 | Ni | 1 | 72 | 7264.92 | P | 109.80 | 1.51 | Fail |
| 60 | Ni | 2 | --- | | P | | | |
| 63 | Cu | 1 | 72 | 20467.45 | P | 153.30 | 0.75 | Fail |
| 63 | Cu | 2 | --- | | P | | | |
| 66 | Zn | 1 | 72 | 2187.79 | P | 49.01 | 2.24 | Fail |
| 66 | Zn | 2 | --- | | P | | | |
| 72 | Ge | 1 | --- | 100347.00 | P | 757.50 | 0.75 | |
| 72 | Ge | 2 | --- | | P | | | |
| 75 | As | 1 | 72 | 1122.46 | P | 15.77 | 1.40 | Fail |
| 78 | Se | 1 | 72 | 69.44 | P | 2.46 | 3.54 | Fail |
| 88 | Sr | 2 | 115 | 95572.36 | P | 1410.00 | 1.48 | Fail |
| 95 | Mo | 2 | 115 | 17210.60 | P | 598.40 | 3.48 | Fail |
| 107 | Ag | 2 | 115 | 47745.14 | P | 876.10 | 1.84 | Fail |
| 111 | Cd | 2 | 115 | 10552.84 | P | 216.20 | 2.05 | Fail |
| 115 | In | 2 | --- | 6494819.00 | A | 84050.00 | 1.29 | |
| 118 | Sn | 2 | 115 | 28959.69 | P | 472.00 | 1.63 | Fail |
| 121 | Sb | 2 | 115 | 32449.74 | P | 643.00 | 1.98 | Fail |
| 137 | Ba | 2 | 115 | 13570.54 | P | 272.20 | 2.01 | Fail |
| 205 | Tl | 2 | 209 | 77095.92 | P | 1656.00 | 2.15 | Fail |
| 208 | Pb | 2 | 209 | 103645.20 | P | 826.60 | 0.80 | Fail |
| 209 | Bi | 2 | --- | 4924977.00 | A | 59300.00 | 1.20 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -2853.03 | 6.92 | 22.89 | -12462.4 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 168489.81 | 0.51 | 168636.11 | 99.9 | 70 - 120 | |
| 45 | Sc | 2 | 4346675.50 | 1.93 | 4411244.50 | 98.5 | 70 - 120 | |
| 72 | Ge | 1 | 100346.99 | 0.75 | 100925.69 | 99.4 | 70 - 120 | |
| 115 | In | 2 | 6494818.50 | 1.29 | 6534497.50 | 99.4 | 70 - 120 | |
| 209 | Bi | 2 | 4924977.00 | 1.20 | 4845836.50 | 101.6 | 70 - 120 | |

# Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: 10X-160526
Operator: KL Instrument: ICPMS3
Date Acquired: May 26 2016 11:53 am
Last Cal. Update: May 26 2016 11:51 am

**QC&ISTD Elements**

| Element | | | | CPS Mean | | SD | RSD(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | --- | -14495.79 | P | 241.50 | 1.67 | ISFail |
| 7 | Li | 2 | 45 | 368393.91 | P | 4734.00 | 1.29 | Fail |
| 9 | Be | 2 | 45 | 92563.86 | P | 1778.00 | 1.92 | Fail |
| 11 | B | 2 | 45 | 77851.37 | P | 1375.00 | 1.77 | Fail |
| 23 | Na | 1 | 45 | 229791.91 | P | 2959.00 | 1.29 | Fail |
| 24 | Mg | 1 | 45 | 105968.90 | P | 1539.00 | 1.45 | Fail |
| 27 | Al | 1 | 45 | 27241.77 | P | 477.30 | 1.75 | Fail |
| 39 | K | 1 | 45 | 60364.88 | P | 831.90 | 1.38 | Fail |
| 44 | Ca | 2 | 45 | 180640.00 | P | 4169.00 | 2.31 | Fail |
| 45 | Sc | 1 | --- | 164793.30 | P | 1223.00 | 0.74 | |
| 45 | Sc | 2 | --- | 4331415.00 | A | 63170.00 | 1.46 | |
| 47 | Ti | 1 | 45 | 1192.08 | P | 26.97 | 2.26 | |
| 51 | V | 1 | 45 | 48173.05 | P | 589.10 | 1.22 | Fail |
| 51 | V | 2 | --- | | P | | | |
| 52 | Cr | 1 | 45 | 64556.11 | P | 1446.00 | 2.24 | |
| 55 | Mn | 1 | 45 | 26149.18 | P | 521.40 | 1.99 | Fail |
| 56 | Fe | 1 | 72 | 980871.81 | P | 11120.00 | 1.13 | |
| 59 | Co | 1 | 72 | 121114.60 | P | 1407.00 | 1.16 | |
| 60 | Ni | 1 | 72 | 35624.92 | P | 346.90 | 0.97 | |
| 60 | Ni | 2 | --- | | P | | | |
| 63 | Cu | 1 | 72 | 99116.49 | P | 1273.00 | 1.28 | |
| 63 | Cu | 2 | --- | | P | | | |
| 66 | Zn | 1 | 72 | 10013.11 | P | 71.08 | 0.71 | Fail |
| 66 | Zn | 2 | --- | | P | | | |
| 72 | Ge | 1 | --- | 97589.42 | P | 1162.00 | 1.19 | |
| 72 | Ge | 2 | --- | | P | | | |
| 75 | As | 1 | 72 | 5465.07 | P | 28.80 | 0.53 | |
| 78 | Se | 1 | 72 | 322.60 | P | 5.60 | 1.74 | Fail |
| 88 | Sr | 2 | 115 | 475911.41 | P | 12140.00 | 2.55 | Fail |
| 95 | Mo | 2 | 115 | 84947.17 | P | 986.10 | 1.16 | Fail |
| 107 | Ag | 2 | 115 | 236413.80 | P | 2317.00 | 0.98 | Fail |
| 111 | Cd | 2 | 115 | 51850.21 | P | 475.10 | 0.92 | Fail |
| 115 | In | 2 | --- | 6447723.00 | A | 51790.00 | 0.80 | |
| 118 | Sn | 2 | 115 | 141358.50 | P | 2925.00 | 2.07 | Fail |
| 121 | Sb | 2 | 115 | 162336.09 | P | 3836.00 | 2.36 | Fail |
| 137 | Ba | 2 | 115 | 65999.50 | P | 2209.00 | 3.35 | Fail |
| 205 | Tl | 2 | 209 | 381669.81 | P | 6171.00 | 1.62 | Fail |
| 208 | Pb | 2 | 209 | 516578.59 | P | 8319.00 | 1.61 | Fail |
| 209 | Bi | 2 | --- | 4918655.00 | A | 65340.00 | 1.33 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -14495.79 | 1.67 | 22.89 | -63319.6 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 164793.33 | 0.74 | 168636.11 | 97.7 | 70 - 120 | |
| 45 | Sc | 2 | 4331414.50 | 1.46 | 4411244.50 | 98.2 | 70 - 120 | |
| 72 | Ge | 1 | 97589.41 | 1.19 | 100925.69 | 96.7 | 70 - 120 | |
| 115 | In | 2 | 6447723.00 | 0.80 | 6534497.50 | 98.7 | 70 - 120 | |
| 209 | Bi | 2 | 4918655.00 | 1.33 | 4845836.50 | 101.5 | 70 - 120 | |

# Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: 5X-160526
Operator: KL Instrument: ICPMS3
Date Acquired: May 26 2016 12:00 pm
Last Cal. Update: May 26 2016 11:57 am

**QC&ISTD Elements**

| Element | | | | CPS Mean | | SD | RSD(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | --- | -29158.50 | P | 1014.00 | 3.48 | ISFail |
| 7 | Li | 2 | 45 | 736902.38 | A | 19540.00 | 2.65 | Fail |
| 9 | Be | 2 | 45 | 185362.30 | P | 3536.00 | 1.91 | Fail |
| 11 | B | 2 | 45 | 149951.50 | P | 1692.00 | 1.13 | Fail |
| 23 | Na | 1 | 45 | 457975.81 | P | 3107.00 | 0.68 | Fail |
| 24 | Mg | 1 | 45 | 210458.50 | P | 2170.00 | 1.03 | |
| 27 | Al | 1 | 45 | 54325.29 | P | 728.60 | 1.34 | Fail |
| 39 | K | 1 | 45 | 118726.50 | P | 732.50 | 0.62 | Fail |
| 44 | Ca | 2 | 45 | 356693.19 | P | 8182.00 | 2.29 | Fail |
| 45 | Sc | 1 | --- | 166716.70 | P | 655.10 | 0.39 | |
| 45 | Sc | 2 | --- | 4306344.00 | A | 93420.00 | 2.17 | |
| 47 | Ti | 1 | 45 | 2353.15 | P | 46.59 | 1.98 | |
| 51 | V | 1 | 45 | 96531.47 | P | 2236.00 | 2.32 | |
| 51 | V | 2 | --- | | P | | | |
| 52 | Cr | 1 | 45 | 128789.00 | P | 1664.00 | 1.29 | |
| 55 | Mn | 1 | 45 | 52020.13 | P | 683.20 | 1.31 | |
| 56 | Fe | 1 | 72 | 1985262.00 | A | 20400.00 | 1.03 | |
| 59 | Co | 1 | 72 | 240217.80 | P | 3230.00 | 1.34 | |
| 60 | Ni | 1 | 72 | 70843.21 | P | 1119.00 | 1.58 | |
| 60 | Ni | 2 | --- | | P | | | |
| 63 | Cu | 1 | 72 | 198214.41 | P | 2267.00 | 1.14 | |
| 63 | Cu | 2 | --- | | P | | | |
| 66 | Zn | 1 | 72 | 19982.66 | P | 103.00 | 0.52 | Fail |
| 66 | Zn | 2 | --- | | P | | | |
| 72 | Ge | 1 | --- | 97991.54 | P | 580.90 | 0.59 | |
| 72 | Ge | 2 | --- | | P | | | |
| 75 | As | 1 | 72 | 10856.13 | P | 111.90 | 1.03 | |
| 78 | Se | 1 | 72 | 642.72 | P | 8.49 | 1.32 | Fail |
| 88 | Sr | 2 | 115 | 963155.69 | M | 26940.00 | 2.80 | Fail |
| 95 | Mo | 2 | 115 | 171238.50 | P | 2895.00 | 1.69 | Fail |
| 107 | Ag | 2 | 115 | 473196.41 | P | 12300.00 | 2.60 | Fail |
| 111 | Cd | 2 | 115 | 102299.90 | P | 3009.00 | 2.94 | Fail |
| 115 | In | 2 | --- | 6419535.00 | A | 40530.00 | 0.63 | |
| 118 | Sn | 2 | 115 | 280883.09 | P | 6245.00 | 2.22 | Fail |
| 121 | Sb | 2 | 115 | 324213.09 | P | 6272.00 | 1.93 | Fail |
| 137 | Ba | 2 | 115 | 130490.80 | P | 3322.00 | 2.55 | Fail |
| 205 | Tl | 2 | 209 | 749869.69 | P | 11560.00 | 1.54 | Fail |
| 208 | Pb | 2 | 209 | 1008207.00 | P | 16570.00 | 1.64 | Fail |
| 209 | Bi | 2 | --- | 4780422.00 | A | 51650.00 | 1.08 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -29158.51 | 3.48 | 22.89 | -127368.4 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 166716.70 | 0.39 | 168636.11 | 98.9 | 70 - 120 | |
| 45 | Sc | 2 | 4306344.50 | 2.17 | 4411244.50 | 97.6 | 70 - 120 | |
| 72 | Ge | 1 | 97991.54 | 0.59 | 100925.69 | 97.1 | 70 - 120 | |
| 115 | In | 2 | 6419535.50 | 0.63 | 6534497.50 | 98.2 | 70 - 120 | |
| 209 | Bi | 2 | 4780421.50 | 1.08 | 4845836.50 | 98.7 | 70 - 120 | |

# Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: 2X-160526
Operator: KL Instrument: ICPMS3
Date Acquired: May 26 2016 12:06 pm
Last Cal. Update: May 26 2016 12:03 pm

**QC&ISTD Elements**

| Element | | | | CPS Mean | | SD | RSD(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | --- | -70471.73 | P | 1437.00 | 2.04 | ISFail |
| 7 | Li | 2 | 45 | 1807047.00 | A | 16860.00 | 0.93 | Fail |
| 9 | Be | 2 | 45 | 456731.50 | P | 6546.00 | 1.43 | |
| 11 | B | 2 | 45 | 367061.69 | P | 6478.00 | 1.76 | Fail |
| 23 | Na | 1 | 45 | 1164363.00 | A | 21250.00 | 1.83 | Fail |
| 24 | Mg | 1 | 45 | 527160.50 | P | 10800.00 | 2.05 | |
| 27 | Al | 1 | 45 | 138352.09 | P | 1812.00 | 1.31 | Fail |
| 39 | K | 1 | 45 | 300885.81 | P | 1087.00 | 0.36 | Fail |
| 44 | Ca | 2 | 45 | 888808.13 | M | 40400.00 | 4.55 | Fail |
| 45 | Sc | 1 | --- | 167494.09 | P | 951.50 | 0.57 | |
| 45 | Sc | 2 | --- | 4224350.00 | A | 83120.00 | 1.97 | |
| 47 | Ti | 1 | 45 | 6029.12 | P | 35.66 | 0.59 | |
| 51 | V | 1 | 45 | 244170.91 | P | 2403.00 | 0.98 | |
| 51 | V | 2 | --- | | A | | | |
| 52 | Cr | 1 | 45 | 323235.91 | P | 2725.00 | 0.84 | |
| 55 | Mn | 1 | 45 | 133135.50 | P | 860.00 | 0.65 | |
| 56 | Fe | 1 | 72 | 4845755.00 | A | 30750.00 | 0.63 | |
| 59 | Co | 1 | 72 | 601062.69 | P | 4270.00 | 0.71 | |
| 60 | Ni | 1 | 72 | 175083.09 | P | 441.40 | 0.25 | |
| 60 | Ni | 2 | --- | | P | | | |
| 63 | Cu | 1 | 72 | 490695.69 | P | 3225.00 | 0.66 | |
| 63 | Cu | 2 | --- | | P | | | |
| 66 | Zn | 1 | 72 | 49171.62 | P | 699.30 | 1.42 | |
| 66 | Zn | 2 | --- | | P | | | |
| 72 | Ge | 1 | --- | 98470.84 | P | 640.90 | 0.65 | |
| 72 | Ge | 2 | --- | | P | | | |
| 75 | As | 1 | 72 | 27200.44 | P | 121.40 | 0.45 | |
| 78 | Se | 1 | 72 | 1608.44 | P | 24.48 | 1.52 | |
| 88 | Sr | 2 | 115 | 2452718.00 | A | 20500.00 | 0.84 | Fail |
| 95 | Mo | 2 | 115 | 422343.31 | P | 6915.00 | 1.64 | Fail |
| 107 | Ag | 2 | 115 | 1184420.00 | A | 16580.00 | 1.40 | |
| 111 | Cd | 2 | 115 | 249780.50 | P | 5961.00 | 2.39 | Fail |
| 115 | In | 2 | --- | 6257524.00 | A | 85220.00 | 1.36 | |
| 118 | Sn | 2 | 115 | 686210.38 | P | 12360.00 | 1.80 | Fail |
| 121 | Sb | 2 | 115 | 797247.63 | P | 16380.00 | 2.05 | Fail |
| 137 | Ba | 2 | 115 | 324773.69 | P | 6188.00 | 1.91 | Fail |
| 205 | Tl | 2 | 209 | 1958548.00 | A | 27100.00 | 1.38 | |
| 208 | Pb | 2 | 209 | 2565249.00 | A | 26460.00 | 1.03 | Fail |
| 209 | Bi | 2 | --- | 4715737.00 | A | 21610.00 | 0.46 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | | -70471.73 | 2.04 | 22.89 | -307830.3 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | | 167494.09 | 0.57 | 168636.11 | 99.3 | 70 - | 120 | |
| 45 | Sc | 2 | | 4224349.50 | 1.97 | 4411244.50 | 95.8 | 70 - | 120 | |
| 72 | Ge | 1 | | 98470.84 | 0.65 | 100925.69 | 97.6 | 70 - | 120 | |
| 115 | In | 2 | | 6257524.00 | 1.36 | 6534497.50 | 95.8 | 70 - | 120 | |
| 209 | Bi | 2 | | 4715737.00 | 0.46 | 4845836.50 | 97.3 | 70 - | 120 | |

# Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: H-160526
Operator: KL Instrument: ICPMS3
Date Acquired: May 26 2016 12:11 pm
Last Cal. Update: May 26 2016 12:09 pm

**QC&ISTD Elements**

| Element | | CPS Mean | | | SD | RSD(%) | Flag |
|---|---|---|---|---|---|---|---|
| 6 Li | 2 --- | -132861.91 | P | | 2177.00 | 1.64 | ISFail |
| 7 Li | 2 45 | 3508284.00 | A | | 38330.00 | 1.09 | Fail |
| 9 Be | 2 45 | 864896.88 | A | | 14120.00 | 1.63 | |
| 11 B | 2 45 | 740353.19 | A | | 29940.00 | 4.04 | Fail |
| 23 Na | 1 45 | 2288264.00 | A | | 6624.00 | 0.29 | |
| 24 Mg | 1 45 | 1061258.00 | A | | 7676.00 | 0.72 | |
| 27 Al | 1 45 | 272175.41 | P | | 4544.00 | 1.67 | |
| 39 K | 1 45 | 591750.31 | P | | 3637.00 | 0.61 | Fail |
| 44 Ca | 2 45 | 1802629.00 | A | | 28580.00 | 1.59 | Fail |
| 45 Sc | 1 --- | 165642.50 | P | | 288.60 | 0.17 | |
| 45 Sc | 2 --- | 4175889.00 | A | | 80940.00 | 1.94 | |
| 47 Ti | 1 45 | 11821.35 | P | | 81.54 | 0.69 | |
| 51 V | 1 45 | 480969.41 | P | | 5472.00 | 1.14 | |
| 51 V | 2 --- | | A | | | | |
| 52 Cr | 1 45 | 638365.69 | P | | 6338.00 | 0.99 | |
| 55 Mn | 1 45 | 259638.09 | P | | 1946.00 | 0.75 | |
| 56 Fe | 1 72 | 9520204.00 | A | | 135800.00 | 1.43 | |
| 59 Co | 1 72 | 1219065.00 | A | | 11490.00 | 0.94 | |
| 60 Ni | 1 72 | 342652.81 | P | | 3298.00 | 0.96 | |
| 60 Ni | 2 --- | | P | | | | |
| 63 Cu | 1 72 | 958707.81 | P | | 9060.00 | 0.95 | |
| 63 Cu | 2 --- | | A | | | | |
| 66 Zn | 1 72 | 93784.77 | P | | 455.10 | 0.49 | |
| 66 Zn | 2 --- | | P | | | | |
| 72 Ge | 1 --- | 96193.00 | P | | 109.10 | 0.11 | |
| 72 Ge | 2 --- | | P | | | | |
| 75 As | 1 72 | 52649.53 | P | | 394.20 | 0.75 | |
| 78 Se | 1 72 | 3029.27 | P | | 32.02 | 1.06 | |
| 88 Sr | 2 115 | 4711314.00 | A | | 82860.00 | 1.76 | Fail |
| 95 Mo | 2 115 | 839991.31 | P | | 7998.00 | 0.95 | Fail |
| 107 Ag | 2 115 | 2308572.00 | A | | 22780.00 | 0.99 | |
| 111 Cd | 2 115 | 488632.19 | P | | 5254.00 | 1.08 | Fail |
| 115 In | 2 --- | 6218405.00 | A | | 37950.00 | 0.61 | |
| 118 Sn | 2 115 | 1430087.00 | A | | 11650.00 | 0.81 | Fail |
| 121 Sb | 2 115 | 1628869.00 | A | | 17120.00 | 1.05 | Fail |
| 137 Ba | 2 115 | 645862.81 | P | | 7157.00 | 1.11 | Fail |
| 205 Tl | 2 209 | 3879082.00 | A | | 39070.00 | 1.01 | |
| 208 Pb | 2 209 | 5179257.00 | A | | 49440.00 | 0.95 | |
| 209 Bi | 2 --- | 4639222.00 | A | | 40220.00 | 0.87 | |

**ISTD Elements**

| Element | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|
| 6 Li | 2 | -132861.92 | 1.64 | 22.89 | -580359.3 | 70 - 120 | ISFail |
| 45 Sc | 1 | 165642.52 | 0.17 | 168636.11 | 98.2 | 70 - 120 | |
| 45 Sc | 2 | 4175889.00 | 1.94 | 4411244.50 | 94.7 | 70 - 120 | |
| 72 Ge | 1 | 96193.00 | 0.11 | 100925.69 | 95.3 | 70 - 120 | |
| 115 In | 2 | 6218405.50 | 0.61 | 6534497.50 | 95.2 | 70 - 120 | |
| 209 Bi | 2 | 4639222.00 | 0.87 | 4845836.50 | 95.7 | 70 - 120 | |

# Calibration Standard QC Report

Acq. Method: DHL_3Fe.M Sample Name: H2-160526
Operator: KL Instrument: ICPMS3
Date Acquired: May 26 2016 12:17 pm
Last Cal. Update: May 26 2016 12:15 pm

**QC&ISTD Elements**

| Element | | | CPS Mean | | SD | RSD(%) | Flag |
|---|---|---|---|---|---|---|---|
| 6 Li | 2 | --- | -509995.91 | P | 3854.00 | 0.76 | ISFail |
| 7 Li | 2 | 45 | 13441910.00 | A | 26400.00 | 0.20 | |
| 9 Be | 2 | 45 | 3154331.00 | A | 49580.00 | 1.57 | |
| 11 B | 2 | 45 | 2692521.00 | A | 28860.00 | 1.07 | Fail |
| 23 Na | 1 | 45 | 5413152.00 | A | 15890.00 | 0.29 | |
| 24 Mg | 1 | 45 | 2516737.00 | A | 12710.00 | 0.51 | |
| 27 Al | 1 | 45 | 1090.73 | P | 27.36 | 2.51 | Fail |
| 39 K | 1 | 45 | 1445588.00 | A | 6917.00 | 0.48 | Fail |
| 44 Ca | 2 | 45 | 4240984.00 | A | 37070.00 | 0.87 | Fail |
| 45 Sc | 1 | --- | 157418.30 | P | 226.70 | 0.14 | |
| 45 Sc | 2 | --- | 3993967.00 | A | 47680.00 | 1.19 | |
| 47 Ti | 1 | 45 | 44753.04 | P | 785.50 | 1.76 | |
| 51 V | 1 | 45 | 1879829.00 | A | 10140.00 | 0.54 | |
| 51 V | 2 | --- | | A | | | |
| 52 Cr | 1 | 45 | 2450212.00 | A | 23830.00 | 0.97 | |
| 55 Mn | 1 | 45 | 978944.00 | M | 9552.00 | 0.98 | |
| 56 Fe | 1 | 72 | 12968.46 | P | 1113.00 | 8.58 | Fail |
| 59 Co | 1 | 72 | 4393587.00 | A | 55010.00 | 1.25 | |
| 60 Ni | 1 | 72 | 1325923.00 | A | 13450.00 | 1.01 | |
| 60 Ni | 2 | --- | | A | | | |
| 63 Cu | 1 | 72 | 3579196.00 | A | 44960.00 | 1.26 | |
| 63 Cu | 2 | --- | | A | | | |
| 66 Zn | 1 | 72 | 346018.81 | P | 1461.00 | 0.42 | |
| 66 Zn | 2 | --- | | A | | | |
| 72 Ge | 1 | --- | 90882.19 | P | 416.00 | 0.46 | |
| 72 Ge | 2 | --- | | P | | | |
| 75 As | 1 | 72 | 198315.59 | P | 1161.00 | 0.59 | |
| 78 Se | 1 | 72 | 11280.52 | P | 62.48 | 0.55 | |
| 88 Sr | 2 | 115 | 17988920.00 | A | 164700.00 | 0.92 | Fail |
| 95 Mo | 2 | 115 | 3345117.00 | A | 36480.00 | 1.09 | |
| 107 Ag | 2 | 115 | 2218.19 | P | 500.50 | 22.56 | Fail |
| 111 Cd | 2 | 115 | 1926422.00 | A | 21080.00 | 1.09 | |
| 115 In | 2 | --- | 5939000.00 | A | 10480.00 | 0.18 | |
| 118 Sn | 2 | 115 | 5285574.00 | A | 43870.00 | 0.83 | Fail |
| 121 Sb | 2 | 115 | 2279.25 | P | 433.00 | 19.00 | Fail |
| 137 Ba | 2 | 115 | 2605059.00 | A | 25600.00 | 0.98 | |
| 205 Tl | 2 | 209 | 14883310.00 | A | 84140.00 | 0.57 | |
| 208 Pb | 2 | 209 | 19828910.00 | A | 107100.00 | 0.54 | |
| 209 Bi | 2 | --- | 4534559.00 | A | 31890.00 | 0.70 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 Li | 2 | | -509995.94 | 0.76 | 22.89 | ######### | 70 - 120 | ISFail |
| 45 Sc | 1 | | 157418.30 | 0.14 | 168636.11 | 93.3 | 70 - 120 | |
| 45 Sc | 2 | | 3993967.00 | 1.19 | 4411244.50 | 90.5 | 70 - 120 | |
| 72 Ge | 1 | | 90882.19 | 0.46 | 100925.69 | 90.0 | 70 - 120 | |
| 115 In | 2 | | 5939000.00 | 0.18 | 6534497.50 | 90.9 | 70 - 120 | |
| 209 Bi | 2 | | 4534559.00 | 0.70 | 4845836.50 | 93.6 | 70 - 120 | |

# ICSA QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\016ICSA.D\016ICSA.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 12:35 pm | Sample Name: | **ICSA-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | ICSAICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | RL S | RL Aq | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.488 | ppb | 5.16 | 8.00 | 5.00 | |
| 9 | Be | 2 | 45 | 0.207 | ppb | 8.66 | 0.32 | 0.80 | |
| 11 | B | 2 | 45 | 8.103 | ppb | 4.68 | 30.00 | 30.00 | |
| 23 | Na | 1 | 45 | 94780.000 | ppb | 1.74 | ####### | ####### | |
| 24 | Mg | 1 | 45 | 91940.000 | ppb | 0.92 | ####### | ####### | |
| 27 | Al | 1 | 45 | 100900.000 | ppb | 0.60 | ####### | ####### | |
| 39 | K | 1 | 45 | 95210.000 | ppb | 0.61 | ####### | ####### | |
| 44 | Ca | 2 | 45 | 94710.000 | ppb | 3.54 | ####### | ####### | |
| 47 | Ti | 1 | 45 | 2017.000 | ppb | 1.73 | 10.00 | 10.00 | |
| 51 | V | 1 | 45 | 0.289 | ppb | 2.68 | 10.00 | 10.00 | |
| 52 | Cr | 1 | 45 | 0.693 | ppb | 3.53 | 8.00 | 5.00 | |
| 55 | Mn | 1 | 45 | 2.089 | ppb | 4.64 | 8.00 | 10.00 | |
| 56 | Fe | 1 | 72 | 96900.000 | ppb | 1.50 | ####### | ####### | |
| 59 | Co | 1 | 72 | 0.829 | ppb | 1.33 | 8.00 | 10.00 | |
| 60 | Ni | 1 | 72 | 0.727 | ppb | 2.73 | 8.00 | 10.00 | |
| 63 | Cu | 1 | 72 | 0.777 | ppb | 1.44 | 8.00 | 10.00 | |
| 66 | Zn | 1 | 72 | 1.797 | ppb | 6.04 | 10.00 | 5.00 | |
| 75 | As | 1 | 72 | 0.992 | ppb | 4.03 | 4.00 | 5.00 | |
| 78 | Se | 1 | 72 | 0.569 | ppb | 13.73 | 2.00 | 5.00 | |
| 88 | Sr | 2 | 115 | 1.647 | ppb | 3.48 | 10.00 | 10.00 | |
| 95 | Mo | 2 | 115 | 1965.000 | ppb | 2.02 | 8.00 | 5.00 | |
| 107 | Ag | 2 | 115 | 0.181 | ppb | 4.24 | 0.80 | 2.00 | |
| 111 | Cd | 2 | 115 | 0.448 | ppb | 25.55 | 1.20 | 1.00 | |
| 118 | Sn | 2 | 115 | 0.635 | ppb | 6.10 | 10.00 | 10.00 | |
| 121 | Sb | 2 | 115 | 0.434 | ppb | 1.84 | 4.00 | 2.50 | |
| 137 | Ba | 2 | 115 | 0.539 | ppb | 5.83 | 8.00 | 10.00 | |
| 205 | Tl | 2 | 209 | 0.366 | ppb | 8.02 | 4.00 | 1.50 | |
| 208 | Pb | 2 | 209 | 0.664 | ppb | 4.93 | 1.20 | 1.00 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -55.73 | 18.57 | 22.89 | -243.4 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 159654.55 | 0.29 | 168636.11 | 94.7 | 70 - 120 | |
| 45 | Sc | 2 | 3995579.80 | 2.64 | 4411244.50 | 90.6 | 70 - 120 | |
| 72 | Ge | 1 | 90761.45 | 0.08 | 100925.69 | 89.9 | 70 - 120 | |
| 115 | In | 2 | 5758946.00 | 1.54 | 6534497.50 | 88.1 | 70 - 120 | |
| 209 | Bi | 2 | 4107273.30 | 0.60 | 4845836.50 | 84.8 | 70 - 120 | |

# ICS-AB QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\017ICSB.D\017ICSB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 12:41 pm | Sample Name: | **ICSAB-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | ICSBICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.36 | ppb | 4.26 | --- | 80 - | | 120 | |
| 9 | Be | 2 | 45 | 0.13 | ppb | 12.74 | --- | 80 - | | 120 | |
| 11 | B | 2 | 45 | 5.09 | ppb | 5.00 | --- | 80 - | | 120 | |
| 23 | Na | 1 | 45 | 95160.00 | ppb | 0.97 | 100000.00 | 80 - | | 120 | |
| 24 | Mg | 1 | 45 | 90010.00 | ppb | 0.62 | 100000.00 | 80 - | | 120 | |
| 27 | Al | 1 | 45 | 99030.00 | ppb | 1.45 | 100000.00 | 80 - | | 120 | |
| 39 | K | 1 | 45 | 94510.00 | ppb | 0.77 | 100000.00 | 80 - | | 120 | |
| 44 | Ca | 2 | 45 | 94940.00 | ppb | 4.19 | 100000.00 | 80 - | | 120 | |
| 47 | Ti | 1 | 45 | 2001.00 | ppb | 0.31 | --- | 80 - | | 120 | |
| 51 | V | 1 | 45 | 39.17 | ppb | 1.12 | 40.00 | 80 - | | 120 | |
| 52 | Cr | 1 | 45 | 20.64 | ppb | 1.72 | 20.00 | 80 - | | 120 | |
| 55 | Mn | 1 | 45 | 20.00 | ppb | 2.83 | 20.00 | 80 - | | 120 | |
| 56 | Fe | 1 | 72 | 95770.00 | ppb | 1.88 | 100000.00 | 80 - | | 120 | |
| 59 | Co | 1 | 72 | 40.41 | ppb | 1.44 | 40.00 | 80 - | | 120 | |
| 60 | Ni | 1 | 72 | 35.96 | ppb | 1.69 | 40.00 | 80 - | | 120 | |
| 63 | Cu | 1 | 72 | 19.75 | ppb | 0.58 | 20.00 | 80 - | | 120 | |
| 66 | Zn | 1 | 72 | 19.01 | ppb | 2.90 | 20.00 | 80 - | | 120 | |
| 75 | As | 1 | 72 | 19.93 | ppb | 0.69 | 20.00 | 80 - | | 120 | |
| 78 | Se | 1 | 72 | 20.40 | ppb | 1.87 | 20.00 | 80 - | | 120 | |
| 88 | Sr | 2 | 115 | 1.18 | ppb | 2.52 | --- | 80 - | | 120 | |
| 95 | Mo | 2 | 115 | 1968.00 | ppb | 2.45 | --- | 80 - | | 120 | |
| 107 | Ag | 2 | 115 | 18.18 | ppb | 3.39 | 20.00 | 80 - | | 120 | |
| 111 | Cd | 2 | 115 | 9.15 | ppb | 1.78 | 10.00 | 80 - | | 120 | |
| 118 | Sn | 2 | 115 | 0.56 | ppb | 3.69 | --- | 80 - | | 120 | |
| 121 | Sb | 2 | 115 | 0.07 | ppb | 8.90 | --- | 80 - | | 120 | |
| 137 | Ba | 2 | 115 | 0.55 | ppb | 11.05 | --- | 80 - | | 120 | |
| 205 | Tl | 2 | 209 | 0.20 | ppb | 13.15 | --- | 80 - | | 120 | |
| 208 | Pb | 2 | 209 | 0.46 | ppb | 4.54 | --- | 80 - | | 120 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -39.15 | 34.94 | 22.89 | -171.0 | 70 - | | 120 | ISFail |
| 45 | Sc | 1 | 159302.56 | 0.39 | 168636.11 | 94.5 | 70 - | | 120 | |
| 45 | Sc | 2 | 3837165.80 | 3.82 | 4411244.50 | 87.0 | 70 - | | 120 | |
| 72 | Ge | 1 | 90530.78 | 0.25 | 100925.69 | 89.7 | 70 - | | 120 | |
| 115 | In | 2 | 5628280.50 | 2.65 | 6534497.50 | 86.1 | 70 - | | 120 | |
| 209 | Bi | 2 | 4071041.30 | 0.76 | 4845836.50 | 84.0 | 70 - | | 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\020ICV.D\020ICV.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 12:59 pm | Sample Name: | **ICV1-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | ICV ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 116.70 | ppb | 2.28 | 100.00 | 90 - | 110 | 116.7 | Fail |
| 9 | Be | 2 | 45 | 111.30 | ppb | 2.03 | 100.00 | 90 - | 110 | 111.3 | Fail |
| 11 | B | 2 | 45 | 112.50 | ppb | 1.13 | 100.00 | 90 - | 110 | 112.5 | Fail |
| 23 | Na | 1 | 45 | 2651.00 | ppb | 0.27 | 2500.00 | 90 - | 110 | 106.0 | |
| 24 | Mg | 1 | 45 | 2587.00 | ppb | 1.33 | 2500.00 | 90 - | 110 | 103.5 | |
| 27 | Al | 1 | 45 | 2540.00 | ppb | 1.23 | 2500.00 | 90 - | 110 | 101.6 | |
| 39 | K | 1 | 45 | 2515.00 | ppb | 0.34 | 2500.00 | 90 - | 110 | 100.6 | |
| 44 | Ca | 2 | 45 | 2446.00 | ppb | 1.10 | 2500.00 | 90 - | 110 | 97.8 | |
| 47 | Ti | 1 | 45 | 101.20 | ppb | 1.02 | 100.00 | 90 - | 110 | 101.2 | |
| 51 | V | 1 | 45 | 100.50 | ppb | 1.11 | 100.00 | 90 - | 110 | 100.5 | |
| 52 | Cr | 1 | 45 | 104.60 | ppb | 1.59 | 100.00 | 90 - | 110 | 104.6 | |
| 55 | Mn | 1 | 45 | 99.70 | ppb | 1.27 | 100.00 | 90 - | 110 | 99.7 | |
| 56 | Fe | 1 | 72 | 2640.00 | ppb | 1.67 | 2500.00 | 90 - | 110 | 105.6 | |
| 59 | Co | 1 | 72 | 104.20 | ppb | 0.99 | 100.00 | 90 - | 110 | 104.2 | |
| 60 | Ni | 1 | 72 | 100.40 | ppb | 1.16 | 100.00 | 90 - | 110 | 100.4 | |
| 63 | Cu | 1 | 72 | 102.70 | ppb | 0.48 | 100.00 | 90 - | 110 | 102.7 | |
| 66 | Zn | 1 | 72 | 105.10 | ppb | 1.21 | 100.00 | 90 - | 110 | 105.1 | |
| 75 | As | 1 | 72 | 101.10 | ppb | 0.52 | 100.00 | 90 - | 110 | 101.1 | |
| 78 | Se | 1 | 72 | 99.09 | ppb | 1.32 | 100.00 | 90 - | 110 | 99.1 | |
| 88 | Sr | 2 | 115 | 98.66 | ppb | 1.92 | 100.00 | 90 - | 110 | 98.7 | |
| 95 | Mo | 2 | 115 | 93.46 | ppb | 2.24 | 100.00 | 90 - | 110 | 93.5 | |
| 107 | Ag | 2 | 115 | 97.69 | ppb | 2.31 | 100.00 | 90 - | 110 | 97.7 | |
| 111 | Cd | 2 | 115 | 97.19 | ppb | 0.90 | 100.00 | 90 - | 110 | 97.2 | |
| 118 | Sn | 2 | 115 | 101.70 | ppb | 2.04 | 100.00 | 90 - | 110 | 101.7 | |
| 121 | Sb | 2 | 115 | 99.96 | ppb | 2.08 | 100.00 | 90 - | 110 | 100.0 | |
| 137 | Ba | 2 | 115 | 97.26 | ppb | 1.52 | 100.00 | 90 - | 110 | 97.3 | |
| 205 | Tl | 2 | 209 | 96.44 | ppb | 1.44 | 100.00 | 90 - | 110 | 96.4 | |
| 208 | Pb | 2 | 209 | 98.21 | ppb | 0.88 | 100.00 | 90 - | 110 | 98.2 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigh | -12468.67 | 9.71 | 22.89 | -54464.9 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | | 161320.23 | 0.40 | 168636.11 | 95.7 | 70 - | 120 | |
| 45 | Sc | 2 | | 3646372.80 | 2.00 | 4411244.50 | 82.7 | 70 - | 120 | |
| 72 | Ge | 1 | | 95107.23 | 0.29 | 100925.69 | 94.2 | 70 - | 120 | |
| 115 | In | 2 | | 5797043.50 | 1.89 | 6534497.50 | 88.7 | 70 - | 120 | |
| 209 | Bi | 2 | | 4730840.00 | 1.04 | 4845836.50 | 97.6 | 70 - | 120 | |

# ICB QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\021_ICB.D\021_ICB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 01:05 pm | Sample Name: | **ICB1-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | ICB ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Instrument: | ICPMS3 |

**QC Elements**

| Element | Conc. | RSD(%) | High Limit | Flag |
|---|---|---|---|---|
| 7 Li 2 45 | 0.20 ppb | 6.02 | 2.00 | |
| 9 Be 2 45 | 0.09 ppb | 23.17 | 0.40 | |
| 11 B 2 45 | 2.02 ppb | 3.90 | 10.00 | |
| 23 Na 1 45 | 16.05 ppb | 7.98 | 50.00 | |
| 24 Mg 1 45 | 10.42 ppb | 19.58 | 50.00 | |
| 27 Al 1 45 | 9.38 ppb | 7.12 | 50.00 | |
| 39 K 1 45 | 11.87 ppb | 4.15 | 50.00 | |
| 44 Ca 2 45 | 6.67 ppb | 2.93 | 50.00 | |
| 47 Ti 1 45 | 0.28 ppb | 26.96 | 4.00 | |
| 51 V 1 45 | 0.10 ppb | 13.87 | 4.00 | |
| 52 Cr 1 45 | 0.11 ppb | 18.55 | 2.00 | |
| 55 Mn 1 45 | 0.23 ppb | 6.86 | 2.00 | |
| 56 Fe 1 72 | 10.06 ppb | 20.74 | 50.00 | |
| 59 Co 1 72 | 0.11 ppb | 19.35 | 2.00 | |
| 60 Ni 1 72 | 0.15 ppb | 13.66 | 2.00 | |
| 63 Cu 1 72 | 0.17 ppb | 13.23 | 2.00 | |
| 66 Zn 1 72 | 0.24 ppb | 9.26 | 4.00 | |
| 75 As 1 72 | 0.14 ppb | 13.25 | 2.00 | |
| 78 Se 1 72 | 0.10 ppb | 15.23 | 0.60 | |
| 88 Sr 2 115 | 0.06 ppb | 6.44 | 4.00 | |
| 95 Mo 2 115 | 0.28 ppb | 16.31 | 2.00 | |
| 107 Ag 2 115 | 0.06 ppb | 6.96 | 0.40 | |
| 111 Cd 2 115 | 0.07 ppb | 19.79 | 0.40 | |
| 118 Sn 2 115 | 0.14 ppb | 4.65 | 20.00 | |
| 121 Sb 2 115 | 0.06 ppb | 15.39 | 2.00 | |
| 137 Ba 2 115 | 0.05 ppb | 21.69 | 2.00 | |
| 205 Tl 2 209 | 0.17 ppb | 8.63 | 2.00 | |
| 208 Pb 2 209 | 0.11 ppb | 10.70 | 0.40 | |

**ISTD Elements**

| Element | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|
| 6 Li 2 RHig | -0.29 | ###### | 22.89 | -1.3 | 70 - 120 | ISFail |
| 45 Sc 1 | 166252.50 | 0.87 | 168636.11 | 98.6 | 70 - 120 | |
| 45 Sc 2 | 3717545.80 | 1.65 | 4411244.50 | 84.3 | 70 - 120 | |
| 72 Ge 1 | 98903.38 | 0.13 | 100925.69 | 98.0 | 70 - 120 | |
| 115 In 2 | 5904958.00 | 1.54 | 6534497.50 | 90.4 | 70 - 120 | |
| 209 Bi 2 | 4901903.50 | 1.06 | 4845836.50 | 101.2 | 70 - 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\022LCVL.D\022LCVL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 01:11 pm | Sample Name: | **ILCVL-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCVLICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 11.95 | ppb | 1.75 | 5.00 | 70 - | 130 | 239.0 | Fail |
| 9 | Be | 2 | 45 | 1.12 | ppb | 2.80 | 1.00 | 70 - | 130 | 112.1 | |
| 11 | B | 2 | 45 | 22.52 | ppb | 4.16 | 20.00 | 70 - | 130 | 112.6 | |
| 23 | Na | 1 | 45 | 113.00 | ppb | 1.08 | 100.00 | 70 - | 130 | 113.0 | |
| 24 | Mg | 1 | 45 | 107.20 | ppb | 2.11 | 100.00 | 70 - | 130 | 107.2 | |
| 27 | Al | 1 | 45 | 107.40 | ppb | 3.20 | 100.00 | 70 - | 130 | 107.4 | |
| 39 | K | 1 | 45 | 102.60 | ppb | 3.48 | 100.00 | 70 - | 130 | 102.6 | |
| 44 | Ca | 2 | 45 | 104.90 | ppb | 5.35 | 100.00 | 70 - | 130 | 104.9 | |
| 47 | Ti | 1 | 45 | 5.32 | ppb | 8.80 | 5.00 | 70 - | 130 | 106.5 | |
| 51 | V | 1 | 45 | 1.05 | ppb | 3.85 | 1.00 | 70 - | 130 | 104.9 | |
| 52 | Cr | 1 | 45 | 5.28 | ppb | 1.08 | 5.00 | 70 - | 130 | 105.6 | |
| 55 | Mn | 1 | 45 | 5.12 | ppb | 2.37 | 5.00 | 70 - | 130 | 102.5 | |
| 56 | Fe | 1 | 72 | 106.60 | ppb | 1.76 | 100.00 | 70 - | 130 | 106.6 | |
| 59 | Co | 1 | 72 | 5.12 | ppb | 1.74 | 5.00 | 70 - | 130 | 102.3 | |
| 60 | Ni | 1 | 72 | 5.08 | ppb | 4.92 | 5.00 | 70 - | 130 | 101.6 | |
| 63 | Cu | 1 | 72 | 5.23 | ppb | 1.80 | 5.00 | 70 - | 130 | 104.6 | |
| 66 | Zn | 1 | 72 | 5.29 | ppb | 4.78 | 5.00 | 70 - | 130 | 105.8 | |
| 75 | As | 1 | 72 | 5.18 | ppb | 0.63 | 5.00 | 70 - | 130 | 103.7 | |
| 78 | Se | 1 | 72 | 5.51 | ppb | 5.23 | 5.00 | 70 - | 130 | 110.2 | |
| 88 | Sr | 2 | 115 | 4.87 | ppb | 2.71 | 5.00 | 70 - | 130 | 97.4 | |
| 95 | Mo | 2 | 115 | 4.67 | ppb | 2.33 | 5.00 | 70 - | 130 | 93.3 | |
| 107 | Ag | 2 | 115 | 2.01 | ppb | 1.55 | 2.00 | 70 - | 130 | 100.5 | |
| 111 | Cd | 2 | 115 | 1.03 | ppb | 8.17 | 1.00 | 70 - | 130 | 102.7 | |
| 118 | Sn | 2 | 115 | 5.07 | ppb | 5.15 | 5.00 | 70 - | 130 | 101.3 | |
| 121 | Sb | 2 | 115 | 2.02 | ppb | 5.60 | 2.00 | 70 - | 130 | 101.1 | |
| 137 | Ba | 2 | 115 | 4.93 | ppb | 1.99 | 5.00 | 70 - | 130 | 98.5 | |
| 205 | Tl | 2 | 209 | 0.99 | ppb | 4.97 | 1.00 | 70 - | 130 | 98.9 | |
| 208 | Pb | 2 | 209 | 1.01 | ppb | 2.23 | 1.00 | 70 - | 130 | 100.9 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -1241.10 | 1.60 | 22.89 | -5421.3 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 162653.64 | 0.57 | 168636.11 | 96.5 | 70 - | 120 | |
| 45 | Sc | 2 | 3682736.30 | 1.79 | 4411244.50 | 83.5 | 70 - | 120 | |
| 72 | Ge | 1 | 96966.94 | 0.14 | 100925.69 | 96.1 | 70 - | 120 | |
| 115 | In | 2 | 5879880.50 | 1.74 | 6534497.50 | 90.0 | 70 - | 120 | |
| 209 | Bi | 2 | 4872015.50 | 1.57 | 4845836.50 | 100.5 | 70 - | 120 | |

# PB QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\023__PB.D\023__PB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 01:17 pm | Sample Name: | MB-75258 |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MBLKICPMS_TSDOD |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL | RL | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.149 | ppb | 5.47 | 2.0 | 8.00 | |
| 9 | Be | 2 | 45 | 0.030 | ppb | 23.31 | 0.4 | 1.20 | |
| 11 | B | 2 | 45 | 0.943 | ppb | 2.73 | 10.0 | 30.00 | |
| 23 | Na | 1 | 45 | 15.720 | ppb | 0.74 | 50.0 | ##### | |
| 24 | Mg | 1 | 45 | 30.790 | ppb | 3.89 | 50.0 | ##### | |
| 27 | Al | 1 | 45 | 81.620 | ppb | 2.64 | 50.0 | ##### | J |
| 39 | K | 1 | 45 | 6.372 | ppb | 4.12 | 50.0 | ##### | |
| 44 | Ca | 2 | 45 | 103.800 | ppb | 2.97 | 50.0 | ##### | J |
| 47 | Ti | 1 | 45 | 6.569 | ppb | 14.00 | 4.0 | 10.00 | J |
| 51 | V | 1 | 45 | 0.023 | ppb | 10.39 | 4.0 | 10.00 | |
| 52 | Cr | 1 | 45 | 0.306 | ppb | 4.15 | 2.0 | 8.00 | |
| 55 | Mn | 1 | 45 | 0.119 | ppb | 7.85 | 2.0 | 8.00 | |
| 56 | Fe | 1 | 72 | 6.915 | ppb | 5.71 | 50.0 | ##### | |
| 59 | Co | 1 | 72 | 0.031 | ppb | 3.48 | 2.0 | 8.00 | |
| 60 | Ni | 1 | 72 | 0.299 | ppb | 4.47 | 2.0 | 8.00 | |
| 63 | Cu | 1 | 72 | 0.170 | ppb | 3.41 | 2.0 | 8.00 | |
| 66 | Zn | 1 | 72 | 10.930 | ppb | 1.93 | 4.0 | 10.00 | Fail |
| 75 | As | 1 | 72 | 0.031 | ppb | 10.30 | 2.0 | 4.00 | |
| 78 | Se | 1 | 72 | -0.052 | ppb | 21.82 | 0.6 | 2.00 | |
| 88 | Sr | 2 | 115 | 0.106 | ppb | 1.30 | 4.0 | 10.00 | |
| 95 | Mo | 2 | 115 | 0.116 | ppb | 14.01 | 2.0 | 8.00 | |
| 107 | Ag | 2 | 115 | 0.015 | ppb | 21.73 | 0.4 | 0.80 | |
| 111 | Cd | 2 | 115 | 0.009 | ppb | 14.44 | 0.4 | 1.20 | |
| 118 | Sn | 2 | 115 | 4.075 | ppb | 2.41 | 20.0 | 40.00 | |
| 121 | Sb | 2 | 115 | 0.006 | ppb | 6.96 | 2.0 | 4.00 | |
| 137 | Ba | 2 | 115 | 0.054 | ppb | 11.62 | 2.0 | 8.00 | |
| 205 | Tl | 2 | 209 | 0.043 | ppb | 7.35 | 2.0 | 4.00 | |
| 208 | Pb | 2 | 209 | 0.074 | ppb | 2.47 | 0.4 | 1.20 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHig | -1.37 | ###### | 22.89 | -6.0 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 163136.64 | 0.69 | 168636.11 | 96.7 | 70 - 120 | |
| 45 | Sc | 2 | | 3735391.80 | 1.31 | 4411244.50 | 84.7 | 70 - 120 | |
| 72 | Ge | 1 | | 94768.16 | 0.16 | 100925.69 | 93.9 | 70 - 120 | |
| 115 | In | 2 | | 5955899.50 | 1.58 | 6534497.50 | 91.1 | 70 - 120 | |
| 209 | Bi | 2 | | 4976295.50 | 0.60 | 4845836.50 | 102.7 | 70 - 120 | |

# LCS QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\024_LCS.D\024_LCS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 01:23 pm | Sample Name: | **LCS-75258** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 238.70 | ppb | 1.25 | 200.00 | 80 - | 120 | 119.4 | |
| 9 | Be | 2 | 45 | 216.40 | ppb | 1.38 | 200.00 | 80 - | 120 | 108.2 | |
| 11 | B | 2 | 45 | 210.80 | ppb | 2.17 | 200.00 | 80 - | 120 | 105.4 | |
| 23 | Na | 1 | 45 | 5328.00 | ppb | 1.29 | 1000.00 | 80 - | 120 | 532.8 | Fail |
| 24 | Mg | 1 | 45 | 5117.00 | ppb | 1.63 | 1000.00 | 80 - | 120 | 511.7 | Fail |
| 27 | Al | 1 | 45 | 1010.00 | ppb | 2.08 | 1000.00 | 80 - | 120 | 101.0 | |
| 39 | K | 1 | 45 | 4979.00 | ppb | 1.17 | 1000.00 | 80 - | 120 | 497.9 | Fail |
| 44 | Ca | 2 | 45 | 4955.00 | ppb | 2.02 | 1000.00 | 80 - | 120 | 495.5 | Fail |
| 47 | Ti | 1 | 45 | 202.70 | ppb | 0.31 | 200.00 | 80 - | 120 | 101.4 | |
| 51 | V | 1 | 45 | 198.40 | ppb | 2.08 | 200.00 | 80 - | 120 | 99.2 | |
| 52 | Cr | 1 | 45 | 203.60 | ppb | 1.47 | 200.00 | 80 - | 120 | 101.8 | |
| 55 | Mn | 1 | 45 | 203.90 | ppb | 1.32 | 200.00 | 80 - | 120 | 102.0 | |
| 56 | Fe | 1 | 72 | 1057.00 | ppb | 1.29 | 1000.00 | 80 - | 120 | 105.7 | |
| 59 | Co | 1 | 72 | 209.60 | ppb | 1.38 | 200.00 | 80 - | 120 | 104.8 | |
| 60 | Ni | 1 | 72 | 203.80 | ppb | 1.36 | 200.00 | 80 - | 120 | 101.9 | |
| 63 | Cu | 1 | 72 | 209.20 | ppb | 1.20 | 200.00 | 80 - | 120 | 104.6 | |
| 66 | Zn | 1 | 72 | 205.30 | ppb | 2.09 | 200.00 | 80 - | 120 | 102.7 | |
| 75 | As | 1 | 72 | 197.20 | ppb | 0.52 | 200.00 | 80 - | 120 | 98.6 | |
| 78 | Se | 1 | 72 | 192.90 | ppb | 2.84 | 200.00 | 80 - | 120 | 96.5 | |
| 88 | Sr | 2 | 115 | 202.70 | ppb | 1.50 | 200.00 | 80 - | 120 | 101.4 | |
| 95 | Mo | 2 | 115 | 185.70 | ppb | 1.46 | 200.00 | 80 - | 120 | 92.9 | |
| 107 | Ag | 2 | 115 | 194.00 | ppb | 1.95 | 200.00 | 80 - | 120 | 97.0 | |
| 111 | Cd | 2 | 115 | 191.60 | ppb | 2.10 | 200.00 | 80 - | 120 | 95.8 | |
| 118 | Sn | 2 | 115 | 204.30 | ppb | 1.45 | 200.00 | 80 - | 120 | 102.2 | |
| 121 | Sb | 2 | 115 | 192.60 | ppb | 1.90 | 200.00 | 80 - | 120 | 96.3 | |
| 137 | Ba | 2 | 115 | 192.00 | ppb | 2.05 | 200.00 | 80 - | 120 | 96.0 | |
| 205 | Tl | 2 | 209 | 207.30 | ppb | 2.03 | 200.00 | 80 - | 120 | 103.7 | |
| 208 | Pb | 2 | 209 | 198.60 | ppb | 1.38 | 200.00 | 80 - | 120 | 99.3 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -56825.68 | 3.01 | 22.89 | -248222.5 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 157769.45 | 0.57 | 168636.11 | 93.6 | 70 - | 120 | |
| 45 | Sc | 2 | 3668085.80 | 2.14 | 4411244.50 | 83.2 | 70 - | 120 | |
| 72 | Ge | 1 | 91421.31 | 0.77 | 100925.69 | 90.6 | 70 - | 120 | |
| 115 | In | 2 | 5832783.00 | 2.07 | 6534497.50 | 89.3 | 70 - | 120 | |
| 209 | Bi | 2 | 4696745.00 | 0.26 | 4845836.50 | 96.9 | 70 - | 120 | |

# LCS QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\025_LCS.D\025_LCS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 01:29 pm | Sample Name: | **LCSD-75258** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCSDICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 242.50 | ppb | 0.84 | 200.00 | 80 - | 120 | 121.3 | Fail |
| 9 | Be | 2 | 45 | 221.70 | ppb | 2.04 | 200.00 | 80 - | 120 | 110.9 | |
| 11 | B | 2 | 45 | 218.20 | ppb | 2.60 | 200.00 | 80 - | 120 | 109.1 | |
| 23 | Na | 1 | 45 | 5515.00 | ppb | 1.39 | 1000.00 | 80 - | 120 | 551.5 | Fail |
| 24 | Mg | 1 | 45 | 5252.00 | ppb | 1.43 | 1000.00 | 80 - | 120 | 525.2 | Fail |
| 27 | Al | 1 | 45 | 1043.00 | ppb | 2.67 | 1000.00 | 80 - | 120 | 104.3 | |
| 39 | K | 1 | 45 | 5091.00 | ppb | 0.14 | 1000.00 | 80 - | 120 | 509.1 | Fail |
| 44 | Ca | 2 | 45 | 5014.00 | ppb | 1.96 | 1000.00 | 80 - | 120 | 501.4 | Fail |
| 47 | Ti | 1 | 45 | 210.60 | ppb | 2.18 | 200.00 | 80 - | 120 | 105.3 | |
| 51 | V | 1 | 45 | 206.80 | ppb | 1.72 | 200.00 | 80 - | 120 | 103.4 | |
| 52 | Cr | 1 | 45 | 210.90 | ppb | 1.26 | 200.00 | 80 - | 120 | 105.5 | |
| 55 | Mn | 1 | 45 | 212.00 | ppb | 1.66 | 200.00 | 80 - | 120 | 106.0 | |
| 56 | Fe | 1 | 72 | 1081.00 | ppb | 1.52 | 1000.00 | 80 - | 120 | 108.1 | |
| 59 | Co | 1 | 72 | 215.90 | ppb | 1.10 | 200.00 | 80 - | 120 | 108.0 | |
| 60 | Ni | 1 | 72 | 209.70 | ppb | 1.40 | 200.00 | 80 - | 120 | 104.9 | |
| 63 | Cu | 1 | 72 | 216.00 | ppb | 1.85 | 200.00 | 80 - | 120 | 108.0 | |
| 66 | Zn | 1 | 72 | 213.60 | ppb | 0.97 | 200.00 | 80 - | 120 | 106.8 | |
| 75 | As | 1 | 72 | 202.60 | ppb | 1.05 | 200.00 | 80 - | 120 | 101.3 | |
| 78 | Se | 1 | 72 | 197.40 | ppb | 0.94 | 200.00 | 80 - | 120 | 98.7 | |
| 88 | Sr | 2 | 115 | 204.90 | ppb | 1.76 | 200.00 | 80 - | 120 | 102.5 | |
| 95 | Mo | 2 | 115 | 188.10 | ppb | 1.50 | 200.00 | 80 - | 120 | 94.1 | |
| 107 | Ag | 2 | 115 | 195.80 | ppb | 1.44 | 200.00 | 80 - | 120 | 97.9 | |
| 111 | Cd | 2 | 115 | 194.00 | ppb | 2.03 | 200.00 | 80 - | 120 | 97.0 | |
| 118 | Sn | 2 | 115 | 206.40 | ppb | 1.32 | 200.00 | 80 - | 120 | 103.2 | |
| 121 | Sb | 2 | 115 | 195.60 | ppb | 1.69 | 200.00 | 80 - | 120 | 97.8 | |
| 137 | Ba | 2 | 115 | 195.60 | ppb | 2.06 | 200.00 | 80 - | 120 | 97.8 | |
| 205 | Tl | 2 | 209 | 211.40 | ppb | 1.86 | 200.00 | 80 - | 120 | 105.7 | |
| 208 | Pb | 2 | 209 | 202.30 | ppb | 1.86 | 200.00 | 80 - | 120 | 101.2 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -57068.63 | 1.31 | 22.89 | -249283.7 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 154398.14 | 1.45 | 168636.11 | 91.6 | 70 - | 120 | |
| 45 | Sc | 2 | 3630068.00 | 1.80 | 4411244.50 | 82.3 | 70 - | 120 | |
| 72 | Ge | 1 | 90439.00 | 0.92 | 100925.69 | 89.6 | 70 - | 120 | |
| 115 | In | 2 | 5841645.50 | 2.05 | 6534497.50 | 89.4 | 70 - | 120 | |
| 209 | Bi | 2 | 4662055.00 | 0.53 | 4845836.50 | 96.2 | 70 - | 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\027AREF.D\027AREF.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 01:42 pm | Sample Name: | **1605121-43A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 55.020 | ppb | #REF! | 4.25 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 1.759 | ppb | #REF! | 3.45 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 91.480 | ppb | #REF! | 4.90 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 16280.000 | ppb | #REF! | 2.71 | 25000.00 | >RL |
| 24 | Mg | 1 | 45 | 10170.000 | ppb | #REF! | 2.86 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 31200.000 | ppb | #REF! | 3.80 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 6647.000 | ppb | #REF! | 3.44 | 25000.00 | >RL |
| 44 | Ca | 2 | 45 | 478100.000 | ppb | #REF! | 4.95 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 72.070 | ppb | #REF! | 7.54 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 45.920 | ppb | #REF! | 3.38 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 27.050 | ppb | #REF! | 3.83 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 151.900 | ppb | #REF! | 3.12 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 48760.000 | ppb | #REF! | 4.10 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 12.510 | ppb | #REF! | 3.67 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 19.430 | ppb | #REF! | 4.95 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 11.370 | ppb | #REF! | 3.21 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 80.080 | ppb | #REF! | 1.86 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 17.540 | ppb | #REF! | 3.69 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 11.550 | ppb | #REF! | 13.65 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 7065.000 | ppb | #REF! | 4.13 | 2000.00 | OUTCAL |
| 95 | Mo | 2 | 115 | 1.176 | ppb | #REF! | 4.96 | 2000.00 | ND |
| 107 | Ag | 2 | 115 | 0.147 | ppb | #REF! | 14.30 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.607 | ppb | #REF! | 6.13 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 4.841 | ppb | #REF! | 3.55 | 2000.00 | J |
| 121 | Sb | 2 | 115 | 0.144 | ppb | #REF! | 9.68 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 230.900 | ppb | #REF! | 4.89 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.404 | ppb | #REF! | 6.35 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 32.810 | ppb | #REF! | 4.70 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -3219.18 | 8.38 | RHigh | 22.89 | -14061.8 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 139636.30 | 3.98 | | 168636.11 | 82.8 | 70 - 120 | |
| 45 | Sc | 2 | 2867999.80 | 5.65 | RHigh | 4411244.50 | 65.0 | 70 - 120 | ISFail |
| 72 | Ge | 1 | 78188.48 | 3.45 | | 100925.69 | 77.5 | 70 - 120 | |
| 115 | In | 2 | 4585708.00 | 5.84 | RHigh | 6534497.50 | 70.2 | 70 - 120 | |
| 209 | Bi | 2 | 3500227.50 | 5.05 | RHigh | 4845836.50 | 72.2 | 70 - 120 | |

# DT QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\028DT1.D\028DT1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 01:48 pm | Sample Name: | **1605121-43A SD** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SD ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 25.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 25.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 11.53 | ppb | 3.34 | -689.42 | 90 - 110 | -8.4 | |
| 9 | Be | 2 | 45 | 0.43 | ppb | 4.59 | 1.76 | 90 - 110 | 121.5 | |
| 11 | B | 2 | 45 | 21.10 | ppb | 1.70 | 91.48 | 90 - 110 | 115.3 | |
| 23 | Na | 1 | 45 | 3332.00 | ppb | 2.48 | 16280.00 | 90 - 110 | 102.3 | GOOD |
| 24 | Mg | 1 | 45 | 2078.00 | ppb | 3.01 | 10170.00 | 90 - 110 | 102.2 | GOOD |
| 27 | Al | 1 | 45 | 6325.00 | ppb | 4.10 | 31200.00 | 90 - 110 | 101.4 | GOOD |
| 39 | K | 1 | 45 | 1341.00 | ppb | 2.69 | 6647.00 | 90 - 110 | 100.9 | GOOD |
| 44 | Ca | 2 | 45 | 95650.00 | ppb | 2.41 | 478100.00 | 90 - 110 | 100.0 | GOOD |
| 47 | Ti | 1 | 45 | 15.30 | ppb | 3.72 | 72.07 | 90 - 110 | 106.1 | GOOD |
| 51 | V | 1 | 45 | 9.54 | ppb | 4.32 | 45.92 | 90 - 110 | 103.9 | GOOD |
| 52 | Cr | 1 | 45 | 5.81 | ppb | 3.90 | 27.05 | 90 - 110 | 107.4 | GOOD |
| 55 | Mn | 1 | 45 | 31.33 | ppb | 3.58 | 151.90 | 90 - 110 | 103.1 | GOOD |
| 56 | Fe | 1 | 72 | 9798.00 | ppb | 2.98 | 48760.00 | 90 - 110 | 100.5 | GOOD |
| 59 | Co | 1 | 72 | 2.58 | ppb | 1.43 | 12.51 | 90 - 110 | 103.2 | GOOD |
| 60 | Ni | 1 | 72 | 4.13 | ppb | 2.95 | 19.43 | 90 - 110 | 106.4 | GOOD |
| 63 | Cu | 1 | 72 | 2.49 | ppb | 1.84 | 11.37 | 90 - 110 | 109.7 | GOOD |
| 66 | Zn | 1 | 72 | 18.70 | ppb | 4.71 | 80.08 | 90 - 110 | 116.8 | |
| 75 | As | 1 | 72 | 3.58 | ppb | 1.85 | 17.54 | 90 - 110 | 102.0 | GOOD |
| 78 | Se | 1 | 72 | 2.38 | ppb | 2.90 | 11.55 | 90 - 110 | 103.2 | GOOD |
| 88 | Sr | 2 | 115 | 1392.00 | ppb | 2.53 | 7065.00 | 90 - 110 | 98.5 | GOOD |
| 95 | Mo | 2 | 115 | 0.26 | ppb | 10.76 | 1.18 | 90 - 110 | 109.9 | GOOD |
| 107 | Ag | 2 | 115 | 0.06 | ppb | 9.76 | 0.15 | 90 - 110 | 213.8 | |
| 111 | Cd | 2 | 115 | 0.13 | ppb | 12.13 | 0.61 | 90 - 110 | 106.1 | GOOD |
| 118 | Sn | 2 | 115 | 0.99 | ppb | 7.36 | 4.84 | 90 - 110 | 101.9 | GOOD |
| 121 | Sb | 2 | 115 | 0.04 | ppb | 22.38 | 0.14 | 90 - 110 | 140.2 | |
| 137 | Ba | 2 | 115 | 45.28 | ppb | 2.50 | 230.90 | 90 - 110 | 98.1 | GOOD |
| 205 | Tl | 2 | 209 | 0.14 | ppb | 15.79 | 0.40 | 90 - 110 | 174.8 | |
| 208 | Pb | 2 | 209 | 6.46 | ppb | 2.12 | 32.81 | 90 - 110 | 98.5 | GOOD |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHig | -689.42 | 6.74 | 22.89 | -3011.5 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | | 147307.52 | 3.09 | 168636.11 | 87.4 | 70 - | 120 | |
| 45 | Sc | 2 | | 3211082.80 | 3.31 | 4411244.50 | 72.8 | 70 - | 120 | |
| 72 | Ge | 1 | | 87077.05 | 2.01 | 100925.69 | 86.3 | 70 - | 120 | |
| 115 | In | 2 | | 5208473.50 | 4.03 | 6534497.50 | 79.7 | 70 - | 120 | |
| 209 | Bi | 2 | | 4226713.50 | 2.20 | 4845836.50 | 87.2 | 70 - | 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\029SMPL.D\029SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 01:54 pm | Sample Name: | **1605121-38A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 64.290 | ppb | #REF! | 2.52 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 2.063 | ppb | #REF! | 6.62 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 104.300 | ppb | #REF! | 4.81 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 20390.000 | ppb | #REF! | 5.94 | 25000.00 | >RL |
| 24 | Mg | 1 | 45 | 12040.000 | ppb | #REF! | 5.09 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 34440.000 | ppb | #REF! | 4.63 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 7534.000 | ppb | #REF! | 5.38 | 25000.00 | >RL |
| 44 | Ca | 2 | 45 | 434000.000 | ppb | #REF! | 3.67 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 75.370 | ppb | #REF! | 4.80 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 49.930 | ppb | #REF! | 4.72 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 32.680 | ppb | #REF! | 5.12 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 109.800 | ppb | #REF! | 3.92 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 67440.000 | ppb | #REF! | 4.74 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 14.770 | ppb | #REF! | 4.06 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 22.070 | ppb | #REF! | 4.41 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 12.970 | ppb | #REF! | 4.22 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 98.880 | ppb | #REF! | 3.78 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 24.720 | ppb | #REF! | 4.97 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 13.530 | ppb | #REF! | 6.09 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 1596.000 | ppb | #REF! | 2.79 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 3.977 | ppb | #REF! | 1.10 | 2000.00 | J |
| 107 | Ag | 2 | 115 | 0.097 | ppb | #REF! | 18.20 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.547 | ppb | #REF! | 16.03 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 5.083 | ppb | #REF! | 3.61 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.165 | ppb | #REF! | 10.51 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 214.700 | ppb | #REF! | 3.16 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.392 | ppb | #REF! | 6.44 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 38.010 | ppb | #REF! | 1.84 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -3766.19 | 7.62 | RHigh | 22.89 | -16451.3 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 154939.70 | 6.58 | RHigh | 168636.11 | 91.9 | 70 - 120 | |
| 45 | Sc | 2 | 2983668.00 | 5.51 | RHigh | 4411244.50 | 67.6 | 70 - 120 | ISFail |
| 72 | Ge | 1 | 86251.84 | 5.82 | RHigh | 100925.69 | 85.5 | 70 - 120 | |
| 115 | In | 2 | 4886629.50 | 5.59 | RHigh | 6534497.50 | 74.8 | 70 - 120 | |
| 209 | Bi | 2 | 3644445.00 | 2.73 | | 4845836.50 | 75.2 | 70 - 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\030SMPL.D\030SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 02:00 pm | Sample Name: | **1605121-39A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 44.160 | ppb | #REF! | 2.24 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 2.070 | ppb | #REF! | 3.34 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 94.040 | ppb | #REF! | 2.13 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 31910.000 | ppb | #REF! | 1.00 | 25000.00 | OUTCAL |
| 24 | Mg | 1 | 45 | 17020.000 | ppb | #REF! | 2.09 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 52230.000 | ppb | #REF! | 2.64 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 20870.000 | ppb | #REF! | 1.29 | 25000.00 | >RL |
| 44 | Ca | 2 | 45 | 112600.000 | ppb | #REF! | 3.17 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 73.990 | ppb | #REF! | 5.01 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 67.210 | ppb | #REF! | 2.22 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 53.760 | ppb | #REF! | 2.43 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 100.000 | ppb | #REF! | 0.56 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 101700.000 | ppb | #REF! | 1.67 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 8.821 | ppb | #REF! | 1.65 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 16.000 | ppb | #REF! | 3.43 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 21.870 | ppb | #REF! | 1.57 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 100.600 | ppb | #REF! | 1.40 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 32.890 | ppb | #REF! | 1.01 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 20.030 | ppb | #REF! | 0.88 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 745.300 | ppb | #REF! | 2.03 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 1.177 | ppb | #REF! | 14.24 | 2000.00 | ND |
| 107 | Ag | 2 | 115 | 0.092 | ppb | #REF! | 3.11 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.405 | ppb | #REF! | 8.41 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 5.975 | ppb | #REF! | 3.69 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.072 | ppb | #REF! | 10.20 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 592.700 | ppb | #REF! | 2.58 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.386 | ppb | #REF! | 1.23 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 70.030 | ppb | #REF! | 1.34 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -2280.39 | 6.51 | RHigh | 22.89 | -9961.0 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 140678.61 | 1.17 | | 168636.11 | 83.4 | 70 - 120 | |
| 45 | Sc | 2 | 2986437.80 | 2.27 | | 4411244.50 | 67.7 | 70 - 120 | ISFail |
| 72 | Ge | 1 | 81138.95 | 0.86 | | 100925.69 | 80.4 | 70 - 120 | |
| 115 | In | 2 | 4726989.00 | 1.41 | | 6534497.50 | 72.3 | 70 - 120 | |
| 209 | Bi | 2 | 3727740.30 | 0.56 | | 4845836.50 | 76.9 | 70 - 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\031SMPL.D\031SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 02:06 pm | Sample Name: | **1605121-40A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 41.450 | ppb | #REF! | 1.49 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 2.069 | ppb | #REF! | 5.80 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 81.280 | ppb | #REF! | 1.97 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 30840.000 | ppb | #REF! | 0.67 | 25000.00 | OUTCAL |
| 24 | Mg | 1 | 45 | 16170.000 | ppb | #REF! | 1.24 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 46770.000 | ppb | #REF! | 1.63 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 9499.000 | ppb | #REF! | 1.41 | 25000.00 | >RL |
| 44 | Ca | 2 | 45 | 63210.000 | ppb | #REF! | 2.44 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 77.790 | ppb | #REF! | 4.41 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 54.440 | ppb | #REF! | 1.57 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 44.320 | ppb | #REF! | 0.59 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 67.420 | ppb | #REF! | 0.75 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 68490.000 | ppb | #REF! | 1.65 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 10.500 | ppb | #REF! | 1.40 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 28.400 | ppb | #REF! | 0.75 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 23.630 | ppb | #REF! | 0.53 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 89.500 | ppb | #REF! | 0.97 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 26.240 | ppb | #REF! | 0.52 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 21.830 | ppb | #REF! | 4.27 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 1152.000 | ppb | #REF! | 1.46 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 0.855 | ppb | #REF! | 5.11 | 2000.00 | ND |
| 107 | Ag | 2 | 115 | 0.068 | ppb | #REF! | 13.34 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.435 | ppb | #REF! | 23.52 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 5.853 | ppb | #REF! | 4.95 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.056 | ppb | #REF! | 7.02 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 1064.000 | ppb | #REF! | 2.73 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.356 | ppb | #REF! | 3.18 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 54.720 | ppb | #REF! | 1.64 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -2407.50 | 16.24 | RHigh | 22.89 | -10516.3 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 137233.52 | 0.33 | | 168636.11 | 81.4 | 70 - 120 | |
| 45 | Sc | 2 | 3015171.00 | 2.34 | | 4411244.50 | 68.4 | 70 - 120 | ISFail |
| 72 | Ge | 1 | 81040.74 | 1.13 | | 100925.69 | 80.3 | 70 - 120 | |
| 115 | In | 2 | 4775640.50 | 1.44 | | 6534497.50 | 73.1 | 70 - 120 | |
| 209 | Bi | 2 | 3798802.00 | 1.44 | | 4845836.50 | 78.4 | 70 - 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\032SMPL.D\032SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 02:12 pm | Sample Name: | **1605121-41A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 68.010 | ppb | #REF! | 2.34 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 2.652 | ppb | #REF! | 4.02 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 71.240 | ppb | #REF! | 2.46 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 4863.000 | ppb | #REF! | 0.70 | 25000.00 | >RL |
| 24 | Mg | 1 | 45 | 14780.000 | ppb | #REF! | 1.44 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 56530.000 | ppb | #REF! | 1.57 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 12780.000 | ppb | #REF! | 0.24 | 25000.00 | >RL |
| 44 | Ca | 2 | 45 | 136300.000 | ppb | #REF! | 2.90 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 129.400 | ppb | #REF! | 3.02 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 80.800 | ppb | #REF! | 2.11 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 51.200 | ppb | #REF! | 1.79 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 749.800 | ppb | #REF! | 1.02 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 57760.000 | ppb | #REF! | 1.02 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 25.190 | ppb | #REF! | 1.22 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 39.190 | ppb | #REF! | 0.66 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 28.020 | ppb | #REF! | 0.41 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 203.000 | ppb | #REF! | 0.77 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 23.330 | ppb | #REF! | 0.80 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 16.030 | ppb | #REF! | 2.12 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 482.800 | ppb | #REF! | 2.28 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 1.854 | ppb | #REF! | 2.38 | 2000.00 | ND |
| 107 | Ag | 2 | 115 | 0.248 | ppb | #REF! | 8.79 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.982 | ppb | #REF! | 9.89 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 5.234 | ppb | #REF! | 3.18 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.895 | ppb | #REF! | 4.92 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 618.600 | ppb | #REF! | 2.43 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.532 | ppb | #REF! | 6.40 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 81.570 | ppb | #REF! | 1.46 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -3727.83 | 6.13 | RHigh | 22.89 | -16283.7 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 141900.84 | 0.66 | | 168636.11 | 84.1 | 70 - 120 | |
| 45 | Sc | 2 | 3048574.80 | 2.40 | | 4411244.50 | 69.1 | 70 - 120 | ISFail |
| 72 | Ge | 1 | 83652.24 | 0.26 | | 100925.69 | 82.9 | 70 - 120 | |
| 115 | In | 2 | 4998711.50 | 1.85 | | 6534497.50 | 76.5 | 70 - 120 | |
| 209 | Bi | 2 | 3919816.30 | 1.93 | | 4845836.50 | 80.9 | 70 - 120 | |

# Sample QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\033SMPL.D\033SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 02:17 pm | Sample Name: | **1605121-42A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 55.940 | ppb | #REF! | 2.04 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 1.659 | ppb | #REF! | 4.11 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 81.900 | ppb | #REF! | 1.05 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 14310.000 | ppb | #REF! | 1.13 | 25000.00 | >RL |
| 24 | Mg | 1 | 45 | 10850.000 | ppb | #REF! | 2.81 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 32420.000 | ppb | #REF! | 2.46 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 6893.000 | ppb | #REF! | 1.57 | 25000.00 | >RL |
| 44 | Ca | 2 | 45 | 452500.000 | ppb | #REF! | 1.68 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 68.860 | ppb | #REF! | 5.47 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 52.280 | ppb | #REF! | 2.84 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 29.300 | ppb | #REF! | 3.51 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 205.400 | ppb | #REF! | 2.72 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 48830.000 | ppb | #REF! | 3.13 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 16.530 | ppb | #REF! | 3.37 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 24.770 | ppb | #REF! | 2.48 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 12.190 | ppb | #REF! | 1.25 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 104.100 | ppb | #REF! | 2.79 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 17.150 | ppb | #REF! | 3.01 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 10.330 | ppb | #REF! | 1.44 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 2454.000 | ppb | #REF! | 1.15 | 2000.00 | OUTCAL |
| 95 | Mo | 2 | 115 | 1.334 | ppb | #REF! | 9.68 | 2000.00 | ND |
| 107 | Ag | 2 | 115 | 0.103 | ppb | #REF! | 15.77 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.516 | ppb | #REF! | 7.47 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 4.501 | ppb | #REF! | 1.53 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.100 | ppb | #REF! | 7.37 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 268.300 | ppb | #REF! | 1.72 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.361 | ppb | #REF! | 4.65 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 32.470 | ppb | #REF! | 0.46 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -3063.37 | 4.44 | 22.89 | -13381.2 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 134488.44 | 2.53 | 168636.11 | 79.8 | 70 - 120 | |
| 45 | Sc | 2 | 2790883.00 | 1.74 | 4411244.50 | 63.3 | 70 - 120 | ISFail |
| 72 | Ge | 1 | 76601.86 | 2.26 | 100925.69 | 75.9 | 70 - 120 | |
| 115 | In | 2 | 4532221.00 | 1.06 | 6534497.50 | 69.4 | 70 - 120 | ISFail |
| 209 | Bi | 2 | 3380967.30 | 0.97 | 4845836.50 | 69.8 | ~~70 - 120~~ | ~~ISFail~~ |

ISTD limits for DOD are 30-120%.

# Sample QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\034SMPL.D\034SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 02:23 pm | Sample Name: | 1605121-44A |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 46.140 | ppb | #REF! | 0.54 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 2.543 | ppb | #REF! | 5.20 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 112.700 | ppb | #REF! | 1.76 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 32420.000 | ppb | #REF! | 0.64 | 25000.00 | OUTCAL |
| 24 | Mg | 1 | 45 | 17650.000 | ppb | #REF! | 0.66 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 49070.000 | ppb | #REF! | 0.59 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 12560.000 | ppb | #REF! | 1.99 | 25000.00 | >RL |
| 44 | Ca | 2 | 45 | 119200.000 | ppb | #REF! | 1.81 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 63.940 | ppb | #REF! | 2.54 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 66.690 | ppb | #REF! | 0.93 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 49.410 | ppb | #REF! | 0.11 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 118.000 | ppb | #REF! | 0.81 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 145400.000 | ppb | #REF! | 0.99 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 11.960 | ppb | #REF! | 1.15 | 2000.00 | >RL |
| 60 | Ni | 1 | 72 | 21.130 | ppb | #REF! | 0.56 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 23.980 | ppb | #REF! | 0.71 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 138.600 | ppb | #REF! | 0.31 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 30.790 | ppb | #REF! | 0.74 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 20.640 | ppb | #REF! | 5.59 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 769.200 | ppb | #REF! | 1.93 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 2.501 | ppb | #REF! | 2.08 | 2000.00 | J |
| 107 | Ag | 2 | 115 | 0.075 | ppb | #REF! | 10.44 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.541 | ppb | #REF! | 11.95 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 5.811 | ppb | #REF! | 1.62 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.098 | ppb | #REF! | 12.00 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 919.600 | ppb | #REF! | 1.13 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.415 | ppb | #REF! | 3.80 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 53.280 | ppb | #REF! | 1.72 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -2427.73 | 13.99 | RHigh | 22.89 | -10604.6 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 125676.45 | 1.16 | | 168636.11 | 74.5 | 70 - 120 | |
| 45 | Sc | 2 | 2658686.00 | 2.06 | | 4411244.50 | 60.3 | 70 - 120 | ISFail |
| 72 | Ge | 1 | 73643.41 | 0.99 | | 100925.69 | 73.0 | 70 - 120 | |
| 115 | In | 2 | 4192325.80 | 1.85 | | 6534497.50 | 64.2 | 70 - 120 | ISFail |
| 209 | Bi | 2 | 3231647.30 | 0.76 | | 4845836.50 | 66.7 | ~~70 - 120~~ | ~~ISFail~~ |

ISTD limits for DOD are 30-120%.

# Sample QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\035SMPL.D\035SMPL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 02:29 pm | Sample Name: | **1605121-45A** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SAMPICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | Corr. Con | RSD(%) | High Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 46.030 | ppb | #REF! | 0.45 | 2000.00 | >RL |
| 9 | Be | 2 | 45 | 2.455 | ppb | #REF! | 6.87 | 2000.00 | >RL |
| 11 | B | 2 | 45 | 87.260 | ppb | #REF! | 1.91 | 2000.00 | >RL |
| 23 | Na | 1 | 45 | 33850.000 | ppb | #REF! | 0.84 | 25000.00 | OUTCAL |
| 24 | Mg | 1 | 45 | 17100.000 | ppb | #REF! | 1.20 | 25000.00 | >RL |
| 27 | Al | 1 | 45 | 53500.000 | ppb | #REF! | 2.20 | 10000.00 | OUTCAL |
| 39 | K | 1 | 45 | 9835.000 | ppb | #REF! | 0.16 | 25000.00 | >RL |
| 44 | Ca | 2 | 45 | 61480.000 | ppb | #REF! | 2.26 | 25000.00 | OUTCAL |
| 47 | Ti | 1 | 45 | 68.250 | ppb | #REF! | 4.25 | 2000.00 | >RL |
| 51 | V | 1 | 45 | 71.050 | ppb | #REF! | 1.43 | 2000.00 | >RL |
| 52 | Cr | 1 | 45 | 50.610 | ppb | #REF! | 1.79 | 2000.00 | >RL |
| 55 | Mn | 1 | 45 | 54.850 | ppb | #REF! | 0.48 | 2000.00 | >RL |
| 56 | Fe | 1 | 72 | 112700.000 | ppb | #REF! | 1.26 | 10000.00 | OUTCAL |
| 59 | Co | 1 | 72 | 7.384 | ppb | #REF! | 0.89 | 2000.00 | J |
| 60 | Ni | 1 | 72 | 19.230 | ppb | #REF! | 0.84 | 2000.00 | >RL |
| 63 | Cu | 1 | 72 | 26.320 | ppb | #REF! | 1.49 | 2000.00 | >RL |
| 66 | Zn | 1 | 72 | 102.200 | ppb | #REF! | 1.53 | 2000.00 | >RL |
| 75 | As | 1 | 72 | 47.100 | ppb | #REF! | 1.14 | 2000.00 | >RL |
| 78 | Se | 1 | 72 | 25.090 | ppb | #REF! | 3.39 | 2000.00 | >RL |
| 88 | Sr | 2 | 115 | 326.000 | ppb | #REF! | 3.39 | 2000.00 | >RL |
| 95 | Mo | 2 | 115 | 1.369 | ppb | #REF! | 1.63 | 2000.00 | ND |
| 107 | Ag | 2 | 115 | 0.063 | ppb | #REF! | 14.94 | 500.00 | ND |
| 111 | Cd | 2 | 115 | 0.467 | ppb | #REF! | 6.67 | 2000.00 | J |
| 118 | Sn | 2 | 115 | 6.501 | ppb | #REF! | 0.50 | 2000.00 | ND |
| 121 | Sb | 2 | 115 | 0.097 | ppb | #REF! | 11.85 | 500.00 | ND |
| 137 | Ba | 2 | 115 | 240.300 | ppb | #REF! | 2.73 | 2000.00 | >RL |
| 205 | Tl | 2 | 209 | 0.543 | ppb | #REF! | 1.91 | 2000.00 | ND |
| 208 | Pb | 2 | 209 | 75.320 | ppb | #REF! | 0.82 | 2000.00 | >RL |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -2085.54 | 10.67 | RHigh | 22.89 | -9109.9 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 122802.84 | 0.50 | | 168636.11 | 72.8 | 70 - 120 | |
| 45 | Sc | 2 | 2636158.30 | 2.40 | | 4411244.50 | 59.8 | 70 - 120 | ISFail |
| 72 | Ge | 1 | 72676.79 | 0.50 | | 100925.69 | 72.0 | 70 - 120 | |
| 115 | In | 2 | 4149692.50 | 0.76 | | 6534497.50 | 63.5 | 70 - 120 | ISFail |
| 209 | Bi | 2 | 3290967.50 | 0.68 | | 4845836.50 | 67.9 | ~~70 - 120~~ | ~~ISFail~~ |

**ISTD limits for DOD are 30-120%.**

# PDS QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\038_PDS.D\038_PDS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 02:47 pm | Sample Name: | **1605121-43A PDS** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | PDS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 258.80 | ppb | 3.33 | -22581.34 | 200 | 75-125 | ###### | Fail |
| 9 | Be | 2 | 45 | 185.60 | ppb | 2.96 | 1.76 | 200 | 75-125 | 91.9 | |
| 11 | B | 2 | 45 | 245.30 | ppb | 4.00 | 91.48 | 200 | 75-125 | 76.9 | |
| 23 | Na | 1 | 45 | 20660.00 | ppb | 1.99 | 16280.00 | 5000 | 75-125 | 87.6 | |
| 24 | Mg | 1 | 45 | 14960.00 | ppb | 3.73 | 10170.00 | 5000 | 75-125 | 95.8 | |
| 27 | Al | 1 | 45 | 34620.00 | ppb | 3.68 | 31200.00 | 5000 | 75-125 | 68.4 | Fail |
| 39 | K | 1 | 45 | 11430.00 | ppb | 2.84 | 6647.00 | 5000 | 75-125 | 95.7 | |
| 44 | Ca | 2 | 45 | 473000.00 | ppb | 3.30 | 478100.00 | 5000 | 75-125 | -102.0 | Fail |
| 47 | Ti | 1 | 45 | 264.80 | ppb | 5.96 | 72.07 | 200 | 75-125 | 96.4 | |
| 51 | V | 1 | 45 | 240.40 | ppb | 3.14 | 45.92 | 200 | 75-125 | 97.2 | |
| 52 | Cr | 1 | 45 | 221.10 | ppb | 2.95 | 27.05 | 200 | 75-125 | 97.0 | |
| 55 | Mn | 1 | 45 | 337.50 | ppb | 3.45 | 151.90 | 200 | 75-125 | 92.8 | |
| 56 | Fe | 1 | 72 | 53210.00 | ppb | 3.52 | 48760.00 | 5000 | 75-125 | 89.0 | |
| 59 | Co | 1 | 72 | 210.30 | ppb | 3.41 | 12.51 | 200 | 75-125 | 98.9 | |
| 60 | Ni | 1 | 72 | 202.10 | ppb | 3.68 | 19.43 | 200 | 75-125 | 91.3 | |
| 63 | Cu | 1 | 72 | 195.40 | ppb | 3.10 | 11.37 | 200 | 75-125 | 92.0 | |
| 66 | Zn | 1 | 72 | 254.30 | ppb | 3.49 | 80.08 | 200 | 75-125 | 87.1 | |
| 75 | As | 1 | 72 | 222.00 | ppb | 2.81 | 17.54 | 200 | 75-125 | 102.2 | |
| 78 | Se | 1 | 72 | 208.00 | ppb | 2.98 | 11.55 | 200 | 75-125 | 98.2 | |
| 88 | Sr | 2 | 115 | 7176.00 | ppb | 3.61 | 7065.00 | 200 | 75-125 | 55.5 | Fail |
| 95 | Mo | 2 | 115 | 187.00 | ppb | 3.48 | 1.18 | 200 | 75-125 | 92.9 | |
| 107 | Ag | 2 | 115 | 176.70 | ppb | 3.38 | 0.15 | 200 | 75-125 | 88.3 | |
| 111 | Cd | 2 | 115 | 175.40 | ppb | 3.48 | 0.61 | 200 | 75-125 | 87.4 | |
| 118 | Sn | 2 | 115 | 202.80 | ppb | 3.37 | 4.84 | 200 | 75-125 | 99.0 | |
| 121 | Sb | 2 | 115 | 199.80 | ppb | 3.02 | 0.14 | 200 | 75-125 | 99.8 | |
| 137 | Ba | 2 | 115 | 418.60 | ppb | 3.22 | 230.90 | 200 | 75-125 | 93.9 | |
| 205 | Tl | 2 | 209 | 198.40 | ppb | 6.41 | 0.40 | 200 | 75-125 | 99.0 | |
| 208 | Pb | 2 | 209 | 226.90 | ppb | 3.64 | 32.81 | 200 | 75-125 | 97.0 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHig | -22581.34 | 8.85 | 22.89 | -98638.4 | 70 | - | 120 | ISFail |
| 45 | Sc | 1 | | 140036.17 | 3.24 | 168636.11 | 83.0 | 70 | - | 120 | |
| 45 | Sc | 2 | | 2970911.00 | 2.49 | 4411244.50 | 67.3 | 70 | - | 120 | ISFail |
| 72 | Ge | 1 | | 78988.16 | 2.91 | 100925.69 | 78.3 | 70 | - | 120 | |
| 115 | In | 2 | | 4803728.50 | 3.35 | 6534497.50 | 73.5 | 70 | - | 120 | |
| 209 | Bi | 2 | | 3518785.80 | 3.85 | 4845836.50 | 72.6 | 70 | - | 120 | |

## MS/MSD QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\039_MS.D\039_MS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 02:53 pm | Sample Name: | **1605121-43A MS** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 265.10 | ppb | 3.09 | ######## | 200 | 80-120 | ###### | Fail |
| 9 | Be | 2 | 45 | 191.30 | ppb | 3.52 | 1.76 | 200 | 80-120 | 94.8 | |
| 11 | B | 2 | 45 | 232.10 | ppb | 4.96 | 91.48 | 200 | 80-120 | 70.3 | Fail |
| 23 | Na | 1 | 45 | 21490.00 | ppb | 2.24 | 16280.00 | 1000 | 80-120 | 521.0 | Fail |
| 24 | Mg | 1 | 45 | 17300.00 | ppb | 2.92 | 10170.00 | 1000 | 80-120 | 713.0 | Fail |
| 27 | Al | 1 | 45 | 50370.00 | ppb | 2.92 | 31200.00 | 1000 | 80-120 | 1917.0 | Fail |
| 39 | K | 1 | 45 | 12780.00 | ppb | 1.90 | 6647.00 | 1000 | 80-120 | 613.3 | Fail |
| 44 | Ca | 2 | 45 | 464300.00 | ppb | 3.98 | ######## | 1000 | 80-120 | ###### | Fail |
| 47 | Ti | 1 | 45 | 141.20 | ppb | 5.18 | 72.07 | 200 | 80-120 | 34.6 | Fail |
| 51 | V | 1 | 45 | 253.50 | ppb | 3.39 | 45.92 | 200 | 80-120 | 103.8 | |
| 52 | Cr | 1 | 45 | 257.30 | ppb | 3.47 | 27.05 | 200 | 80-120 | 115.1 | |
| 55 | Mn | 1 | 45 | 347.10 | ppb | 3.11 | 151.90 | 200 | 80-120 | 97.6 | |
| 56 | Fe | 1 | 72 | 50510.00 | ppb | 3.95 | 48760.00 | 1000 | 80-120 | 175.0 | Fail |
| 59 | Co | 1 | 72 | 216.50 | ppb | 3.35 | 12.51 | 200 | 80-120 | 102.0 | |
| 60 | Ni | 1 | 72 | 222.50 | ppb | 2.90 | 19.43 | 200 | 80-120 | 101.5 | |
| 63 | Cu | 1 | 72 | 204.30 | ppb | 2.70 | 11.37 | 200 | 80-120 | 96.5 | |
| 66 | Zn | 1 | 72 | 267.60 | ppb | 2.88 | 80.08 | 200 | 80-120 | 93.8 | |
| 75 | As | 1 | 72 | 225.20 | ppb | 2.57 | 17.54 | 200 | 80-120 | 103.8 | |
| 78 | Se | 1 | 72 | 211.40 | ppb | 3.59 | 11.55 | 200 | 80-120 | 99.9 | |
| 88 | Sr | 2 | 115 | 9815.00 | ppb | 3.26 | 7065.00 | 200 | 80-120 | 1375.0 | Fail |
| 95 | Mo | 2 | 115 | 161.70 | ppb | 3.42 | 1.18 | 200 | 80-120 | 80.3 | |
| 107 | Ag | 2 | 115 | 179.10 | ppb | 3.71 | 0.15 | 200 | 80-120 | 89.5 | |
| 111 | Cd | 2 | 115 | 185.40 | ppb | 4.07 | 0.61 | 200 | 80-120 | 92.4 | |
| 118 | Sn | 2 | 115 | 199.20 | ppb | 3.30 | 4.84 | 200 | 80-120 | 97.2 | |
| 121 | Sb | 2 | 115 | 30.88 | ppb | 4.35 | 0.14 | 200 | 80-120 | 15.4 | Fail |
| 137 | Ba | 2 | 115 | 450.80 | ppb | 3.46 | 230.90 | 200 | 80-120 | 110.0 | |
| 205 | Tl | 2 | 209 | 215.30 | ppb | 2.26 | 0.40 | 200 | 80-120 | 107.4 | |
| 208 | Pb | 2 | 209 | 240.70 | ppb | 2.26 | 32.81 | 200 | 80-120 | 103.9 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -47611.13 | 3.70 | 22.89 | ######## | 70 - 120 | ISFail |
| 45 | Sc | 1 | 137634.02 | 2.28 | 168636.11 | 81.6 | 70 - 120 | |
| 45 | Sc | 2 | 3274525.30 | 4.23 | 4411244.50 | 74.2 | 70 - 120 | |
| 72 | Ge | 1 | 78282.98 | 1.96 | 100925.69 | 77.6 | 70 - 120 | |
| 115 | In | 2 | 5286697.50 | 2.98 | 6534497.50 | 80.9 | 70 - 120 | |
| 209 | Bi | 2 | 3857024.00 | 2.20 | 4845836.50 | 79.6 | 70 - 120 | |

## MS/MSD QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\040_MS.D\040_MS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 02:59 pm | Sample Name: | **1605121-43A MSD** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MSD ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 263.60 | ppb | 0.58 | ######## | 200 | 80-120 | ###### | Fail |
| 9 | Be | 2 | 45 | 189.80 | ppb | 0.89 | 1.76 | 200 | 80-120 | 94.0 | |
| 11 | B | 2 | 45 | 228.50 | ppb | 2.31 | 91.48 | 200 | 80-120 | 68.5 | Fail |
| 23 | Na | 1 | 45 | 21020.00 | ppb | 1.31 | 16280.00 | 1000 | 80-120 | 474.0 | Fail |
| 24 | Mg | 1 | 45 | 16920.00 | ppb | 1.32 | 10170.00 | 1000 | 80-120 | 675.0 | Fail |
| 27 | Al | 1 | 45 | 48950.00 | ppb | 0.34 | 31200.00 | 1000 | 80-120 | 1775.0 | Fail |
| 39 | K | 1 | 45 | 12350.00 | ppb | 1.95 | 6647.00 | 1000 | 80-120 | 570.3 | Fail |
| 44 | Ca | 2 | 45 | 381000.00 | ppb | 1.42 | ######## | 1000 | 80-120 | ###### | Fail |
| 47 | Ti | 1 | 45 | 116.30 | ppb | 2.59 | 72.07 | 200 | 80-120 | 22.1 | Fail |
| 51 | V | 1 | 45 | 249.40 | ppb | 0.64 | 45.92 | 200 | 80-120 | 101.7 | |
| 52 | Cr | 1 | 45 | 236.10 | ppb | 0.62 | 27.05 | 200 | 80-120 | 104.5 | |
| 55 | Mn | 1 | 45 | 349.00 | ppb | 1.23 | 151.90 | 200 | 80-120 | 98.6 | |
| 56 | Fe | 1 | 72 | 60890.00 | ppb | 0.79 | 48760.00 | 1000 | 80-120 | 1213.0 | Fail |
| 59 | Co | 1 | 72 | 214.50 | ppb | 1.53 | 12.51 | 200 | 80-120 | 101.0 | |
| 60 | Ni | 1 | 72 | 211.50 | ppb | 1.46 | 19.43 | 200 | 80-120 | 96.0 | |
| 63 | Cu | 1 | 72 | 203.70 | ppb | 1.29 | 11.37 | 200 | 80-120 | 96.2 | |
| 66 | Zn | 1 | 72 | 264.30 | ppb | 1.13 | 80.08 | 200 | 80-120 | 92.1 | |
| 75 | As | 1 | 72 | 224.00 | ppb | 1.12 | 17.54 | 200 | 80-120 | 103.2 | |
| 78 | Se | 1 | 72 | 202.40 | ppb | 2.29 | 11.55 | 200 | 80-120 | 95.4 | |
| 88 | Sr | 2 | 115 | 4666.00 | ppb | 0.51 | 7065.00 | 200 | 80-120 | ###### | Fail |
| 95 | Mo | 2 | 115 | 162.60 | ppb | 0.35 | 1.18 | 200 | 80-120 | 80.7 | |
| 107 | Ag | 2 | 115 | 178.40 | ppb | 0.82 | 0.15 | 200 | 80-120 | 89.1 | |
| 111 | Cd | 2 | 115 | 183.30 | ppb | 0.37 | 0.61 | 200 | 80-120 | 91.3 | |
| 118 | Sn | 2 | 115 | 198.80 | ppb | 0.55 | 4.84 | 200 | 80-120 | 97.0 | |
| 121 | Sb | 2 | 115 | 34.09 | ppb | 0.76 | 0.14 | 200 | 80-120 | 17.0 | Fail |
| 137 | Ba | 2 | 115 | 408.20 | ppb | 1.09 | 230.90 | 200 | 80-120 | 88.7 | |
| 205 | Tl | 2 | 209 | 216.10 | ppb | 1.73 | 0.40 | 200 | 80-120 | 107.8 | |
| 208 | Pb | 2 | 209 | 233.00 | ppb | 0.36 | 32.81 | 200 | 80-120 | 100.1 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -48211.56 | 2.30 | 22.89 | ######## | 70 - 120 | ISFail |
| 45 | Sc | 1 | 139044.64 | 2.24 | 168636.11 | 82.5 | 70 - 120 | |
| 45 | Sc | 2 | 3322082.00 | 1.12 | 4411244.50 | 75.3 | 70 - 120 | |
| 72 | Ge | 1 | 78614.88 | 1.53 | 100925.69 | 77.9 | 70 - 120 | |
| 115 | In | 2 | 5341430.50 | 1.43 | 6534497.50 | 81.7 | 70 - 120 | |
| 209 | Bi | 2 | 3904216.30 | 0.69 | 4845836.50 | 80.6 | 70 - 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\041CCV1.D\041CCV1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 03:05 pm | Sample Name: | **CCV1-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCV ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 223.10 | ppb | 1.48 | 200.00 | 90 - | 110 | 111.6 | Fail |
| 9 | Be | 2 | 45 | 210.40 | ppb | 2.09 | 200.00 | 90 - | 110 | 105.2 | |
| 11 | B | 2 | 45 | 191.80 | ppb | 0.90 | 200.00 | 90 - | 110 | 95.9 | |
| 23 | Na | 1 | 45 | 5059.00 | ppb | 0.73 | 5000.00 | 90 - | 110 | 101.2 | |
| 24 | Mg | 1 | 45 | 4844.00 | ppb | 2.07 | 5000.00 | 90 - | 110 | 96.9 | |
| 27 | Al | 1 | 45 | 4907.00 | ppb | 2.26 | 5000.00 | 90 - | 110 | 98.1 | |
| 39 | K | 1 | 45 | 4777.00 | ppb | 1.34 | 5000.00 | 90 - | 110 | 95.5 | |
| 44 | Ca | 2 | 45 | 5028.00 | ppb | 0.76 | 5000.00 | 90 - | 110 | 100.6 | |
| 47 | Ti | 1 | 45 | 196.80 | ppb | 2.47 | 200.00 | 90 - | 110 | 98.4 | |
| 51 | V | 1 | 45 | 196.80 | ppb | 1.22 | 200.00 | 90 - | 110 | 98.4 | |
| 52 | Cr | 1 | 45 | 202.00 | ppb | 2.10 | 200.00 | 90 - | 110 | 101.0 | |
| 55 | Mn | 1 | 45 | 200.90 | ppb | 2.31 | 200.00 | 90 - | 110 | 100.5 | |
| 56 | Fe | 1 | 72 | 5014.00 | ppb | 2.46 | 5000.00 | 90 - | 110 | 100.3 | |
| 59 | Co | 1 | 72 | 200.70 | ppb | 2.46 | 200.00 | 90 - | 110 | 100.4 | |
| 60 | Ni | 1 | 72 | 195.00 | ppb | 1.90 | 200.00 | 90 - | 110 | 97.5 | |
| 63 | Cu | 1 | 72 | 203.00 | ppb | 1.95 | 200.00 | 90 - | 110 | 101.5 | |
| 66 | Zn | 1 | 72 | 204.90 | ppb | 2.04 | 200.00 | 90 - | 110 | 102.5 | |
| 75 | As | 1 | 72 | 202.50 | ppb | 0.87 | 200.00 | 90 - | 110 | 101.3 | |
| 78 | Se | 1 | 72 | 197.60 | ppb | 1.20 | 200.00 | 90 - | 110 | 98.8 | |
| 88 | Sr | 2 | 115 | 207.80 | ppb | 2.01 | 200.00 | 90 - | 110 | 103.9 | |
| 95 | Mo | 2 | 115 | 186.20 | ppb | 1.37 | 200.00 | 90 - | 110 | 93.1 | |
| 107 | Ag | 2 | 115 | 193.40 | ppb | 1.60 | 200.00 | 90 - | 110 | 96.7 | |
| 111 | Cd | 2 | 115 | 193.30 | ppb | 2.09 | 200.00 | 90 - | 110 | 96.7 | |
| 118 | Sn | 2 | 115 | 197.00 | ppb | 1.88 | 200.00 | 90 - | 110 | 98.5 | |
| 121 | Sb | 2 | 115 | 197.90 | ppb | 1.38 | 200.00 | 90 - | 110 | 99.0 | |
| 137 | Ba | 2 | 115 | 194.20 | ppb | 2.14 | 200.00 | 90 - | 110 | 97.1 | |
| 205 | Tl | 2 | 209 | 201.50 | ppb | 1.06 | 200.00 | 90 - | 110 | 100.8 | |
| 208 | Pb | 2 | 209 | 192.40 | ppb | 1.80 | 200.00 | 90 - | 110 | 96.2 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -48343.84 | 0.24 | 22.89 | -211172.6 | 70 - | 120 | | ISFail |
| 45 | Sc | 1 | 143219.92 | 0.92 | 168636.11 | 84.9 | 70 - | 120 | | |
| 45 | Sc | 2 | 3396432.80 | 1.42 | 4411244.50 | 77.0 | 70 - | 120 | | |
| 72 | Ge | 1 | 85723.23 | 1.13 | 100925.69 | 84.9 | 70 - | 120 | | |
| 115 | In | 2 | 5544841.50 | 0.79 | 6534497.50 | 84.9 | 70 - | 120 | | |
| 209 | Bi | 2 | 4443310.50 | 0.19 | 4845836.50 | 91.7 | 70 - | 120 | | |

# CCB QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\042_CCB.D\042_CCB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 03:11 pm | Sample Name: | **CCB1-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCB ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL S | MDL Aq | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.395 | ppb | 5.38 | 2.00 | 2.00 | |
| 9 | Be | 2 | 45 | 0.228 | ppb | 3.91 | 0.40 | 0.30 | |
| 11 | B | 2 | 45 | 2.788 | ppb | 5.52 | 10.00 | 10.00 | |
| 23 | Na | 1 | 45 | 23.210 | ppb | 6.05 | 50.00 | ##### | |
| 24 | Mg | 1 | 45 | 12.800 | ppb | 6.10 | 50.00 | ##### | |
| 27 | Al | 1 | 45 | 31.450 | ppb | 3.71 | 50.00 | 10.00 | FailAq |
| 39 | K | 1 | 45 | 15.660 | ppb | 4.73 | 50.00 | ##### | |
| 44 | Ca | 2 | 45 | 193.600 | ppb | 4.59 | 50.00 | ##### | Failsoil |
| 47 | Ti | 1 | 45 | 0.220 | ppb | 24.99 | 4.00 | 3.00 | |
| 51 | V | 1 | 45 | 0.255 | ppb | 6.57 | 4.00 | 3.00 | |
| 52 | Cr | 1 | 45 | 0.265 | ppb | 3.89 | 2.00 | 2.00 | |
| 55 | Mn | 1 | 45 | 0.428 | ppb | 9.78 | 2.00 | 3.00 | |
| 56 | Fe | 1 | 72 | 42.100 | ppb | 2.97 | 50.00 | 30.00 | FailAq |
| 59 | Co | 1 | 72 | 0.243 | ppb | 1.46 | 2.00 | 3.00 | |
| 60 | Ni | 1 | 72 | 0.269 | ppb | 8.87 | 2.00 | 3.00 | |
| 63 | Cu | 1 | 72 | 0.307 | ppb | 4.13 | 2.00 | 2.00 | |
| 66 | Zn | 1 | 72 | 0.295 | ppb | 8.12 | 4.00 | 2.00 | |
| 75 | As | 1 | 72 | 0.330 | ppb | 7.50 | 2.00 | 2.00 | |
| 78 | Se | 1 | 72 | 0.331 | ppb | 35.91 | 0.60 | 2.00 | |
| 88 | Sr | 2 | 115 | 2.584 | ppb | 8.49 | 4.00 | 3.00 | |
| 95 | Mo | 2 | 115 | 0.248 | ppb | 8.14 | 2.00 | 2.00 | |
| 107 | Ag | 2 | 115 | 0.205 | ppb | 19.42 | 0.40 | 1.00 | |
| 111 | Cd | 2 | 115 | 0.197 | ppb | 15.61 | 0.40 | 0.30 | |
| 118 | Sn | 2 | 115 | 0.211 | ppb | 15.93 | 20.00 | 3.00 | |
| 121 | Sb | 2 | 115 | 0.188 | ppb | 4.55 | 2.00 | 0.80 | |
| 137 | Ba | 2 | 115 | 0.364 | ppb | 4.09 | 2.00 | 3.00 | |
| 205 | Tl | 2 | 209 | 0.325 | ppb | 5.84 | 2.00 | 0.50 | |
| 208 | Pb | 2 | 209 | 0.249 | ppb | 8.97 | 0.40 | 0.30 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigh | -49.01 | 43.95 | 22.89 | -214.1 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 146175.67 | 0.36 | 168636.11 | 86.7 | 70 - 120 | |
| 45 | Sc | 2 | | 3508618.30 | 1.36 | 4411244.50 | 79.5 | 70 - 120 | |
| 72 | Ge | 1 | | 89127.49 | 1.28 | 100925.69 | 88.3 | 70 - 120 | |
| 115 | In | 2 | | 5710293.50 | 1.15 | 6534497.50 | 87.4 | 70 - 120 | |
| 209 | Bi | 2 | | 4531261.00 | 0.42 | 4845836.50 | 93.5 | 70 - 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\043LCVL.D\043LCVL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 03:17 pm | Sample Name: | **LCVL1-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCVLICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 10.73 | ppb | 0.66 | 5.00 | 70 - | 130 | 214.6 | Fail |
| 9 | Be | 2 | 45 | 1.14 | ppb | 2.92 | 1.00 | 70 - | 130 | 113.6 | |
| 11 | B | 2 | 45 | 20.11 | ppb | 2.91 | 20.00 | 70 - | 130 | 100.6 | |
| 23 | Na | 1 | 45 | 114.50 | ppb | 1.42 | 100.00 | 70 - | 130 | 114.5 | |
| 24 | Mg | 1 | 45 | 105.90 | ppb | 3.05 | 100.00 | 70 - | 130 | 105.9 | |
| 27 | Al | 1 | 45 | 119.90 | ppb | 3.23 | 100.00 | 70 - | 130 | 119.9 | |
| 39 | K | 1 | 45 | 104.50 | ppb | 1.85 | 100.00 | 70 - | 130 | 104.5 | |
| 44 | Ca | 2 | 45 | 209.00 | ppb | 3.53 | 100.00 | 70 - | 130 | 209.0 | Fail |
| 47 | Ti | 1 | 45 | 4.90 | ppb | 15.55 | 5.00 | 70 - | 130 | 98.1 | |
| 51 | V | 1 | 45 | 1.06 | ppb | 5.15 | 1.00 | 70 - | 130 | 106.4 | |
| 52 | Cr | 1 | 45 | 5.11 | ppb | 1.05 | 5.00 | 70 - | 130 | 102.2 | |
| 55 | Mn | 1 | 45 | 5.36 | ppb | 2.00 | 5.00 | 70 - | 130 | 107.1 | |
| 56 | Fe | 1 | 72 | 123.70 | ppb | 2.05 | 100.00 | 70 - | 130 | 123.7 | |
| 59 | Co | 1 | 72 | 4.95 | ppb | 0.98 | 5.00 | 70 - | 130 | 98.9 | |
| 60 | Ni | 1 | 72 | 4.96 | ppb | 3.74 | 5.00 | 70 - | 130 | 99.2 | |
| 63 | Cu | 1 | 72 | 5.07 | ppb | 3.31 | 5.00 | 70 - | 130 | 101.4 | |
| 66 | Zn | 1 | 72 | 5.17 | ppb | 2.79 | 5.00 | 70 - | 130 | 103.4 | |
| 75 | As | 1 | 72 | 5.27 | ppb | 2.55 | 5.00 | 70 - | 130 | 105.3 | |
| 78 | Se | 1 | 72 | 5.36 | ppb | 5.01 | 5.00 | 70 - | 130 | 107.2 | |
| 88 | Sr | 2 | 115 | 6.24 | ppb | 2.21 | 5.00 | 70 - | 130 | 124.8 | |
| 95 | Mo | 2 | 115 | 4.59 | ppb | 2.75 | 5.00 | 70 - | 130 | 91.8 | |
| 107 | Ag | 2 | 115 | 1.99 | ppb | 2.35 | 2.00 | 70 - | 130 | 99.7 | |
| 111 | Cd | 2 | 115 | 1.00 | ppb | 6.20 | 1.00 | 70 - | 130 | 100.0 | |
| 118 | Sn | 2 | 115 | 4.93 | ppb | 0.98 | 5.00 | 70 - | 130 | 98.6 | |
| 121 | Sb | 2 | 115 | 2.02 | ppb | 2.38 | 2.00 | 70 - | 130 | 100.8 | |
| 137 | Ba | 2 | 115 | 4.97 | ppb | 3.22 | 5.00 | 70 - | 130 | 99.5 | |
| 205 | Tl | 2 | 209 | 1.02 | ppb | 3.25 | 1.00 | 70 - | 130 | 102.3 | |
| 208 | Pb | 2 | 209 | 1.03 | ppb | 3.75 | 1.00 | 70 - | 130 | 102.8 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigl | -1057.26 | 16.20 | 22.89 | -4618.3 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | | 147874.44 | 0.95 | 168636.11 | 87.7 | 70 - | 120 | |
| 45 | Sc | 2 | | 3571001.80 | 2.05 | 4411244.50 | 81.0 | 70 - | 120 | |
| 72 | Ge | 1 | | 89241.45 | 0.85 | 100925.69 | 88.4 | 70 - | 120 | |
| 115 | In | 2 | | 5723110.50 | 0.96 | 6534497.50 | 87.6 | 70 - | 120 | |
| 209 | Bi | 2 | | 4545912.50 | 1.28 | 4845836.50 | 93.8 | 70 - | 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\053CCV1.D\053CCV1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 04:17 pm | Sample Name: | **CCV2-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCV ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 200.40 | ppb | 3.17 | 200.00 | 90 - | 110 | 100.2 | |
| 9 | Be | 2 | 45 | 191.60 | ppb | 5.42 | 200.00 | 90 - | 110 | 95.8 | |
| 11 | B | 2 | 45 | 177.00 | ppb | 3.64 | 200.00 | 90 - | 110 | 88.5 | Fail |
| 23 | Na | 1 | 45 | 4982.00 | ppb | 1.13 | 5000.00 | 90 - | 110 | 99.6 | |
| 24 | Mg | 1 | 45 | 4719.00 | ppb | 1.30 | 5000.00 | 90 - | 110 | 94.4 | |
| 27 | Al | 1 | 45 | 4818.00 | ppb | 1.19 | 5000.00 | 90 - | 110 | 96.4 | |
| 39 | K | 1 | 45 | 4695.00 | ppb | 0.60 | 5000.00 | 90 - | 110 | 93.9 | |
| 44 | Ca | 2 | 45 | 4632.00 | ppb | 5.30 | 5000.00 | 90 - | 110 | 92.6 | |
| 47 | Ti | 1 | 45 | 196.10 | ppb | 4.02 | 200.00 | 90 - | 110 | 98.1 | |
| 51 | V | 1 | 45 | 193.70 | ppb | 1.63 | 200.00 | 90 - | 110 | 96.9 | |
| 52 | Cr | 1 | 45 | 196.60 | ppb | 2.08 | 200.00 | 90 - | 110 | 98.3 | |
| 55 | Mn | 1 | 45 | 199.20 | ppb | 1.46 | 200.00 | 90 - | 110 | 99.6 | |
| 56 | Fe | 1 | 72 | 4963.00 | ppb | 1.52 | 5000.00 | 90 - | 110 | 99.3 | |
| 59 | Co | 1 | 72 | 196.10 | ppb | 1.44 | 200.00 | 90 - | 110 | 98.1 | |
| 60 | Ni | 1 | 72 | 190.70 | ppb | 1.28 | 200.00 | 90 - | 110 | 95.4 | |
| 63 | Cu | 1 | 72 | 198.60 | ppb | 1.17 | 200.00 | 90 - | 110 | 99.3 | |
| 66 | Zn | 1 | 72 | 199.60 | ppb | 0.77 | 200.00 | 90 - | 110 | 99.8 | |
| 75 | As | 1 | 72 | 200.40 | ppb | 1.30 | 200.00 | 90 - | 110 | 100.2 | |
| 78 | Se | 1 | 72 | 194.70 | ppb | 1.41 | 200.00 | 90 - | 110 | 97.4 | |
| 88 | Sr | 2 | 115 | 196.70 | ppb | 4.89 | 200.00 | 90 - | 110 | 98.4 | |
| 95 | Mo | 2 | 115 | 177.50 | ppb | 4.51 | 200.00 | 90 - | 110 | 88.8 | Fail |
| 107 | Ag | 2 | 115 | 184.50 | ppb | 3.32 | 200.00 | 90 - | 110 | 92.3 | |
| 111 | Cd | 2 | 115 | 185.50 | ppb | 4.54 | 200.00 | 90 - | 110 | 92.8 | |
| 118 | Sn | 2 | 115 | 185.90 | ppb | 6.06 | 200.00 | 90 - | 110 | 93.0 | |
| 121 | Sb | 2 | 115 | 189.10 | ppb | 4.98 | 200.00 | 90 - | 110 | 94.6 | |
| 137 | Ba | 2 | 115 | 188.00 | ppb | 4.81 | 200.00 | 90 - | 110 | 94.0 | |
| 205 | Tl | 2 | 209 | 197.40 | ppb | 3.48 | 200.00 | 90 - | 110 | 98.7 | |
| 208 | Pb | 2 | 209 | 187.50 | ppb | 3.90 | 200.00 | 90 - | 110 | 93.8 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -45248.27 | 3.83 | 22.89 | -197650.7 | 70 - | 120 | | ISFail |
| 45 | Sc | 1 | 138964.20 | 0.44 | 168636.11 | 82.4 | 70 - | 120 | | |
| 45 | Sc | 2 | 3487940.30 | 1.62 | 4411244.50 | 79.1 | 70 - | 120 | | |
| 72 | Ge | 1 | 83254.24 | 0.49 | 100925.69 | 82.5 | 70 - | 120 | | |
| 115 | In | 2 | 5804800.50 | 1.63 | 6534497.50 | 88.8 | 70 - | 120 | | |
| 209 | Bi | 2 | 4483626.00 | 1.64 | 4845836.50 | 92.5 | 70 - | 120 | | |

# CCB QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\054_CCB.D\054_CCB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 04:23 pm | Sample Name: | **CCB2-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCB ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL S | MDL Aq | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.271 | ppb | 3.22 | 2.00 | 2.00 | |
| 9 | Be | 2 | 45 | 0.178 | ppb | 11.69 | 0.40 | 0.30 | |
| 11 | B | 2 | 45 | 1.801 | ppb | 5.58 | 10.00 | 10.00 | |
| 23 | Na | 1 | 45 | 63.740 | ppb | 2.99 | 50.00 | ##### | Failsoil |
| 24 | Mg | 1 | 45 | 10.330 | ppb | 4.07 | 50.00 | ##### | |
| 27 | Al | 1 | 45 | 27.320 | ppb | 9.52 | 50.00 | 10.00 | FailAq |
| 39 | K | 1 | 45 | 11.730 | ppb | 1.90 | 50.00 | ##### | |
| 44 | Ca | 2 | 45 | 63.610 | ppb | 2.90 | 50.00 | ##### | Failsoil |
| 47 | Ti | 1 | 45 | 0.239 | ppb | 13.33 | 4.00 | 3.00 | |
| 51 | V | 1 | 45 | 0.201 | ppb | 4.89 | 4.00 | 3.00 | |
| 52 | Cr | 1 | 45 | 0.213 | ppb | 9.27 | 2.00 | 2.00 | |
| 55 | Mn | 1 | 45 | 0.399 | ppb | 9.97 | 2.00 | 3.00 | |
| 56 | Fe | 1 | 72 | 35.180 | ppb | 12.56 | 50.00 | 30.00 | FailAq |
| 59 | Co | 1 | 72 | 0.184 | ppb | 7.27 | 2.00 | 3.00 | |
| 60 | Ni | 1 | 72 | 0.220 | ppb | 13.13 | 2.00 | 3.00 | |
| 63 | Cu | 1 | 72 | 0.242 | ppb | 8.21 | 2.00 | 2.00 | |
| 66 | Zn | 1 | 72 | 0.298 | ppb | 13.07 | 4.00 | 2.00 | |
| 75 | As | 1 | 72 | 0.249 | ppb | 19.01 | 2.00 | 2.00 | |
| 78 | Se | 1 | 72 | 0.198 | ppb | 6.44 | 0.60 | 2.00 | |
| 88 | Sr | 2 | 115 | 0.530 | ppb | 1.91 | 4.00 | 3.00 | |
| 95 | Mo | 2 | 115 | 0.222 | ppb | 7.09 | 2.00 | 2.00 | |
| 107 | Ag | 2 | 115 | 0.145 | ppb | 3.76 | 0.40 | 1.00 | |
| 111 | Cd | 2 | 115 | 0.104 | ppb | 25.62 | 0.40 | 0.30 | |
| 118 | Sn | 2 | 115 | 0.191 | ppb | 5.62 | 20.00 | 3.00 | |
| 121 | Sb | 2 | 115 | 0.159 | ppb | 4.29 | 2.00 | 0.80 | |
| 137 | Ba | 2 | 115 | 0.272 | ppb | 12.80 | 2.00 | 3.00 | |
| 205 | Tl | 2 | 209 | 0.256 | ppb | 1.33 | 2.00 | 0.50 | |
| 208 | Pb | 2 | 209 | 0.214 | ppb | 2.59 | 0.40 | 0.30 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigh | -32.60 | 62.79 | 22.89 | -142.4 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 147162.81 | 0.09 | 168636.11 | 87.3 | 70 - 120 | |
| 45 | Sc | 2 | | 3699381.00 | 1.91 | 4411244.50 | 83.9 | 70 - 120 | |
| 72 | Ge | 1 | | 89407.74 | 0.88 | 100925.69 | 88.6 | 70 - 120 | |
| 115 | In | 2 | | 6021329.00 | 1.35 | 6534497.50 | 92.1 | 70 - 120 | |
| 209 | Bi | 2 | | 4584997.50 | 1.82 | 4845836.50 | 94.6 | 70 - 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\055LCVL.D\055LCVL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 04:29 pm | Sample Name: | **LCVL2-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCVLICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 9.92 | ppb | 1.05 | 5.00 | 70 - | 130 | 198.3 | Fail |
| 9 | Be | 2 | 45 | 1.03 | ppb | 5.02 | 1.00 | 70 - | 130 | 103.2 | |
| 11 | B | 2 | 45 | 18.70 | ppb | 1.56 | 20.00 | 70 - | 130 | 93.5 | |
| 23 | Na | 1 | 45 | 178.60 | ppb | 6.01 | 100.00 | 70 - | 130 | 178.6 | Fail |
| 24 | Mg | 1 | 45 | 101.80 | ppb | 2.58 | 100.00 | 70 - | 130 | 101.8 | |
| 27 | Al | 1 | 45 | 114.60 | ppb | 1.97 | 100.00 | 70 - | 130 | 114.6 | |
| 39 | K | 1 | 45 | 107.90 | ppb | 0.25 | 100.00 | 70 - | 130 | 107.9 | |
| 44 | Ca | 2 | 45 | 159.40 | ppb | 2.31 | 100.00 | 70 - | 130 | 159.4 | Fail |
| 47 | Ti | 1 | 45 | 5.43 | ppb | 2.41 | 5.00 | 70 - | 130 | 108.6 | |
| 51 | V | 1 | 45 | 1.01 | ppb | 6.58 | 1.00 | 70 - | 130 | 100.6 | |
| 52 | Cr | 1 | 45 | 4.89 | ppb | 2.31 | 5.00 | 70 - | 130 | 97.8 | |
| 55 | Mn | 1 | 45 | 5.07 | ppb | 2.73 | 5.00 | 70 - | 130 | 101.4 | |
| 56 | Fe | 1 | 72 | 120.60 | ppb | 2.47 | 100.00 | 70 - | 130 | 120.6 | |
| 59 | Co | 1 | 72 | 4.84 | ppb | 0.82 | 5.00 | 70 - | 130 | 96.8 | |
| 60 | Ni | 1 | 72 | 4.84 | ppb | 2.12 | 5.00 | 70 - | 130 | 96.8 | |
| 63 | Cu | 1 | 72 | 4.96 | ppb | 1.44 | 5.00 | 70 - | 130 | 99.1 | |
| 66 | Zn | 1 | 72 | 5.19 | ppb | 4.19 | 5.00 | 70 - | 130 | 103.7 | |
| 75 | As | 1 | 72 | 5.11 | ppb | 0.84 | 5.00 | 70 - | 130 | 102.1 | |
| 78 | Se | 1 | 72 | 5.62 | ppb | 6.31 | 5.00 | 70 - | 130 | 112.3 | |
| 88 | Sr | 2 | 115 | 5.14 | ppb | 1.07 | 5.00 | 70 - | 130 | 102.7 | |
| 95 | Mo | 2 | 115 | 4.55 | ppb | 3.24 | 5.00 | 70 - | 130 | 91.0 | |
| 107 | Ag | 2 | 115 | 1.92 | ppb | 1.97 | 2.00 | 70 - | 130 | 95.9 | |
| 111 | Cd | 2 | 115 | 1.03 | ppb | 2.99 | 1.00 | 70 - | 130 | 103.4 | |
| 118 | Sn | 2 | 115 | 4.80 | ppb | 3.43 | 5.00 | 70 - | 130 | 96.1 | |
| 121 | Sb | 2 | 115 | 1.99 | ppb | 3.30 | 2.00 | 70 - | 130 | 99.4 | |
| 137 | Ba | 2 | 115 | 4.86 | ppb | 2.67 | 5.00 | 70 - | 130 | 97.2 | |
| 205 | Tl | 2 | 209 | 1.00 | ppb | 1.72 | 1.00 | 70 - | 130 | 99.7 | |
| 208 | Pb | 2 | 209 | 1.05 | ppb | 1.18 | 1.00 | 70 - | 130 | 105.0 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigh | -1092.24 | 10.67 | 22.89 | -4771.0 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | | 148124.48 | 1.10 | 168636.11 | 87.8 | 70 - | 120 | |
| 45 | Sc | 2 | | 3670998.00 | 2.52 | 4411244.50 | 83.2 | 70 - | 120 | |
| 72 | Ge | 1 | | 89089.56 | 0.69 | 100925.69 | 88.3 | 70 - | 120 | |
| 115 | In | 2 | | 6052001.00 | 1.03 | 6534497.50 | 92.6 | 70 - | 120 | |
| 209 | Bi | 2 | | 4773090.50 | 1.89 | 4845836.50 | 98.5 | 70 - | 120 | |

# PB QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\056__PB.D\056__PB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 04:35 pm | Sample Name: | MB-75286 |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MBLKICPMS_TSDOD |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL | RL | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.168 | ppb | 4.93 | 2.0 | 8.00 | |
| 9 | Be | 2 | 45 | 0.053 | ppb | 9.80 | 0.4 | 1.20 | |
| 11 | B | 2 | 45 | 0.445 | ppb | 6.90 | 10.0 | 30.00 | |
| 23 | Na | 1 | 45 | 84.300 | ppb | 3.15 | 50.0 | ##### | J |
| 24 | Mg | 1 | 45 | 7.601 | ppb | 2.57 | 50.0 | ##### | |
| 27 | Al | 1 | 45 | 14.050 | ppb | 8.46 | 50.0 | ##### | |
| 39 | K | 1 | 45 | 13.190 | ppb | 1.48 | 50.0 | ##### | |
| 44 | Ca | 2 | 45 | 61.380 | ppb | 0.30 | 50.0 | ##### | J |
| 47 | Ti | 1 | 45 | 0.182 | ppb | 45.83 | 4.0 | 10.00 | |
| 51 | V | 1 | 45 | 0.082 | ppb | 8.25 | 4.0 | 10.00 | |
| 52 | Cr | 1 | 45 | 0.248 | ppb | 12.64 | 2.0 | 8.00 | |
| 55 | Mn | 1 | 45 | 0.380 | ppb | 4.49 | 2.0 | 8.00 | |
| 56 | Fe | 1 | 72 | 24.270 | ppb | 1.30 | 50.0 | ##### | |
| 59 | Co | 1 | 72 | 0.042 | ppb | 8.93 | 2.0 | 8.00 | |
| 60 | Ni | 1 | 72 | 0.215 | ppb | 11.01 | 2.0 | 8.00 | |
| 63 | Cu | 1 | 72 | 0.172 | ppb | 3.08 | 2.0 | 8.00 | |
| 66 | Zn | 1 | 72 | 1.985 | ppb | 1.71 | 4.0 | 10.00 | |
| 75 | As | 1 | 72 | 0.096 | ppb | 7.31 | 2.0 | 4.00 | |
| 78 | Se | 1 | 72 | 0.065 | ppb | 13.21 | 0.6 | 2.00 | |
| 88 | Sr | 2 | 115 | 0.372 | ppb | 3.71 | 4.0 | 10.00 | |
| 95 | Mo | 2 | 115 | 0.071 | ppb | 15.16 | 2.0 | 8.00 | |
| 107 | Ag | 2 | 115 | 0.043 | ppb | 1.54 | 0.4 | 0.80 | |
| 111 | Cd | 2 | 115 | 0.048 | ppb | 18.43 | 0.4 | 1.20 | |
| 118 | Sn | 2 | 115 | 3.922 | ppb | 1.85 | 20.0 | 40.00 | |
| 121 | Sb | 2 | 115 | 0.024 | ppb | 7.44 | 2.0 | 4.00 | |
| 137 | Ba | 2 | 115 | 0.146 | ppb | 5.14 | 2.0 | 8.00 | |
| 205 | Tl | 2 | 209 | 0.063 | ppb | 8.86 | 2.0 | 4.00 | |
| 208 | Pb | 2 | 209 | 0.102 | ppb | 1.62 | 0.4 | 1.20 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHig | -9.33 | 366.78 | 22.89 | -40.8 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 142337.83 | 0.78 | 168636.11 | 84.4 | 70 - 120 | |
| 45 | Sc | 2 | | 3612112.30 | 0.80 | 4411244.50 | 81.9 | 70 - 120 | |
| 72 | Ge | 1 | | 84564.77 | 0.59 | 100925.69 | 83.8 | 70 - 120 | |
| 115 | In | 2 | | 5927814.50 | 1.34 | 6534497.50 | 90.7 | 70 - 120 | |
| 209 | Bi | 2 | | 4687405.50 | 1.86 | 4845836.50 | 96.7 | 70 - 120 | |

# LCS QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\057_LCS.D\057_LCS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 04:41 pm | Sample Name: | **LCS-75286** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 201.80 | ppb | 1.00 | 200.00 | 80 - | 120 | 100.9 | |
| 9 | Be | 2 | 45 | 189.00 | ppb | 0.76 | 200.00 | 80 - | 120 | 94.5 | |
| 11 | B | 2 | 45 | 177.20 | ppb | 2.34 | 200.00 | 80 - | 120 | 88.6 | |
| 23 | Na | 1 | 45 | 5142.00 | ppb | 0.89 | 1000.00 | 80 - | 120 | 514.2 | Fail |
| 24 | Mg | 1 | 45 | 4837.00 | ppb | 0.39 | 1000.00 | 80 - | 120 | 483.7 | Fail |
| 27 | Al | 1 | 45 | 986.80 | ppb | 0.77 | 1000.00 | 80 - | 120 | 98.7 | |
| 39 | K | 1 | 45 | 4893.00 | ppb | 0.53 | 1000.00 | 80 - | 120 | 489.3 | Fail |
| 44 | Ca | 2 | 45 | 4760.00 | ppb | 1.90 | 1000.00 | 80 - | 120 | 476.0 | Fail |
| 47 | Ti | 1 | 45 | 197.30 | ppb | 0.70 | 200.00 | 80 - | 120 | 98.7 | |
| 51 | V | 1 | 45 | 192.90 | ppb | 1.03 | 200.00 | 80 - | 120 | 96.5 | |
| 52 | Cr | 1 | 45 | 196.40 | ppb | 1.36 | 200.00 | 80 - | 120 | 98.2 | |
| 55 | Mn | 1 | 45 | 199.80 | ppb | 1.21 | 200.00 | 80 - | 120 | 99.9 | |
| 56 | Fe | 1 | 72 | 1001.00 | ppb | 1.19 | 1000.00 | 80 - | 120 | 100.1 | |
| 59 | Co | 1 | 72 | 195.80 | ppb | 0.42 | 200.00 | 80 - | 120 | 97.9 | |
| 60 | Ni | 1 | 72 | 190.20 | ppb | 0.26 | 200.00 | 80 - | 120 | 95.1 | |
| 63 | Cu | 1 | 72 | 196.40 | ppb | 0.63 | 200.00 | 80 - | 120 | 98.2 | |
| 66 | Zn | 1 | 72 | 192.70 | ppb | 0.72 | 200.00 | 80 - | 120 | 96.4 | |
| 75 | As | 1 | 72 | 192.30 | ppb | 0.68 | 200.00 | 80 - | 120 | 96.2 | |
| 78 | Se | 1 | 72 | 184.60 | ppb | 0.28 | 200.00 | 80 - | 120 | 92.3 | |
| 88 | Sr | 2 | 115 | 200.70 | ppb | 0.38 | 200.00 | 80 - | 120 | 100.4 | |
| 95 | Mo | 2 | 115 | 182.20 | ppb | 1.56 | 200.00 | 80 - | 120 | 91.1 | |
| 107 | Ag | 2 | 115 | 188.80 | ppb | 1.72 | 200.00 | 80 - | 120 | 94.4 | |
| 111 | Cd | 2 | 115 | 184.90 | ppb | 1.83 | 200.00 | 80 - | 120 | 92.5 | |
| 118 | Sn | 2 | 115 | 195.90 | ppb | 1.65 | 200.00 | 80 - | 120 | 98.0 | |
| 121 | Sb | 2 | 115 | 192.60 | ppb | 1.02 | 200.00 | 80 - | 120 | 96.3 | |
| 137 | Ba | 2 | 115 | 192.00 | ppb | 0.86 | 200.00 | 80 - | 120 | 96.0 | |
| 205 | Tl | 2 | 209 | 201.30 | ppb | 1.38 | 200.00 | 80 - | 120 | 100.7 | |
| 208 | Pb | 2 | 209 | 192.90 | ppb | 1.71 | 200.00 | 80 - | 120 | 96.5 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -46150.16 | 1.58 | 22.89 | -201590.3 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 137475.39 | 1.06 | 168636.11 | 81.5 | 70 - | 120 | |
| 45 | Sc | 2 | 3452792.80 | 1.22 | 4411244.50 | 78.3 | 70 - | 120 | |
| 72 | Ge | 1 | 81579.74 | 0.13 | 100925.69 | 80.8 | 70 - | 120 | |
| 115 | In | 2 | 5548910.50 | 0.50 | 6534497.50 | 84.9 | 70 - | 120 | |
| 209 | Bi | 2 | 4259716.00 | 1.71 | 4845836.50 | 87.9 | 70 - | 120 | |

# LCS QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\058_LCS.D\058_LCS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 04:48 pm | Sample Name: | **LCSD-75286** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCSDICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 202.70 | ppb | 0.66 | 200.00 | 80 - | 120 | 101.4 | |
| 9 | Be | 2 | 45 | 190.70 | ppb | 1.81 | 200.00 | 80 - | 120 | 95.4 | |
| 11 | B | 2 | 45 | 177.10 | ppb | 2.18 | 200.00 | 80 - | 120 | 88.6 | |
| 23 | Na | 1 | 45 | 5189.00 | ppb | 1.07 | 1000.00 | 80 - | 120 | 518.9 | Fail |
| 24 | Mg | 1 | 45 | 4891.00 | ppb | 1.25 | 1000.00 | 80 - | 120 | 489.1 | Fail |
| 27 | Al | 1 | 45 | 1004.00 | ppb | 1.36 | 1000.00 | 80 - | 120 | 100.4 | |
| 39 | K | 1 | 45 | 4965.00 | ppb | 0.89 | 1000.00 | 80 - | 120 | 496.5 | Fail |
| 44 | Ca | 2 | 45 | 4829.00 | ppb | 2.26 | 1000.00 | 80 - | 120 | 482.9 | Fail |
| 47 | Ti | 1 | 45 | 205.30 | ppb | 3.29 | 200.00 | 80 - | 120 | 102.7 | |
| 51 | V | 1 | 45 | 195.60 | ppb | 1.06 | 200.00 | 80 - | 120 | 97.8 | |
| 52 | Cr | 1 | 45 | 200.30 | ppb | 1.30 | 200.00 | 80 - | 120 | 100.2 | |
| 55 | Mn | 1 | 45 | 203.80 | ppb | 1.41 | 200.00 | 80 - | 120 | 101.9 | |
| 56 | Fe | 1 | 72 | 1010.00 | ppb | 1.27 | 1000.00 | 80 - | 120 | 101.0 | |
| 59 | Co | 1 | 72 | 198.90 | ppb | 0.97 | 200.00 | 80 - | 120 | 99.5 | |
| 60 | Ni | 1 | 72 | 192.20 | ppb | 0.77 | 200.00 | 80 - | 120 | 96.1 | |
| 63 | Cu | 1 | 72 | 198.00 | ppb | 0.82 | 200.00 | 80 - | 120 | 99.0 | |
| 66 | Zn | 1 | 72 | 196.20 | ppb | 0.57 | 200.00 | 80 - | 120 | 98.1 | |
| 75 | As | 1 | 72 | 196.10 | ppb | 0.71 | 200.00 | 80 - | 120 | 98.1 | |
| 78 | Se | 1 | 72 | 183.30 | ppb | 0.47 | 200.00 | 80 - | 120 | 91.7 | |
| 88 | Sr | 2 | 115 | 204.60 | ppb | 1.56 | 200.00 | 80 - | 120 | 102.3 | |
| 95 | Mo | 2 | 115 | 185.90 | ppb | 1.82 | 200.00 | 80 - | 120 | 93.0 | |
| 107 | Ag | 2 | 115 | 189.70 | ppb | 2.20 | 200.00 | 80 - | 120 | 94.9 | |
| 111 | Cd | 2 | 115 | 186.70 | ppb | 2.25 | 200.00 | 80 - | 120 | 93.4 | |
| 118 | Sn | 2 | 115 | 198.00 | ppb | 1.66 | 200.00 | 80 - | 120 | 99.0 | |
| 121 | Sb | 2 | 115 | 194.80 | ppb | 1.83 | 200.00 | 80 - | 120 | 97.4 | |
| 137 | Ba | 2 | 115 | 195.80 | ppb | 2.32 | 200.00 | 80 - | 120 | 97.9 | |
| 205 | Tl | 2 | 209 | 207.90 | ppb | 0.74 | 200.00 | 80 - | 120 | 104.0 | |
| 208 | Pb | 2 | 209 | 194.20 | ppb | 1.03 | 200.00 | 80 - | 120 | 97.1 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -45748.89 | 2.56 | 22.89 | -199837.5 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 134196.89 | 1.13 | 168636.11 | 79.6 | 70 - | 120 | |
| 45 | Sc | 2 | 3424443.00 | 1.27 | 4411244.50 | 77.6 | 70 - | 120 | |
| 72 | Ge | 1 | 80008.41 | 0.37 | 100925.69 | 79.3 | 70 - | 120 | |
| 115 | In | 2 | 5511413.50 | 1.23 | 6534497.50 | 84.3 | 70 - | 120 | |
| 209 | Bi | 2 | 4117153.30 | 0.34 | 4845836.50 | 85.0 | 70 - | 120 | |

# DT QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\061DT1.D\061DT1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 05:06 pm | Sample Name: | **1605135-14A SD** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SD ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 25.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 25.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 11.12 | ppb | 3.72 | -851.57 | 90 - 110 | -6.5 | |
| 9 | Be | 2 | 45 | 0.53 | ppb | 3.87 | 2.21 | 90 - 110 | 119.0 | |
| 11 | B | 2 | 45 | 23.29 | ppb | 2.52 | 109.50 | 90 - 110 | 106.3 | GOOD |
| 23 | Na | 1 | 45 | 1147.00 | ppb | 0.44 | 5575.00 | 90 - 110 | 102.9 | GOOD |
| 24 | Mg | 1 | 45 | 1984.00 | ppb | 0.45 | 9873.00 | 90 - 110 | 100.5 | GOOD |
| 27 | Al | 1 | 45 | 9001.00 | ppb | 1.04 | 47470.00 | 90 - 110 | 94.8 | GOOD |
| 39 | K | 1 | 45 | 2780.00 | ppb | 0.26 | 13920.00 | 90 - 110 | 99.9 | GOOD |
| 44 | Ca | 2 | 45 | 38740.00 | ppb | 4.01 | 193600.00 | 90 - 110 | 100.1 | GOOD |
| 47 | Ti | 1 | 45 | 29.55 | ppb | 1.29 | 152.40 | 90 - 110 | 96.9 | GOOD |
| 51 | V | 1 | 45 | 12.67 | ppb | 0.69 | 63.38 | 90 - 110 | 100.0 | GOOD |
| 52 | Cr | 1 | 45 | 15.62 | ppb | 1.04 | 76.36 | 90 - 110 | 102.3 | GOOD |
| 55 | Mn | 1 | 45 | 14.15 | ppb | 1.83 | 70.03 | 90 - 110 | 101.0 | GOOD |
| 56 | Fe | 1 | 72 | 12340.00 | ppb | 1.31 | 62910.00 | 90 - 110 | 98.1 | GOOD |
| 59 | Co | 1 | 72 | 1.65 | ppb | 1.42 | 8.04 | 90 - 110 | 102.3 | GOOD |
| 60 | Ni | 1 | 72 | 6.68 | ppb | 0.45 | 32.46 | 90 - 110 | 102.9 | GOOD |
| 63 | Cu | 1 | 72 | 1.00 | ppb | 2.45 | 4.53 | 90 - 110 | 110.7 | |
| 66 | Zn | 1 | 72 | 42.19 | ppb | 1.24 | 191.00 | 90 - 110 | 110.4 | |
| 75 | As | 1 | 72 | 3.10 | ppb | 3.20 | 15.23 | 90 - 110 | 101.8 | GOOD |
| 78 | Se | 1 | 72 | 2.56 | ppb | 8.92 | 14.31 | 90 - 110 | 89.4 | |
| 88 | Sr | 2 | 115 | 218.80 | ppb | 3.96 | 1101.00 | 90 - 110 | 99.4 | GOOD |
| 95 | Mo | 2 | 115 | 1.00 | ppb | 7.09 | 4.67 | 90 - 110 | 106.6 | GOOD |
| 107 | Ag | 2 | 115 | 0.08 | ppb | 1.59 | 0.16 | 90 - 110 | 261.9 | |
| 111 | Cd | 2 | 115 | 0.15 | ppb | 18.65 | 0.54 | 90 - 110 | 140.0 | |
| 118 | Sn | 2 | 115 | 1.12 | ppb | 6.14 | 5.33 | 90 - 110 | 105.3 | GOOD |
| 121 | Sb | 2 | 115 | 0.07 | ppb | 4.19 | 0.14 | 90 - 110 | 238.2 | |
| 137 | Ba | 2 | 115 | 6.81 | ppb | 3.79 | 34.82 | 90 - 110 | 97.8 | GOOD |
| 205 | Tl | 2 | 209 | 0.16 | ppb | 9.11 | 0.37 | 90 - 110 | 211.1 | |
| 208 | Pb | 2 | 209 | 3.01 | ppb | 2.34 | 15.54 | 90 - 110 | 96.7 | GOOD |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -851.57 | 4.37 | 22.89 | -3719.8 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 136263.31 | 0.79 | 168636.11 | 80.8 | 70 - 120 | |
| 45 | Sc | 2 | 3369500.30 | 1.65 | 4411244.50 | 76.4 | 70 - 120 | |
| 72 | Ge | 1 | 82261.15 | 0.93 | 100925.69 | 81.5 | 70 - 120 | |
| 115 | In | 2 | 5509855.50 | 1.17 | 6534497.50 | 84.3 | 70 - 120 | |
| 209 | Bi | 2 | 4166163.30 | 0.89 | 4845836.50 | 86.0 | 70 - 120 | |

# PDS QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\071_PDS.D\071_PDS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 06:05 pm | Sample Name: | **1605135-14A PDS** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | PDS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 232.50 | ppb | 0.86 | -21760.04 | 200 | 75-125 | ###### | Fail |
| 9 | Be | 2 | 45 | 169.80 | ppb | 0.56 | 2.21 | 200 | 75-125 | 83.8 | |
| 11 | B | 2 | 45 | 250.20 | ppb | 0.34 | 109.50 | 200 | 75-125 | 70.4 | Fail |
| 23 | Na | 1 | 45 | 10250.00 | ppb | 1.47 | 5575.00 | 5000 | 75-125 | 93.5 | |
| 24 | Mg | 1 | 45 | 14600.00 | ppb | 1.05 | 9873.00 | 5000 | 75-125 | 94.5 | |
| 27 | Al | 1 | 45 | 49860.00 | ppb | 1.40 | 47470.00 | 5000 | 75-125 | 47.8 | Fail |
| 39 | K | 1 | 45 | 18450.00 | ppb | 1.67 | 13920.00 | 5000 | 75-125 | 90.6 | |
| 44 | Ca | 2 | 45 | 194700.00 | ppb | 0.66 | 193600.00 | 5000 | 75-125 | 22.0 | Fail |
| 47 | Ti | 1 | 45 | 342.30 | ppb | 3.08 | 152.40 | 200 | 75-125 | 95.0 | |
| 51 | V | 1 | 45 | 253.90 | ppb | 1.88 | 63.38 | 200 | 75-125 | 95.3 | |
| 52 | Cr | 1 | 45 | 235.90 | ppb | 2.17 | 76.36 | 200 | 75-125 | 79.8 | |
| 55 | Mn | 1 | 45 | 254.10 | ppb | 1.80 | 70.03 | 200 | 75-125 | 92.0 | |
| 56 | Fe | 1 | 72 | 65890.00 | ppb | 1.67 | 62910.00 | 5000 | 75-125 | 59.6 | Fail |
| 59 | Co | 1 | 72 | 198.70 | ppb | 1.62 | 8.04 | 200 | 75-125 | 95.3 | |
| 60 | Ni | 1 | 72 | 193.00 | ppb | 1.63 | 32.46 | 200 | 75-125 | 80.3 | |
| 63 | Cu | 1 | 72 | 182.60 | ppb | 1.33 | 4.53 | 200 | 75-125 | 89.0 | |
| 66 | Zn | 1 | 72 | 278.90 | ppb | 1.62 | 191.00 | 200 | 75-125 | 44.0 | Fail |
| 75 | As | 1 | 72 | 212.20 | ppb | 1.35 | 15.23 | 200 | 75-125 | 98.5 | |
| 78 | Se | 1 | 72 | 195.80 | ppb | 3.43 | 14.31 | 200 | 75-125 | 90.7 | |
| 88 | Sr | 2 | 115 | 1285.00 | ppb | 0.97 | 1101.00 | 200 | 75-125 | 92.0 | |
| 95 | Mo | 2 | 115 | 185.70 | ppb | 0.59 | 4.67 | 200 | 75-125 | 90.5 | |
| 107 | Ag | 2 | 115 | 177.10 | ppb | 1.73 | 0.16 | 200 | 75-125 | 88.5 | |
| 111 | Cd | 2 | 115 | 176.40 | ppb | 1.57 | 0.54 | 200 | 75-125 | 87.9 | |
| 118 | Sn | 2 | 115 | 203.50 | ppb | 1.39 | 5.33 | 200 | 75-125 | 99.1 | |
| 121 | Sb | 2 | 115 | 197.90 | ppb | 0.63 | 0.14 | 200 | 75-125 | 98.9 | |
| 137 | Ba | 2 | 115 | 226.70 | ppb | 1.51 | 34.82 | 200 | 75-125 | 95.9 | |
| 205 | Tl | 2 | 209 | 205.00 | ppb | 2.47 | 0.37 | 200 | 75-125 | 102.3 | |
| 208 | Pb | 2 | 209 | 208.00 | ppb | 2.06 | 15.54 | 200 | 75-125 | 96.2 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -21760.04 | 2.58 | 22.89 | -95050.9 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 122897.01 | 1.39 | 168636.11 | 72.9 | 70 - 120 | |
| 45 | Sc | 2 | 3348554.30 | 0.36 | 4411244.50 | 75.9 | 70 - 120 | |
| 72 | Ge | 1 | 71121.98 | 0.72 | 100925.69 | 70.5 | 70 - 120 | |
| 115 | In | 2 | 5463240.50 | 0.90 | 6534497.50 | 83.6 | 70 - 120 | |
| 209 | Bi | 2 | 3983668.80 | 2.55 | 4845836.50 | 82.2 | 70 - 120 | |

## MS/MSD QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\072_MS.D\072_MS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 06:11 pm | Sample Name: | **1605135-14A MS** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 243.80 | ppb | 1.20 | ######## | 200 | 80-120 | ###### | Fail |
| 9 | Be | 2 | 45 | 175.00 | ppb | 2.06 | 2.21 | 200 | 80-120 | 86.4 | |
| 11 | B | 2 | 45 | 250.20 | ppb | 2.02 | 109.50 | 200 | 80-120 | 70.4 | Fail |
| 23 | Na | 1 | 45 | 10260.00 | ppb | 1.43 | 5575.00 | 1000 | 80-120 | 468.5 | Fail |
| 24 | Mg | 1 | 45 | 14910.00 | ppb | 2.40 | 9873.00 | 1000 | 80-120 | 503.7 | Fail |
| 27 | Al | 1 | 45 | 51740.00 | ppb | 3.09 | 47470.00 | 1000 | 80-120 | 427.0 | Fail |
| 39 | K | 1 | 45 | 18580.00 | ppb | 2.51 | 13920.00 | 1000 | 80-120 | 466.0 | Fail |
| 44 | Ca | 2 | 45 | 211800.00 | ppb | 2.50 | ######## | 1000 | 80-120 | 1820.0 | Fail |
| 47 | Ti | 1 | 45 | 276.40 | ppb | 3.39 | 152.40 | 200 | 80-120 | 62.0 | Fail |
| 51 | V | 1 | 45 | 258.30 | ppb | 1.85 | 63.38 | 200 | 80-120 | 97.5 | |
| 52 | Cr | 1 | 45 | 235.50 | ppb | 2.76 | 76.36 | 200 | 80-120 | 79.6 | Fail |
| 55 | Mn | 1 | 45 | 257.50 | ppb | 2.04 | 70.03 | 200 | 80-120 | 93.7 | |
| 56 | Fe | 1 | 72 | 62690.00 | ppb | 2.10 | 62910.00 | 1000 | 80-120 | -22.0 | Fail |
| 59 | Co | 1 | 72 | 198.20 | ppb | 2.14 | 8.04 | 200 | 80-120 | 95.1 | |
| 60 | Ni | 1 | 72 | 194.10 | ppb | 1.71 | 32.46 | 200 | 80-120 | 80.8 | |
| 63 | Cu | 1 | 72 | 185.00 | ppb | 2.11 | 4.53 | 200 | 80-120 | 90.2 | |
| 66 | Zn | 1 | 72 | 273.00 | ppb | 1.33 | 191.00 | 200 | 80-120 | 41.0 | Fail |
| 75 | As | 1 | 72 | 213.40 | ppb | 1.36 | 15.23 | 200 | 80-120 | 99.1 | |
| 78 | Se | 1 | 72 | 197.50 | ppb | 1.20 | 14.31 | 200 | 80-120 | 91.6 | |
| 88 | Sr | 2 | 115 | 1054.00 | ppb | 1.71 | 1101.00 | 200 | 80-120 | -23.5 | Fail |
| 95 | Mo | 2 | 115 | 180.30 | ppb | 1.65 | 4.67 | 200 | 80-120 | 87.8 | |
| 107 | Ag | 2 | 115 | 176.60 | ppb | 1.98 | 0.16 | 200 | 80-120 | 88.2 | |
| 111 | Cd | 2 | 115 | 179.70 | ppb | 2.61 | 0.54 | 200 | 80-120 | 89.6 | |
| 118 | Sn | 2 | 115 | 196.50 | ppb | 1.70 | 5.33 | 200 | 80-120 | 95.6 | |
| 121 | Sb | 2 | 115 | 63.71 | ppb | 1.58 | 0.14 | 200 | 80-120 | 31.8 | Fail |
| 137 | Ba | 2 | 115 | 229.70 | ppb | 0.72 | 34.82 | 200 | 80-120 | 97.4 | |
| 205 | Tl | 2 | 209 | 211.50 | ppb | 0.94 | 0.37 | 200 | 80-120 | 105.6 | |
| 208 | Pb | 2 | 209 | 213.70 | ppb | 0.77 | 15.54 | 200 | 80-120 | 99.1 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -42032.65 | 2.71 | 22.89 | ######## | 70 - 120 | ISFail |
| 45 | Sc | 1 | 132637.80 | 1.63 | 168636.11 | 78.7 | 70 - 120 | |
| 45 | Sc | 2 | 3124208.30 | 2.39 | 4411244.50 | 70.8 | 70 - 120 | |
| 72 | Ge | 1 | 76708.27 | 1.96 | 100925.69 | 76.0 | 70 - 120 | |
| 115 | In | 2 | 5140287.00 | 1.62 | 6534497.50 | 78.7 | 70 - 120 | |
| 209 | Bi | 2 | 3700261.30 | 1.33 | 4845836.50 | 76.4 | 70 - 120 | |

# MS/MSD QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\073_MS.D\073_MS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 06:17 pm | Sample Name: | **1605135-14A MSD** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MSD ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 244.50 | ppb | 3.27 | ######## | 200 | 80-120 | ###### | Fail |
| 9 | Be | 2 | 45 | 172.70 | ppb | 1.97 | 2.21 | 200 | 80-120 | 85.2 | |
| 11 | B | 2 | 45 | 260.10 | ppb | 3.19 | 109.50 | 200 | 80-120 | 75.3 | Fail |
| 23 | Na | 1 | 45 | 10290.00 | ppb | 3.32 | 5575.00 | 1000 | 80-120 | 471.5 | Fail |
| 24 | Mg | 1 | 45 | 14960.00 | ppb | 2.56 | 9873.00 | 1000 | 80-120 | 508.7 | Fail |
| 27 | Al | 1 | 45 | 53350.00 | ppb | 3.07 | 47470.00 | 1000 | 80-120 | 588.0 | Fail |
| 39 | K | 1 | 45 | 19160.00 | ppb | 2.06 | 13920.00 | 1000 | 80-120 | 524.0 | Fail |
| 44 | Ca | 2 | 45 | 204200.00 | ppb | 2.53 | ######## | 1000 | 80-120 | 1060.0 | Fail |
| 47 | Ti | 1 | 45 | 295.60 | ppb | 2.11 | 152.40 | 200 | 80-120 | 71.6 | Fail |
| 51 | V | 1 | 45 | 254.90 | ppb | 2.41 | 63.38 | 200 | 80-120 | 95.8 | |
| 52 | Cr | 1 | 45 | 232.30 | ppb | 2.21 | 76.36 | 200 | 80-120 | 78.0 | Fail |
| 55 | Mn | 1 | 45 | 262.00 | ppb | 1.99 | 70.03 | 200 | 80-120 | 96.0 | |
| 56 | Fe | 1 | 72 | 65600.00 | ppb | 3.00 | 62910.00 | 1000 | 80-120 | 269.0 | Fail |
| 59 | Co | 1 | 72 | 197.70 | ppb | 2.40 | 8.04 | 200 | 80-120 | 94.8 | |
| 60 | Ni | 1 | 72 | 193.20 | ppb | 2.21 | 32.46 | 200 | 80-120 | 80.4 | |
| 63 | Cu | 1 | 72 | 183.90 | ppb | 1.64 | 4.53 | 200 | 80-120 | 89.7 | |
| 66 | Zn | 1 | 72 | 272.10 | ppb | 1.34 | 191.00 | 200 | 80-120 | 40.6 | Fail |
| 75 | As | 1 | 72 | 210.80 | ppb | 1.55 | 15.23 | 200 | 80-120 | 97.8 | |
| 78 | Se | 1 | 72 | 198.30 | ppb | 2.57 | 14.31 | 200 | 80-120 | 92.0 | |
| 88 | Sr | 2 | 115 | 1137.00 | ppb | 2.30 | 1101.00 | 200 | 80-120 | 18.0 | Fail |
| 95 | Mo | 2 | 115 | 178.40 | ppb | 2.35 | 4.67 | 200 | 80-120 | 86.9 | |
| 107 | Ag | 2 | 115 | 176.00 | ppb | 2.11 | 0.16 | 200 | 80-120 | 87.9 | |
| 111 | Cd | 2 | 115 | 178.80 | ppb | 2.64 | 0.54 | 200 | 80-120 | 89.1 | |
| 118 | Sn | 2 | 115 | 196.40 | ppb | 2.95 | 5.33 | 200 | 80-120 | 95.5 | |
| 121 | Sb | 2 | 115 | 62.24 | ppb | 3.01 | 0.14 | 200 | 80-120 | 31.1 | Fail |
| 137 | Ba | 2 | 115 | 240.10 | ppb | 3.39 | 34.82 | 200 | 80-120 | 102.6 | |
| 205 | Tl | 2 | 209 | 206.60 | ppb | 3.68 | 0.37 | 200 | 80-120 | 103.1 | |
| 208 | Pb | 2 | 209 | 212.80 | ppb | 5.15 | 15.54 | 200 | 80-120 | 98.6 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -46101.79 | 4.54 | 22.89 | ######## | 70 - 120 | ISFail |
| 45 | Sc | 1 | 145290.77 | 1.75 | 168636.11 | 86.2 | 70 - 120 | |
| 45 | Sc | 2 | 3452643.00 | 1.64 | 4411244.50 | 78.3 | 70 - 120 | |
| 72 | Ge | 1 | 82579.11 | 1.67 | 100925.69 | 81.8 | 70 - 120 | |
| 115 | In | 2 | 5734377.00 | 2.99 | 6534497.50 | 87.8 | 70 - 120 | |
| 209 | Bi | 2 | 4304954.00 | 2.65 | 4845836.50 | 88.8 | 70 - 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\075CCV1.D\075CCV1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 06:29 pm | Sample Name: | CCV3-160526 |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCV ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 196.40 | ppb | 0.49 | 200.00 | 90 - | 110 | 98.2 | |
| 9 | Be | 2 | 45 | 189.60 | ppb | 1.15 | 200.00 | 90 - | 110 | 94.8 | |
| 11 | B | 2 | 45 | 175.40 | ppb | 1.81 | 200.00 | 90 - | 110 | 87.7 | Fail |
| 23 | Na | 1 | 45 | 4940.00 | ppb | 1.44 | 5000.00 | 90 - | 110 | 98.8 | |
| 24 | Mg | 1 | 45 | 4702.00 | ppb | 1.94 | 5000.00 | 90 - | 110 | 94.0 | |
| 27 | Al | 1 | 45 | 4919.00 | ppb | 1.85 | 5000.00 | 90 - | 110 | 98.4 | |
| 39 | K | 1 | 45 | 4829.00 | ppb | 0.63 | 5000.00 | 90 - | 110 | 96.6 | |
| 44 | Ca | 2 | 45 | 4740.00 | ppb | 1.94 | 5000.00 | 90 - | 110 | 94.8 | |
| 47 | Ti | 1 | 45 | 203.80 | ppb | 1.57 | 200.00 | 90 - | 110 | 101.9 | |
| 51 | V | 1 | 45 | 192.00 | ppb | 1.78 | 200.00 | 90 - | 110 | 96.0 | |
| 52 | Cr | 1 | 45 | 193.80 | ppb | 1.32 | 200.00 | 90 - | 110 | 96.9 | |
| 55 | Mn | 1 | 45 | 200.90 | ppb | 1.29 | 200.00 | 90 - | 110 | 100.5 | |
| 56 | Fe | 1 | 72 | 4965.00 | ppb | 1.99 | 5000.00 | 90 - | 110 | 99.3 | |
| 59 | Co | 1 | 72 | 193.90 | ppb | 0.90 | 200.00 | 90 - | 110 | 97.0 | |
| 60 | Ni | 1 | 72 | 188.10 | ppb | 1.61 | 200.00 | 90 - | 110 | 94.1 | |
| 63 | Cu | 1 | 72 | 193.60 | ppb | 0.65 | 200.00 | 90 - | 110 | 96.8 | |
| 66 | Zn | 1 | 72 | 200.80 | ppb | 1.15 | 200.00 | 90 - | 110 | 100.4 | |
| 75 | As | 1 | 72 | 201.90 | ppb | 1.09 | 200.00 | 90 - | 110 | 101.0 | |
| 78 | Se | 1 | 72 | 202.80 | ppb | 1.31 | 200.00 | 90 - | 110 | 101.4 | |
| 88 | Sr | 2 | 115 | 201.00 | ppb | 0.39 | 200.00 | 90 - | 110 | 100.5 | |
| 95 | Mo | 2 | 115 | 181.30 | ppb | 1.34 | 200.00 | 90 - | 110 | 90.7 | |
| 107 | Ag | 2 | 115 | 186.90 | ppb | 1.84 | 200.00 | 90 - | 110 | 93.5 | |
| 111 | Cd | 2 | 115 | 189.50 | ppb | 1.27 | 200.00 | 90 - | 110 | 94.8 | |
| 118 | Sn | 2 | 115 | 193.60 | ppb | 1.17 | 200.00 | 90 - | 110 | 96.8 | |
| 121 | Sb | 2 | 115 | 194.70 | ppb | 1.83 | 200.00 | 90 - | 110 | 97.4 | |
| 137 | Ba | 2 | 115 | 191.70 | ppb | 2.08 | 200.00 | 90 - | 110 | 95.9 | |
| 205 | Tl | 2 | 209 | 201.50 | ppb | 1.28 | 200.00 | 90 - | 110 | 100.8 | |
| 208 | Pb | 2 | 209 | 190.80 | ppb | 0.56 | 200.00 | 90 - | 110 | 95.4 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -44257.22 | 1.72 | 22.89 | -193321.6 | 70 - | 120 | | ISFail |
| 45 | Sc | 1 | 139841.31 | 0.68 | 168636.11 | 82.9 | 70 - | 120 | | |
| 45 | Sc | 2 | 3491485.30 | 1.60 | 4411244.50 | 79.1 | 70 - | 120 | | |
| 72 | Ge | 1 | 83111.70 | 0.35 | 100925.69 | 82.3 | 70 - | 120 | | |
| 115 | In | 2 | 5869933.00 | 1.03 | 6534497.50 | 89.8 | 70 - | 120 | | |
| 209 | Bi | 2 | 4507379.00 | 0.88 | 4845836.50 | 93.0 | 70 - | 120 | | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\077LCVL.D\077LCVL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 06:41 pm | Sample Name: | **LCVL3-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCVLICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 9.66 | ppb | 1.70 | 5.00 | 70 - | 130 | 193.2 | Fail |
| 9 | Be | 2 | 45 | 0.99 | ppb | 2.95 | 1.00 | 70 - | 130 | 99.1 | |
| 11 | B | 2 | 45 | 18.73 | ppb | 1.28 | 20.00 | 70 - | 130 | 93.7 | |
| 23 | Na | 1 | 45 | 131.20 | ppb | 0.90 | 100.00 | 70 - | 130 | 131.2 | Fail |
| 24 | Mg | 1 | 45 | 102.90 | ppb | 3.45 | 100.00 | 70 - | 130 | 102.9 | |
| 27 | Al | 1 | 45 | 118.80 | ppb | 0.99 | 100.00 | 70 - | 130 | 118.8 | |
| 39 | K | 1 | 45 | 103.10 | ppb | 1.25 | 100.00 | 70 - | 130 | 103.1 | |
| 44 | Ca | 2 | 45 | 153.10 | ppb | 1.24 | 100.00 | 70 - | 130 | 153.1 | Fail |
| 47 | Ti | 1 | 45 | 4.41 | ppb | 8.19 | 5.00 | 70 - | 130 | 88.2 | |
| 51 | V | 1 | 45 | 1.03 | ppb | 4.09 | 1.00 | 70 - | 130 | 102.8 | |
| 52 | Cr | 1 | 45 | 4.96 | ppb | 0.40 | 5.00 | 70 - | 130 | 99.2 | |
| 55 | Mn | 1 | 45 | 5.16 | ppb | 4.08 | 5.00 | 70 - | 130 | 103.3 | |
| 56 | Fe | 1 | 72 | 119.70 | ppb | 0.85 | 100.00 | 70 - | 130 | 119.7 | |
| 59 | Co | 1 | 72 | 4.84 | ppb | 1.62 | 5.00 | 70 - | 130 | 96.8 | |
| 60 | Ni | 1 | 72 | 4.79 | ppb | 1.60 | 5.00 | 70 - | 130 | 95.8 | |
| 63 | Cu | 1 | 72 | 4.84 | ppb | 1.79 | 5.00 | 70 - | 130 | 96.9 | |
| 66 | Zn | 1 | 72 | 5.11 | ppb | 2.04 | 5.00 | 70 - | 130 | 102.2 | |
| 75 | As | 1 | 72 | 5.21 | ppb | 0.98 | 5.00 | 70 - | 130 | 104.1 | |
| 78 | Se | 1 | 72 | 5.89 | ppb | 9.06 | 5.00 | 70 - | 130 | 117.8 | |
| 88 | Sr | 2 | 115 | 4.97 | ppb | 1.05 | 5.00 | 70 - | 130 | 99.4 | |
| 95 | Mo | 2 | 115 | 4.40 | ppb | 6.05 | 5.00 | 70 - | 130 | 88.0 | |
| 107 | Ag | 2 | 115 | 1.93 | ppb | 3.27 | 2.00 | 70 - | 130 | 96.3 | |
| 111 | Cd | 2 | 115 | 1.04 | ppb | 16.03 | 1.00 | 70 - | 130 | 103.7 | |
| 118 | Sn | 2 | 115 | 4.89 | ppb | 3.14 | 5.00 | 70 - | 130 | 97.8 | |
| 121 | Sb | 2 | 115 | 2.02 | ppb | 1.12 | 2.00 | 70 - | 130 | 101.2 | |
| 137 | Ba | 2 | 115 | 4.87 | ppb | 2.66 | 5.00 | 70 - | 130 | 97.4 | |
| 205 | Tl | 2 | 209 | 1.04 | ppb | 2.23 | 1.00 | 70 - | 130 | 103.6 | |
| 208 | Pb | 2 | 209 | 1.03 | ppb | 2.53 | 1.00 | 70 - | 130 | 102.7 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigl | -1025.60 | 15.06 | 22.89 | -4480.0 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | | 143261.48 | 0.49 | 168636.11 | 85.0 | 70 - | 120 | |
| 45 | Sc | 2 | | 3676986.00 | 2.25 | 4411244.50 | 83.4 | 70 - | 120 | |
| 72 | Ge | 1 | | 85387.91 | 0.95 | 100925.69 | 84.6 | 70 - | 120 | |
| 115 | In | 2 | | 6184134.50 | 1.14 | 6534497.50 | 94.6 | 70 - | 120 | |
| 209 | Bi | 2 | | 4899108.50 | 1.50 | 4845836.50 | 101.1 | 70 - | 120 | |

# CCB QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\078_CCB.D\078_CCB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 06:47 pm | Sample Name: | **CCB3-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCB ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL S | MDL Aq | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.154 | ppb | 6.42 | 2.00 | 2.00 | |
| 9 | Be | 2 | 45 | 0.055 | ppb | 42.11 | 0.40 | 0.30 | |
| 11 | B | 2 | 45 | 0.940 | ppb | 1.76 | 10.00 | 10.00 | |
| 23 | Na | 1 | 45 | 30.700 | ppb | 2.04 | 50.00 | ##### | |
| 24 | Mg | 1 | 45 | 3.530 | ppb | 14.31 | 50.00 | ##### | |
| 27 | Al | 1 | 45 | 12.320 | ppb | 4.93 | 50.00 | 10.00 | FailAq |
| 39 | K | 1 | 45 | 9.875 | ppb | 4.36 | 50.00 | ##### | |
| 44 | Ca | 2 | 45 | 43.000 | ppb | 3.57 | 50.00 | ##### | |
| 47 | Ti | 1 | 45 | 0.054 | ppb | 86.62 | 4.00 | 3.00 | |
| 51 | V | 1 | 45 | 0.053 | ppb | 12.99 | 4.00 | 3.00 | |
| 52 | Cr | 1 | 45 | 0.050 | ppb | 6.98 | 2.00 | 2.00 | |
| 55 | Mn | 1 | 45 | 0.114 | ppb | 8.00 | 2.00 | 3.00 | |
| 56 | Fe | 1 | 72 | 15.600 | ppb | 2.37 | 50.00 | 30.00 | |
| 59 | Co | 1 | 72 | 0.041 | ppb | 3.60 | 2.00 | 3.00 | |
| 60 | Ni | 1 | 72 | 0.036 | ppb | 21.74 | 2.00 | 3.00 | |
| 63 | Cu | 1 | 72 | 0.072 | ppb | 8.77 | 2.00 | 2.00 | |
| 66 | Zn | 1 | 72 | 0.051 | ppb | 6.89 | 4.00 | 2.00 | |
| 75 | As | 1 | 72 | 0.104 | ppb | 10.38 | 2.00 | 2.00 | |
| 78 | Se | 1 | 72 | 0.153 | ppb | 23.50 | 0.60 | 2.00 | |
| 88 | Sr | 2 | 115 | 0.259 | ppb | 1.35 | 4.00 | 3.00 | |
| 95 | Mo | 2 | 115 | 0.068 | ppb | 23.01 | 2.00 | 2.00 | |
| 107 | Ag | 2 | 115 | 0.054 | ppb | 6.69 | 0.40 | 1.00 | |
| 111 | Cd | 2 | 115 | 0.043 | ppb | 29.63 | 0.40 | 0.30 | |
| 118 | Sn | 2 | 115 | 0.054 | ppb | 8.44 | 20.00 | 3.00 | |
| 121 | Sb | 2 | 115 | 0.045 | ppb | 4.60 | 2.00 | 0.80 | |
| 137 | Ba | 2 | 115 | 0.086 | ppb | 12.65 | 2.00 | 3.00 | |
| 205 | Tl | 2 | 209 | 0.095 | ppb | 1.85 | 2.00 | 0.50 | |
| 208 | Pb | 2 | 209 | 0.082 | ppb | 12.03 | 0.40 | 0.30 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigh | -6.18 | 369.68 | 22.89 | -27.0 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 138429.02 | 1.62 | 168636.11 | 82.1 | 70 - 120 | |
| 45 | Sc | 2 | | 3668180.30 | 1.98 | 4411244.50 | 83.2 | 70 - 120 | |
| 72 | Ge | 1 | | 84107.66 | 0.69 | 100925.69 | 83.3 | 70 - 120 | |
| 115 | In | 2 | | 6110557.00 | 1.30 | 6534497.50 | 93.5 | 70 - 120 | |
| 209 | Bi | 2 | | 4817383.50 | 1.62 | 4845836.50 | 99.4 | 70 - 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\089CCV1.D\089CCV1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 07:53 pm | Sample Name: | **CCV4-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCV ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 194.90 | ppb | 1.15 | 200.00 | 90 - | 110 | 97.5 | |
| 9 | Be | 2 | 45 | 183.60 | ppb | 1.51 | 200.00 | 90 - | 110 | 91.8 | |
| 11 | B | 2 | 45 | 166.10 | ppb | 0.73 | 200.00 | 90 - | 110 | 83.1 | Fail |
| 23 | Na | 1 | 45 | 4835.00 | ppb | 1.24 | 5000.00 | 90 - | 110 | 96.7 | |
| 24 | Mg | 1 | 45 | 4709.00 | ppb | 1.67 | 5000.00 | 90 - | 110 | 94.2 | |
| 27 | Al | 1 | 45 | 5035.00 | ppb | 1.23 | 5000.00 | 90 - | 110 | 100.7 | |
| 39 | K | 1 | 45 | 4920.00 | ppb | 1.47 | 5000.00 | 90 - | 110 | 98.4 | |
| 44 | Ca | 2 | 45 | 4849.00 | ppb | 0.64 | 5000.00 | 90 - | 110 | 97.0 | |
| 47 | Ti | 1 | 45 | 204.00 | ppb | 0.92 | 200.00 | 90 - | 110 | 102.0 | |
| 51 | V | 1 | 45 | 192.30 | ppb | 1.34 | 200.00 | 90 - | 110 | 96.2 | |
| 52 | Cr | 1 | 45 | 195.30 | ppb | 2.02 | 200.00 | 90 - | 110 | 97.7 | |
| 55 | Mn | 1 | 45 | 203.40 | ppb | 2.05 | 200.00 | 90 - | 110 | 101.7 | |
| 56 | Fe | 1 | 72 | 5053.00 | ppb | 2.37 | 5000.00 | 90 - | 110 | 101.1 | |
| 59 | Co | 1 | 72 | 190.90 | ppb | 1.55 | 200.00 | 90 - | 110 | 95.5 | |
| 60 | Ni | 1 | 72 | 184.60 | ppb | 1.22 | 200.00 | 90 - | 110 | 92.3 | |
| 63 | Cu | 1 | 72 | 192.40 | ppb | 0.89 | 200.00 | 90 - | 110 | 96.2 | |
| 66 | Zn | 1 | 72 | 200.00 | ppb | 0.98 | 200.00 | 90 - | 110 | 100.0 | |
| 75 | As | 1 | 72 | 203.10 | ppb | 1.05 | 200.00 | 90 - | 110 | 101.6 | |
| 78 | Se | 1 | 72 | 202.30 | ppb | 0.85 | 200.00 | 90 - | 110 | 101.2 | |
| 88 | Sr | 2 | 115 | 201.90 | ppb | 0.91 | 200.00 | 90 - | 110 | 101.0 | |
| 95 | Mo | 2 | 115 | 180.60 | ppb | 0.97 | 200.00 | 90 - | 110 | 90.3 | |
| 107 | Ag | 2 | 115 | 185.30 | ppb | 1.35 | 200.00 | 90 - | 110 | 92.7 | |
| 111 | Cd | 2 | 115 | 189.40 | ppb | 1.03 | 200.00 | 90 - | 110 | 94.7 | |
| 118 | Sn | 2 | 115 | 192.50 | ppb | 1.87 | 200.00 | 90 - | 110 | 96.3 | |
| 121 | Sb | 2 | 115 | 196.70 | ppb | 1.14 | 200.00 | 90 - | 110 | 98.4 | |
| 137 | Ba | 2 | 115 | 195.10 | ppb | 0.73 | 200.00 | 90 - | 110 | 97.6 | |
| 205 | Tl | 2 | 209 | 201.90 | ppb | 2.00 | 200.00 | 90 - | 110 | 101.0 | |
| 208 | Pb | 2 | 209 | 191.20 | ppb | 0.47 | 200.00 | 90 - | 110 | 95.6 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -38250.51 | 1.03 | 22.89 | -167083.5 | 70 - | 120 | | ISFail |
| 45 | Sc | 1 | 118311.65 | 0.88 | 168636.11 | 70.2 | 70 - | 120 | | |
| 45 | Sc | 2 | 2978509.80 | 1.08 | 4411244.50 | 67.5 | 70 - | 120 | | ISFail |
| 72 | Ge | 1 | 71241.90 | 0.55 | 100925.69 | 70.6 | 70 - | 120 | | |
| 115 | In | 2 | 5126225.50 | 1.05 | 6534497.50 | 78.4 | 70 - | 120 | | |
| 209 | Bi | 2 | 4008607.50 | 0.13 | 4845836.50 | 82.7 | 70 - | 120 | | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\091LCVL.D\091LCVL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 08:05 pm | Sample Name: | **LCVL4-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCVLICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 9.47 | ppb | 1.74 | 5.00 | 70 - | 130 | 189.4 | Fail |
| 9 | Be | 2 | 45 | 1.03 | ppb | 8.28 | 1.00 | 70 - | 130 | 102.7 | |
| 11 | B | 2 | 45 | 17.36 | ppb | 1.55 | 20.00 | 70 - | 130 | 86.8 | |
| 23 | Na | 1 | 45 | 107.60 | ppb | 0.87 | 100.00 | 70 - | 130 | 107.6 | |
| 24 | Mg | 1 | 45 | 103.40 | ppb | 2.61 | 100.00 | 70 - | 130 | 103.4 | |
| 27 | Al | 1 | 45 | 117.20 | ppb | 3.33 | 100.00 | 70 - | 130 | 117.2 | |
| 39 | K | 1 | 45 | 113.40 | ppb | 5.02 | 100.00 | 70 - | 130 | 113.4 | |
| 44 | Ca | 2 | 45 | 140.30 | ppb | 3.24 | 100.00 | 70 - | 130 | 140.3 | Fail |
| 47 | Ti | 1 | 45 | 4.93 | ppb | 20.87 | 5.00 | 70 - | 130 | 98.7 | |
| 51 | V | 1 | 45 | 1.00 | ppb | 2.99 | 1.00 | 70 - | 130 | 99.7 | |
| 52 | Cr | 1 | 45 | 4.94 | ppb | 1.43 | 5.00 | 70 - | 130 | 98.8 | |
| 55 | Mn | 1 | 45 | 5.10 | ppb | 2.38 | 5.00 | 70 - | 130 | 102.0 | |
| 56 | Fe | 1 | 72 | 120.60 | ppb | 2.14 | 100.00 | 70 - | 130 | 120.6 | |
| 59 | Co | 1 | 72 | 4.69 | ppb | 2.18 | 5.00 | 70 - | 130 | 93.8 | |
| 60 | Ni | 1 | 72 | 4.51 | ppb | 4.02 | 5.00 | 70 - | 130 | 90.3 | |
| 63 | Cu | 1 | 72 | 4.70 | ppb | 2.12 | 5.00 | 70 - | 130 | 94.1 | |
| 66 | Zn | 1 | 72 | 5.07 | ppb | 3.91 | 5.00 | 70 - | 130 | 101.4 | |
| 75 | As | 1 | 72 | 5.10 | ppb | 2.75 | 5.00 | 70 - | 130 | 102.0 | |
| 78 | Se | 1 | 72 | 5.28 | ppb | 3.34 | 5.00 | 70 - | 130 | 105.7 | |
| 88 | Sr | 2 | 115 | 5.00 | ppb | 1.76 | 5.00 | 70 - | 130 | 100.0 | |
| 95 | Mo | 2 | 115 | 4.49 | ppb | 1.92 | 5.00 | 70 - | 130 | 89.8 | |
| 107 | Ag | 2 | 115 | 1.90 | ppb | 2.65 | 2.00 | 70 - | 130 | 95.1 | |
| 111 | Cd | 2 | 115 | 0.99 | ppb | 6.15 | 1.00 | 70 - | 130 | 99.2 | |
| 118 | Sn | 2 | 115 | 4.89 | ppb | 3.56 | 5.00 | 70 - | 130 | 97.9 | |
| 121 | Sb | 2 | 115 | 2.03 | ppb | 2.11 | 2.00 | 70 - | 130 | 101.3 | |
| 137 | Ba | 2 | 115 | 4.99 | ppb | 3.16 | 5.00 | 70 - | 130 | 99.8 | |
| 205 | Tl | 2 | 209 | 0.98 | ppb | 2.84 | 1.00 | 70 - | 130 | 98.3 | |
| 208 | Pb | 2 | 209 | 1.03 | ppb | 0.83 | 1.00 | 70 - | 130 | 103.1 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigl -808.14 | 10.51 | 22.89 | -3530.0 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 114453.98 | 0.21 | 168636.11 | 67.9 | 70 - | 120 | ISFail |
| 45 | Sc | 2 | 2929802.00 | 1.18 | 4411244.50 | 66.4 | 70 - | 120 | ISFail |
| 72 | Ge | 1 | 70050.45 | 1.13 | 100925.69 | 69.4 | 70 - | 120 | ISFail |
| 115 | In | 2 | 4953002.00 | 1.29 | 6534497.50 | 75.8 | 70 - | 120 | |
| 209 | Bi | 2 | 4003718.80 | 1.92 | 4845836.50 | 82.6 | 70 - | 120 | |

# CCB QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\092_CCB.D\092_CCB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 08:12 pm | Sample Name: | **CCB4-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCB ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL S | MDL Aq | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.130 | ppb | 5.27 | 2.00 | 2.00 | |
| 9 | Be | 2 | 45 | 0.023 | ppb | 48.60 | 0.40 | 0.30 | |
| 11 | B | 2 | 45 | 0.638 | ppb | 3.77 | 10.00 | 10.00 | |
| 23 | Na | 1 | 45 | 10.350 | ppb | 2.78 | 50.00 | ##### | |
| 24 | Mg | 1 | 45 | 2.180 | ppb | 19.06 | 50.00 | ##### | |
| 27 | Al | 1 | 45 | 10.710 | ppb | 9.01 | 50.00 | 10.00 | FailAq |
| 39 | K | 1 | 45 | 10.560 | ppb | 1.43 | 50.00 | ##### | |
| 44 | Ca | 2 | 45 | 23.000 | ppb | 8.86 | 50.00 | ##### | |
| 47 | Ti | 1 | 45 | -0.010 | ppb | 173.20 | 4.00 | 3.00 | |
| 51 | V | 1 | 45 | 0.025 | ppb | 8.08 | 4.00 | 3.00 | |
| 52 | Cr | 1 | 45 | 0.034 | ppb | 31.13 | 2.00 | 2.00 | |
| 55 | Mn | 1 | 45 | 0.111 | ppb | 22.26 | 2.00 | 3.00 | |
| 56 | Fe | 1 | 72 | 13.990 | ppb | 11.07 | 50.00 | 30.00 | |
| 59 | Co | 1 | 72 | 0.015 | ppb | 11.48 | 2.00 | 3.00 | |
| 60 | Ni | 1 | 72 | 0.031 | ppb | 16.01 | 2.00 | 3.00 | |
| 63 | Cu | 1 | 72 | 0.043 | ppb | 15.14 | 2.00 | 2.00 | |
| 66 | Zn | 1 | 72 | -0.031 | ppb | 10.91 | 4.00 | 2.00 | |
| 75 | As | 1 | 72 | 0.087 | ppb | 5.53 | 2.00 | 2.00 | |
| 78 | Se | 1 | 72 | 0.094 | ppb | 34.64 | 0.60 | 2.00 | |
| 88 | Sr | 2 | 115 | 0.143 | ppb | 2.47 | 4.00 | 3.00 | |
| 95 | Mo | 2 | 115 | 0.040 | ppb | 20.62 | 2.00 | 2.00 | |
| 107 | Ag | 2 | 115 | 0.026 | ppb | 22.11 | 0.40 | 1.00 | |
| 111 | Cd | 2 | 115 | 0.023 | ppb | 45.08 | 0.40 | 0.30 | |
| 118 | Sn | 2 | 115 | 0.020 | ppb | 11.13 | 20.00 | 3.00 | |
| 121 | Sb | 2 | 115 | 0.029 | ppb | 10.18 | 2.00 | 0.80 | |
| 137 | Ba | 2 | 115 | 0.035 | ppb | 24.17 | 2.00 | 3.00 | |
| 205 | Tl | 2 | 209 | 0.051 | ppb | 4.58 | 2.00 | 0.50 | |
| 208 | Pb | 2 | 209 | 0.048 | ppb | 3.87 | 0.40 | 0.30 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigh | -8.51 | 189.64 | 22.89 | -37.2 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 116262.53 | 1.20 | 168636.11 | 68.9 | 70 - 120 | ISFail |
| 45 | Sc | 2 | | 3078728.80 | 2.20 | 4411244.50 | 69.8 | 70 - 120 | ISFail |
| 72 | Ge | 1 | | 71209.09 | 1.02 | 100925.69 | 70.6 | 70 - 120 | |
| 115 | In | 2 | | 5207976.00 | 0.98 | 6534497.50 | 79.7 | 70 - 120 | |
| 209 | Bi | 2 | | 4106173.30 | 1.95 | 4845836.50 | 84.7 | 70 - 120 | |

# PB QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\093__PB.D\093__PB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 08:18 pm | Sample Name: | MB-75292 |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MBLKICPMS_TSDOD |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL | RL | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.128 | ppb | 12.98 | 2.0 | 8.00 | |
| 9 | Be | 2 | 45 | 0.014 | ppb | 21.65 | 0.4 | 1.20 | |
| 11 | B | 2 | 45 | 0.426 | ppb | 2.77 | 10.0 | 30.00 | |
| 23 | Na | 1 | 45 | 12.180 | ppb | 2.58 | 50.0 | ##### | |
| 24 | Mg | 1 | 45 | 3.507 | ppb | 16.49 | 50.0 | ##### | |
| 27 | Al | 1 | 45 | 5.259 | ppb | 19.08 | 50.0 | ##### | |
| 39 | K | 1 | 45 | 13.790 | ppb | 2.73 | 50.0 | ##### | |
| 44 | Ca | 2 | 45 | 25.270 | ppb | 6.10 | 50.0 | ##### | |
| 47 | Ti | 1 | 45 | 0.222 | ppb | 69.30 | 4.0 | 10.00 | |
| 51 | V | 1 | 45 | 0.020 | ppb | 15.45 | 4.0 | 10.00 | |
| 52 | Cr | 1 | 45 | 0.229 | ppb | 5.16 | 2.0 | 8.00 | |
| 55 | Mn | 1 | 45 | 0.306 | ppb | 8.32 | 2.0 | 8.00 | |
| 56 | Fe | 1 | 72 | 24.950 | ppb | 3.27 | 50.0 | ##### | |
| 59 | Co | 1 | 72 | -0.009 | ppb | 30.77 | 2.0 | 8.00 | |
| 60 | Ni | 1 | 72 | 0.620 | ppb | 2.96 | 2.0 | 8.00 | |
| 63 | Cu | 1 | 72 | 0.152 | ppb | 4.96 | 2.0 | 8.00 | |
| 66 | Zn | 1 | 72 | 2.066 | ppb | 1.33 | 4.0 | 10.00 | |
| 75 | As | 1 | 72 | 0.052 | ppb | 8.89 | 2.0 | 4.00 | |
| 78 | Se | 1 | 72 | -0.047 | ppb | 12.75 | 0.6 | 2.00 | |
| 88 | Sr | 2 | 115 | 0.091 | ppb | 5.77 | 4.0 | 10.00 | |
| 95 | Mo | 2 | 115 | 0.036 | ppb | 27.74 | 2.0 | 8.00 | |
| 107 | Ag | 2 | 115 | 0.021 | ppb | 22.38 | 0.4 | 0.80 | |
| 111 | Cd | 2 | 115 | -0.016 | ppb | 115.54 | 0.4 | 1.20 | |
| 118 | Sn | 2 | 115 | 4.074 | ppb | 2.93 | 20.0 | 40.00 | |
| 121 | Sb | 2 | 115 | 0.008 | ppb | 18.24 | 2.0 | 4.00 | |
| 137 | Ba | 2 | 115 | 0.038 | ppb | 6.06 | 2.0 | 8.00 | |
| 205 | Tl | 2 | 209 | 0.035 | ppb | 16.31 | 2.0 | 4.00 | |
| 208 | Pb | 2 | 209 | 0.061 | ppb | 2.96 | 0.4 | 1.20 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHig | -20.99 | 72.04 | 22.89 | -91.7 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 120373.62 | 1.31 | 168636.11 | 71.4 | 70 - 120 | |
| 45 | Sc | 2 | | 3139304.30 | 2.65 | 4411244.50 | 71.2 | 70 - 120 | |
| 72 | Ge | 1 | | 72606.69 | 0.39 | 100925.69 | 71.9 | 70 - 120 | |
| 115 | In | 2 | | 5345453.50 | 2.10 | 6534497.50 | 81.8 | 70 - 120 | |
| 209 | Bi | 2 | | 4250538.00 | 0.58 | 4845836.50 | 87.7 | 70 - 120 | |

# LCS QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\094_LCS.D\094_LCS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 08:24 pm | Sample Name: | **LCS-75292** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 191.20 | ppb | 0.86 | 200.00 | 80 - | 120 | 95.6 | |
| 9 | Be | 2 | 45 | 177.50 | ppb | 1.75 | 200.00 | 80 - | 120 | 88.8 | |
| 11 | B | 2 | 45 | 166.70 | ppb | 2.13 | 200.00 | 80 - | 120 | 83.4 | |
| 23 | Na | 1 | 45 | 4978.00 | ppb | 1.94 | 1000.00 | 80 - | 120 | 497.8 | Fail |
| 24 | Mg | 1 | 45 | 4855.00 | ppb | 1.00 | 1000.00 | 80 - | 120 | 485.5 | Fail |
| 27 | Al | 1 | 45 | 1024.00 | ppb | 1.06 | 1000.00 | 80 - | 120 | 102.4 | |
| 39 | K | 1 | 45 | 5113.00 | ppb | 0.72 | 1000.00 | 80 - | 120 | 511.3 | Fail |
| 44 | Ca | 2 | 45 | 4838.00 | ppb | 2.26 | 1000.00 | 80 - | 120 | 483.8 | Fail |
| 47 | Ti | 1 | 45 | 205.90 | ppb | 0.63 | 200.00 | 80 - | 120 | 103.0 | |
| 51 | V | 1 | 45 | 189.70 | ppb | 1.09 | 200.00 | 80 - | 120 | 94.9 | |
| 52 | Cr | 1 | 45 | 191.30 | ppb | 1.35 | 200.00 | 80 - | 120 | 95.7 | |
| 55 | Mn | 1 | 45 | 203.30 | ppb | 1.17 | 200.00 | 80 - | 120 | 101.7 | |
| 56 | Fe | 1 | 72 | 975.40 | ppb | 1.02 | 1000.00 | 80 - | 120 | 97.5 | |
| 59 | Co | 1 | 72 | 188.40 | ppb | 0.74 | 200.00 | 80 - | 120 | 94.2 | |
| 60 | Ni | 1 | 72 | 181.40 | ppb | 0.69 | 200.00 | 80 - | 120 | 90.7 | |
| 63 | Cu | 1 | 72 | 186.70 | ppb | 0.92 | 200.00 | 80 - | 120 | 93.4 | |
| 66 | Zn | 1 | 72 | 191.70 | ppb | 0.32 | 200.00 | 80 - | 120 | 95.9 | |
| 75 | As | 1 | 72 | 194.30 | ppb | 0.42 | 200.00 | 80 - | 120 | 97.2 | |
| 78 | Se | 1 | 72 | 194.50 | ppb | 0.76 | 200.00 | 80 - | 120 | 97.3 | |
| 88 | Sr | 2 | 115 | 198.30 | ppb | 1.58 | 200.00 | 80 - | 120 | 99.2 | |
| 95 | Mo | 2 | 115 | 180.20 | ppb | 1.52 | 200.00 | 80 - | 120 | 90.1 | |
| 107 | Ag | 2 | 115 | 183.50 | ppb | 1.56 | 200.00 | 80 - | 120 | 91.8 | |
| 111 | Cd | 2 | 115 | 183.20 | ppb | 1.62 | 200.00 | 80 - | 120 | 91.6 | |
| 118 | Sn | 2 | 115 | 198.40 | ppb | 1.70 | 200.00 | 80 - | 120 | 99.2 | |
| 121 | Sb | 2 | 115 | 192.80 | ppb | 1.58 | 200.00 | 80 - | 120 | 96.4 | |
| 137 | Ba | 2 | 115 | 197.60 | ppb | 0.70 | 200.00 | 80 - | 120 | 98.8 | |
| 205 | Tl | 2 | 209 | 205.30 | ppb | 1.37 | 200.00 | 80 - | 120 | 102.7 | |
| 208 | Pb | 2 | 209 | 192.40 | ppb | 1.52 | 200.00 | 80 - | 120 | 96.2 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -39768.09 | 1.27 | 22.89 | -173712.5 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 121522.96 | 0.59 | 168636.11 | 72.1 | 70 - | 120 | |
| 45 | Sc | 2 | 3117824.80 | 1.80 | 4411244.50 | 70.7 | 70 - | 120 | |
| 72 | Ge | 1 | 72444.83 | 0.84 | 100925.69 | 71.8 | 70 - | 120 | |
| 115 | In | 2 | 5286002.50 | 1.22 | 6534497.50 | 80.9 | 70 - | 120 | |
| 209 | Bi | 2 | 4142432.50 | 1.24 | 4845836.50 | 85.5 | 70 - | 120 | |

# LCS QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\095_LCS.D\095_LCS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 08:30 pm | Sample Name: | **LCSD-75292** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCSDICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Dil: | Undiluted |
| Instrument: | ICPMS3 | Total Dil: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 188.40 | ppb | 0.66 | 200.00 | 80 - | 120 | 94.2 | |
| 9 | Be | 2 | 45 | 177.40 | ppb | 1.17 | 200.00 | 80 - | 120 | 88.7 | |
| 11 | B | 2 | 45 | 168.40 | ppb | 1.90 | 200.00 | 80 - | 120 | 84.2 | |
| 23 | Na | 1 | 45 | 4883.00 | ppb | 0.93 | 1000.00 | 80 - | 120 | 488.3 | Fail |
| 24 | Mg | 1 | 45 | 4864.00 | ppb | 0.89 | 1000.00 | 80 - | 120 | 486.4 | Fail |
| 27 | Al | 1 | 45 | 1018.00 | ppb | 1.90 | 1000.00 | 80 - | 120 | 101.8 | |
| 39 | K | 1 | 45 | 5059.00 | ppb | 1.37 | 1000.00 | 80 - | 120 | 505.9 | Fail |
| 44 | Ca | 2 | 45 | 4833.00 | ppb | 1.45 | 1000.00 | 80 - | 120 | 483.3 | Fail |
| 47 | Ti | 1 | 45 | 201.60 | ppb | 4.54 | 200.00 | 80 - | 120 | 100.8 | |
| 51 | V | 1 | 45 | 190.10 | ppb | 1.34 | 200.00 | 80 - | 120 | 95.1 | |
| 52 | Cr | 1 | 45 | 192.70 | ppb | 1.65 | 200.00 | 80 - | 120 | 96.4 | |
| 55 | Mn | 1 | 45 | 205.20 | ppb | 0.82 | 200.00 | 80 - | 120 | 102.6 | |
| 56 | Fe | 1 | 72 | 980.50 | ppb | 1.31 | 1000.00 | 80 - | 120 | 98.1 | |
| 59 | Co | 1 | 72 | 190.00 | ppb | 1.29 | 200.00 | 80 - | 120 | 95.0 | |
| 60 | Ni | 1 | 72 | 183.60 | ppb | 1.04 | 200.00 | 80 - | 120 | 91.8 | |
| 63 | Cu | 1 | 72 | 189.20 | ppb | 1.38 | 200.00 | 80 - | 120 | 94.6 | |
| 66 | Zn | 1 | 72 | 194.20 | ppb | 0.77 | 200.00 | 80 - | 120 | 97.1 | |
| 75 | As | 1 | 72 | 194.50 | ppb | 0.85 | 200.00 | 80 - | 120 | 97.3 | |
| 78 | Se | 1 | 72 | 196.40 | ppb | 1.68 | 200.00 | 80 - | 120 | 98.2 | |
| 88 | Sr | 2 | 115 | 201.60 | ppb | 2.15 | 200.00 | 80 - | 120 | 100.8 | |
| 95 | Mo | 2 | 115 | 180.60 | ppb | 1.28 | 200.00 | 80 - | 120 | 90.3 | |
| 107 | Ag | 2 | 115 | 186.00 | ppb | 1.61 | 200.00 | 80 - | 120 | 93.0 | |
| 111 | Cd | 2 | 115 | 185.00 | ppb | 2.06 | 200.00 | 80 - | 120 | 92.5 | |
| 118 | Sn | 2 | 115 | 198.60 | ppb | 1.71 | 200.00 | 80 - | 120 | 99.3 | |
| 121 | Sb | 2 | 115 | 193.80 | ppb | 1.60 | 200.00 | 80 - | 120 | 96.9 | |
| 137 | Ba | 2 | 115 | 200.20 | ppb | 1.43 | 200.00 | 80 - | 120 | 100.1 | |
| 205 | Tl | 2 | 209 | 205.30 | ppb | 1.59 | 200.00 | 80 - | 120 | 102.7 | |
| 208 | Pb | 2 | 209 | 192.30 | ppb | 1.24 | 200.00 | 80 - | 120 | 96.2 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -39499.27 | 1.18 | 22.89 | -172538.3 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 117378.68 | 0.75 | 168636.11 | 69.6 | 70 - | 120 | ISFail |
| 45 | Sc | 2 | 3150003.00 | 1.91 | 4411244.50 | 71.4 | 70 - | 120 | |
| 72 | Ge | 1 | 70096.84 | 0.85 | 100925.69 | 69.5 | 70 - | 120 | ISFail |
| 115 | In | 2 | 5303895.50 | 0.91 | 6534497.50 | 81.2 | 70 - | 120 | |
| 209 | Bi | 2 | 4188152.00 | 1.19 | 4845836.50 | 86.4 | 70 - | 120 | |

# DT QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\098DT1.D\098DT1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 08:48 pm | Sample Name: | **1605144-13A SD** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | SD ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 25.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 25.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 8.98 | ppb | 1.04 | -593.58 | 90 - 110 | -7.6 | |
| 9 | Be | 2 | 45 | 0.46 | ppb | 2.27 | 2.12 | 90 - 110 | 109.5 | GOOD |
| 11 | B | 2 | 45 | 14.05 | ppb | 1.90 | 66.95 | 90 - 110 | 104.9 | GOOD |
| 23 | Na | 1 | 45 | 226.70 | ppb | 0.68 | 1123.00 | 90 - 110 | 100.9 | GOOD |
| 24 | Mg | 1 | 45 | 2529.00 | ppb | 0.38 | 13080.00 | 90 - 110 | 96.7 | GOOD |
| 27 | Al | 1 | 45 | 12610.00 | ppb | 1.43 | 65830.00 | 90 - 110 | 95.8 | GOOD |
| 39 | K | 1 | 45 | 2767.00 | ppb | 1.10 | 13950.00 | 90 - 110 | 99.2 | GOOD |
| 44 | Ca | 2 | 45 | 10120.00 | ppb | 2.56 | 49160.00 | 90 - 110 | 102.9 | GOOD |
| 47 | Ti | 1 | 45 | 61.15 | ppb | 2.28 | 320.30 | 90 - 110 | 95.5 | GOOD |
| 51 | V | 1 | 45 | 16.80 | ppb | 1.21 | 86.37 | 90 - 110 | 97.3 | GOOD |
| 52 | Cr | 1 | 45 | 11.21 | ppb | 0.90 | 56.34 | 90 - 110 | 99.5 | GOOD |
| 55 | Mn | 1 | 45 | 151.20 | ppb | 1.47 | 761.50 | 90 - 110 | 99.3 | GOOD |
| 56 | Fe | 1 | 72 | 10800.00 | ppb | 1.02 | 55130.00 | 90 - 110 | 98.0 | GOOD |
| 59 | Co | 1 | 72 | 3.69 | ppb | 1.37 | 18.96 | 90 - 110 | 97.3 | GOOD |
| 60 | Ni | 1 | 72 | 6.56 | ppb | 4.97 | 32.78 | 90 - 110 | 100.0 | GOOD |
| 63 | Cu | 1 | 72 | 10.47 | ppb | 0.29 | 52.35 | 90 - 110 | 100.0 | GOOD |
| 66 | Zn | 1 | 72 | 135.80 | ppb | 1.42 | 634.20 | 90 - 110 | 107.1 | GOOD |
| 75 | As | 1 | 72 | 17.74 | ppb | 1.49 | 86.88 | 90 - 110 | 102.1 | GOOD |
| 78 | Se | 1 | 72 | 3.25 | ppb | 6.44 | 15.50 | 90 - 110 | 104.9 | GOOD |
| 88 | Sr | 2 | 115 | 70.04 | ppb | 1.86 | 382.20 | 90 - 110 | 91.6 | GOOD |
| 95 | Mo | 2 | 115 | 0.32 | ppb | 7.95 | 1.89 | 90 - 110 | 84.7 | |
| 107 | Ag | 2 | 115 | 0.15 | ppb | 3.49 | 0.66 | 90 - 110 | 111.1 | |
| 111 | Cd | 2 | 115 | 0.41 | ppb | 4.23 | 1.86 | 90 - 110 | 108.9 | GOOD |
| 118 | Sn | 2 | 115 | 1.58 | ppb | 2.95 | 8.19 | 90 - 110 | 96.4 | GOOD |
| 121 | Sb | 2 | 115 | 0.70 | ppb | 4.37 | 3.69 | 90 - 110 | 95.2 | GOOD |
| 137 | Ba | 2 | 115 | 119.20 | ppb | 1.87 | 613.30 | 90 - 110 | 97.2 | GOOD |
| 205 | Tl | 2 | 209 | 0.17 | ppb | 6.19 | 0.71 | 90 - 110 | 118.0 | |
| 208 | Pb | 2 | 209 | 27.51 | ppb | 1.56 | 144.60 | 90 - 110 | 95.1 | GOOD |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHig | -593.58 | 5.65 | 22.89 | -2592.8 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | | 116763.95 | 0.55 | 168636.11 | 69.2 | 70 - | 120 | ISFail |
| 45 | Sc | 2 | | 3108935.80 | 2.49 | 4411244.50 | 70.5 | 70 - | 120 | |
| 72 | Ge | 1 | | 70839.27 | 0.31 | 100925.69 | 70.2 | 70 - | 120 | |
| 115 | In | 2 | | 5248727.50 | 1.41 | 6534497.50 | 80.3 | 70 - | 120 | |
| 209 | Bi | 2 | | 4199692.50 | 0.98 | 4845836.50 | 86.7 | 70 - | 120 | |

# PDS QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\108_PDS.D\108_PDS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 09:48 pm | Sample Name: | **1605144-13A PDS** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | PDS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 207.50 | ppb | 1.36 | -21126.95 | 200 | 75-125 | ###### | Fail |
| 9 | Be | 2 | 45 | 160.50 | ppb | 1.82 | 2.12 | 200 | 75-125 | 79.2 | |
| 11 | B | 2 | 45 | 213.40 | ppb | 2.52 | 66.95 | 200 | 75-125 | 73.2 | Fail |
| 23 | Na | 1 | 45 | 5939.00 | ppb | 1.82 | 1123.00 | 5000 | 75-125 | 96.3 | |
| 24 | Mg | 1 | 45 | 17520.00 | ppb | 1.67 | 13080.00 | 5000 | 75-125 | 88.8 | |
| 27 | Al | 1 | 45 | 67470.00 | ppb | 1.79 | 65830.00 | 5000 | 75-125 | 32.8 | Fail |
| 39 | K | 1 | 45 | 18290.00 | ppb | 1.67 | 13950.00 | 5000 | 75-125 | 86.8 | |
| 44 | Ca | 2 | 45 | 52880.00 | ppb | 2.37 | 49160.00 | 5000 | 75-125 | 74.4 | Fail |
| 47 | Ti | 1 | 45 | 504.80 | ppb | 3.39 | 320.30 | 200 | 75-125 | 92.3 | |
| 51 | V | 1 | 45 | 271.80 | ppb | 1.87 | 86.37 | 200 | 75-125 | 92.7 | |
| 52 | Cr | 1 | 45 | 243.50 | ppb | 1.32 | 56.34 | 200 | 75-125 | 93.6 | |
| 55 | Mn | 1 | 45 | 940.40 | ppb | 1.92 | 761.50 | 200 | 75-125 | 89.5 | |
| 56 | Fe | 1 | 72 | 58770.00 | ppb | 2.23 | 55130.00 | 5000 | 75-125 | 72.8 | Fail |
| 59 | Co | 1 | 72 | 202.10 | ppb | 1.41 | 18.96 | 200 | 75-125 | 91.6 | |
| 60 | Ni | 1 | 72 | 204.30 | ppb | 2.24 | 32.78 | 200 | 75-125 | 85.8 | |
| 63 | Cu | 1 | 72 | 224.10 | ppb | 0.91 | 52.35 | 200 | 75-125 | 85.9 | |
| 66 | Zn | 1 | 72 | 789.20 | ppb | 1.86 | 634.20 | 200 | 75-125 | 77.5 | |
| 75 | As | 1 | 72 | 275.70 | ppb | 1.68 | 86.88 | 200 | 75-125 | 94.4 | |
| 78 | Se | 1 | 72 | 206.70 | ppb | 2.00 | 15.50 | 200 | 75-125 | 95.6 | |
| 88 | Sr | 2 | 115 | 560.30 | ppb | 2.10 | 382.20 | 200 | 75-125 | 89.0 | |
| 95 | Mo | 2 | 115 | 178.30 | ppb | 1.79 | 1.89 | 200 | 75-125 | 88.2 | |
| 107 | Ag | 2 | 115 | 176.90 | ppb | 1.92 | 0.66 | 200 | 75-125 | 88.1 | |
| 111 | Cd | 2 | 115 | 176.70 | ppb | 1.85 | 1.86 | 200 | 75-125 | 87.4 | |
| 118 | Sn | 2 | 115 | 205.00 | ppb | 1.67 | 8.19 | 200 | 75-125 | 98.4 | |
| 121 | Sb | 2 | 115 | 203.20 | ppb | 1.89 | 3.69 | 200 | 75-125 | 99.8 | |
| 137 | Ba | 2 | 115 | 807.00 | ppb | 1.45 | 613.30 | 200 | 75-125 | 96.9 | |
| 205 | Tl | 2 | 209 | 206.70 | ppb | 0.82 | 0.71 | 200 | 75-125 | 103.0 | |
| 208 | Pb | 2 | 209 | 346.90 | ppb | 0.84 | 144.60 | 200 | 75-125 | 101.1 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -21126.95 | 4.72 | 22.89 | -92285.4 | 70 - 120 | ISFail |
| 45 | Sc | 1 | 112236.50 | 0.85 | 168636.11 | 66.6 | 70 - 120 | ISFail |
| 45 | Sc | 2 | 3202520.30 | 2.04 | 4411244.50 | 72.6 | 70 - 120 | |
| 72 | Ge | 1 | 66796.18 | 0.81 | 100925.69 | 66.2 | 70 - 120 | ISFail |
| 115 | In | 2 | 5455923.50 | 1.19 | 6534497.50 | 83.5 | 70 - 120 | |
| 209 | Bi | 2 | 4169810.80 | 1.29 | 4845836.50 | 86.0 | 70 - 120 | |

# MS/MSD QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\109_MS.D\109_MS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 09:54 pm | Sample Name: | **1605144-13A MS** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MS ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 205.10 | ppb | 1.62 | ######## | 200 | 80-120 | ###### | Fail |
| 9 | Be | 2 | 45 | 156.50 | ppb | 2.40 | 2.12 | 200 | 80-120 | 77.2 | Fail |
| 11 | B | 2 | 45 | 205.50 | ppb | 3.00 | 66.95 | 200 | 80-120 | 69.3 | Fail |
| 23 | Na | 1 | 45 | 5661.00 | ppb | 1.19 | 1123.00 | 1000 | 80-120 | 453.8 | Fail |
| 24 | Mg | 1 | 45 | 16920.00 | ppb | 0.95 | 13080.00 | 1000 | 80-120 | 384.0 | Fail |
| 27 | Al | 1 | 45 | 65760.00 | ppb | 2.57 | 65830.00 | 1000 | 80-120 | -7.0 | Fail |
| 39 | K | 1 | 45 | 18160.00 | ppb | 0.99 | 13950.00 | 1000 | 80-120 | 421.0 | Fail |
| 44 | Ca | 2 | 45 | 51160.00 | ppb | 3.01 | 49160.00 | 1000 | 80-120 | 200.0 | Fail |
| 47 | Ti | 1 | 45 | 498.10 | ppb | 1.59 | 320.30 | 200 | 80-120 | 88.9 | |
| 51 | V | 1 | 45 | 262.20 | ppb | 0.54 | 86.37 | 200 | 80-120 | 87.9 | |
| 52 | Cr | 1 | 45 | 234.10 | ppb | 1.44 | 56.34 | 200 | 80-120 | 88.9 | |
| 55 | Mn | 1 | 45 | 937.50 | ppb | 1.10 | 761.50 | 200 | 80-120 | 88.0 | |
| 56 | Fe | 1 | 72 | 53580.00 | ppb | 1.95 | 55130.00 | 1000 | 80-120 | -155.0 | Fail |
| 59 | Co | 1 | 72 | 193.30 | ppb | 0.77 | 18.96 | 200 | 80-120 | 87.2 | |
| 60 | Ni | 1 | 72 | 198.60 | ppb | 1.25 | 32.78 | 200 | 80-120 | 82.9 | |
| 63 | Cu | 1 | 72 | 222.90 | ppb | 0.82 | 52.35 | 200 | 80-120 | 85.3 | |
| 66 | Zn | 1 | 72 | 763.70 | ppb | 0.77 | 634.20 | 200 | 80-120 | 64.7 | Fail |
| 75 | As | 1 | 72 | 266.90 | ppb | 1.01 | 86.88 | 200 | 80-120 | 90.0 | |
| 78 | Se | 1 | 72 | 202.10 | ppb | 2.35 | 15.50 | 200 | 80-120 | 93.3 | |
| 88 | Sr | 2 | 115 | 552.30 | ppb | 2.74 | 382.20 | 200 | 80-120 | 85.0 | |
| 95 | Mo | 2 | 115 | 166.80 | ppb | 2.63 | 1.89 | 200 | 80-120 | 82.5 | |
| 107 | Ag | 2 | 115 | 171.00 | ppb | 3.15 | 0.66 | 200 | 80-120 | 85.2 | |
| 111 | Cd | 2 | 115 | 177.30 | ppb | 2.51 | 1.86 | 200 | 80-120 | 87.7 | |
| 118 | Sn | 2 | 115 | 191.10 | ppb | 2.91 | 8.19 | 200 | 80-120 | 91.5 | |
| 121 | Sb | 2 | 115 | 76.77 | ppb | 3.00 | 3.69 | 200 | 80-120 | 36.5 | Fail |
| 137 | Ba | 2 | 115 | 789.30 | ppb | 2.58 | 613.30 | 200 | 80-120 | 88.0 | |
| 205 | Tl | 2 | 209 | 201.50 | ppb | 2.92 | 0.71 | 200 | 80-120 | 100.4 | |
| 208 | Pb | 2 | 209 | 333.10 | ppb | 2.70 | 144.60 | 200 | 80-120 | 94.2 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -37867.16 | 1.39 | 22.89 | ######## | 70 - 120 | ISFail |
| 45 | Sc | 1 | 117034.37 | 0.50 | 168636.11 | 69.4 | 70 - 120 | ISFail |
| 45 | Sc | 2 | 3150471.00 | 3.35 | 4411244.50 | 71.4 | 70 - 120 | |
| 72 | Ge | 1 | 69389.35 | 0.77 | 100925.69 | 68.8 | 70 - 120 | ISFail |
| 115 | In | 2 | 5354111.00 | 3.09 | 6534497.50 | 81.9 | 70 - 120 | |
| 209 | Bi | 2 | 4177820.30 | 2.82 | 4845836.50 | 86.2 | 70 - 120 | |

# MS/MSD QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\110_MS.D\110_MS.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 10:00 pm | Sample Name: | **1605144-13A MSD** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | MSD ICPMS_TSDOD1 |
| Operator: | KL | Bench Diln: | 5.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | Auto Diln: | Undiluted |
| Instrument: | ICPMS3 | Total Diln: | 5.00 |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Ref Conc | Spike | Range | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 197.10 | ppb | 1.14 | ######## | 200 | 80-120 | ###### | Fail |
| 9 | Be | 2 | 45 | 151.80 | ppb | 1.52 | 2.12 | 200 | 80-120 | 74.8 | Fail |
| 11 | B | 2 | 45 | 202.90 | ppb | 2.02 | 66.95 | 200 | 80-120 | 68.0 | Fail |
| 23 | Na | 1 | 45 | 5365.00 | ppb | 2.41 | 1123.00 | 1000 | 80-120 | 424.2 | Fail |
| 24 | Mg | 1 | 45 | 15900.00 | ppb | 0.42 | 13080.00 | 1000 | 80-120 | 282.0 | Fail |
| 27 | Al | 1 | 45 | 60640.00 | ppb | 0.77 | 65830.00 | 1000 | 80-120 | -519.0 | Fail |
| 39 | K | 1 | 45 | 16850.00 | ppb | 1.21 | 13950.00 | 1000 | 80-120 | 290.0 | Fail |
| 44 | Ca | 2 | 45 | 46780.00 | ppb | 2.40 | 49160.00 | 1000 | 80-120 | -238.0 | Fail |
| 47 | Ti | 1 | 45 | 474.90 | ppb | 0.75 | 320.30 | 200 | 80-120 | 77.3 | Fail |
| 51 | V | 1 | 45 | 250.00 | ppb | 0.49 | 86.37 | 200 | 80-120 | 81.8 | |
| 52 | Cr | 1 | 45 | 224.00 | ppb | 0.51 | 56.34 | 200 | 80-120 | 83.8 | |
| 55 | Mn | 1 | 45 | 839.00 | ppb | 0.08 | 761.50 | 200 | 80-120 | 38.8 | Fail |
| 56 | Fe | 1 | 72 | 48770.00 | ppb | 0.58 | 55130.00 | 1000 | 80-120 | -636.0 | Fail |
| 59 | Co | 1 | 72 | 185.90 | ppb | 0.53 | 18.96 | 200 | 80-120 | 83.5 | |
| 60 | Ni | 1 | 72 | 190.10 | ppb | 0.41 | 32.78 | 200 | 80-120 | 78.7 | Fail |
| 63 | Cu | 1 | 72 | 210.00 | ppb | 0.26 | 52.35 | 200 | 80-120 | 78.8 | Fail |
| 66 | Zn | 1 | 72 | 696.90 | ppb | 0.38 | 634.20 | 200 | 80-120 | 31.3 | Fail |
| 75 | As | 1 | 72 | 254.20 | ppb | 0.91 | 86.88 | 200 | 80-120 | 83.7 | |
| 78 | Se | 1 | 72 | 194.50 | ppb | 1.90 | 15.50 | 200 | 80-120 | 89.5 | |
| 88 | Sr | 2 | 115 | 499.90 | ppb | 1.22 | 382.20 | 200 | 80-120 | 58.8 | Fail |
| 95 | Mo | 2 | 115 | 159.40 | ppb | 1.90 | 1.89 | 200 | 80-120 | 78.8 | Fail |
| 107 | Ag | 2 | 115 | 164.10 | ppb | 1.42 | 0.66 | 200 | 80-120 | 81.7 | |
| 111 | Cd | 2 | 115 | 169.10 | ppb | 1.70 | 1.86 | 200 | 80-120 | 83.6 | |
| 118 | Sn | 2 | 115 | 184.40 | ppb | 1.66 | 8.19 | 200 | 80-120 | 88.1 | |
| 121 | Sb | 2 | 115 | 72.04 | ppb | 1.79 | 3.69 | 200 | 80-120 | 34.2 | Fail |
| 137 | Ba | 2 | 115 | 725.20 | ppb | 2.03 | 613.30 | 200 | 80-120 | 56.0 | Fail |
| 205 | Tl | 2 | 209 | 196.40 | ppb | 2.10 | 0.71 | 200 | 80-120 | 97.8 | |
| 208 | Pb | 2 | 209 | 317.00 | ppb | 1.96 | 144.60 | 200 | 80-120 | 86.2 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -35166.70 | 3.43 | 22.89 | ######## | 70 | - | 120 | ISFail |
| 45 | Sc | 1 | 110448.47 | 1.03 | 168636.11 | 65.5 | 70 | - | 120 | ISFail |
| 45 | Sc | 2 | 3051043.30 | 1.75 | 4411244.50 | 69.2 | 70 | - | 120 | ISFail |
| 72 | Ge | 1 | 65720.63 | 1.56 | 100925.69 | 65.1 | 70 | - | 120 | ISFail |
| 115 | In | 2 | 5264997.00 | 1.16 | 6534497.50 | 80.6 | 70 | - | 120 | |
| 209 | Bi | 2 | 4189733.30 | 1.81 | 4845836.50 | 86.5 | 70 | - | 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\112CCV1.D\112CCV1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 10:12 pm | Sample Name: | **CCV5-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCV ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 172.70 | ppb | 1.53 | 200.00 | 90 - | 110 | 86.4 | Fail |
| 9 | Be | 2 | 45 | 167.70 | ppb | 3.65 | 200.00 | 90 - | 110 | 83.9 | Fail |
| 11 | B | 2 | 45 | 158.20 | ppb | 3.07 | 200.00 | 90 - | 110 | 79.1 | Fail |
| 23 | Na | 1 | 45 | 4593.00 | ppb | 0.76 | 5000.00 | 90 - | 110 | 91.9 | |
| 24 | Mg | 1 | 45 | 4577.00 | ppb | 1.39 | 5000.00 | 90 - | 110 | 91.5 | |
| 27 | Al | 1 | 45 | 4890.00 | ppb | 1.57 | 5000.00 | 90 - | 110 | 97.8 | |
| 39 | K | 1 | 45 | 4828.00 | ppb | 1.12 | 5000.00 | 90 - | 110 | 96.6 | |
| 44 | Ca | 2 | 45 | 4590.00 | ppb | 3.32 | 5000.00 | 90 - | 110 | 91.8 | |
| 47 | Ti | 1 | 45 | 196.60 | ppb | 1.07 | 200.00 | 90 - | 110 | 98.3 | |
| 51 | V | 1 | 45 | 187.90 | ppb | 1.12 | 200.00 | 90 - | 110 | 94.0 | |
| 52 | Cr | 1 | 45 | 189.00 | ppb | 1.77 | 200.00 | 90 - | 110 | 94.5 | |
| 55 | Mn | 1 | 45 | 202.80 | ppb | 1.14 | 200.00 | 90 - | 110 | 101.4 | |
| 56 | Fe | 1 | 72 | 4828.00 | ppb | 1.30 | 5000.00 | 90 - | 110 | 96.6 | |
| 59 | Co | 1 | 72 | 184.90 | ppb | 1.19 | 200.00 | 90 - | 110 | 92.5 | |
| 60 | Ni | 1 | 72 | 178.30 | ppb | 1.25 | 200.00 | 90 - | 110 | 89.2 | Fail |
| 63 | Cu | 1 | 72 | 185.30 | ppb | 1.23 | 200.00 | 90 - | 110 | 92.7 | |
| 66 | Zn | 1 | 72 | 198.80 | ppb | 1.94 | 200.00 | 90 - | 110 | 99.4 | |
| 75 | As | 1 | 72 | 200.80 | ppb | 1.09 | 200.00 | 90 - | 110 | 100.4 | |
| 78 | Se | 1 | 72 | 206.30 | ppb | 0.77 | 200.00 | 90 - | 110 | 103.2 | |
| 88 | Sr | 2 | 115 | 195.90 | ppb | 2.20 | 200.00 | 90 - | 110 | 98.0 | |
| 95 | Mo | 2 | 115 | 175.30 | ppb | 2.45 | 200.00 | 90 - | 110 | 87.7 | Fail |
| 107 | Ag | 2 | 115 | 179.70 | ppb | 2.42 | 200.00 | 90 - | 110 | 89.9 | Fail |
| 111 | Cd | 2 | 115 | 182.30 | ppb | 2.56 | 200.00 | 90 - | 110 | 91.2 | |
| 118 | Sn | 2 | 115 | 189.40 | ppb | 2.79 | 200.00 | 90 - | 110 | 94.7 | |
| 121 | Sb | 2 | 115 | 193.40 | ppb | 2.93 | 200.00 | 90 - | 110 | 96.7 | |
| 137 | Ba | 2 | 115 | 197.60 | ppb | 2.13 | 200.00 | 90 - | 110 | 98.8 | |
| 205 | Tl | 2 | 209 | 200.60 | ppb | 2.14 | 200.00 | 90 - | 110 | 100.3 | |
| 208 | Pb | 2 | 209 | 187.40 | ppb | 2.95 | 200.00 | 90 - | 110 | 93.7 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -33386.47 | 2.04 | 22.89 | -145836.7 | 70 - | 120 | | ISFail |
| 45 | Sc | 1 | 104854.91 | 0.50 | 168636.11 | 62.2 | 70 - | 120 | | ISFail |
| 45 | Sc | 2 | 2922918.80 | 1.58 | 4411244.50 | 66.3 | 70 - | 120 | | ISFail |
| 72 | Ge | 1 | 63637.11 | 0.95 | 100925.69 | 63.1 | 70 - | 120 | | ISFail |
| 115 | In | 2 | 5068153.50 | 0.98 | 6534497.50 | 77.6 | 70 - | 120 | | |
| 209 | Bi | 2 | 4049706.50 | 1.87 | 4845836.50 | 83.6 | 70 - | 120 | | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\114LCVL.D\114LCVL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 10:24 pm | Sample Name: | **LCVL5-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCVLICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 8.68 | ppb | 0.89 | 5.00 | 70 - | 130 | 173.5 | Fail |
| 9 | Be | 2 | 45 | 0.92 | ppb | 6.75 | 1.00 | 70 - | 130 | 92.1 | |
| 11 | B | 2 | 45 | 17.00 | ppb | 1.64 | 20.00 | 70 - | 130 | 85.0 | |
| 23 | Na | 1 | 45 | 103.60 | ppb | 0.18 | 100.00 | 70 - | 130 | 103.6 | |
| 24 | Mg | 1 | 45 | 99.40 | ppb | 1.12 | 100.00 | 70 - | 130 | 99.4 | |
| 27 | Al | 1 | 45 | 115.60 | ppb | 3.30 | 100.00 | 70 - | 130 | 115.6 | |
| 39 | K | 1 | 45 | 110.10 | ppb | 0.80 | 100.00 | 70 - | 130 | 110.1 | |
| 44 | Ca | 2 | 45 | 106.60 | ppb | 2.01 | 100.00 | 70 - | 130 | 106.6 | |
| 47 | Ti | 1 | 45 | 5.10 | ppb | 11.60 | 5.00 | 70 - | 130 | 102.0 | |
| 51 | V | 1 | 45 | 1.11 | ppb | 3.67 | 1.00 | 70 - | 130 | 111.4 | |
| 52 | Cr | 1 | 45 | 5.00 | ppb | 0.86 | 5.00 | 70 - | 130 | 100.0 | |
| 55 | Mn | 1 | 45 | 5.15 | ppb | 2.53 | 5.00 | 70 - | 130 | 102.9 | |
| 56 | Fe | 1 | 72 | 107.90 | ppb | 0.70 | 100.00 | 70 - | 130 | 107.9 | |
| 59 | Co | 1 | 72 | 4.68 | ppb | 1.23 | 5.00 | 70 - | 130 | 93.6 | |
| 60 | Ni | 1 | 72 | 4.51 | ppb | 3.73 | 5.00 | 70 - | 130 | 90.1 | |
| 63 | Cu | 1 | 72 | 4.75 | ppb | 0.74 | 5.00 | 70 - | 130 | 95.0 | |
| 66 | Zn | 1 | 72 | 5.11 | ppb | 3.55 | 5.00 | 70 - | 130 | 102.2 | |
| 75 | As | 1 | 72 | 5.25 | ppb | 2.49 | 5.00 | 70 - | 130 | 104.9 | |
| 78 | Se | 1 | 72 | 5.75 | ppb | 1.98 | 5.00 | 70 - | 130 | 115.0 | |
| 88 | Sr | 2 | 115 | 4.75 | ppb | 1.04 | 5.00 | 70 - | 130 | 95.1 | |
| 95 | Mo | 2 | 115 | 4.35 | ppb | 2.32 | 5.00 | 70 - | 130 | 87.1 | |
| 107 | Ag | 2 | 115 | 1.89 | ppb | 2.68 | 2.00 | 70 - | 130 | 94.3 | |
| 111 | Cd | 2 | 115 | 0.94 | ppb | 10.29 | 1.00 | 70 - | 130 | 94.1 | |
| 118 | Sn | 2 | 115 | 4.90 | ppb | 3.63 | 5.00 | 70 - | 130 | 98.0 | |
| 121 | Sb | 2 | 115 | 2.03 | ppb | 0.50 | 2.00 | 70 - | 130 | 101.5 | |
| 137 | Ba | 2 | 115 | 5.28 | ppb | 0.88 | 5.00 | 70 - | 130 | 105.5 | |
| 205 | Tl | 2 | 209 | 1.08 | ppb | 4.96 | 1.00 | 70 - | 130 | 108.3 | |
| 208 | Pb | 2 | 209 | 1.04 | ppb | 1.75 | 1.00 | 70 - | 130 | 103.8 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigl -712.84 | 6.55 | 22.89 | -3113.8 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 107145.51 | 0.23 | 168636.11 | 63.5 | 70 - | 120 | ISFail |
| 45 | Sc | 2 | 2990691.00 | 1.29 | 4411244.50 | 67.8 | 70 - | 120 | ISFail |
| 72 | Ge | 1 | 66632.87 | 0.34 | 100925.69 | 66.0 | 70 - | 120 | ISFail |
| 115 | In | 2 | 5258168.00 | 1.01 | 6534497.50 | 80.5 | 70 - | 120 | |
| 209 | Bi | 2 | 4347028.00 | 1.33 | 4845836.50 | 89.7 | 70 - | 120 | |

# CCB QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\115_CCB.D\115_CCB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 10:30 pm | Sample Name: | **CCB5-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCB ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL S | MDL Aq | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.136 | ppb | 5.92 | 2.00 | 2.00 | |
| 9 | Be | 2 | 45 | 0.036 | ppb | 6.25 | 0.40 | 0.30 | |
| 11 | B | 2 | 45 | 0.668 | ppb | 7.18 | 10.00 | 10.00 | |
| 23 | Na | 1 | 45 | 6.527 | ppb | 4.37 | 50.00 | ##### | |
| 24 | Mg | 1 | 45 | 1.478 | ppb | 7.78 | 50.00 | ##### | |
| 27 | Al | 1 | 45 | 8.465 | ppb | 10.61 | 50.00 | 10.00 | |
| 39 | K | 1 | 45 | 10.320 | ppb | 4.38 | 50.00 | ##### | |
| 44 | Ca | 2 | 45 | 6.934 | ppb | 1.96 | 50.00 | ##### | |
| 47 | Ti | 1 | 45 | -0.007 | ppb | 173.20 | 4.00 | 3.00 | |
| 51 | V | 1 | 45 | 0.063 | ppb | 7.62 | 4.00 | 3.00 | |
| 52 | Cr | 1 | 45 | 0.051 | ppb | 21.36 | 2.00 | 2.00 | |
| 55 | Mn | 1 | 45 | 0.132 | ppb | 14.78 | 2.00 | 3.00 | |
| 56 | Fe | 1 | 72 | 7.213 | ppb | 5.77 | 50.00 | 30.00 | |
| 59 | Co | 1 | 72 | 0.039 | ppb | 7.06 | 2.00 | 3.00 | |
| 60 | Ni | 1 | 72 | 0.037 | ppb | 20.88 | 2.00 | 3.00 | |
| 63 | Cu | 1 | 72 | 0.058 | ppb | 2.37 | 2.00 | 2.00 | |
| 66 | Zn | 1 | 72 | 0.099 | ppb | 11.64 | 4.00 | 2.00 | |
| 75 | As | 1 | 72 | 0.096 | ppb | 11.77 | 2.00 | 2.00 | |
| 78 | Se | 1 | 72 | 0.168 | ppb | 13.48 | 0.60 | 2.00 | |
| 88 | Sr | 2 | 115 | 0.065 | ppb | 5.83 | 4.00 | 3.00 | |
| 95 | Mo | 2 | 115 | 0.043 | ppb | 16.68 | 2.00 | 2.00 | |
| 107 | Ag | 2 | 115 | 0.043 | ppb | 17.11 | 0.40 | 1.00 | |
| 111 | Cd | 2 | 115 | 0.031 | ppb | 26.58 | 0.40 | 0.30 | |
| 118 | Sn | 2 | 115 | 0.046 | ppb | 8.26 | 20.00 | 3.00 | |
| 121 | Sb | 2 | 115 | 0.041 | ppb | 14.98 | 2.00 | 0.80 | |
| 137 | Ba | 2 | 115 | 0.080 | ppb | 9.27 | 2.00 | 3.00 | |
| 205 | Tl | 2 | 209 | 0.077 | ppb | 8.84 | 2.00 | 0.50 | |
| 208 | Pb | 2 | 209 | 0.069 | ppb | 2.30 | 0.40 | 0.30 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigh | -36.00 | 68.42 | 22.89 | -157.2 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 105745.16 | 0.46 | 168636.11 | 62.7 | 70 - 120 | ISFail |
| 45 | Sc | 2 | | 3022424.80 | 1.42 | 4411244.50 | 68.5 | 70 - 120 | ISFail |
| 72 | Ge | 1 | | 65665.65 | 0.63 | 100925.69 | 65.1 | 70 - 120 | ISFail |
| 115 | In | 2 | | 5227148.00 | 1.12 | 6534497.50 | 80.0 | 70 - 120 | |
| 209 | Bi | 2 | | 4190346.50 | 0.96 | 4845836.50 | 86.5 | 70 - 120 | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\120CCV1.D\120CCV1.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 11:00 pm | Sample Name: | CCV6-160526 |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCV ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 170.90 | ppb | 0.10 | 200.00 | 90 - | 110 | 85.5 | Fail |
| 9 | Be | 2 | 45 | 167.60 | ppb | 1.11 | 200.00 | 90 - | 110 | 83.8 | Fail |
| 11 | B | 2 | 45 | 155.20 | ppb | 2.05 | 200.00 | 90 - | 110 | 77.6 | Fail |
| 23 | Na | 1 | 45 | 4580.00 | ppb | 1.22 | 5000.00 | 90 - | 110 | 91.6 | |
| 24 | Mg | 1 | 45 | 4586.00 | ppb | 1.56 | 5000.00 | 90 - | 110 | 91.7 | |
| 27 | Al | 1 | 45 | 5047.00 | ppb | 2.06 | 5000.00 | 90 - | 110 | 100.9 | |
| 39 | K | 1 | 45 | 4940.00 | ppb | 1.24 | 5000.00 | 90 - | 110 | 98.8 | |
| 44 | Ca | 2 | 45 | 4760.00 | ppb | 1.57 | 5000.00 | 90 - | 110 | 95.2 | |
| 47 | Ti | 1 | 45 | 200.00 | ppb | 2.11 | 200.00 | 90 - | 110 | 100.0 | |
| 51 | V | 1 | 45 | 188.50 | ppb | 1.49 | 200.00 | 90 - | 110 | 94.3 | |
| 52 | Cr | 1 | 45 | 190.00 | ppb | 2.18 | 200.00 | 90 - | 110 | 95.0 | |
| 55 | Mn | 1 | 45 | 205.50 | ppb | 1.67 | 200.00 | 90 - | 110 | 102.8 | |
| 56 | Fe | 1 | 72 | 4926.00 | ppb | 1.61 | 5000.00 | 90 - | 110 | 98.5 | |
| 59 | Co | 1 | 72 | 184.50 | ppb | 1.47 | 200.00 | 90 - | 110 | 92.3 | |
| 60 | Ni | 1 | 72 | 179.10 | ppb | 2.23 | 200.00 | 90 - | 110 | 89.6 | Fail |
| 63 | Cu | 1 | 72 | 185.60 | ppb | 1.43 | 200.00 | 90 - | 110 | 92.8 | |
| 66 | Zn | 1 | 72 | 198.50 | ppb | 0.63 | 200.00 | 90 - | 110 | 99.3 | |
| 75 | As | 1 | 72 | 200.90 | ppb | 1.39 | 200.00 | 90 - | 110 | 100.5 | |
| 78 | Se | 1 | 72 | 208.50 | ppb | 1.91 | 200.00 | 90 - | 110 | 104.3 | |
| 88 | Sr | 2 | 115 | 199.90 | ppb | 1.52 | 200.00 | 90 - | 110 | 100.0 | |
| 95 | Mo | 2 | 115 | 177.10 | ppb | 1.59 | 200.00 | 90 - | 110 | 88.6 | Fail |
| 107 | Ag | 2 | 115 | 181.70 | ppb | 1.54 | 200.00 | 90 - | 110 | 90.9 | |
| 111 | Cd | 2 | 115 | 183.80 | ppb | 1.09 | 200.00 | 90 - | 110 | 91.9 | |
| 118 | Sn | 2 | 115 | 192.40 | ppb | 1.50 | 200.00 | 90 - | 110 | 96.2 | |
| 121 | Sb | 2 | 115 | 195.30 | ppb | 1.61 | 200.00 | 90 - | 110 | 97.7 | |
| 137 | Ba | 2 | 115 | 200.90 | ppb | 1.54 | 200.00 | 90 - | 110 | 100.5 | |
| 205 | Tl | 2 | 209 | 204.70 | ppb | 1.71 | 200.00 | 90 - | 110 | 102.4 | |
| 208 | Pb | 2 | 209 | 190.20 | ppb | 1.40 | 200.00 | 90 - | 110 | 95.1 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | -34121.10 | 0.94 | 22.89 | -149045.7 | 70 - | 120 | | ISFail |
| 45 | Sc | 1 | 108631.63 | 0.86 | 168636.11 | 64.4 | 70 - | 120 | | ISFail |
| 45 | Sc | 2 | 2975952.80 | 0.71 | 4411244.50 | 67.5 | 70 - | 120 | | ISFail |
| 72 | Ge | 1 | 65908.27 | 0.18 | 100925.69 | 65.3 | 70 - | 120 | | ISFail |
| 115 | In | 2 | 5216120.00 | 0.82 | 6534497.50 | 79.8 | 70 - | 120 | | |
| 209 | Bi | 2 | 4160339.00 | 1.63 | 4845836.50 | 85.9 | 70 - | 120 | | |

# CCV QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\122LCVL.D\122LCVL.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 11:12 pm | Sample Name: | **LCVL6-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | LCVLICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | Expected | QC Range(%) | | Rec(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 8.46 | ppb | 1.94 | 5.00 | 70 - | 130 | 169.2 | Fail |
| 9 | Be | 2 | 45 | 0.89 | ppb | 7.43 | 1.00 | 70 - | 130 | 88.6 | |
| 11 | B | 2 | 45 | 15.96 | ppb | 3.07 | 20.00 | 70 - | 130 | 79.8 | |
| 23 | Na | 1 | 45 | 99.03 | ppb | 1.10 | 100.00 | 70 - | 130 | 99.0 | |
| 24 | Mg | 1 | 45 | 99.23 | ppb | 1.25 | 100.00 | 70 - | 130 | 99.2 | |
| 27 | Al | 1 | 45 | 124.10 | ppb | 2.02 | 100.00 | 70 - | 130 | 124.1 | |
| 39 | K | 1 | 45 | 108.30 | ppb | 2.60 | 100.00 | 70 - | 130 | 108.3 | |
| 44 | Ca | 2 | 45 | 117.60 | ppb | 2.33 | 100.00 | 70 - | 130 | 117.6 | |
| 47 | Ti | 1 | 45 | 4.75 | ppb | 3.57 | 5.00 | 70 - | 130 | 95.0 | |
| 51 | V | 1 | 45 | 1.09 | ppb | 3.49 | 1.00 | 70 - | 130 | 109.3 | |
| 52 | Cr | 1 | 45 | 4.85 | ppb | 3.03 | 5.00 | 70 - | 130 | 97.0 | |
| 55 | Mn | 1 | 45 | 5.41 | ppb | 3.42 | 5.00 | 70 - | 130 | 108.2 | |
| 56 | Fe | 1 | 72 | 114.40 | ppb | 0.93 | 100.00 | 70 - | 130 | 114.4 | |
| 59 | Co | 1 | 72 | 4.65 | ppb | 3.10 | 5.00 | 70 - | 130 | 93.1 | |
| 60 | Ni | 1 | 72 | 4.56 | ppb | 2.44 | 5.00 | 70 - | 130 | 91.3 | |
| 63 | Cu | 1 | 72 | 4.73 | ppb | 2.76 | 5.00 | 70 - | 130 | 94.5 | |
| 66 | Zn | 1 | 72 | 5.41 | ppb | 3.96 | 5.00 | 70 - | 130 | 108.1 | |
| 75 | As | 1 | 72 | 5.22 | ppb | 2.61 | 5.00 | 70 - | 130 | 104.4 | |
| 78 | Se | 1 | 72 | 6.28 | ppb | 6.34 | 5.00 | 70 - | 130 | 125.6 | |
| 88 | Sr | 2 | 115 | 4.85 | ppb | 3.32 | 5.00 | 70 - | 130 | 97.1 | |
| 95 | Mo | 2 | 115 | 4.33 | ppb | 1.70 | 5.00 | 70 - | 130 | 86.6 | |
| 107 | Ag | 2 | 115 | 1.87 | ppb | 1.24 | 2.00 | 70 - | 130 | 93.7 | |
| 111 | Cd | 2 | 115 | 0.94 | ppb | 4.74 | 1.00 | 70 - | 130 | 94.2 | |
| 118 | Sn | 2 | 115 | 4.85 | ppb | 3.76 | 5.00 | 70 - | 130 | 97.0 | |
| 121 | Sb | 2 | 115 | 2.05 | ppb | 2.86 | 2.00 | 70 - | 130 | 102.6 | |
| 137 | Ba | 2 | 115 | 5.13 | ppb | 3.03 | 5.00 | 70 - | 130 | 102.5 | |
| 205 | Tl | 2 | 209 | 1.05 | ppb | 1.53 | 1.00 | 70 - | 130 | 104.5 | |
| 208 | Pb | 2 | 209 | 1.06 | ppb | 2.08 | 1.00 | 70 - | 130 | 106.0 | |

**ISTD Elements**

| Element | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigl -934.94 | 8.12 | 22.89 | -4084.0 | 70 - | 120 | ISFail |
| 45 | Sc | 1 | 109661.82 | 0.60 | 168636.11 | 65.0 | 70 - | 120 | ISFail |
| 45 | Sc | 2 | 3127420.00 | 2.30 | 4411244.50 | 70.9 | 70 - | 120 | |
| 72 | Ge | 1 | 68097.43 | 0.59 | 100925.69 | 67.5 | 70 - | 120 | ISFail |
| 115 | In | 2 | 5557938.50 | 1.78 | 6534497.50 | 85.1 | 70 - | 120 | |
| 209 | Bi | 2 | 4571607.00 | 2.67 | 4845836.50 | 94.3 | 70 - | 120 | |

# CCB QC Report

C:\ICPCHEM\1\DATA\16E26l01.B\123_CCB.D\123_CCB.D#

| | | | |
|---|---|---|---|
| Date Acquired: | May 26 2016 11:18 pm | Sample Name: | **CCB6-160526** |
| Acq. Method: | DHL_3Fe.M | Misc Info: | CCB ICPMS_TW |
| Operator: | KL | Diln Factor: | 1.00 |
| Last Cal. Update: | May 26 2016 12:20 pm | | |
| Instrument: | ICPMS3 | | |

**QC Elements**

| Element | | | | Conc. | | RSD(%) | MDL S | MDL Aq | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 2 | 45 | 0.101 | ppb | 14.60 | 2.00 | 2.00 | |
| 9 | Be | 2 | 45 | 0.033 | ppb | 9.96 | 0.40 | 0.30 | |
| 11 | B | 2 | 45 | 0.340 | ppb | 4.17 | 10.00 | 10.00 | |
| 23 | Na | 1 | 45 | 4.777 | ppb | 5.41 | 50.00 | ##### | |
| 24 | Mg | 1 | 45 | 1.600 | ppb | 14.10 | 50.00 | ##### | |
| 27 | Al | 1 | 45 | 11.340 | ppb | 4.62 | 50.00 | 10.00 | FailAq |
| 39 | K | 1 | 45 | 7.394 | ppb | 3.61 | 50.00 | ##### | |
| 44 | Ca | 2 | 45 | 10.130 | ppb | 6.74 | 50.00 | ##### | |
| 47 | Ti | 1 | 45 | -0.008 | ppb | 173.20 | 4.00 | 3.00 | |
| 51 | V | 1 | 45 | 0.060 | ppb | 9.44 | 4.00 | 3.00 | |
| 52 | Cr | 1 | 45 | 0.035 | ppb | 2.17 | 2.00 | 2.00 | |
| 55 | Mn | 1 | 45 | 0.142 | ppb | 1.04 | 2.00 | 3.00 | |
| 56 | Fe | 1 | 72 | 9.749 | ppb | 8.98 | 50.00 | 30.00 | |
| 59 | Co | 1 | 72 | 0.021 | ppb | 5.85 | 2.00 | 3.00 | |
| 60 | Ni | 1 | 72 | 0.028 | ppb | 9.85 | 2.00 | 3.00 | |
| 63 | Cu | 1 | 72 | 0.034 | ppb | 4.63 | 2.00 | 2.00 | |
| 66 | Zn | 1 | 72 | 0.028 | ppb | 21.74 | 4.00 | 2.00 | |
| 75 | As | 1 | 72 | 0.081 | ppb | 3.87 | 2.00 | 2.00 | |
| 78 | Se | 1 | 72 | 0.048 | ppb | 18.81 | 0.60 | 2.00 | |
| 88 | Sr | 2 | 115 | 0.080 | ppb | 1.21 | 4.00 | 3.00 | |
| 95 | Mo | 2 | 115 | 0.040 | ppb | 10.78 | 2.00 | 2.00 | |
| 107 | Ag | 2 | 115 | 0.030 | ppb | 15.35 | 0.40 | 1.00 | |
| 111 | Cd | 2 | 115 | 0.016 | ppb | 31.66 | 0.40 | 0.30 | |
| 118 | Sn | 2 | 115 | 0.039 | ppb | 6.67 | 20.00 | 3.00 | |
| 121 | Sb | 2 | 115 | 0.033 | ppb | 8.19 | 2.00 | 0.80 | |
| 137 | Ba | 2 | 115 | 0.060 | ppb | 18.59 | 2.00 | 3.00 | |
| 205 | Tl | 2 | 209 | 0.071 | ppb | 0.58 | 2.00 | 0.50 | |
| 208 | Pb | 2 | 209 | 0.071 | ppb | 3.76 | 0.40 | 0.30 | |

**ISTD Elements**

| Element | | | | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Li | 2 | RHigh | -18.89 | 172.28 | 22.89 | -82.5 | 70 - 120 | ISFail |
| 45 | Sc | 1 | | 108033.78 | 0.46 | 168636.11 | 64.1 | 70 - 120 | ISFail |
| 45 | Sc | 2 | | 3093215.80 | 0.93 | 4411244.50 | 70.1 | 70 - 120 | |
| 72 | Ge | 1 | | 67155.41 | 0.19 | 100925.69 | 66.5 | 70 - 120 | ISFail |
| 115 | In | 2 | | 5468202.50 | 0.78 | 6534497.50 | 83.7 | 70 - 120 | |
| 209 | Bi | 2 | | 4450011.00 | 1.12 | 4845836.50 | 91.8 | 70 - 120 | |

# ICP-MS4
# For

# DHL Work Order
# 1605121

# ICP-MS4_160520C
# For

# DHL Work Order
# 1605121

# Lab Data Review Check List
## EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

| PROJECT AND BATCH NUMBERS ARE LISTED ON THE RUN LOG | Run ID: ICP-MS4_160520C<br>SOP: MET-ICPMS-01 | | | |
|---|---|---|---|---|
| **Review Item** | **Yes** | **No** | **N/A** | **2nd Level Review** |
| **Data Folder Contents**<br>1. Is the Prep Batch Report included?<br>***Check the Prep Start/End Dates, Sample Amounts, Bottle #s*** | X | | | |
| 2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date?<br>***All standard/QC sample preparations shall be documented in LIMS*** | X | | | x |
| 3. Is the Run Log and instrument sequence included?<br>***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time*** | X | | | |

## Daily Demonstration of Performance

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.**

| Review Item | Frequency | Limits | Pass | Fail (List Batch/Sample) **See Run Log** | | 2nd Level Review |
|---|---|---|---|---|---|---|
| Tune | Before ICAL | RSD ≤ 5% / Peak Width@10% <0.9amu | X | | | |
| P/A Factor | Before ICAL | Increasing trend | X | | | x |
| Initial Calibration Curve (ICAL) (Blank + 4 Standards) | Prior to samples and when ICV fails | R ≥ 0.995 (DoD)<br>R ≥ 0.998 (6020A) | X | | | |
| **Review Item** | **Frequency** | **Limits** | **Pass** | **Fail** | **N/A** | **Review** |
| ICSA (N/A for Method 200.8+U) | After calibration & every 12 hours | < RL (except Mn & Zn) | X | | | x |
| ICSAB (N/A for Method 200.8+U) | After calibration & every 12 hours | 80-120% (correct for ICSA result) | X | | | |
| **Note: LCVLs and ICSA/ICSAB are N/A for Method 200.8 or project-specific exceptions** | | | | | | |
| ICV (Second Source Verification) | After ICAL | 90-110% | X | | | |
| ICB | After calibration | < MDL | X | | | |
| CCV | Every 10 samples | 90-110% | X | | | |
| CCB | Every 10 samples | < MDL (ALL + DoD) | X | | | |
| Internal Standards | Every sample and QC sample | > 70% (6020A)<br>60-125% (200.8)<br>30-120% (DoD) | X | | | |
| LCVL (6020A test code) | After ICAL, every 10 samples and end of run | 70-130% | X | | | |
| LCVL (All metals test codes except 200.8/6020A) | After ICAL and end of run | 70-130% | | | X | x |
| Method Blank (MB) | Every Batch | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | X | | | |
| Filter/TCLP/SPLP Blank | Filter-Dissolved only TCLP / SPLP | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | | | X | |
| Lab Control Sample (LCS) | Every Batch | 80-120% | X | | | |
| Lab Control Sample Dup (LCSD) | Every Batch | 80-120% | X | | | |
| LCSD - RPD | Every LCS/LCSD | 15 (H2O) / 20 (Soil) | X | | | |
| Matrix Spike/ Matrix Spike Duplicate (MS/MSD) | Every Batch | 80-120% | | X | | |
| MSD - RPD | Every MS/MSD | 15 (H2O) / 20 (Soil) | X | | | |
| Dilution Test (SD) - RPD | Every Batch | 10 | X | | | |
| Post Digestion Spike (PDS) | Every Batch | 75-125 / 80-120 (6020A) | X | | | |

# Lab Data Review Check List
## EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

| Review Item | Criteria | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|---|
| **Sample Analysis**<br>1. Are all sample hold times met? | 6 months | X | | | x |
| 2. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed? | All results > high point of ICAL must be diluted | X | | | |
| **3. Are ALL reported analytes and reported results > MDL highlighted by the analyst?** | | X | **Confirm with analyst if LIMS result does not match Labcore** | | |

## VARIANCE REPORT

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.**

| NON-CONFORMANCES / VARIANCE | Criteria | Yes | No | N/A | 2nd Level |
|---|---|---|---|---|---|
| 1. Are all non-conformances and corrective actions included and noted? | All deviations from the method and SOP that affect data quality | X | | | x |
| 2. Does the variance require approval by the Technical Director/General Manager/QA Manager? | | X | | | |

TECHNICAL DIRECTOR / QA MANAGER APPROVAL
SIGNATURE AND DATE STAMP:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

| VARIANCE ITEM | REASON | CORRECTIVE ACTION |
|---|---|---|
| __ CCV out of control (± 10%) | __ Carryover from previous run | __ Reanalyze QC to confirm |
| __ CCB out of control (> MDL / >½ RL) | __ Cross contamination | __ Recalibrate |
| __ MB out of control (> RL / >½ RL) | __ Lab Artifact | __ Reprep/Reanalyze sample |
| __ LCS __ LCSD out of control (± 20%) | __ Prep Spike error (describe) | __ Reprep/Reanalyze Batch |
| __ MS __ MSD out of control (± 20%) | __ Matrix Effect | __ Reanalyze Batch/Sample/QC |
| __ RPD out of control for MS/MSD (15/25) | __ High Levels of Target Metals | __ Verify reagents are clean |
| __ Internal Standard(s) out of control (see Method) | __ Insufficient sample for QC | __ Reanalyze sample to confirm |
| __ No MS/MSD prepared - LCS/LCSD used instead | __ Digestion/Prep Error | __ Sample results ND w/ dilution |
| __ Missing QC (other than MS/MSD) | __ Analytical Error | __ Client notified and approved |
| __ QC sample(s) was mis-spiked | __ Client Request | __ Flag Data/ Case Narative |
| __ ICSA/ICSAB missing or out of control (± 20%) | | __ Accept data |
| __ LCVL out of control (± 30%) | | __ Cal Std high and sample ND |
| __ Other (describe below) | __ Other (describe below) | __ Other (describe below) |

**General Comments and Impact on Data**: See Run Log

Analyst: _____ Date of Completion: 05/23/2016

Second-Level Review: Janice Whitt Date Stamp: 5/23/2016

REVIEWED BY
By Janice Whitt at 2:57:44 PM, 5/23/2016

**DHL Analytical, Inc.**

**Run ID:** **ICP-MS4_160520C** **Run No.:** 85935

**Analytical Run Date:** 5/20/2016 **InstrumentID:** ICP-MS4

**Analyst:** Ryan Oliver

| SampID | DF | TestCode | SampType | Batch ID | Analysis Date/Time | Q | Comments |
|---|---|---|---|---|---|---|---|
| BLANK STD 1 | 1 | ICPMS_TWDOD | CAL | R85935 | 5/20/2016 10:52:00 AM | | |
| L2-160520 | 1 | ICPMS_TWDOD | CAL | R85935 | 5/20/2016 10:54:00 AM | | |
| L-160520 | 1 | ICPMS_TWDOD | CAL | R85935 | 5/20/2016 10:56:00 AM | | |
| 10X-160520 | 1 | ICPMS_TWDOD | CAL | R85935 | 5/20/2016 10:58:00 AM | | |
| 5X-160520 | 1 | ICPMS_TWDOD | CAL | R85935 | 5/20/2016 11:00:00 AM | | |
| 2X-160520 | 1 | ICPMS_TWDOD | CAL | R85935 | 5/20/2016 11:02:00 AM | | |
| H-160520 | 1 | ICPMS_TWDOD | CAL | R85935 | 5/20/2016 11:04:00 AM | | |
| H2-160520 | 1 | ICPMS_TWDOD | CAL | R85935 | 5/20/2016 11:06:00 AM | | |
| ICSA-160520 | 1 | ICPMS_TWDOD | ICSA | R85935 | 5/20/2016 11:14:00 AM | | |
| ICSAB-160520 | 1 | ICPMS_TWDOD | ICSB | R85935 | 5/20/2016 11:16:00 AM | | |
| ICV-160520 | 1 | ICPMS_TWDOD | ICV | R85935 | 5/20/2016 11:28:00 AM | | |
| LCVL-160520 | 1 | ICPMS_TWDOD | LCVL | R85935 | 5/20/2016 11:40:00 AM | | |
| ICB-160520 | 1 | ICPMS_TWDOD | ICB | R85935 | 5/20/2016 11:45:00 AM | | |
| CCV2-160520 | 1 | ICPMS_TWDOD | CCV | R85935 | 5/20/2016 1:06:00 PM | | |
| LCVL2-160520 | 1 | ICPMS_TWDOD | LCVL | R85935 | 5/20/2016 1:11:00 PM | | |
| CCB2-160520 | 1 | ICPMS_TWDOD | CCB | R85935 | 5/20/2016 1:20:00 PM | | |
| MB-75180 | 1 | ICPMS_TWDOD | MBLK | 75180 | 5/20/2016 1:22:00 PM | | |
| LCS-75180 | 1 | ICPMS_TWDOD | LCS | 75180 | 5/20/2016 1:24:00 PM | | |
| LCSD-75180 | 1 | ICPMS_TWDOD | LCSD | 75180 | 5/20/2016 1:26:00 PM | | |
| 1605097-27A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:30:00 PM | | |
| 1605097-27A SD | 5 | ICPMS_TWDOD | SD | 75180 | 5/20/2016 1:32:00 PM | | |
| 1605047-31A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:34:00 PM | | |
| 1605047-32A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:36:00 PM | | |
| 1605047-38A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:38:00 PM | | |
| 1605071-28A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:40:00 PM | | |
| 1605071-29A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:42:00 PM | | |
| 1605074-33A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:44:00 PM | | |
| 1605074-34A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:46:00 PM | | |
| 1605074-35A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:48:00 PM | | |
| 1605096-36A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 1:50:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160520- | 10 PPM Ag+Sb PDS | | 11/18/2016 |
| MET-PDS-160520- | 10 PPM CUSTOM PDS SOLUTI | | 11/18/2016 |
| MET-PDS-160520- | 250 PPM Naturals+Al+Fe PDS | | 11/18/2016 |

**DHL Analytical, Inc.**

**Run ID: ICP-MS4_160520C** **Run No.:** 85935

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1605097-27A PDS | 1 | ICPMS_TWDOD | PDS | 75180 | 5/20/2016 1:52:00 PM | | |
| 1605097-27A MS | 1 | ICPMS_TWDOD | MS | 75180 | 5/20/2016 1:54:00 PM | | S-flag Pb- Low |
| 1605097-27A MSD | 1 | ICPMS_TWDOD | MSD | 75180 | 5/20/2016 1:56:00 PM | | |
| CCV3-160520 | 1 | ICPMS_TWDOD | CCV | R85935 | 5/20/2016 1:58:00 PM | | |
| LCVL3-160520 | 1 | ICPMS_TWDOD | LCVL | R85935 | 5/20/2016 2:04:00 PM | | |
| CCB3-160520 | 1 | ICPMS_TWDOD | CCB | R85935 | 5/20/2016 2:06:00 PM | | |
| 1605096-37A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 2:08:00 PM | | |
| 1605096-44A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 2:10:00 PM | | |
| 1605097-30A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 2:12:00 PM | | |
| 1605098-42A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 2:14:00 PM | | |
| 1605121-46A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 2:16:00 PM | | |
| 1605121-47A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 2:18:00 PM | | |
| 1605135-46A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 2:20:00 PM | | |
| 1605144-16A | 1 | ICPMS_TWDOD | SAMP | 75180 | 5/20/2016 2:22:00 PM | | |
| CCV4-160520 | 1 | ICPMS_TWDOD | CCV | R85935 | 5/20/2016 2:24:00 PM | | |
| LCVL4-160520 | 1 | ICPMS_TWDOD | LCVL | R85935 | 5/20/2016 2:41:00 PM | | |
| CCB4-160520 | 1 | ICPMS_TWDOD | CCB | R85935 | 5/20/2016 2:48:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160520- | 10 PPM Ag+Sb PDS | | 11/18/2016 |
| MET-PDS-160520- | 10 PPM CUSTOM PDS SOLUTI | | 11/18/2016 |
| MET-PDS-160520- | 250 PPM Naturals+Al+Fe PDS | | 11/18/2016 |

# Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\160520.b

## Acquisition Order

| # | Sequence Flow |
|---|---|
| 1 | Calibration Standards |
| 2 | Unknown Samples |
| 3 | Blank Samples |

**Calibration Standards:**

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 1 | CCB | | CAL ICPMS_TW | 1101 | |
| 2 | CCB | | CAL ICPMS_TW | 1101 | |
| 3 | CCB | | CAL ICPMS_TW | 1101 | |
| 4 | CCB | | CAL ICPMS_TW | 1102 | |
| 5 | CCB | | CAL ICPMS_TW | 1102 | |
| 6 | CCB | | CAL ICPMS_TW | 1102 | |
| 7 | CCB | | CAL ICPMS_TW | 1102 | |
| 8 | CCB | | CAL ICPMS_TW | 1103 | |
| 9 | CCB | | CAL ICPMS_TW | 1103 | |
| 10 | CCB | | CAL ICPMS_TW | 1103 | |
| 11 | CCB | | CAL ICPMS_TW | 1103 | |
| 12 | CalBlk | BLANK STD 1 | CAL ICPMS_TW | 2101 | |
| 13 | CalStd | L2-160520 | CAL ICPMS_TW | 2102 | |
| 14 | CalStd | L-160520 | CAL ICPMS_TW | 2103 | |
| 15 | CalStd | 10X-160520 | CAL ICPMS_TW | 2104 | |
| 16 | CalStd | 5X-160520 | CAL ICPMS_TW | 2105 | |
| 17 | CalStd | 2X-160520 | CAL ICPMS_TW | 2106 | |
| 18 | CalStd | H-160520 | CAL ICPMS_TW | 2107 | |
| 19 | CalStd | H2-160520 | CAL ICPMS_TW | 2108 | |
| 20 | ICB | BLANK | CCB ICPMS_TW | 1101 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | 1 | | |
| 13 | 2 | | |
| 14 | 3 | | |
| 15 | 4 | | |
| 16 | 5 | | |
| 17 | 6 | | |
| 18 | 7 | | |
| 19 | 8 | | |

# Sample List

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 20 | | | | | |
| 21 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 22 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 23 | ICSA | ICSA-160520 | ICSAICPMS_TW | 2109 | |
| 24 | ICSB | ICSAB-160520 | ICSBICPMS_TW | 2110 | |
| 25 | ICB | BLANK | CCB ICPMS_TW | 1101 | |
| 26 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 27 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 28 | ICV | ICV-160520 | ICV ICPMS_TW | 2111 | |
| 29 | ICB | ICB-160520 | ICB ICPMS_TW | 1101 | |
| 30 | ICB | ICB-160520 | ICB ICPMS_TW | 1103 | |
| 31 | LLICV | LCVL-160520 | LCVLICPMS_TW | 2112 | |
| 32 | ICB | ICB-160520 | ICB ICPMS_TW | 1102 | |
| 33 | ICB | ICB-160520 | ICB ICPMS_TW | 1103 | |
| 34 | PB_W | MB-75206 | MBLK200.8_EPA | 2201 | |
| 35 | LCS_W | LCS-75206 | LCS 200.8_EPA | 2202 | |
| 36 | LCS_W | LCSD-75206 | LCSD200.8_EPA | 2203 | |
| 37 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 38 | AllRef | 1605161-13A | SAMP200.8_EPA | 2204 | |
| 39 | SD | 1605161-13A SD | SD 200.8_EPA | 2205 | |
| 40 | SAMP_W | 1605161-01A | SAMP200.8_EPA | 2206 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 21 | | | |
| 22 | | | |
| 23 | | | |
| 24 | | | |
| 25 | | | |
| 26 | | | |
| 27 | | | |
| 28 | | | |
| 29 | | | |
| 30 | | | |
| 31 | | | |
| 32 | | | |
| 33 | | | |
| 34 | | 1 | |
| 35 | | 1 | |
| 36 | | 1 | |
| 37 | | | |
| 38 | | 1 | |
| 39 | | 5 | |
| 40 | | 1 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 41 | SAMP_W | 1605161-02A | SAMP200.8_EPA | 2207 | |
| 42 | SAMP_W | 1605161-03A | SAMP200.8_EPA | 2208 | |
| 43 | SAMP_W | 1605161-04A | SAMP200.8_EPA | 2209 | |
| 44 | SAMP_W | 1605161-05A | SAMP200.8_EPA | 2210 | |
| 45 | SAMP_W | 1605161-06A | SAMP200.8_EPA | 2211 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 46 | SAMP_W | 1605161-07A | SAMP200.8_EPA | 2212 |
| 47 | SAMP_W | 1605161-08A | SAMP200.8_EPA | 2301 |
| 48 | SAMP_W | 1605161-09A | SAMP200.8_EPA | 2302 |
| 49 | PDS | 1605161-13A PDS | PDS 200.8_EPA | 2303 |
| 50 | MS_W | 1605161-13A MS | MS 200.8_EPA | 2304 |
| 51 | MS_W | 1605161-13A MSD | MSD 200.8_EPA | 2305 |
| 52 | CCV | CCV1-160520 | CCV ICPMS_TW | 1207 |
| 53 | CCB | CCB1-160520 | CCB ICPMS_TW | 1102 |
| 54 | LLCCV | LCVL1-160520 | LCVLICPMS_TW | 2112 |
| 55 | CCB | CCB1-160520 | CCB ICPMS_TW | 1103 |
| 56 | SAMP_W | 1605161-10A | SAMP200.8_EPA | 2306 |
| 57 | SAMP_W | 1605161-11A | SAMP200.8_EPA | 2307 |
| 58 | SAMP_W | 1605161-12A | SAMP200.8_EPA | 2308 |
| 59 | SAMP_W | 1605161-13A | SAMP200.8_EPA | 2309 |
| 60 | SAMP_W | 1605161-14A | SAMP200.8_EPA | 2310 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 41 | | 1 | |
| 42 | | 1 | |
| 43 | | 1 | |
| 44 | | 1 | |
| 45 | | 1 | |
| 46 | | 1 | |
| 47 | | 1 | |
| 48 | | 1 | |
| 49 | | 1 | |
| 50 | | 1 | |
| 51 | | 1 | |
| 52 | | | |
| 53 | | | |
| 54 | | | |
| 55 | | | |
| 56 | | 1 | |
| 57 | | 1 | |
| 58 | | 1 | |
| 59 | | 1 | |
| 60 | | 1 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 61 | SAMP_W | 1605161-15A | SAMP200.8_EPA | 2311 | |
| 62 | SAMP_W | 1605161-16A | SAMP200.8_EPA | 2312 | |
| 63 | SAMP_W | 1605161-17A | SAMP200.8_EPA | 2401 | |
| 64 | SAMP_W | 1605161-18A | SAMP200.8_EPA | 2402 | |
| 65 | SAMP_W | 1605161-19A | SAMP200.8_EPA | 2403 | |
| 66 | CCV | CCV2-160520 | CCV ICPMS_TW | 1207 | |
| 67 | CCB | CCB2-160520 | CCB ICPMS_TW | 1102 | |
| 68 | LLCCV | LCVL2-160520 | LCVLICPMS_TW | 2112 | |
| 69 | CCB | CCB2-160520 | CCB ICPMS_TW | 1103 | |
| 70 | PB_W | MB-75180 | MBLKICPMS_TWDOD | 3101 | |
| 71 | LCS_W | LCS-75180 | LCS ICPMS_TWDOD | 3102 | |
| 72 | LCS_W | LCSD-75180 | LCSDICPMS_TWDOD | 3103 | |
| 73 | CCB | RINSE | CCB ICPMS_TW | 1101 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 74 | AllRef | 1605097-27A | SAMPICPMS_TWDOD | 3104 |
| 75 | SD | 1605097-27A SD | SD ICPMS_TWDOD | 3105 |
| 76 | SAMP_W | 1605047-31A | SAMPICPMS_TWDOD | 3106 |
| 77 | SAMP_W | 1605047-32A | SAMPICPMS_TWDOD | 3107 |
| 78 | SAMP_W | 1605047-38A | SAMPICPMS_TWDOD | 3108 |
| 79 | SAMP_W | 1605071-28A | SAMPICPMS_TWDOD | 3109 |
| 80 | SAMP_W | 1605071-29A | SAMPICPMS_TWDOD | 3110 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 61 | | 1 | |
| 62 | | 1 | |
| 63 | | 1 | |
| 64 | | 1 | |
| 65 | | 1 | |
| 66 | | | |
| 67 | | | |
| 68 | | | |
| 69 | | | |
| 70 | | 1 | |
| 71 | | 1 | |
| 72 | | 1 | |
| 73 | | | |
| 74 | | 1 | |
| 75 | | 5 | |
| 76 | | 1 | |
| 77 | | 1 | |
| 78 | | 1 | |
| 79 | | 1 | |
| 80 | | 1 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 81 | SAMP_W | 1605074-33A | SAMPICPMS_TWDOD | 3111 | |
| 82 | SAMP_W | 1605074-34A | SAMPICPMS_TWDOD | 3112 | |
| 83 | SAMP_W | 1605074-35A | SAMPICPMS_TWDOD | 3201 | |
| 84 | SAMP_W | 1605096-36A | SAMPICPMS_TWDOD | 3202 | |
| 85 | PDS | 1605097-27A PDS | PDS ICPMS_TWDOD | 3203 | |
| 86 | MS_W | 1605097-27A MS | MS ICPMS_TWDOD | 3204 | |
| 87 | MS_W | 1605097-27A MSD | MSD ICPMS_TWDOD | 3205 | |
| 88 | CCV | CCV3-160520 | CCV ICPMS_TW | 1207 | |
| 89 | CCB | CCB3-160520 | CCB ICPMS_TW | 1102 | |
| 90 | LLCCV | LCVL3-160520 | LCVLICPMS_TW | 2512 | |
| 91 | CCB | CCB3-160520 | CCB ICPMS_TW | 1103 | |
| 92 | SAMP_W | 1605096-37A | SAMPICPMS_TWDOD | 3206 | |
| 93 | SAMP_W | 1605096-44A | SAMPICPMS_TWDOD | 3207 | |
| 94 | SAMP_W | 1605097-30A | SAMPICPMS_TWDOD | 3208 | |
| 95 | SAMP_W | 1605098-42A | SAMPICPMS_TWDOD | 3209 | |
| 96 | SAMP_W | 1605121-46A | SAMPICPMS_TWDOD | 3210 | |
| 97 | SAMP_W | 1605121-47A | SAMPICPMS_TWDOD | 3211 | |
| 98 | SAMP_W | 1605135-46A | SAMPICPMS_TWDOD | 3212 | |
| 99 | SAMP_W | 1605144-16A | SAMPICPMS_TWDOD | 2501 | |
| 100 | CCV | CCV4-160520 | CCV ICPMS_TW | 1207 | |

# Sample List

| # | Level | Dilution | Skip |
|---|---|---|---|
| 81 | | 1 | |
| 82 | | 1 | |
| 83 | | 1 | |
| 84 | | 1 | |
| 85 | | 1 | |
| 86 | | 1 | |
| 87 | | 1 | |
| 88 | | | |
| 89 | | | |
| 90 | | | |
| 91 | | | |
| 92 | | 1 | |
| 93 | | 1 | |
| 94 | | 1 | |
| 95 | | 1 | |
| 96 | | 1 | |
| 97 | | 1 | |
| 98 | | 1 | |
| 99 | | 1 | |
| 100 | | | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 101 | CCB | CCB4-160520 | CCB ICPMS_TW | 1102 | |
| 102 | LLCCV | LCVL4-160520 | LCVLICPMS_TW | 2512 | |
| 103 | CCB | CCB4-160520 | CCB ICPMS_TW | 1103 | |
| 104 | PB_W | MB-75233 | MBLKICPMS_TW | 3301 | |
| 105 | LCS_W | LCS-75233 | LCS ICPMS_TW | 3302 | |
| 106 | LCS_W | LCSD-75233 | LCSDICPMS_TW | 3303 | |
| 107 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 108 | AllRef | 1605172-04C | SAMPICPMS_TW | 3304 | |
| 109 | SD | 1605172-04C SD | SD ICPMS_TW | 3305 | |
| 110 | SAMP_W | 1605169-01C | SAMPICPMS_TW | 3306 | |
| 111 | SAMP_W | 1605183-01C | SAMP6020A_W | 3307 | |
| 112 | SAMP_W | 1605173-01E | SAMPICPMS_TW | 3308 | |
| 113 | SAMP_W | 1605173-02E | SAMPICPMS_TW | 3309 | |
| 114 | SAMP_W | 1605173-03E | SAMPICPMS_TW | 3310 | |
| 115 | SAMP_W | 1605173-04E | SAMPICPMS_TW | 3311 | |
| 116 | SAMP_W | 1604114-25B | SAMPICPMS_TW | 3312 | |
| 117 | SAMP_W | 1604114-26B | SAMPICPMS_TW | 3401 | |
| 118 | SAMP_W | 1604114-27B | SAMPICPMS_TW | 3402 | |
| 119 | PDS | 1605172-04C PDS | PDS ICPMS_TW | 3403 | |
| 120 | MS_W | 1605172-04C MS | MS ICPMS_TW | 3404 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 101 | | | |
| 102 | | | |
| 103 | | | |
| 104 | | 1 | |
| 105 | | 1 | |
| 106 | | 1 | |
| 107 | | | |

# Sample List

| | | |
|---|---|---|
| 108 | | 1 |
| 109 | | 5 |
| 110 | | 1 |
| 111 | | 1 |
| 112 | | 1 |
| 113 | | 1 |
| 114 | | 1 |
| 115 | | 1 |
| 116 | | 1 |
| 117 | | 1 |
| 118 | | 1 |
| 119 | | 1 |
| 120 | | 1 |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 121 | MS_W | 1605172-04C MSD | MSD ICPMS_TW | 3405 | |
| 122 | CCV | CCV5-160520 | CCV ICPMS_TW | 1207 | |
| 123 | CCB | CCB5-160520 | CCB ICPMS_TW | 1102 | |
| 124 | CCB | CCB5-160520 | CCB ICPMS_TW | 1102 | |
| 125 | CCB | CCB5-160520 | CCB ICPMS_TW | 1102 | |
| 126 | CCB | CCB5-160520 | CCB ICPMS_TW | 1103 | |
| 127 | CCB | CCB5-160520 | CCB ICPMS_TW | 1103 | |
| 128 | CCB | CCB5-160520 | CCB ICPMS_TW | 1103 | |
| 129 | LLCCV | LCVL5-160520 | LCVLICPMS_TW | 2511 | |
| 130 | CCB | CCB5-160520 | CCB ICPMS_TW | 1103 | |
| 131 | SAMP_W | 1605172-01C | SAMPICPMS_TW | 3406 | |
| 132 | SAMP_W | 1605172-02C | SAMPICPMS_TW | 3407 | |
| 133 | SAMP_W | 1605172-03C | SAMPICPMS_TW | 3408 | |
| 134 | SAMP_W | 1605181-01A | SAMPICPMS_TW | 3409 | |
| 135 | CCV | CCV6-160520 | CCV ICPMS_TW | 1207 | |
| 136 | CCB | CCB6-160520 | CCB ICPMS_TW | 1102 | |
| 137 | CCB | CCB6-160520 | CCB ICPMS_TW | 1102 | |
| 138 | CCB | CCB6-160520 | CCB ICPMS_TW | 1103 | |
| 139 | CCB | CCB6-160520 | CCB ICPMS_TW | 1103 | |
| 140 | LLCCV | LCVL6-160520 | LCVLICPMS_TW | 2511 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 121 | | 1 | |
| 122 | | | |
| 123 | | | |
| 124 | | | |
| 125 | | | |
| 126 | | | |
| 127 | | | |
| 128 | | | |
| 129 | | | |
| 130 | | | |
| 131 | | 1 | |
| 132 | | 1 | |
| 133 | | 1 | |
| 134 | | 1 | |
| 135 | | | |

# Sample List

136
137
138
139
140

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 141 | CCB | CCB6-160520 | CCB ICPMS_TW | 1102 | |
| 142 | CCB | CCB6-160520 | CCB ICPMS_TW | 1102 | |
| 143 | CCB | CCB6-160520 | CCB ICPMS_TW | 1102 | |
| 144 | CCB | CCB6-160520 | CCB ICPMS_TW | 1103 | |
| 145 | CCB | CCB6-160520 | CCB ICPMS_TW | 1103 | |
| 146 | CCB | CCB6-160520 | CCB ICPMS_TW | 1103 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 141 | | | |
| 142 | | | |
| 143 | | | |
| 144 | | | |
| 145 | | | |
| 146 | | | |

**Unknown Samples:**

**Blank Samples:**

## Periodic Block

| # | Block Name | Period | Unit | Reset By |
|---|---|---|---|---|

## Sublist

**DHL Analytical, Inc.**

# PREP BATCH REPORT



Prep Start Date: **5/19/2016 8:30:00 AM**
Digestion:
Prep End Date:

Prep Batch **75180** Prep Code: **3005ADOD** Technician: **Cassie Van Dyke**

Prep Factor Units: **mL/mL**

| Equipment List |
|---|
| Hot Block #4 |
| Thermometer #71 |
| Pipette #P-09-Spikes |
| Pipette #P-01 Samples |

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605047-31A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605047-32A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605047-38A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605071-28A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605071-29A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605074-33A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605074-34A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605074-35A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605096-36A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605096-37A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605096-44A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605097-27A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | MS + MSD |
| 1605097-30A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605098-42A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605121-46A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605121-47A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605135-46A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605144-16A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| LCS-75180 | Aqueous | | 50 | 50 | 1.000 | of | |
| LCSD-75180 | Aqueous | | 50 | 50 | 1.000 | of | |
| MB-75180 | Aqueous | | 50 | 50 | 1.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 9641 | Hydrochloric Acid (trace metal grade) | 1 | ml | 09/22/2025 |
| 10056 | Digestion Vessels | 1 | ml | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 1 | ml | 01/10/2026 |

9:54 - 15:33

REVIEWED BY
By Janice Whitt at 2:45:04 PM, 5/23/2016

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160406-1 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.1 | 07/05/2016 |
| MET-SPIKE-160511-1 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 0.2 | 08/09/2016 |
| MET-SPIKE-160511-2 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 0.2 | 08/09/2016 |

5/19/16

# MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

| | | | | |
|---|---|---|---|---|
| **ANALYST:** | CVD | **BALANCE #:** | 26 | |
| **TEST DATE:** | 05/19/2016 | **Water is at Room Temperatue (70-73°F) / (21-23°C)** | | |
| **PIPETTER LAB ID:** | P-01, P-09 | **WATER TEMP (°C):** | **21-23°C** | |
| **TEST VOLUME:** | See Below | **WATER DENSITY:** | **0.998** | **(0.9980-0.9976)** |

| | |
|---|---|
| **REFERENCE:** | DoD QSM 5.0 |
| **# of REPLICATES:** | 3 |
| **LABWARE TYPE:** | MECHANICAL VOLUMETRIC PIPETTE |
| **FREQUENCY:** | DAILY BEFORE USE |
| **MEAN CRITERIA:** | ± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME) |
| **RSD CRITERIA:** | < 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS) |

| | |
|---|---|
| **1) RECORD ROOM AND WATER TEMPERATURE** | **% TEST VOL = Volume of H2O at °C/Test Volume * 100** |
| **2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.** | **%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100** |
| **3) WEIGH 3 REPLICATES AT THE TEST VOLUME.** | |
| **4) DETERMINE TOTAL WT.** | |
| **5) CALCULATE VOLUME OF H2O AT °C (in mL)** | **VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY** |

| | | | | | BIAS | PRECISION |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-01** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 5.00 | 4.9999 | 4.9899 | 99.80 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 4.9998 | 4.9898 | 99.80 | | |
| 3 | | 4.9952 | 4.9852 | 99.70 | | |
| **AVERAGE (MEAN)** | | **4.998** | **4.988** | **99.77** | | **0.054** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-09** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 0.20 | 0.2007 | 0.2003 | 100.15 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 0.2025 | 0.2021 | 101.05 | | |
| 3 | | 0.2027 | 0.2023 | 101.15 | | |
| **AVERAGE (MEAN)** | | **0.202** | **0.202** | **100.78** | | **0.545** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID:** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | | | | | | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | | | | | |
| 3 | | | | | | |
| **AVERAGE (MEAN)** | | | | | | |
| | | | | | | |

5/19/16
Analyst / Date

REVIEWED BY
By Janice Whitt at 2:45:08 PM, 5/23/2016
Review and Approved / Date

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/19/2016 8:30:00 AM**
Digestion: **Start: 5/19/2016 9:54:00 AM / Stop: 5/19/2016 3:33:00 PM**
Prep End Date: **5/19/2016 3:41:51 PM**

Prep Batch **75180** Prep Code: **3005ADOD** Technician: **Cassie Van Dyke**

Prep Factor Units: **mL/mL**

**Equipment List**

Hot Block #4
Thermometer #71
Pipette #P-09-Spikes
Pipette #P-01 Samples

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605047-31A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605047-32A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605047-38A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605071-28A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605071-29A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605074-33A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605074-34A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605074-35A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605096-36A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605096-37A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605096-44A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605097-27A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605097-27A MS | Equip Blank | | 50 | 50 | 1.000 | of | |
| 1605097-27A MSD | Equip Blank | | 50 | 50 | 1.000 | of | |
| 1605097-27A PDS | Equip Blank | | 50 | 50 | 1.000 | of | |
| 1605097-27A SD | Equip Blank | | 50 | 50 | 1.000 | of | |
| 1605097-30A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605098-42A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605121-46A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605121-47A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605135-46A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| 1605144-16A | Equip Blank | | 50 | 50 | 1.000 | 1 of 1 | |
| LCS-75180 | Aqueous | | 50 | 50 | 1.000 | of | |
| LCSD-75180 | Aqueous | | 50 | 50 | 1.000 | of | |
| MB-75180 | Aqueous | | 50 | 50 | 1.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 9641 | Hydrochloric Acid (trace metal grade) | 1 | ml | 09/22/2025 |
| 10056 | Digestion Vessels | 1 | ml | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 1 | ml | 01/10/2026 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160406-1 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.1 | 07/05/2016 |
| MET-SPIKE-160511-1 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 0.2 | 08/09/2016 |
| MET-SPIKE-160511-2 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 0.2 | 08/09/2016 |

***REVIEWED BY***
*By Janice Whitt at 2:45:11 PM, 5/23/2016*

# MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

| | | | |
|---|---|---|---|
| **ANALYST:** | RO | **BALANCE #:** | 30 |
| **TEST DATE:** | 05/20/2016 | **Water is at Room Temperatue (70-73°F) / (21-23°C)** | |
| **PIPETTER LAB ID:** | See Below | **WATER TEMP (°C):** | 21-23°C |
| **TEST VOLUME:** | See Below | **WATER DENSITY:** | 0.998 (0.9980-0.9976) |

| | |
|---|---|
| **REFERENCE:** | DoD QSM 5.0 |
| **# of REPLICATES:** | 3 |
| **LABWARE TYPE:** | MECHANICAL VOLUMETRIC PIPETTE |
| **FREQUENCY:** | DAILY BEFORE USE |
| **MEAN CRITERIA:** | ± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME) |
| **RSD CRITERIA:** | < 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS) |

| | |
|---|---|
| **1) RECORD ROOM AND WATER TEMPERATURE** | **% TEST VOL = Volume of H2O at °C/Test Volume * 100** |
| **2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.** | **%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100** |
| **3) WEIGH 3 REPLICATES AT THE TEST VOLUME.** | |
| **4) DETERMINE TOTAL WT.** | |
| **5) CALCULATE VOLUME OF H2O AT °C (in mL)** | **VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY** |

| | | | | | BIAS | PRECISION |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-31** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 4.00 | 3.9957 | 3.9877 | 99.69 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 3.9968 | 3.9888 | 99.72 | | |
| 3 | | 3.9926 | 3.9846 | 99.62 | | |
| **AVERAGE (MEAN)** | | **3.995** | **3.987** | **99.68** | | **0.055** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-21** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 1.00 | 0.9998 | 0.9978 | 99.78 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 0.9976 | 0.9956 | 99.56 | | |
| 3 | | 0.9977 | 0.9957 | 99.57 | | |
| **AVERAGE (MEAN)** | | **0.998** | **0.996** | **99.64** | | **0.124** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-39** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 0.500 | 0.4996 | 0.4986 | 99.72 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 0.4999 | 0.4989 | 99.78 | | |
| 3 | | 0.4989 | 0.4979 | 99.58 | | |
| **AVERAGE (MEAN)** | | **0.499** | **0.498** | **99.69** | | **0.103** |
| | | | | | | **PASS** |

5/20/16

Analyst / Date

REVIEWED BY
By Janice Whitt at 2:45:14 PM, 5/23/2016

Review and Approved / Date

# Calibration Summary Report

**Date Acquired** 5/20/2016 10:52
**Data Batch** 160520.b

| Level | Calibration File Name |
|---|---|
| 1 | 012CALB.d |
| 2 | 013CALS.d |
| 3 | 014CALS.d |
| 4 | 015CALS.d |
| 5 | 016CALS.d |
| 6 | 017CALS.d |
| 7 | 018CALS.d |
| 8 | 019CALS.d |

**Calibration Table**

| Ele | Corr Coef | Curve Equation |
|---|---|---|
| As | 1.0000 | y = 0.0014 * x + 1.9173E-004 |
| Be | 1.0000 | y = 6.7611E-005 * x + 4.0753E-006 |
| B | 1.0000 | y = 2.3935E-005 * x + 6.6671E-005 |
| Na | 0.9999 | y = 8.2020E-004 * x + 0.0425 |
| Mg | 0.9999 | y = 4.1094E-004 * x + 0.0010 |
| Al | 1.0000 | y = 1.4756E-004 * x + 3.6385E-004 |
| K | 0.9999 | y = 3.9899E-004 * x + 0.0507 |
| Ca | 1.0000 | y = 2.2762E-005 * x + 2.4734E-004 |
| Ti | 1.0000 | y = 1.5550E-004 * x + 2.4548E-006 |
| V | 1.0000 | y = 0.0053 * x + 0.0030 |
| Cr | 1.0000 | y = 0.0064 * x + 0.0010 |
| Mn | 1.0000 | y = 0.0034 * x + 1.2334E-004 |
| Fe | 1.0000 | y = 0.0054 * x + 0.0075 |
| Co | 1.0000 | y = 0.0134 * x + 1.6697E-004 |
| Ni | 1.0000 | y = 0.0037 * x + 5.9595E-004 |
| Cu | 1.0000 | y = 0.0102 * x + 0.0033 |
| Zn | 1.0000 | y = 0.0017 * x + 3.7275E-004 |
| Se | 1.0000 | y = 7.9937E-005 * x + 9.8739E-005 |
| Sr | 1.0000 | y = 6.4021E-004 * x + 3.3178E-005 |
| Mo | 1.0000 | y = 6.0622E-004 * x + 4.8584E-006 |
| Ag | 0.9999 | y = 0.0019 * x + 7.8947E-006 |
| Cd | 1.0000 | y = 2.8420E-004 * x + 1.5075E-006 |
| Sn | 1.0000 | y = 5.9872E-004 * x + 6.4692E-005 |
| Sb | 1.0000 | y = 9.1882E-004 * x + 2.1127E-005 |
| Tl | 1.0000 | y = 0.0017 * x + 2.3075E-006 |
| Ba | 1.0000 | y = 2.9131E-004 * x + 3.1689E-006 |
| Pb | 1.0000 | y = 0.0023 * x + 2.2673E-005 |
| Li | 1.0000 | y = 5.2630E-005 * x + 1.4809E-005 |

REVIEWED BY
By Janice Whitt at 2:45:18 PM, 5/23/2016

# Calibration Summary Report

**Level 7 Cal**

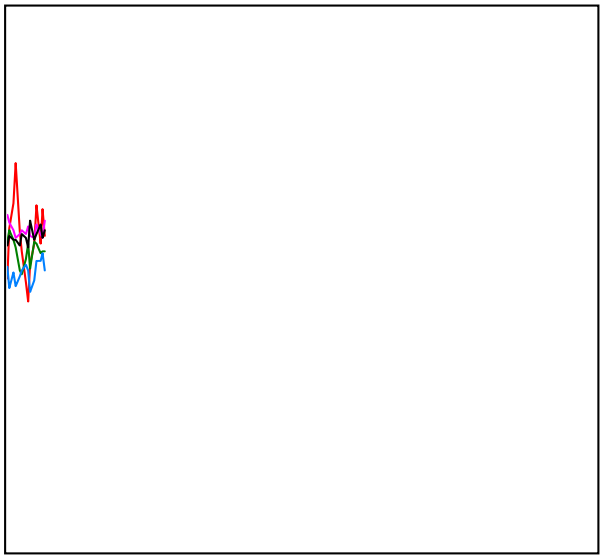
| Ele | Conc | Calc | %Rec |
|---|---|---|---|
| As | 500 | 494.27 | 99 |
| Be | 500 | 507.25 | 101 |
| B | 500 | 512.43 | 102 |
| Na | 10000 | 10274.86 | 103 |
| Mg | 10000 | 10243.18 | 102 |
| Al | 10000 | 9999.22 | 100 |
| K | 10000 | 10218.11 | 102 |
| Ca | 10000 | 9805.32 | 98 |
| Ti | 500 | 501.17 | 100 |
| V | 500 | 507.40 | 101 |
| Cr | 500 | 509.33 | 102 |
| Mn | 500 | 509.95 | 102 |
| Fe | 10000 | 9967.53 | 100 |
| Co | 500 | 512.00 | 102 |
| Ni | 500 | 505.16 | 101 |
| Cu | 500 | 508.82 | 102 |
| Zn | 500 | 506.99 | 101 |
| Se | 500 | 497.89 | 100 |
| Sr | 500 | 505.73 | 101 |
| Mo | 500 | 498.28 | 100 |
| Ag | 500 | 497.63 | 100 |
| Cd | 500 | 496.13 | 99 |
| Sn | 500 | 494.23 | 99 |
| Sb | 500 | 501.03 | 100 |
| Tl | 500 | 509.21 | 102 |
| Ba | 500 | 495.71 | 99 |
| Pb | 500 | 503.45 | 101 |

**Level 8 Cal**

| Ele | Conc | Calc | %Rec |
|---|---|---|---|
| As | 2000 | 2001.88 | 100 |
| Be | 2000 | 1997.64 | 100 |
| B | 2000 | 1996.74 | 100 |
| Na | 25000 | 24858.90 | 101 |
| Mg | 25000 | 24867.65 | 101 |
| K | 25000 | 24896.46 | 100 |
| Ca | 25000 | 25100.13 | 100 |
| Ti | 2000 | 1999.82 | 100 |
| V | 2000 | 1997.81 | 100 |
| Cr | 2000 | 1997.17 | 100 |
| Mn | 2000 | 1996.76 | 100 |
| Co | 2000 | 1995.80 | 100 |
| Ni | 2000 | 1997.77 | 100 |
| Cu | 2000 | 1996.80 | 100 |
| Zn | 2000 | 1997.23 | 100 |
| Se | 2000 | 2000.32 | 100 |
| Sr | 2000 | 1998.31 | 100 |
| Mo | 2000 | 2000.69 | 100 |
| Cd | 2000 | 2001.01 | 100 |
| Sn | 2000 | 2001.88 | 100 |
| Tl | 2000 | 1997.65 | 100 |
| Ba | 2000 | 2001.53 | 100 |
| Pb | 2000 | 1999.22 | 100 |
| Li | 2000 | 1995.26 | 100 |

REVIEWED BY
By Janice Whitt at 2:45:21 PM, 5/23/2016

# Current Signal



| Mass | Range | Count | Avg. Count | RSD [%] |
|---|---|---|---|---|
| 51 | 200 | 116 | 114.9 | 11.79 |
| 59 | 2000 | 1105 | 1102.9 | 4.38 |
| 89 | 2000 | 1032 | 1025.3 | 4.05 |
| 140 | 5000 | 3033 | 2949.5 | 2.29 |
| 205 | 5000 | 2959 | 2890.5 | 2.51 |
| 156/140 | 1 | 0.462 % | 0.345 % | 35.57 |
| 75 | 20 | 3 | 4.9 | 44.86 |
| 78 | 20 | 3 | 7.9 | 39.26 |
| 56 | 5000 | 2420 | 2326.3 | 2.61 |
| 31 | 100 | 56 | 49.2 | 9.44 |
| **Integration Time [sec]** | | 0.10 | | |

**## Plasma Parameters ##**

| | | | |
|---|---|---|---|
| RF Power | 1550 | Carrier Gas | 0.55 |
| RF Matching | 1.90 | Option Gas | 0.0 |
| Smpl Depth | 8.0 | Nebulizer Pump | 0.10 |
| S/C Temp | 2 | | |

**## Lenses Parameters ##**

| | | | |
|---|---|---|---|
| Extract 1 | 0.0 | Omega Lens | 6.6 |
| Extract 2 | -200.0 | Cell Entrance | -40 |
| Omega Bias | -80 | Cell Exit | -60 |
| Deflect | 2.4 | | |

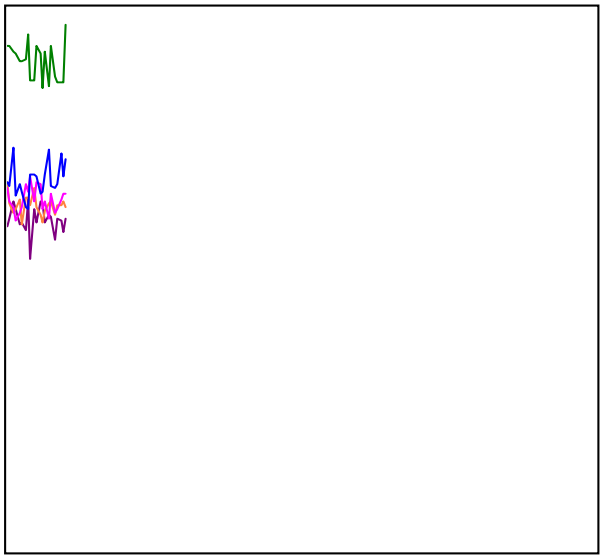
**## Cell Parameters ##**

| | | | |
|---|---|---|---|
| Use Gas | true | 3rd Gas Flow | 0 |
| He Flow | 4.7 | OctP Bias | -18.0 |
| H2 Flow | 0.0 | OctP RF | 200 |
| Energy Discrimination | 3.0 | | |

**Meters**

| | | | | | |
|---|---|---|---|---|---|
| IF/BK Press | 2.26E+2 | Pa | Carrier Gas(BP) | 2.53E+2 | kPa |
| Analyzer Press | 2.03E-4 | Pa | Reflected Power | 1 | W |
| Forward Power | 1550 | W | | | |

# Current Signal



| Mass | Range | Count | Avg. Count | RSD [%] |
|---|---|---|---|---|
| 7 | 2000 | 1222 | 1219.4 | 4.17 |
| 59 | 2000 | 1933 | 1800.7 | 3.77 |
| 89 | 5000 | 3170 | 3179.9 | 2.86 |
| 140 | 5000 | 3279 | 3231.5 | 3.58 |
| 205 | 5000 | 2137 | 2197.3 | 4.10 |
| 156/140 | 2 | 1.373 % | 1.107 % | 20.36 |
| 78 | 5000 | 2219 | 2298.0 | 2.84 |
| 63 | 500 | 361 | 341.0 | 4.61 |
| 75 | 10000 | 5042 | 4978.2 | 1.76 |
| **Integration Time [sec]** | | 0.10 | | |

**## Plasma Parameters ##**

| | | | |
|---|---|---|---|
| RF Power | 1550 | Carrier Gas | 0.55 |
| RF Matching | 1.90 | Option Gas | 0.0 |
| Smpl Depth | 8.0 | Nebulizer Pump | 0.10 |
| S/C Temp | 2 | | |

**## Lenses Parameters ##**

| | | | |
|---|---|---|---|
| Extract 1 | 0.0 | Omega Lens | 6.6 |
| Extract 2 | -200.0 | Cell Entrance | -40 |
| Omega Bias | -80 | Cell Exit | -60 |
| Deflect | 7.0 | | |

**## Cell Parameters ##**

| | | | |
|---|---|---|---|
| Use Gas | false | 3rd Gas Flow | 0 |
| He Flow | 4.2 | OctP Bias | -18.0 |
| H2 Flow | 0.0 | OctP RF | 200 |
| Energy Discrimination | 3.0 | | |

**Meters**

| | | | | | |
|---|---|---|---|---|---|
| IF/BK Press | 2.25E+2 | Pa | Carrier Gas(BP) | 2.51E+2 | kPa |
| Analyzer Press | 1.15E-4 | Pa | Reflected Power | 1 | W |
| Forward Power | 1549 | W | | | |

# US EPA Tune Check Sample Report

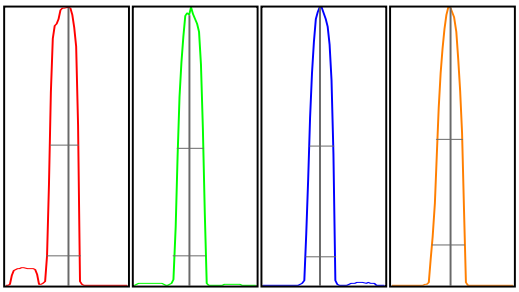
**Batch Folder** C:\Agilent\ICPMH\1\DATA\DHL TEMPLATE Li.b
**Report Comment**
**Instrument Name** ICPMS4 JP12361998

**[No gas]**

| Mass | Count (Mean) | RSD% (Actual) | RSD% (Required) | RSD% (Flag) |
|---|---|---|---|---|
| 7 | 766071 | 0.59 | 5.00 | |
| 59 | 1002535 | 0.88 | 5.00 | |
| 115 | 1534120 | 0.47 | 5.00 | |
| 205 | 1337735 | 0.65 | 5.00 | |

| Mass | Replicate 1 Count | Replicate 2 Count | Replicate 3 Count | Replicate 4 Count | Replicate 5 Count |
|---|---|---|---|---|---|
| 7 | 761000 | 762770 | 766402 | 767567 | 772618 |
| 59 | 994287 | 996607 | 1000508 | 1004518 | 1016753 |
| 115 | 1531586 | 1527087 | 1528422 | 1540459 | 1543047 |
| 205 | 1347346 | 1339137 | 1338492 | 1340161 | 1323539 |

**Integration Time [sec] =** 0.1



| Mass | Peak Height | Axis (Actual) | Axis (Required) | Axis (Flag) | Width-X% (Actual) | Width-X% (Required) | Width-X% (Flag) |
|---|---|---|---|---|---|---|---|
| 7 | 114427 | 7.05 | 6.9 - 7.1 | | 0.792 | 0.850 | |
| 59 | 169781 | 58.90 | 58.9 - 59.1 | | 0.757 | 0.850 | |
| 115 | 281192 | 114.95 | 114.9 - 115.1 | | 0.715 | 0.850 | |
| 205 | 235049 | 205.00 | 204.9 - 205.1 | | 0.792 | 0.850 | |

**X% =** 10 **Int Time [sec] =** 0.1 **Acq Time [sec] =** 135.05 **Y Axis =** Linear

**Tune Parameters**

**## Plasma Paramters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| RF Power | 1550 | W | Nebulizer Pump | 0.10 | rps |
| RF Matching | 1.90 | V | S/C Temp | 2 | ℃ |
| Smpl Depth | 8.0 | mm | Gas Switch | Dilution Gas | |
| Carrier Gas | 0.55 | L/min | Makeup/Dilution Gas | 0.50 | L/min |
| Option Gas | 0.0 | % | | | |

**## Lenses Parameters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| Extract 1 | 0.0 | V | Cell Entrance | -40 | V |
| Extract 2 | -200.0 | V | Cell Exit | -60 | V |
| Omega Bias | -80 | V | Deflect | 7.0 | V |
| Omega Lens | 6.6 | V | Plate Bias | -60 | V |

**## Cell Parameters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| Use Gas | false | | OctP Bias | -18.0 | V |
| He Flow | 0.0 | mL/min | OctP RF | 200 | V |
| H2 Flow | 0.0 | mL/min | Energy Discrimination | 3.0 | V |
| 3rd Gas Flow | 0 | % | | | |

REVIEWED BY
By Janice Whitt at 2:45:29 PM, 5/23/2016

# P/A Factor Tuning Report

## Current Sample

Sample Name: BLANK STD 1
Data File: 012CALB.d
Acquired: 05/20/2016 10:52:47

## Detector Parameters and P/A Factors

Discriminator: 4.5 mV
AnalogHV: 1756 V
PulseHV: 1224 V

Acquired: 05/20/2016 10:17:33

| Mass[u] | Element | P/A Factor |
|---|---|---|
| 6 | Li | 0.098134 |
| 9 | Be | 0.112424 |
| 23 | Na | 0.120362 |
| 24 | Mg | 0.125799 |
| 27 | Al | 0.129086 |
| 39 | K | 0.130962 |
| 45 | Sc | 0.132626 |
| 48 | | 0.132901 |
| 51 | V | 0.134336 |
| 52 | Cr | 0.138170 |
| 55 | Mn | 0.140003 |
| 59 | Co | 0.143275 |
| 60 | Ni | 0.144291 |
| 63 | Cu | 0.146894 |
| 66 | Zn | 0.146603 |
| 72 | | 0.145810 |
| 74 | Ge | 0.145819 |
| 75 | As | 0.144825 |
| 88 | Sr | 0.145917 |
| 89 | | 0.145627 |
| 95 | | 0.145741 |
| 97 | Mo | 0.145945 |
| 98 | Mo | 0.146160 |
| 99 | [Mo] | 0.149063 |
| 101 | | 0.148703 |
| 105 | | 0.151466 |
| 111 | Cd | 0.152171 |
| 114 | Cd | 0.152307 |
| 115 | In | 0.152070 |
| 118 | Sn | 0.152341 |
| 121 | | 0.151907 |
| 123 | Sb | 0.151213 |
| 135 | Ba | 0.153085 |
| 138 | | 0.153114 |
| 175 | | 0.157166 |
| 193 | | 0.158115 |
| 205 | Tl | 0.159390 |
| 206 | [Pb] | 0.158901 |
| 207 | [Pb] | 0.160233 |
| 208 | Pb | 0.160034 |
| 209 | Bi | 0.160265 |
| 232 | | 0.160153 |
| 238 | U | 0.160001 |
| 44 | Ca | Signal too low |
| 78 | Se | Signal too low |
| 107 | Ag | Signal too low |
| 172 | | Signal too low |

REVIEWED BY
By Janice Whitt at 2:45:32 PM, 5/23/2016

# Calibration Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 10:52 | Sample Name | BLANK STD 1 |
| Data Batch | 160520.b | Comment | CAL ICPMS_TW |
| Data File Name | 012CALB.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 13 | 11.46 |
| 9 | Be | 45 | 4 | 31.49 |
| 11 | B | 45 | 60 | 38.88 |
| 23 | Na | 45 | 38295 | 1.98 |
| 24 | Mg | 45 | 929 | 4.13 |
| 27 | Al | 45 | 328 | 9.67 |
| 39 | K | 45 | 45687 | 1.92 |
| 44 | Ca | 45 | 223 | 14.74 |
| 47 | Ti | 45 | 2 | 173.21 |
| 51 | V | 45 | 2712 | 3.25 |
| 52 | Cr | 45 | 932 | 8.94 |
| 55 | Mn | 45 | 111 | 4.58 |
| 56 | Fe | 45 | 6780 | 0.46 |
| 59 | Co | 72 | 116 | 10.13 |
| 60 | Ni | 72 | 412 | 4.45 |
| 63 | Cu | 72 | 2314 | 7.14 |
| 66 | Zn | 72 | 258 | 12.02 |
| 75 | As | 72 | 133 | 9.18 |
| 78 | Se | 72 | 68 | 18.46 |
| 88 | Sr | 115 | 220 | 6.60 |
| 95 | Mo | 115 | 32 | 39.17 |
| 107 | Ag | 115 | 52 | 47.91 |
| 111 | Cd | 115 | 10 | 0.00 |
| 118 | Sn | 115 | 429 | 7.22 |
| 121 | Sb | 115 | 140 | 14.48 |
| 137 | Ba | 115 | 21 | 59.77 |
| 205 | Tl | 209 | 38 | 10.19 |
| 208 | Pb | 209 | 371 | 5.49 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD |
|---|---|---|---|
| 45 | Sc | 900744 | 0.58 |
| 72 | Ge | 691836 | 0.52 |
| 115 | In | 6634288 | 1.31 |
| 209 | Bi | 16365010 | 0.86 |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 10:54 | Sample Name | L2-160520 |
| Data Batch | 160520.b | Comment | CAL ICPMS_TW |
| Data File Name | 013CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 51 | 19.61 |
| 9 | Be | 45 | 59 | 16.17 |
| 11 | B | 45 | 81 | 47.63 |
| 23 | Na | 45 | 54693 | 1.98 |
| 24 | Mg | 45 | 8631 | 1.06 |
| 27 | Al | 45 | 3024 | 4.27 |
| 39 | K | 45 | 52837 | 1.33 |
| 44 | Ca | 45 | 673 | 9.59 |
| 47 | Ti | 45 | 142 | 21.27 |
| 51 | V | 45 | 7566 | 1.37 |
| 52 | Cr | 45 | 6659 | 1.56 |
| 55 | Mn | 45 | 3339 | 3.35 |
| 56 | Fe | 45 | 103212 | 0.39 |
| 59 | Co | 72 | 9894 | 1.63 |
| 60 | Ni | 72 | 3053 | 2.78 |
| 63 | Cu | 72 | 9651 | 1.49 |
| 66 | Zn | 72 | 1510 | 9.51 |
| 75 | As | 72 | 1134 | 3.65 |
| 78 | Se | 72 | 138 | 13.66 |
| 88 | Sr | 115 | 4758 | 9.98 |
| 95 | Mo | 115 | 4017 | 1.96 |
| 107 | Ag | 115 | 13061 | 1.16 |
| 111 | Cd | 115 | 1892 | 1.58 |
| 118 | Sn | 115 | 4368 | 1.85 |
| 121 | Sb | 115 | 6040 | 1.52 |
| 137 | Ba | 115 | 1957 | 3.12 |
| 205 | Tl | 209 | 28454 | 0.85 |
| 208 | Pb | 209 | 38051 | 1.40 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 888675 | 0.90 | 900744 | 98.66 | 70 | 120 | |
| 72 | Ge | 693617 | 1.22 | 691836 | 100.26 | 70 | 120 | |
| 115 | In | 6537693 | 1.64 | 6634288 | 98.54 | 70 | 120 | |
| 209 | Bi | 16272142 | 1.22 | 16365010 | 99.43 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 10:56 | Sample Name | L-160520 |
| Data Batch | 160520.b | Comment | CAL ICPMS_TW |
| Data File Name | 014CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 475 | 4.33 |
| 9 | Be | 45 | 589 | 2.81 |
| 11 | B | 45 | 213 | 8.70 |
| 23 | Na | 45 | 187072 | 0.24 |
| 24 | Mg | 45 | 75079 | 1.15 |
| 27 | Al | 45 | 26142 | 0.55 |
| 39 | K | 45 | 117199 | 0.47 |
| 44 | Ca | 45 | 4092 | 2.49 |
| 47 | Ti | 45 | 1508 | 7.61 |
| 51 | V | 45 | 49367 | 1.70 |
| 52 | Cr | 45 | 57479 | 0.64 |
| 55 | Mn | 45 | 30593 | 1.12 |
| 56 | Fe | 45 | 958300 | 0.88 |
| 59 | Co | 72 | 94946 | 1.52 |
| 60 | Ni | 72 | 26516 | 2.15 |
| 63 | Cu | 72 | 74283 | 1.74 |
| 66 | Zn | 72 | 11910 | 2.27 |
| 75 | As | 72 | 9774 | 0.72 |
| 78 | Se | 72 | 636 | 2.65 |
| 88 | Sr | 115 | 41218 | 0.48 |
| 95 | Mo | 115 | 38411 | 0.41 |
| 107 | Ag | 115 | 126475 | 0.65 |
| 111 | Cd | 115 | 18563 | 1.42 |
| 118 | Sn | 115 | 38626 | 1.15 |
| 121 | Sb | 115 | 58717 | 1.10 |
| 137 | Ba | 115 | 18171 | 0.63 |
| 205 | Tl | 209 | 272304 | 0.87 |
| 208 | Pb | 209 | 366431 | 0.81 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 873243 | 0.62 | 900744 | 96.95 | 70 | 120 | |
| 72 | Ge | 678023 | 0.58 | 691836 | 98.00 | 70 | 120 | |
| 115 | In | 6551099 | 0.64 | 6634288 | 98.75 | 70 | 120 | |
| 209 | Bi | 15917913 | 1.04 | 16365010 | 97.27 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 10:58 | Sample Name | 10X-160520 |
| Data Batch | 160520.b | Comment | CAL ICPMS_TW |
| Data File Name | 015CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 2372 | 1.63 |
| 9 | Be | 45 | 2923 | 2.25 |
| 11 | B | 45 | 1067 | 9.08 |
| 23 | Na | 45 | 770119 | 0.18 |
| 24 | Mg | 45 | 367454 | 0.88 |
| 27 | Al | 45 | 128655 | 0.92 |
| 39 | K | 45 | 399073 | 0.48 |
| 44 | Ca | 45 | 19370 | 0.75 |
| 47 | Ti | 45 | 6789 | 2.58 |
| 51 | V | 45 | 235086 | 0.94 |
| 52 | Cr | 45 | 281473 | 0.22 |
| 55 | Mn | 45 | 151664 | 1.11 |
| 56 | Fe | 45 | 4726262 | 0.52 |
| 59 | Co | 72 | 472848 | 1.31 |
| 60 | Ni | 72 | 128482 | 0.55 |
| 63 | Cu | 72 | 359776 | 1.03 |
| 66 | Zn | 72 | 59442 | 1.18 |
| 75 | As | 72 | 47843 | 0.10 |
| 78 | Se | 72 | 2827 | 1.34 |
| 88 | Sr | 115 | 207253 | 0.76 |
| 95 | Mo | 115 | 189832 | 0.47 |
| 107 | Ag | 115 | 625220 | 0.51 |
| 111 | Cd | 115 | 90493 | 0.63 |
| 118 | Sn | 115 | 188562 | 0.79 |
| 121 | Sb | 115 | 291979 | 0.59 |
| 137 | Ba | 115 | 91676 | 0.52 |
| 205 | Tl | 209 | 1369668 | 0.21 |
| 208 | Pb | 209 | 1836011 | 0.28 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 870783 | 0.49 | 900744 | 96.67 | 70 | 120 | |
| 72 | Ge | 675804 | 0.16 | 691836 | 97.68 | 70 | 120 | |
| 115 | In | 6511848 | 1.01 | 6634288 | 98.15 | 70 | 120 | |
| 209 | Bi | 15817982 | 1.93 | 16365010 | 96.66 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:00 | Sample Name | 5X-160520 |
| Data Batch | 160520.b | Comment | CAL ICPMS_TW |
| Data File Name | 016CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 4719 | 0.99 |
| 9 | Be | 45 | 6031 | 2.61 |
| 11 | B | 45 | 2106 | 2.38 |
| 23 | Na | 45 | 1487744 | 0.34 |
| 24 | Mg | 45 | 730325 | 0.75 |
| 27 | Al | 45 | 254158 | 1.00 |
| 39 | K | 45 | 743764 | 0.35 |
| 44 | Ca | 45 | 38890 | 0.92 |
| 47 | Ti | 45 | 13122 | 1.48 |
| 51 | V | 45 | 464545 | 0.24 |
| 52 | Cr | 45 | 553845 | 0.36 |
| 55 | Mn | 45 | 296245 | 0.64 |
| 56 | Fe | 45 | 9475567 | 0.90 |
| 59 | Co | 72 | 929518 | 0.70 |
| 60 | Ni | 72 | 254645 | 0.94 |
| 63 | Cu | 72 | 705956 | 0.91 |
| 66 | Zn | 72 | 115636 | 0.55 |
| 75 | As | 72 | 94999 | 1.00 |
| 78 | Se | 72 | 5517 | 1.18 |
| 88 | Sr | 115 | 407209 | 0.73 |
| 95 | Mo | 115 | 382159 | 0.27 |
| 107 | Ag | 115 | 1246974 | 0.27 |
| 111 | Cd | 115 | 180002 | 0.67 |
| 118 | Sn | 115 | 373685 | 0.75 |
| 121 | Sb | 115 | 581845 | 0.44 |
| 137 | Ba | 115 | 181959 | 0.36 |
| 205 | Tl | 209 | 2721048 | 0.56 |
| 208 | Pb | 209 | 3638595 | 0.14 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 867111 | 0.94 | 900744 | 96.27 | 70 | 120 | |
| 72 | Ge | 670073 | 0.40 | 691836 | 96.85 | 70 | 120 | |
| 115 | In | 6345212 | 1.15 | 6634288 | 95.64 | 70 | 120 | |
| 209 | Bi | 15774838 | 1.13 | 16365010 | 96.39 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:02 | Sample Name | 2X-160520 |
| Data Batch | 160520.b | Comment | CAL ICPMS_TW |
| Data File Name | 017CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 11645 | 1.45 |
| 9 | Be | 45 | 14799 | 0.87 |
| 11 | B | 45 | 5271 | 3.09 |
| 23 | Na | 45 | 3674579 | 0.75 |
| 24 | Mg | 45 | 1829610 | 0.19 |
| 27 | Al | 45 | 638745 | 0.27 |
| 39 | K | 45 | 1790546 | 0.40 |
| 44 | Ca | 45 | 96796 | 0.45 |
| 47 | Ti | 45 | 33606 | 0.77 |
| 51 | V | 45 | 1166196 | 0.37 |
| 52 | Cr | 45 | 1399555 | 0.43 |
| 55 | Mn | 45 | 749211 | 1.10 |
| 56 | Fe | 45 | 23607094 | 0.99 |
| 59 | Co | 72 | 2343107 | 0.54 |
| 60 | Ni | 72 | 639981 | 0.74 |
| 63 | Cu | 72 | 1763980 | 0.57 |
| 66 | Zn | 72 | 293583 | 0.29 |
| 75 | As | 72 | 238361 | 0.79 |
| 78 | Se | 72 | 13619 | 1.02 |
| 88 | Sr | 115 | 1023414 | 0.41 |
| 95 | Mo | 115 | 955739 | 0.13 |
| 107 | Ag | 115 | 3129309 | 0.67 |
| 111 | Cd | 115 | 450580 | 1.28 |
| 118 | Sn | 115 | 940332 | 0.60 |
| 121 | Sb | 115 | 1446811 | 0.41 |
| 137 | Ba | 115 | 456887 | 0.89 |
| 205 | Tl | 209 | 6865122 | 2.34 |
| 208 | Pb | 209 | 9182346 | 0.28 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 863899 | 0.62 | 900744 | 95.91 | 70 | 120 | |
| 72 | Ge | 676172 | 1.16 | 691836 | 97.74 | 70 | 120 | |
| 115 | In | 6342174 | 1.08 | 6634288 | 95.60 | 70 | 120 | |
| 209 | Bi | 15798184 | 1.06 | 16365010 | 96.54 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:04 | Sample Name | H-160520 |
| Data Batch | 160520.b | Comment | CAL ICPMS_TW |
| Data File Name | 018CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 23477 | 0.78 |
| 9 | Be | 45 | 29678 | 0.77 |
| 11 | B | 45 | 10670 | 2.57 |
| 23 | Na | 45 | 7328693 | 1.45 |
| 24 | Mg | 45 | 3642987 | 0.46 |
| 27 | Al | 45 | 1276992 | 0.43 |
| 39 | K | 45 | 3571412 | 0.39 |
| 44 | Ca | 45 | 193325 | 1.27 |
| 47 | Ti | 45 | 67432 | 0.26 |
| 51 | V | 45 | 2342136 | 0.46 |
| 52 | Cr | 45 | 2811568 | 0.73 |
| 55 | Mn | 45 | 1497737 | 1.02 |
| 56 | Fe | 45 | 46607699 | 0.12 |
| 59 | Co | 72 | 4664541 | 0.37 |
| 60 | Ni | 72 | 1265436 | 0.57 |
| 63 | Cu | 72 | 3510221 | 0.93 |
| 66 | Zn | 72 | 580522 | 0.69 |
| 75 | As | 72 | 478495 | 0.53 |
| 78 | Se | 72 | 27052 | 0.42 |
| 88 | Sr | 115 | 2062251 | 0.76 |
| 95 | Mo | 115 | 1923834 | 1.60 |
| 107 | Ag | 115 | 6149064 | 1.18 |
| 111 | Cd | 115 | 897958 | 0.69 |
| 118 | Sn | 115 | 1885001 | 0.48 |
| 121 | Sb | 115 | 2931945 | 1.17 |
| 137 | Ba | 115 | 919713 | 0.73 |
| 205 | Tl | 209 | 13843577 | 0.15 |
| 208 | Pb | 209 | 18376231 | 1.17 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 865250 | 0.07 | 900744 | 96.06 | 70 | 120 | |
| 72 | Ge | 678053 | 0.72 | 691836 | 98.01 | 70 | 120 | |
| 115 | In | 6368809 | 0.55 | 6634288 | 96.00 | 70 | 120 | |
| 209 | Bi | 15682376 | 1.12 | 16365010 | 95.83 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:06 | Sample Name | H2-160520 |
| Data Batch | 160520.b | Comment | CAL ICPMS_TW |
| Data File Name | 019CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 91520 | 0.61 |
| 9 | Be | 45 | 117696 | 1.05 |
| 11 | B | 45 | 41703 | 2.00 |
| 23 | Na | 45 | 17804069 | 1.61 |
| 24 | Mg | 45 | 8905730 | 0.41 |
| 27 | Al | 45 | 1268 | 15.64 |
| 39 | K | 45 | 8700336 | 3.99 |
| 44 | Ca | 45 | 498064 | 0.89 |
| 47 | Ti | 45 | 270980 | 0.88 |
| 51 | V | 45 | 9279476 | 1.91 |
| 52 | Cr | 45 | 11100250 | 2.57 |
| 55 | Mn | 45 | 5906029 | 1.36 |
| 56 | Fe | 45 | 31079 | 21.18 |
| 59 | Co | 72 | 18091149 | 2.15 |
| 60 | Ni | 72 | 4978053 | 0.80 |
| 63 | Cu | 72 | 13698455 | 1.21 |
| 66 | Zn | 72 | 2274547 | 0.47 |
| 75 | As | 72 | 1927729 | 0.53 |
| 78 | Se | 72 | 107929 | 0.33 |
| 88 | Sr | 115 | 8069912 | 1.86 |
| 95 | Mo | 115 | 7651186 | 1.88 |
| 107 | Ag | 115 | 2167 | 27.48 |
| 111 | Cd | 115 | 3587268 | 0.74 |
| 118 | Sn | 115 | 7561068 | 0.94 |
| 121 | Sb | 115 | 4899 | 3.75 |
| 137 | Ba | 115 | 3678176 | 0.64 |
| 205 | Tl | 209 | 54027345 | 1.56 |
| 208 | Pb | 209 | 72597616 | 1.51 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 871411 | 0.35 | 900744 | 96.74 | 70 | 120 | |
| 72 | Ge | 674585 | 0.55 | 691836 | 97.51 | 70 | 120 | |
| 115 | In | 6308303 | 0.56 | 6634288 | 95.09 | 70 | 120 | |
| 209 | Bi | 15600790 | 0.51 | 16365010 | 95.33 | 70 | 120 | |

# Interference Check Solution A (ICS-A) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:14 | Sample Name | ICSA-160520 |
| Data Batch | 160520.b | Comment | ICSAICPMS_TW |
| Data File Name | 023ICSA.d | Dilution | 1 |

| Mass | Name | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|
| 9 | Be | 0.178 | 13 | 11.5 | 1.2 | 0.8 | |
| 11 | B | 12.857 | 310 | 15.8 | 30 | 30 | |
| 51 | V | -0.035 | 2337 | 3.4 | 10 | 10 | |
| 52 | Cr | 0.435 | 3153 | 9.6 | 8 | 5 | |
| 55 | Mn | 1.453 | 4183 | 2.6 | 8 | 10 | |
| 59 | Co | 0.572 | 5053 | 6.0 | 8 | 10 | |
| 60 | Ni | 0.460 | 1477 | 4.3 | 8 | 10 | |
| 63 | Cu | 0.966 | 8479 | 8.6 | 8 | 10 | |
| 66 | Zn | 1.514 | 1886 | 2.4 | 10 | 5 | |
| 75 | As | 0.723 | 788 | 5.3 | 4 | 5 | |
| 78 | Se | 0.403 | 84 | 12.1 | 2 | 5 | |
| 88 | Sr | 1.450 | 5706 | 4.5 | 10 | 10 | |
| 107 | Ag | 0.149 | 1757 | 1.5 | 0.8 | 2 | |
| 111 | Cd | 0.508 | 864 | 8.0 | 1.2 | 1 | |
| 118 | Sn | 1.337 | 5130 | 5.4 | 10 | 10 | |
| 121 | Sb | 0.431 | 2474 | 8.2 | 4 | 2.5 | |
| 137 | Ba | 0.360 | 641 | 0.8 | 8 | 10 | |
| 205 | Tl | 0.057 | 1457 | 3.8 | 4 | 1.5 | |
| 208 | Pb | 0.112 | 4071 | 5.3 | 1.2 | 1 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 827611 | 0.57 | 900744 | 91.88 | 70 | 120 | |
| 72 | Ge | 643920 | 0.43 | 691836 | 93.07 | 70 | 120 | |
| 115 | In | 5931990 | 0.71 | 6634288 | 89.41 | 70 | 120 | |
| 209 | Bi | 14414677 | 1.32 | 16365010 | 88.08 | 70 | 120 | |

# Interference Check Solution AB (ICS-AB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:16 | Sample Name | ICSAB-160520 |
| Data Batch | 160520.b | Comment | ICSBICPMS_TW |
| Data File Name | 024ICSB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 51 | V | 45 | 40.230 | 179228 | 0.38 | 40 | 100.6 | 80 | 120 | |
| 52 | Cr | 45 | 21.180 | 112220 | 0.68 | 20 | 105.9 | 80 | 120 | |
| 55 | Mn | 45 | 20.090 | 56319 | 0.85 | 20 | 100.5 | 80 | 120 | |
| 59 | Co | 72 | 40.765 | 350154 | 0.67 | 40 | 101.9 | 80 | 120 | |
| 60 | Ni | 72 | 37.991 | 90057 | 0.27 | 40 | 95.0 | 80 | 120 | |
| 63 | Cu | 72 | 21.028 | 138786 | 0.46 | 20 | 105.1 | 80 | 120 | |
| 66 | Zn | 72 | 20.320 | 22160 | 1.43 | 20 | 101.6 | 80 | 120 | |
| 75 | As | 72 | 19.962 | 18332 | 0.50 | 20 | 99.8 | 80 | 120 | |
| 78 | Se | 72 | 20.880 | 1130 | 1.09 | 20 | 104.4 | 80 | 120 | |
| 107 | Ag | 115 | 19.272 | 219521 | 0.59 | 20 | 96.4 | 80 | 120 | |
| 111 | Cd | 115 | 10.173 | 16977 | 1.44 | 10 | 101.7 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 824440 | 0.46 | 900744 | 91.53 | 70 | 120 | |
| 72 | Ge | 639098 | 0.68 | 691836 | 92.38 | 70 | 120 | |
| 115 | In | 5869841 | 0.52 | 6634288 | 88.48 | 70 | 120 | |
| 209 | Bi | 14474563 | 1.18 | 16365010 | 88.45 | 70 | 120 | |

# Initial Calibration Verification (ICV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:28 | Sample Name | ICV-160520 |
| Data Batch | 160520.b | Comment | ICV ICPMS_TW |
| Data File Name | 028_ICV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 100.332 | 4824 | 1.81 | 100 | 100.3 | 90 | 110 | |
| 9 | Be | 45 | 103.176 | 6359 | 1.46 | 100 | 103.2 | 90 | 110 | |
| 11 | B | 45 | 106.105 | 2375 | 2.15 | 100 | 106.1 | 90 | 110 | |
| 23 | Na | 45 | 2619.649 | 1996303 | 0.67 | 2500 | 104.8 | 90 | 110 | |
| 24 | Mg | 45 | 2613.352 | 979367 | 0.11 | 2500 | 104.5 | 90 | 110 | |
| 27 | Al | 45 | 2492.346 | 335405 | 0.21 | 2500 | 99.7 | 90 | 110 | |
| 39 | K | 45 | 2576.179 | 982676 | 0.45 | 2500 | 103.0 | 90 | 110 | |
| 44 | Ca | 45 | 2392.260 | 49836 | 0.98 | 2500 | 95.7 | 90 | 110 | |
| 47 | Ti | 45 | 102.414 | 14511 | 1.78 | 100 | 102.4 | 90 | 110 | |
| 51 | V | 45 | 103.304 | 504292 | 0.75 | 100 | 103.3 | 90 | 110 | |
| 52 | Cr | 45 | 105.424 | 613523 | 0.38 | 100 | 105.4 | 90 | 110 | |
| 55 | Mn | 45 | 102.300 | 316459 | 1.21 | 100 | 102.3 | 90 | 110 | |
| 56 | Fe | 45 | 2567.305 | 12645614 | 0.68 | 2500 | 102.7 | 90 | 110 | |
| 59 | Co | 72 | 106.357 | 1016420 | 0.67 | 100 | 106.4 | 90 | 110 | |
| 60 | Ni | 72 | 103.434 | 272118 | 0.62 | 100 | 103.4 | 90 | 110 | |
| 63 | Cu | 72 | 102.858 | 746210 | 0.57 | 100 | 102.9 | 90 | 110 | |
| 66 | Zn | 72 | 103.642 | 124695 | 1.04 | 100 | 103.6 | 90 | 110 | |
| 75 | As | 72 | 100.339 | 101992 | 0.91 | 100 | 100.3 | 90 | 110 | |
| 78 | Se | 72 | 104.060 | 5986 | 1.79 | 100 | 104.1 | 90 | 110 | |
| 88 | Sr | 115 | 103.091 | 442072 | 0.16 | 100 | 103.1 | 90 | 110 | |
| 95 | Mo | 115 | 98.299 | 398988 | 0.75 | 100 | 98.3 | 90 | 110 | |
| 107 | Ag | 115 | 98.962 | 1285452 | 0.32 | 100 | 99.0 | 90 | 110 | |
| 111 | Cd | 115 | 99.483 | 189297 | 1.17 | 100 | 99.5 | 90 | 110 | |
| 118 | Sn | 115 | 101.471 | 407166 | 1.20 | 100 | 101.5 | 90 | 110 | |
| 121 | Sb | 115 | 98.770 | 607715 | 0.72 | 100 | 98.8 | 90 | 110 | |
| 137 | Ba | 115 | 98.652 | 192414 | 0.96 | 100 | 98.7 | 90 | 110 | |
| 205 | Tl | 209 | 101.466 | 2836271 | 0.84 | 100 | 101.5 | 90 | 110 | |
| 208 | Pb | 209 | 101.685 | 3816480 | 0.50 | 100 | 101.7 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 911084 | 0.27 | 900744 | 101.15 | 70 | 120 | |
| 72 | Ge | 711191 | 0.51 | 691836 | 102.80 | 70 | 120 | |
| 115 | In | 6694931 | 0.54 | 6634288 | 100.91 | 70 | 120 | |
| 209 | Bi | 16123032 | 0.92 | 16365010 | 98.52 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:40 | Sample Name | LCVL-160520 |
| Data Batch | 160520.b | Comment | LCVLICPMS_TW |
| Data File Name | 031LICV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.211 | 493 | 3.28 | 10 | 102.1 | 70 | 130 | |
| 9 | Be | 45 | 0.883 | 57 | 3.51 | 1 | 88.3 | 70 | 130 | |
| 11 | B | 45 | 23.200 | 556 | 15.56 | 20 | 116.0 | 70 | 130 | |
| 23 | Na | 45 | 105.249 | 115108 | 0.58 | 100 | 105.2 | 70 | 130 | |
| 24 | Mg | 45 | 100.404 | 37782 | 2.89 | 100 | 100.4 | 70 | 130 | |
| 27 | Al | 45 | 96.019 | 12984 | 1.75 | 100 | 96.0 | 70 | 130 | |
| 39 | K | 45 | 105.822 | 83035 | 0.80 | 100 | 105.8 | 70 | 130 | |
| 44 | Ca | 45 | 97.034 | 2194 | 6.79 | 100 | 97.0 | 70 | 130 | |
| 47 | Ti | 45 | 4.981 | 694 | 16.24 | 5 | 99.6 | 70 | 130 | |
| 51 | V | 45 | 0.990 | 7405 | 1.67 | 1 | 99.0 | 70 | 130 | |
| 52 | Cr | 45 | 5.164 | 30348 | 0.92 | 5 | 103.3 | 70 | 130 | |
| 55 | Mn | 45 | 4.932 | 15067 | 0.98 | 5 | 98.6 | 70 | 130 | |
| 56 | Fe | 45 | 98.316 | 481338 | 0.67 | 100 | 98.3 | 70 | 130 | |
| 59 | Co | 72 | 5.160 | 48099 | 1.92 | 5 | 103.2 | 70 | 130 | |
| 60 | Ni | 72 | 5.266 | 13871 | 3.84 | 5 | 105.3 | 70 | 130 | |
| 63 | Cu | 72 | 5.055 | 37891 | 1.05 | 5 | 101.1 | 70 | 130 | |
| 66 | Zn | 72 | 5.003 | 6103 | 1.75 | 5 | 100.1 | 70 | 130 | |
| 75 | As | 72 | 5.096 | 5168 | 1.25 | 5 | 101.9 | 70 | 130 | |
| 78 | Se | 72 | 4.860 | 337 | 3.91 | 5 | 97.2 | 70 | 130 | |
| 88 | Sr | 115 | 5.140 | 21310 | 1.33 | 5 | 102.8 | 70 | 130 | |
| 95 | Mo | 115 | 4.953 | 19283 | 2.26 | 5 | 99.1 | 70 | 130 | |
| 107 | Ag | 115 | 1.964 | 24482 | 0.47 | 2 | 98.2 | 70 | 130 | |
| 111 | Cd | 115 | 1.030 | 1888 | 5.78 | 1 | 103.0 | 70 | 130 | |
| 118 | Sn | 115 | 5.127 | 20100 | 1.89 | 5 | 102.5 | 70 | 130 | |
| 121 | Sb | 115 | 1.951 | 11631 | 2.50 | 2 | 97.6 | 70 | 130 | |
| 137 | Ba | 115 | 5.004 | 9363 | 2.13 | 5 | 100.1 | 70 | 130 | |
| 205 | Tl | 209 | 0.992 | 27078 | 1.04 | 1 | 99.2 | 70 | 130 | |
| 208 | Pb | 209 | 0.967 | 35772 | 0.59 | 1 | 96.7 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 893427 | 0.34 | 900744 | 99.19 | 70 | 120 | |
| 72 | Ge | 692133 | 0.84 | 691836 | 100.04 | 70 | 120 | |
| 115 | In | 6412520 | 1.80 | 6634288 | 96.66 | 70 | 120 | |
| 209 | Bi | 15729452 | 0.95 | 16365010 | 96.12 | 70 | 120 | |

# Initial Calibration Blank (ICB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 11:45 | Sample Name | ICB-160520 |
| Data Batch | 160520.b | Comment | ICB ICPMS_TW |
| Data File Name | 033_ICB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.079 | 17 | 24.0 | 2 | 5 | |
| 9 | Be | 45 | 0.096 | 10 | 11.9 | 0.4 | 0.3 | |
| 11 | B | 45 | 2.797 | 122 | 14.0 | 10 | 10 | |
| 23 | Na | 45 | 1.389 | 39897 | 0.2 | 50 | 100 | |
| 24 | Mg | 45 | -0.816 | 636 | 7.3 | 50 | 100 | |
| 27 | Al | 45 | -0.630 | 248 | 10.8 | 50 | 10 | |
| 39 | K | 45 | 4.622 | 48039 | 0.4 | 50 | 100 | |
| 44 | Ca | 45 | 0.493 | 236 | 7.3 | 50 | 100 | |
| 47 | Ti | 45 | 0.032 | 7 | 132.3 | 4 | 3 | |
| 51 | V | 45 | 0.003 | 2768 | 7.0 | 4 | 3 | |
| 52 | Cr | 45 | -0.004 | 922 | 6.2 | 2 | 2 | |
| 55 | Mn | 45 | 0.012 | 149 | 15.9 | 2 | 3 | |
| 56 | Fe | 45 | 0.182 | 7778 | 2.3 | 50 | 50 | |
| 59 | Co | 72 | 0.001 | 131 | 10.3 | 2 | 3 | |
| 60 | Ni | 72 | -0.045 | 304 | 13.2 | 2 | 3 | |
| 63 | Cu | 72 | -0.086 | 1743 | 2.3 | 2 | 2 | |
| 66 | Zn | 72 | 0.005 | 270 | 10.7 | 4 | 2 | |
| 75 | As | 72 | 0.026 | 161 | 5.5 | 2 | 2 | |
| 78 | Se | 72 | 0.216 | 82 | 13.1 | 1 | 2 | |
| 88 | Sr | 115 | -0.005 | 196 | 17.2 | 4 | 3 | |
| 95 | Mo | 115 | 0.004 | 49 | 43.3 | 2 | 2 | |
| 107 | Ag | 115 | 0.002 | 71 | 15.1 | 0.4 | 1 | |
| 111 | Cd | 115 | -0.002 | 7 | 50.0 | 0.4 | 0.3 | |
| 118 | Sn | 115 | 0.236 | 1351 | 4.6 | 4 | 3 | |
| 121 | Sb | 115 | 0.008 | 189 | 2.7 | 2 | 0.8 | |
| 137 | Ba | 115 | -0.002 | 18 | 57.3 | 2 | 3 | |
| 205 | Tl | 209 | 0.000 | 32 | 39.2 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.001 | 313 | 21.3 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 914027 | 1.10 | 900744 | 101.47 | 70 | 120 | |
| 72 | Ge | 707118 | 0.50 | 691836 | 102.21 | 70 | 120 | |
| 115 | In | 6559701 | 1.67 | 6634288 | 98.88 | 70 | 120 | |
| 209 | Bi | 15784059 | 0.77 | 16365010 | 96.45 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:06 | Sample Name | CCV2-160520 |
| Data Batch | 160520.b | Comment | CCV ICPMS_TW |
| Data File Name | 066_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 206.782 | 9383 | 0.75 | 200 | 103.4 | 90 | 110 | |
| 9 | Be | 45 | 206.653 | 12034 | 2.11 | 200 | 103.3 | 90 | 110 | |
| 11 | B | 45 | 208.432 | 4353 | 3.34 | 200 | 104.2 | 90 | 110 | |
| 23 | Na | 45 | 5168.925 | 3686872 | 0.54 | 5000 | 103.4 | 90 | 110 | |
| 24 | Mg | 45 | 5109.315 | 1808629 | 0.07 | 5000 | 102.2 | 90 | 110 | |
| 27 | Al | 45 | 4965.141 | 631105 | 1.07 | 5000 | 99.3 | 90 | 110 | |
| 39 | K | 45 | 5070.813 | 1785627 | 0.49 | 5000 | 101.4 | 90 | 110 | |
| 44 | Ca | 45 | 4837.310 | 95013 | 0.31 | 5000 | 96.7 | 90 | 110 | |
| 47 | Ti | 45 | 201.140 | 26931 | 1.95 | 200 | 100.6 | 90 | 110 | |
| 51 | V | 45 | 203.158 | 934716 | 0.26 | 200 | 101.6 | 90 | 110 | |
| 52 | Cr | 45 | 203.913 | 1120596 | 0.27 | 200 | 102.0 | 90 | 110 | |
| 55 | Mn | 45 | 203.279 | 594158 | 0.25 | 200 | 101.6 | 90 | 110 | |
| 56 | Fe | 45 | 5042.514 | 23467994 | 2.63 | 5000 | 100.9 | 90 | 110 | |
| 59 | Co | 72 | 209.877 | 1876358 | 0.40 | 200 | 104.9 | 90 | 110 | |
| 60 | Ni | 72 | 207.066 | 509243 | 0.87 | 200 | 103.5 | 90 | 110 | |
| 63 | Cu | 72 | 208.708 | 1414211 | 0.15 | 200 | 104.4 | 90 | 110 | |
| 66 | Zn | 72 | 207.264 | 233038 | 0.84 | 200 | 103.6 | 90 | 110 | |
| 75 | As | 72 | 201.926 | 191894 | 0.46 | 200 | 101.0 | 90 | 110 | |
| 78 | Se | 72 | 202.755 | 10849 | 1.10 | 200 | 101.4 | 90 | 110 | |
| 88 | Sr | 115 | 204.295 | 814939 | 0.35 | 200 | 102.1 | 90 | 110 | |
| 95 | Mo | 115 | 202.212 | 763670 | 0.55 | 200 | 101.1 | 90 | 110 | |
| 107 | Ag | 115 | 205.239 | 2480385 | 1.13 | 200 | 102.6 | 90 | 110 | |
| 111 | Cd | 115 | 199.199 | 352656 | 0.69 | 200 | 99.6 | 90 | 110 | |
| 118 | Sn | 115 | 197.089 | 735458 | 0.76 | 200 | 98.5 | 90 | 110 | |
| 121 | Sb | 115 | 199.804 | 1143701 | 0.34 | 200 | 99.9 | 90 | 110 | |
| 137 | Ba | 115 | 198.088 | 359480 | 0.42 | 200 | 99.0 | 90 | 110 | |
| 205 | Tl | 209 | 200.163 | 5318716 | 0.54 | 200 | 100.1 | 90 | 110 | |
| 208 | Pb | 209 | 199.769 | 7127416 | 0.69 | 200 | 99.9 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 861013 | 0.67 | 900744 | 95.59 | 70 | 120 | |
| 72 | Ge | 665333 | 0.20 | 691836 | 96.17 | 70 | 120 | |
| 115 | In | 6231428 | 2.47 | 6634288 | 93.93 | 70 | 120 | |
| 209 | Bi | 15327196 | 0.94 | 16365010 | 93.66 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:11 | Sample Name | LCVL2-160520 |
| Data Batch | 160520.b | Comment | LCVLICPMS_TW |
| Data File Name | 068LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.180 | 474 | 2.40 | 10 | 101.8 | 70 | 130 | |
| 9 | Be | 45 | 0.959 | 59 | 8.65 | 1 | 95.9 | 70 | 130 | |
| 11 | B | 45 | 21.476 | 500 | 5.81 | 20 | 107.4 | 70 | 130 | |
| 23 | Na | 45 | 114.680 | 117582 | 1.00 | 100 | 114.7 | 70 | 130 | |
| 24 | Mg | 45 | 102.970 | 37317 | 0.48 | 100 | 103.0 | 70 | 130 | |
| 27 | Al | 45 | 98.909 | 12880 | 4.15 | 100 | 98.9 | 70 | 130 | |
| 39 | K | 45 | 108.787 | 81036 | 0.93 | 100 | 108.8 | 70 | 130 | |
| 44 | Ca | 45 | 94.480 | 2064 | 3.75 | 100 | 94.5 | 70 | 130 | |
| 47 | Ti | 45 | 5.005 | 672 | 10.88 | 5 | 100.1 | 70 | 130 | |
| 51 | V | 45 | 1.123 | 7743 | 1.49 | 1 | 112.3 | 70 | 130 | |
| 52 | Cr | 45 | 5.141 | 29121 | 0.49 | 5 | 102.8 | 70 | 130 | |
| 55 | Mn | 45 | 4.988 | 14682 | 1.06 | 5 | 99.8 | 70 | 130 | |
| 56 | Fe | 45 | 99.852 | 470995 | 0.94 | 100 | 99.9 | 70 | 130 | |
| 59 | Co | 72 | 5.265 | 47388 | 0.94 | 5 | 105.3 | 70 | 130 | |
| 60 | Ni | 72 | 5.263 | 13389 | 2.18 | 5 | 105.3 | 70 | 130 | |
| 63 | Cu | 72 | 4.987 | 36119 | 2.85 | 5 | 99.7 | 70 | 130 | |
| 66 | Zn | 72 | 5.046 | 5941 | 3.03 | 5 | 100.9 | 70 | 130 | |
| 75 | As | 72 | 5.075 | 4969 | 1.43 | 5 | 101.5 | 70 | 130 | |
| 78 | Se | 72 | 4.862 | 326 | 7.08 | 5 | 97.2 | 70 | 130 | |
| 88 | Sr | 115 | 5.081 | 20655 | 2.50 | 5 | 101.6 | 70 | 130 | |
| 95 | Mo | 115 | 4.888 | 18659 | 3.10 | 5 | 97.8 | 70 | 130 | |
| 107 | Ag | 115 | 1.957 | 23909 | 0.54 | 2 | 97.8 | 70 | 130 | |
| 111 | Cd | 115 | 0.957 | 1719 | 2.72 | 1 | 95.7 | 70 | 130 | |
| 118 | Sn | 115 | 5.006 | 19243 | 1.11 | 5 | 100.1 | 70 | 130 | |
| 121 | Sb | 115 | 1.956 | 11427 | 1.88 | 2 | 97.8 | 70 | 130 | |
| 137 | Ba | 115 | 4.966 | 9110 | 2.66 | 5 | 99.3 | 70 | 130 | |
| 205 | Tl | 209 | 0.981 | 26754 | 0.55 | 1 | 98.1 | 70 | 130 | |
| 208 | Pb | 209 | 0.963 | 35540 | 1.14 | 1 | 96.3 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 860941 | 0.31 | 900744 | 95.58 | 70 | 120 | |
| 72 | Ge | 668324 | 0.73 | 691836 | 96.60 | 70 | 120 | |
| 115 | In | 6285266 | 1.03 | 6634288 | 94.74 | 70 | 120 | |
| 209 | Bi | 15704344 | 0.74 | 16365010 | 95.96 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:20 | Sample Name | CCB2-160520 |
| Data Batch | 160520.b | Comment | CCB ICPMS_TW |
| Data File Name | 069_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | -0.014 | 13 | 25.4 | 2 | 5 | |
| 9 | Be | 45 | -0.006 | 3 | 34.6 | 0.4 | 0.3 | |
| 11 | B | 45 | 2.688 | 118 | 17.3 | 10 | 10 | |
| 23 | Na | 45 | 1.684 | 39484 | 2.0 | 50 | 100 | |
| 24 | Mg | 45 | -0.399 | 780 | 2.7 | 50 | 100 | |
| 27 | Al | 45 | -0.348 | 281 | 7.9 | 50 | 10 | |
| 39 | K | 45 | 7.540 | 48329 | 1.2 | 50 | 100 | |
| 44 | Ca | 45 | -1.660 | 189 | 6.3 | 50 | 100 | |
| 47 | Ti | 45 | 0.008 | 3 | 100.1 | 4 | 3 | |
| 51 | V | 45 | 0.049 | 2943 | 3.7 | 4 | 3 | |
| 52 | Cr | 45 | -0.015 | 847 | 3.8 | 2 | 2 | |
| 55 | Mn | 45 | -0.011 | 78 | 8.9 | 2 | 3 | |
| 56 | Fe | 45 | 0.069 | 7107 | 2.5 | 50 | 50 | |
| 59 | Co | 72 | -0.007 | 53 | 43.7 | 2 | 3 | |
| 60 | Ni | 72 | -0.065 | 244 | 13.7 | 2 | 3 | |
| 63 | Cu | 72 | -0.125 | 1426 | 1.3 | 2 | 2 | |
| 66 | Zn | 72 | -0.037 | 213 | 14.9 | 4 | 2 | |
| 75 | As | 72 | 0.009 | 141 | 11.2 | 2 | 2 | |
| 78 | Se | 72 | -0.189 | 58 | 22.2 | 1 | 2 | |
| 88 | Sr | 115 | 0.038 | 371 | 62.4 | 4 | 3 | |
| 95 | Mo | 115 | -0.003 | 19 | 56.7 | 2 | 2 | |
| 107 | Ag | 115 | 0.003 | 94 | 22.4 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.005 | 19 | 62.0 | 0.4 | 0.3 | |
| 118 | Sn | 115 | 0.076 | 714 | 4.9 | 4 | 3 | |
| 121 | Sb | 115 | 0.016 | 233 | 23.8 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.007 | 33 | 17.3 | 2 | 3 | |
| 205 | Tl | 209 | 0.000 | 34 | 39.1 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.001 | 310 | 17.2 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 899519 | 0.65 | 900744 | 99.86 | 70 | 120 | |
| 72 | Ge | 688533 | 0.82 | 691836 | 99.52 | 70 | 120 | |
| 115 | In | 6468049 | 0.42 | 6634288 | 97.49 | 70 | 120 | |
| 209 | Bi | 16017395 | 0.29 | 16365010 | 97.88 | 70 | 120 | |

# Method Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/16 1:22 PM | Sample Name | MB-75180 |
| Data Batch | 160520.b | Comment | MBLKICPMS_TWDOD |
| Data File Name | 070_LRB.d | Dilution | 1 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.065 | 16 | 43.00 | | |
| 9 | Be | 45 | -0.016 | 3 | 43.30 | | |
| 11 | B | 45 | 3.680 | 139 | 7.33 | | |
| 23 | Na | 45 | 1.602 | 39357 | 1.68 | | |
| 24 | Mg | 45 | 1.079 | 1323 | 9.33 | | |
| 27 | Al | 45 | 6.638 | 1207 | 6.50 | | |
| 39 | K | 45 | 6.087 | 47729 | 1.50 | | |
| 44 | Ca | 45 | 17.031 | 570 | 6.85 | | |
| 47 | Ti | 45 | 0.000 | 2 | 86.60 | | |
| 51 | V | 45 | 0.098 | 3175 | 2.84 | | |
| 52 | Cr | 45 | 0.003 | 946 | 10.81 | | |
| 55 | Mn | 45 | 0.007 | 131 | 27.42 | | |
| 56 | Fe | 45 | 0.701 | 10161 | 1.53 | | |
| 59 | Co | 72 | -0.006 | 58 | 35.25 | | |
| 60 | Ni | 72 | -0.056 | 270 | 9.64 | | |
| 63 | Cu | 72 | -0.120 | 1478 | 9.63 | | |
| 66 | Zn | 72 | 0.584 | 947 | 5.99 | | |
| 75 | As | 72 | -0.003 | 131 | 9.62 | | |
| 78 | Se | 72 | 0.231 | 82 | 12.61 | | |
| 88 | Sr | 115 | 0.102 | 651 | 7.42 | | |
| 95 | Mo | 115 | -0.004 | 14 | 74.18 | | |
| 107 | Ag | 115 | 0.004 | 98 | 20.55 | | |
| 111 | Cd | 115 | -0.005 | 0 | #DIV/0! | | |
| 118 | Sn | 115 | 0.027 | 536 | 6.23 | | |
| 121 | Sb | 115 | 0.014 | 222 | 8.66 | | |
| 137 | Ba | 115 | 0.032 | 82 | 24.77 | | |
| 205 | Tl | 209 | 0.000 | 47 | 25.75 | | |
| 208 | Pb | 209 | 0.004 | 533 | 7.68 | | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 898027 | 1.16 | 900744 | 99.70 | 70 | 120 | |
| 72 | Ge | 696733 | 0.54 | 691836 | 100.71 | 70 | 120 | |
| 115 | In | 6624535 | 1.15 | 6634288 | 99.85 | 70 | 120 | |
| 209 | Bi | 16420634 | 0.64 | 16365010 | 100.34 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:24 | Sample Name | LCS-75180 |
| Data Batch | 160520.b | Comment | LCS ICPMS_TWDOD |
| Data File Name | 071_LFB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 207.477 | 9515 | 1.62 | 200 | 103.7 | 80 | 120 | |
| 9 | Be | 45 | 202.266 | 11905 | 1.32 | 200 | 101.1 | 80 | 120 | |
| 11 | B | 45 | 195.161 | 4124 | 4.40 | 200 | 97.6 | 80 | 120 | |
| 23 | Na | 45 | 5153.894 | 3715782 | 0.89 | 5000 | 103.1 | 80 | 120 | |
| 24 | Mg | 45 | 5118.954 | 1831544 | 0.71 | 5000 | 102.4 | 80 | 120 | |
| 27 | Al | 45 | 4981.246 | 639961 | 1.20 | 5000 | 99.6 | 80 | 120 | |
| 39 | K | 45 | 5041.266 | 1794560 | 0.13 | 5000 | 100.8 | 80 | 120 | |
| 44 | Ca | 45 | 4740.164 | 94110 | 0.45 | 5000 | 94.8 | 80 | 120 | |
| 47 | Ti | 45 | 192.838 | 26098 | 0.93 | 200 | 96.4 | 80 | 120 | |
| 51 | V | 45 | 200.032 | 930245 | 0.81 | 200 | 100.0 | 80 | 120 | |
| 52 | Cr | 45 | 200.955 | 1116256 | 0.75 | 200 | 100.5 | 80 | 120 | |
| 55 | Mn | 45 | 199.655 | 589846 | 0.43 | 200 | 99.8 | 80 | 120 | |
| 56 | Fe | 45 | 5071.775 | 23856763 | 1.05 | 5000 | 101.4 | 80 | 120 | |
| 59 | Co | 72 | 207.626 | 1874260 | 0.84 | 200 | 103.8 | 80 | 120 | |
| 60 | Ni | 72 | 204.682 | 508272 | 0.59 | 200 | 102.3 | 80 | 120 | |
| 63 | Cu | 72 | 205.447 | 1405663 | 1.66 | 200 | 102.7 | 80 | 120 | |
| 66 | Zn | 72 | 202.971 | 230430 | 0.68 | 200 | 101.5 | 80 | 120 | |
| 75 | As | 72 | 196.603 | 188655 | 0.16 | 200 | 98.3 | 80 | 120 | |
| 78 | Se | 72 | 200.300 | 10823 | 0.38 | 200 | 100.1 | 80 | 120 | |
| 88 | Sr | 115 | 196.190 | 794822 | 0.55 | 200 | 98.1 | 80 | 120 | |
| 95 | Mo | 115 | 195.187 | 748613 | 0.26 | 200 | 97.6 | 80 | 120 | |
| 107 | Ag | 115 | 196.529 | 2412668 | 1.27 | 200 | 98.3 | 80 | 120 | |
| 111 | Cd | 115 | 196.284 | 352950 | 1.05 | 200 | 98.1 | 80 | 120 | |
| 118 | Sn | 115 | 193.543 | 733613 | 1.09 | 200 | 96.8 | 80 | 120 | |
| 121 | Sb | 115 | 198.951 | 1156640 | 0.59 | 200 | 99.5 | 80 | 120 | |
| 137 | Ba | 115 | 195.083 | 359597 | 1.11 | 200 | 97.5 | 80 | 120 | |
| 205 | Tl | 209 | 200.277 | 5442896 | 1.66 | 200 | 100.1 | 80 | 120 | |
| 208 | Pb | 209 | 196.766 | 7180277 | 0.50 | 200 | 98.4 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 870277 | 0.61 | 900744 | 96.62 | 70 | 120 | |
| 72 | Ge | 671795 | 0.07 | 691836 | 97.10 | 70 | 120 | |
| 115 | In | 6329080 | 2.64 | 6634288 | 95.40 | 70 | 120 | |
| 209 | Bi | 15677643 | 1.30 | 16365010 | 95.80 | 70 | 120 | |

# Laboratory Control Sample (LCS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:26 | Sample Name | LCSD-75180 |
| Data Batch | 160520.b | Comment | LCSDICPMS_TWDOD |
| Data File Name | 072_LFB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 211.628 | 9552 | 1.66 | 200 | 105.8 | 80 | 120 | |
| 9 | Be | 45 | 207.907 | 12043 | 0.86 | 200 | 104.0 | 80 | 120 | |
| 11 | B | 45 | 207.539 | 4312 | 1.43 | 200 | 103.8 | 80 | 120 | |
| 23 | Na | 45 | 5362.484 | 3803524 | 0.49 | 5000 | 107.2 | 80 | 120 | |
| 24 | Mg | 45 | 5350.645 | 1884119 | 0.41 | 5000 | 107.0 | 80 | 120 | |
| 27 | Al | 45 | 4623.801 | 584689 | 0.66 | 5000 | 92.5 | 80 | 120 | |
| 39 | K | 45 | 5298.886 | 1854221 | 0.78 | 5000 | 106.0 | 80 | 120 | |
| 44 | Ca | 45 | 4926.669 | 96259 | 0.97 | 5000 | 98.5 | 80 | 120 | |
| 47 | Ti | 45 | 200.210 | 26667 | 0.20 | 200 | 100.1 | 80 | 120 | |
| 51 | V | 45 | 205.077 | 938586 | 0.55 | 200 | 102.5 | 80 | 120 | |
| 52 | Cr | 45 | 204.586 | 1118439 | 0.90 | 200 | 102.3 | 80 | 120 | |
| 55 | Mn | 45 | 205.641 | 597919 | 0.06 | 200 | 102.8 | 80 | 120 | |
| 56 | Fe | 45 | 5087.447 | 23550804 | 1.09 | 5000 | 101.7 | 80 | 120 | |
| 59 | Co | 72 | 214.414 | 1904053 | 0.24 | 200 | 107.2 | 80 | 120 | |
| 60 | Ni | 72 | 209.839 | 512595 | 0.45 | 200 | 104.9 | 80 | 120 | |
| 63 | Cu | 72 | 210.981 | 1419956 | 0.46 | 200 | 105.5 | 80 | 120 | |
| 66 | Zn | 72 | 204.234 | 228100 | 0.64 | 200 | 102.1 | 80 | 120 | |
| 75 | As | 72 | 202.120 | 190788 | 0.15 | 200 | 101.1 | 80 | 120 | |
| 78 | Se | 72 | 201.529 | 10711 | 1.06 | 200 | 100.8 | 80 | 120 | |
| 88 | Sr | 115 | 196.352 | 801400 | 0.82 | 200 | 98.2 | 80 | 120 | |
| 95 | Mo | 115 | 195.900 | 756939 | 0.79 | 200 | 98.0 | 80 | 120 | |
| 107 | Ag | 115 | 195.076 | 2412277 | 0.22 | 200 | 97.5 | 80 | 120 | |
| 111 | Cd | 115 | 198.025 | 358702 | 0.47 | 200 | 99.0 | 80 | 120 | |
| 118 | Sn | 115 | 194.683 | 743307 | 0.78 | 200 | 97.3 | 80 | 120 | |
| 121 | Sb | 115 | 195.279 | 1143707 | 0.47 | 200 | 97.6 | 80 | 120 | |
| 137 | Ba | 115 | 194.998 | 362068 | 0.19 | 200 | 97.5 | 80 | 120 | |
| 205 | Tl | 209 | 201.393 | 5413984 | 0.64 | 200 | 100.7 | 80 | 120 | |
| 208 | Pb | 209 | 200.604 | 7241369 | 0.67 | 200 | 100.3 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 856491 | 0.13 | 900744 | 95.09 | 70 | 120 | |
| 72 | Ge | 660905 | 0.92 | 691836 | 95.53 | 70 | 120 | |
| 115 | In | 6373621 | 0.51 | 6634288 | 96.07 | 70 | 120 | |
| 209 | Bi | 15514322 | 2.64 | 16365010 | 94.80 | 70 | 120 | |

# Dilution Sample (Dil) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:32 | Sample Name | 1605097-27A SD |
| Data Batch | 160520.b | Comment | SD ICPMS_TWDOD |
| Data File Name | 075_SD.d | Dilution | 5 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Value | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.068 | 16 | 12.50 | 0.2 | 180.5 | 110 | 90 | |
| 9 | Be | 45 | -0.038 | 1 | 114.56 | 0.1 | -141.3 | 110 | 90 | |
| 11 | B | 45 | 17.535 | 423 | 8.52 | 77.9 | 112.5 | 110 | 90 | |
| 23 | Na | 45 | 35.699 | 62521 | 0.91 | 172.1 | 103.7 | 110 | 90 | Good |
| 24 | Mg | 45 | 3.836 | 2271 | 5.49 | 19.3 | 99.3 | 110 | 90 | Good |
| 27 | Al | 45 | 34.453 | 4743 | 3.67 | 166.6 | 103.4 | 110 | 90 | Good |
| 39 | K | 45 | 11.074 | 48015 | 1.21 | 33.2 | 166.9 | 110 | 90 | |
| 44 | Ca | 45 | 74.540 | 1693 | 4.14 | 360.4 | 103.4 | 110 | 90 | Good |
| 47 | Ti | 45 | 0.107 | 17 | 87.16 | 0.3 | 169.7 | 110 | 90 | |
| 51 | V | 45 | 0.073 | 2960 | 6.49 | 0.2 | 205.2 | 110 | 90 | |
| 52 | Cr | 45 | 0.197 | 1996 | 7.06 | 1.1 | 92.7 | 110 | 90 | Good |
| 55 | Mn | 45 | 0.148 | 544 | 14.36 | 0.8 | 93.8 | 110 | 90 | Good |
| 56 | Fe | 45 | 5.267 | 31343 | 1.57 | 26.2 | 100.7 | 110 | 90 | Good |
| 59 | Co | 72 | 0.009 | 193 | 14.73 | 0.0 | 121.3 | 110 | 90 | |
| 60 | Ni | 72 | 0.263 | 1052 | 2.56 | 1.7 | 76.4 | 110 | 90 | |
| 63 | Cu | 72 | -0.047 | 1923 | 10.96 | 0.3 | -91.9 | 110 | 90 | |
| 66 | Zn | 72 | 0.853 | 1217 | 12.34 | 4.1 | 103.4 | 110 | 90 | Good |
| 75 | As | 72 | 0.029 | 157 | 5.00 | 0.1 | 222.6 | 110 | 90 | |
| 78 | Se | 72 | 0.336 | 84 | 9.94 | 0.1 | 1399.8 | 110 | 90 | |
| 88 | Sr | 115 | 0.548 | 2455 | 2.52 | 2.7 | 102.1 | 110 | 90 | Good |
| 95 | Mo | 115 | 0.153 | 626 | 21.59 | 0.7 | 110.5 | 110 | 90 | |
| 107 | Ag | 115 | 0.009 | 164 | 25.34 | 0.0 | 250.0 | 110 | 90 | |
| 111 | Cd | 115 | 0.003 | 16 | 32.73 | 0.0 | 143.0 | 110 | 90 | |
| 118 | Sn | 115 | 0.074 | 696 | 6.98 | 0.2 | 169.5 | 110 | 90 | |
| 121 | Sb | 115 | 0.045 | 399 | 25.38 | 0.1 | 235.1 | 110 | 90 | |
| 137 | Ba | 115 | 0.117 | 239 | 11.62 | 0.7 | 90.2 | 110 | 90 | Good |
| 205 | Tl | 209 | 0.005 | 176 | 19.02 | 0.0 | 164.6 | 110 | 90 | |
| 208 | Pb | 209 | 0.027 | 1372 | 7.85 | 0.1 | 113.9 | 110 | 90 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 870854 | 0.91 | 900744 | 96.68 | 70 | 120 | |
| 72 | Ge | 671393 | 0.27 | 691836 | 97.05 | 70 | 120 | |
| 115 | In | 6391281 | 1.83 | 6634288 | 96.34 | 70 | 120 | |
| 209 | Bi | 15830888 | 0.33 | 16365010 | 96.74 | 70 | 120 | |

# Post Digestion Spike Sample (PDS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:52 | Sample Name | 1605097-27A PDS |
| Data Batch | 160520.b | Comment | PDS ICPMS_TWDOD |
| Data File Name | 085_PDS.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 208.981 | 9280 | 1.02 | 0.2 | 200 | 104.4 | 75 | 125 | |
| 9 | Be | 45 | 205.509 | 11711 | 0.53 | 0.1 | 200 | 102.7 | 75 | 125 | |
| 11 | B | 45 | 285.809 | 5820 | 2.43 | 77.9 | 200 | 104.0 | 75 | 125 | |
| 23 | Na | 45 | 5404.541 | 3770772 | 0.71 | 172.1 | 5000 | 104.6 | 75 | 125 | |
| 24 | Mg | 45 | 5227.887 | 1811012 | 0.25 | 19.3 | 5000 | 104.2 | 75 | 125 | |
| 27 | Al | 45 | 5186.356 | 645154 | 1.11 | 166.6 | 5000 | 100.4 | 75 | 125 | |
| 39 | K | 45 | 5131.767 | 1767946 | 0.81 | 33.2 | 5000 | 102.0 | 75 | 125 | |
| 44 | Ca | 45 | 5036.090 | 96794 | 0.63 | 360.4 | 5000 | 93.5 | 75 | 125 | |
| 47 | Ti | 45 | 204.672 | 26818 | 0.31 | 0.3 | 200 | 102.2 | 75 | 125 | |
| 51 | V | 45 | 205.614 | 925765 | 1.11 | 0.2 | 200 | 102.7 | 75 | 125 | |
| 52 | Cr | 45 | 209.415 | 1126215 | 0.10 | 1.1 | 200 | 104.2 | 75 | 125 | |
| 55 | Mn | 45 | 201.270 | 575717 | 0.99 | 0.8 | 200 | 100.2 | 75 | 125 | |
| 56 | Fe | 45 | 5141.790 | 23416040 | 2.86 | 26.2 | 5000 | 102.3 | 75 | 125 | |
| 59 | Co | 72 | 212.432 | 1865010 | 0.28 | 0.0 | 200 | 106.2 | 75 | 125 | |
| 60 | Ni | 72 | 206.554 | 498845 | 0.40 | 1.7 | 200 | 102.4 | 75 | 125 | |
| 63 | Cu | 72 | 205.509 | 1367501 | 0.81 | 0.3 | 200 | 102.6 | 75 | 125 | |
| 66 | Zn | 72 | 206.091 | 227552 | 0.83 | 4.1 | 200 | 101.0 | 75 | 125 | |
| 75 | As | 72 | 197.771 | 184566 | 0.70 | 0.1 | 200 | 98.9 | 75 | 125 | |
| 78 | Se | 72 | 202.393 | 10635 | 0.90 | 0.1 | 200 | 101.1 | 75 | 125 | |
| 88 | Sr | 115 | 206.704 | 815896 | 0.34 | 2.7 | 200 | 102.0 | 75 | 125 | |
| 95 | Mo | 115 | 198.384 | 741330 | 0.42 | 0.7 | 200 | 98.8 | 75 | 125 | |
| 107 | Ag | 115 | 184.548 | 2207022 | 0.22 | 0.0 | 200 | 92.3 | 75 | 125 | |
| 111 | Cd | 115 | 195.191 | 341931 | 0.27 | 0.0 | 200 | 97.6 | 75 | 125 | |
| 118 | Sn | 115 | 202.579 | 748007 | 0.46 | 0.2 | 200 | 101.2 | 75 | 125 | |
| 121 | Sb | 115 | 188.867 | 1069835 | 1.39 | 0.1 | 200 | 94.4 | 75 | 125 | |
| 137 | Ba | 115 | 199.288 | 357867 | 0.43 | 0.7 | 200 | 99.3 | 75 | 125 | |
| 205 | Tl | 209 | 199.302 | 5296717 | 0.74 | 0.0 | 200 | 99.6 | 75 | 125 | |
| 208 | Pb | 209 | 199.936 | 7134456 | 0.42 | 0.1 | 200 | 99.9 | 75 | 125 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 842584 | 0.33 | 900744 | 93.54 | 70 | 120 | |
| 72 | Ge | 653370 | 0.47 | 691836 | 94.44 | 70 | 120 | |
| 115 | In | 6164044 | 0.75 | 6634288 | 92.91 | 70 | 120 | |
| 209 | Bi | 15329899 | 0.74 | 16365010 | 93.67 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:54 | Sample Name | 1605097-27A MS |
| Data Batch | 160520.b | Comment | MS ICPMS_TWDOD |
| Data File Name | 086_MSW.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 170.064 | 7584 | 1.95 | 0.2 | 200 | 84.9 | 80 | 120 | |
| 9 | Be | 45 | 170.036 | 9730 | 0.33 | 0.1 | 200 | 85.0 | 80 | 120 | |
| 11 | B | 45 | 211.300 | 4335 | 2.63 | 77.9 | 200 | 66.7 | 80 | 120 | Fail |
| 23 | Na | 45 | 5276.203 | 3697081 | 0.68 | 172.1 | 5000 | 102.1 | 80 | 120 | |
| 24 | Mg | 45 | 5130.074 | 1784373 | 1.29 | 19.3 | 5000 | 102.2 | 80 | 120 | |
| 27 | Al | 45 | 4817.494 | 601724 | 1.24 | 166.6 | 5000 | 93.0 | 80 | 120 | |
| 39 | K | 45 | 5034.751 | 1742366 | 0.92 | 33.2 | 5000 | 100.0 | 80 | 120 | |
| 44 | Ca | 45 | 4749.301 | 91663 | 0.93 | 360.4 | 5000 | 87.8 | 80 | 120 | |
| 47 | Ti | 45 | 161.792 | 21287 | 1.94 | 0.3 | 200 | 80.7 | 80 | 120 | |
| 51 | V | 45 | 167.529 | 757849 | 1.08 | 0.2 | 200 | 83.7 | 80 | 120 | |
| 52 | Cr | 45 | 169.182 | 913736 | 0.52 | 1.1 | 200 | 84.1 | 80 | 120 | |
| 55 | Mn | 45 | 167.173 | 480133 | 1.01 | 0.8 | 200 | 83.2 | 80 | 120 | |
| 56 | Fe | 45 | 4989.600 | 22816465 | 1.30 | 26.2 | 5000 | 99.3 | 80 | 120 | |
| 59 | Co | 72 | 170.716 | 1510248 | 1.41 | 0.0 | 200 | 85.3 | 80 | 120 | |
| 60 | Ni | 72 | 170.393 | 414746 | 0.92 | 1.7 | 200 | 84.3 | 80 | 120 | |
| 63 | Cu | 72 | 170.672 | 1144804 | 0.98 | 0.3 | 200 | 85.2 | 80 | 120 | |
| 66 | Zn | 72 | 171.664 | 191038 | 0.75 | 4.1 | 200 | 83.8 | 80 | 120 | |
| 75 | As | 72 | 164.901 | 155123 | 1.29 | 0.1 | 200 | 82.4 | 80 | 120 | |
| 78 | Se | 72 | 162.927 | 8642 | 1.69 | 0.1 | 200 | 81.4 | 80 | 120 | |
| 88 | Sr | 115 | 166.659 | 660795 | 1.05 | 2.7 | 200 | 82.0 | 80 | 120 | |
| 95 | Mo | 115 | 163.856 | 615005 | 0.41 | 0.7 | 200 | 81.6 | 80 | 120 | |
| 107 | Ag | 115 | 198.800 | 2387903 | 0.89 | 0.0 | 200 | 99.4 | 80 | 120 | |
| 111 | Cd | 115 | 165.115 | 290524 | 0.61 | 0.0 | 200 | 82.6 | 80 | 120 | |
| 118 | Sn | 115 | 163.476 | 606381 | 0.54 | 0.2 | 200 | 81.6 | 80 | 120 | |
| 121 | Sb | 115 | 201.813 | 1148120 | 0.30 | 0.1 | 200 | 100.9 | 80 | 120 | |
| 137 | Ba | 115 | 165.330 | 298187 | 0.64 | 0.7 | 200 | 82.3 | 80 | 120 | |
| 205 | Tl | 209 | 163.516 | 4397378 | 0.75 | 0.0 | 200 | 81.8 | 80 | 120 | |
| 208 | Pb | 209 | 161.721 | 5839522 | 0.48 | 0.1 | 200 | 80.8 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 846025 | 0.40 | 900744 | 93.93 | 70 | 120 | |
| 72 | Ge | 658505 | 1.30 | 691836 | 95.18 | 70 | 120 | |
| 115 | In | 6191469 | 0.95 | 6634288 | 93.33 | 70 | 120 | |
| 209 | Bi | 15511736 | 0.59 | 16365010 | 94.79 | 70 | 120 | |

# Matrix Spike Sample (MS) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:56 | Sample Name | 1605097-27A MSD |
| Data Batch | 160520.b | Comment | MSD ICPMS_TWDOD |
| Data File Name | 087_MSW.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Ref Conc | Spk Amt | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 205.597 | 9304 | 1.62 | 0.2 | 200 | 102.7 | 80 | 120 | |
| 9 | Be | 45 | 203.064 | 11793 | 1.41 | 0.1 | 200 | 101.5 | 80 | 120 | |
| 11 | B | 45 | 242.909 | 5050 | 4.50 | 77.9 | 200 | 82.5 | 80 | 120 | |
| 23 | Na | 45 | 5177.237 | 3682905 | 1.10 | 172.1 | 5000 | 100.1 | 80 | 120 | |
| 24 | Mg | 45 | 4993.908 | 1763105 | 0.25 | 19.3 | 5000 | 99.5 | 80 | 120 | |
| 27 | Al | 45 | 4936.520 | 625831 | 0.74 | 166.6 | 5000 | 95.4 | 80 | 120 | |
| 39 | K | 45 | 4965.228 | 1744703 | 1.20 | 33.2 | 5000 | 98.6 | 80 | 120 | |
| 44 | Ca | 45 | 4753.640 | 93125 | 1.29 | 360.4 | 5000 | 87.9 | 80 | 120 | |
| 47 | Ti | 45 | 195.210 | 26068 | 0.98 | 0.3 | 200 | 97.4 | 80 | 120 | |
| 51 | V | 45 | 200.675 | 920875 | 0.73 | 0.2 | 200 | 100.2 | 80 | 120 | |
| 52 | Cr | 45 | 203.955 | 1117867 | 0.41 | 1.1 | 200 | 101.4 | 80 | 120 | |
| 55 | Mn | 45 | 202.473 | 590229 | 0.83 | 0.8 | 200 | 100.8 | 80 | 120 | |
| 56 | Fe | 45 | 5112.057 | 23726119 | 2.33 | 26.2 | 5000 | 101.7 | 80 | 120 | |
| 59 | Co | 72 | 206.133 | 1846156 | 0.73 | 0.0 | 200 | 103.0 | 80 | 120 | |
| 60 | Ni | 72 | 206.533 | 508832 | 0.56 | 1.7 | 200 | 102.4 | 80 | 120 | |
| 63 | Cu | 72 | 206.199 | 1399718 | 0.23 | 0.3 | 200 | 103.0 | 80 | 120 | |
| 66 | Zn | 72 | 204.471 | 230307 | 1.38 | 4.1 | 200 | 100.2 | 80 | 120 | |
| 75 | As | 72 | 198.160 | 188652 | 0.84 | 0.1 | 200 | 99.0 | 80 | 120 | |
| 78 | Se | 72 | 201.130 | 10782 | 0.12 | 0.1 | 200 | 100.5 | 80 | 120 | |
| 88 | Sr | 115 | 201.026 | 801163 | 0.72 | 2.7 | 200 | 99.2 | 80 | 120 | |
| 95 | Mo | 115 | 199.764 | 753727 | 1.09 | 0.7 | 200 | 99.5 | 80 | 120 | |
| 107 | Ag | 115 | 197.459 | 2384307 | 0.18 | 0.0 | 200 | 98.7 | 80 | 120 | |
| 111 | Cd | 115 | 200.097 | 353929 | 0.48 | 0.0 | 200 | 100.0 | 80 | 120 | |
| 118 | Sn | 115 | 197.870 | 737731 | 0.96 | 0.2 | 200 | 98.8 | 80 | 120 | |
| 121 | Sb | 115 | 201.125 | 1150215 | 0.35 | 0.1 | 200 | 100.5 | 80 | 120 | |
| 137 | Ba | 115 | 199.346 | 361437 | 0.39 | 0.7 | 200 | 99.3 | 80 | 120 | |
| 205 | Tl | 209 | 195.932 | 5357915 | 0.27 | 0.0 | 200 | 98.0 | 80 | 120 | |
| 208 | Pb | 209 | 195.812 | 7189529 | 0.20 | 0.1 | 200 | 97.8 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 858705 | 0.07 | 900744 | 95.33 | 70 | 120 | |
| 72 | Ge | 666512 | 0.03 | 691836 | 96.34 | 70 | 120 | |
| 115 | In | 6223826 | 0.86 | 6634288 | 93.81 | 70 | 120 | |
| 209 | Bi | 15779807 | 2.46 | 16365010 | 96.42 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 13:58 | Sample Name | CCV3-160520 |
| Data Batch | 160520.b | Comment | CCV ICPMS_TW |
| Data File Name | 088_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 203.180 | 9274 | 0.83 | 200 | 101.6 | 90 | 110 | |
| 9 | Be | 45 | 203.486 | 11920 | 1.02 | 200 | 101.7 | 90 | 110 | |
| 11 | B | 45 | 210.276 | 4416 | 1.73 | 200 | 105.1 | 90 | 110 | |
| 23 | Na | 45 | 5132.134 | 3682741 | 0.63 | 5000 | 102.6 | 90 | 110 | |
| 24 | Mg | 45 | 5086.454 | 1811320 | 0.58 | 5000 | 101.7 | 90 | 110 | |
| 27 | Al | 45 | 4980.080 | 636833 | 0.78 | 5000 | 99.6 | 90 | 110 | |
| 39 | K | 45 | 5081.672 | 1800039 | 0.46 | 5000 | 101.6 | 90 | 110 | |
| 44 | Ca | 45 | 4836.944 | 95568 | 0.34 | 5000 | 96.7 | 90 | 110 | |
| 47 | Ti | 45 | 200.071 | 26952 | 1.98 | 200 | 100.0 | 90 | 110 | |
| 51 | V | 45 | 203.154 | 940224 | 0.55 | 200 | 101.6 | 90 | 110 | |
| 52 | Cr | 45 | 202.100 | 1117262 | 0.18 | 200 | 101.1 | 90 | 110 | |
| 55 | Mn | 45 | 202.982 | 596833 | 0.52 | 200 | 101.5 | 90 | 110 | |
| 56 | Fe | 45 | 5019.103 | 23493427 | 1.22 | 5000 | 100.4 | 90 | 110 | |
| 59 | Co | 72 | 208.419 | 1864213 | 1.18 | 200 | 104.2 | 90 | 110 | |
| 60 | Ni | 72 | 205.434 | 505495 | 0.52 | 200 | 102.7 | 90 | 110 | |
| 63 | Cu | 72 | 209.149 | 1417980 | 1.14 | 200 | 104.6 | 90 | 110 | |
| 66 | Zn | 72 | 205.831 | 231556 | 1.37 | 200 | 102.9 | 90 | 110 | |
| 75 | As | 72 | 201.676 | 191753 | 0.22 | 200 | 100.8 | 90 | 110 | |
| 78 | Se | 72 | 204.247 | 10934 | 1.41 | 200 | 102.1 | 90 | 110 | |
| 88 | Sr | 115 | 201.502 | 818714 | 0.86 | 200 | 100.8 | 90 | 110 | |
| 95 | Mo | 115 | 199.699 | 768114 | 0.40 | 200 | 99.8 | 90 | 110 | |
| 107 | Ag | 115 | 202.247 | 2489708 | 0.73 | 200 | 101.1 | 90 | 110 | |
| 111 | Cd | 115 | 199.234 | 359250 | 0.46 | 200 | 99.6 | 90 | 110 | |
| 118 | Sn | 115 | 196.022 | 745053 | 0.39 | 200 | 98.0 | 90 | 110 | |
| 121 | Sb | 115 | 199.544 | 1163397 | 0.25 | 200 | 99.8 | 90 | 110 | |
| 137 | Ba | 115 | 198.512 | 366908 | 1.08 | 200 | 99.3 | 90 | 110 | |
| 205 | Tl | 209 | 199.782 | 5446376 | 0.37 | 200 | 99.9 | 90 | 110 | |
| 208 | Pb | 209 | 197.855 | 7242369 | 0.64 | 200 | 98.9 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 866202 | 1.29 | 900744 | 96.17 | 70 | 120 | |
| 72 | Ge | 665686 | 0.56 | 691836 | 96.22 | 70 | 120 | |
| 115 | In | 6344920 | 0.75 | 6634288 | 95.64 | 70 | 120 | |
| 209 | Bi | 15726160 | 1.52 | 16365010 | 96.10 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 14:04 | Sample Name | LCVL3-160520 |
| Data Batch | 160520.b | Comment | LCVLICPMS_TW |
| Data File Name | 090LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 11.230 | 527 | 10.42 | 10 | 112.3 | 70 | 130 | |
| 9 | Be | 45 | 1.010 | 63 | 17.89 | 1 | 101.0 | 70 | 130 | |
| 11 | B | 45 | 24.634 | 571 | 4.38 | 20 | 123.2 | 70 | 130 | |
| 23 | Na | 45 | 98.195 | 107074 | 0.50 | 100 | 98.2 | 70 | 130 | |
| 24 | Mg | 45 | 101.451 | 37176 | 1.95 | 100 | 101.5 | 70 | 130 | |
| 27 | Al | 45 | 99.147 | 13048 | 0.90 | 100 | 99.1 | 70 | 130 | |
| 39 | K | 45 | 103.570 | 80094 | 1.64 | 100 | 103.6 | 70 | 130 | |
| 44 | Ca | 45 | 100.317 | 2202 | 2.99 | 100 | 100.3 | 70 | 130 | |
| 47 | Ti | 45 | 5.093 | 691 | 7.81 | 5 | 101.9 | 70 | 130 | |
| 51 | V | 45 | 1.066 | 7563 | 1.15 | 1 | 106.6 | 70 | 130 | |
| 52 | Cr | 45 | 5.146 | 29458 | 1.00 | 5 | 102.9 | 70 | 130 | |
| 55 | Mn | 45 | 5.131 | 15261 | 1.50 | 5 | 102.6 | 70 | 130 | |
| 56 | Fe | 45 | 100.203 | 477688 | 0.08 | 100 | 100.2 | 70 | 130 | |
| 59 | Co | 72 | 5.197 | 47885 | 1.12 | 5 | 103.9 | 70 | 130 | |
| 60 | Ni | 72 | 5.154 | 13429 | 0.94 | 5 | 103.1 | 70 | 130 | |
| 63 | Cu | 72 | 5.013 | 37155 | 1.61 | 5 | 100.3 | 70 | 130 | |
| 66 | Zn | 72 | 5.311 | 6389 | 4.69 | 5 | 106.2 | 70 | 130 | |
| 75 | As | 72 | 4.952 | 4966 | 1.28 | 5 | 99.0 | 70 | 130 | |
| 78 | Se | 72 | 5.555 | 371 | 4.76 | 5 | 111.1 | 70 | 130 | |
| 88 | Sr | 115 | 5.152 | 21317 | 0.76 | 5 | 103.0 | 70 | 130 | |
| 95 | Mo | 115 | 4.876 | 18942 | 2.94 | 5 | 97.5 | 70 | 130 | |
| 107 | Ag | 115 | 1.956 | 24332 | 2.20 | 2 | 97.8 | 70 | 130 | |
| 111 | Cd | 115 | 0.961 | 1757 | 3.66 | 1 | 96.1 | 70 | 130 | |
| 118 | Sn | 115 | 5.019 | 19639 | 1.08 | 5 | 100.4 | 70 | 130 | |
| 121 | Sb | 115 | 2.013 | 11969 | 1.61 | 2 | 100.7 | 70 | 130 | |
| 137 | Ba | 115 | 4.958 | 9262 | 1.20 | 5 | 99.2 | 70 | 130 | |
| 205 | Tl | 209 | 0.992 | 27281 | 1.62 | 1 | 99.2 | 70 | 130 | |
| 208 | Pb | 209 | 0.977 | 36361 | 0.51 | 1 | 97.7 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 870167 | 0.41 | 900744 | 96.61 | 70 | 120 | |
| 72 | Ge | 684121 | 0.81 | 691836 | 98.88 | 70 | 120 | |
| 115 | In | 6398204 | 0.37 | 6634288 | 96.44 | 70 | 120 | |
| 209 | Bi | 15843229 | 2.06 | 16365010 | 96.81 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 14:06 | Sample Name | CCB3-160520 |
| Data Batch | 160520.b | Comment | CCB ICPMS_TW |
| Data File Name | 091_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | -0.018 | 12 | 28.9 | 2 | 5 | |
| 9 | Be | 45 | 0.007 | 4 | 75.0 | 0.4 | 0.3 | |
| 11 | B | 45 | 5.180 | 166 | 19.3 | 10 | 10 | |
| 23 | Na | 45 | -4.493 | 33660 | 2.0 | 50 | 100 | |
| 24 | Mg | 45 | -1.062 | 516 | 7.2 | 50 | 100 | |
| 27 | Al | 45 | -0.474 | 254 | 16.5 | 50 | 10 | |
| 39 | K | 45 | 5.967 | 46044 | 0.9 | 50 | 100 | |
| 44 | Ca | 45 | 0.316 | 221 | 16.5 | 50 | 100 | |
| 47 | Ti | 45 | 0.034 | 7 | 86.6 | 4 | 3 | |
| 51 | V | 45 | 0.086 | 3011 | 4.6 | 4 | 3 | |
| 52 | Cr | 45 | 0.000 | 899 | 4.6 | 2 | 2 | |
| 55 | Mn | 45 | -0.001 | 103 | 29.6 | 2 | 3 | |
| 56 | Fe | 45 | 0.192 | 7426 | 0.8 | 50 | 50 | |
| 59 | Co | 72 | 0.009 | 199 | 23.8 | 2 | 3 | |
| 60 | Ni | 72 | -0.070 | 230 | 15.3 | 2 | 3 | |
| 63 | Cu | 72 | -0.120 | 1441 | 7.2 | 2 | 2 | |
| 66 | Zn | 72 | -0.026 | 223 | 3.9 | 4 | 2 | |
| 75 | As | 72 | 0.026 | 155 | 2.8 | 2 | 2 | |
| 78 | Se | 72 | 0.144 | 75 | 6.5 | 1 | 2 | |
| 88 | Sr | 115 | -0.007 | 181 | 12.5 | 4 | 3 | |
| 95 | Mo | 115 | 0.003 | 42 | 22.8 | 2 | 2 | |
| 107 | Ag | 115 | 0.009 | 161 | 2.4 | 0.4 | 1 | |
| 111 | Cd | 115 | 0.000 | 10 | 33.3 | 0.4 | 0.3 | |
| 118 | Sn | 115 | 0.131 | 907 | 6.1 | 4 | 3 | |
| 121 | Sb | 115 | 0.092 | 671 | 12.4 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.013 | 44 | 11.5 | 2 | 3 | |
| 205 | Tl | 209 | 0.004 | 156 | 14.3 | 2 | 0.5 | |
| 208 | Pb | 209 | 0.003 | 463 | 8.5 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 867169 | 1.51 | 900744 | 96.27 | 70 | 120 | |
| 72 | Ge | 678651 | 0.28 | 691836 | 98.09 | 70 | 120 | |
| 115 | In | 6326752 | 0.94 | 6634288 | 95.36 | 70 | 120 | |
| 209 | Bi | 15694418 | 1.64 | 16365010 | 95.90 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/16 2:16 PM | Sample Name | 1605121-46A |
| Data Batch | 160520.b | Comment | SAMPICPMS_TWDOD |
| Data File Name | 096_WS.d | Dilution | 1 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.066 | 16 | 10.83 | 2000 | |
| 9 | Be | 45 | 0.002 | 4 | 15.75 | 2000 | |
| 11 | B | 45 | 40.703 | 911 | 3.81 | 2000 | >RL |
| 23 | Na | 45 | 362.590 | 297599 | 1.19 | 25000 | >RL |
| 24 | Mg | 45 | 10.891 | 4822 | 5.28 | 25000 | |
| 27 | Al | 45 | 26.669 | 3764 | 3.50 | 10000 | J |
| 39 | K | 45 | 66.372 | 67588 | 0.82 | 25000 | |
| 44 | Ca | 45 | 89.557 | 2002 | 7.96 | 25000 | |
| 47 | Ti | 45 | 0.147 | 22 | 37.76 | 2000 | |
| 51 | V | 45 | 0.468 | 4817 | 3.60 | 2000 | |
| 52 | Cr | 45 | 4.151 | 24083 | 0.88 | 2000 | J |
| 55 | Mn | 45 | 1.822 | 5522 | 0.88 | 2000 | |
| 56 | Fe | 45 | 96.150 | 461449 | 1.01 | 10000 | J |
| 59 | Co | 72 | 0.031 | 397 | 17.89 | 2000 | |
| 60 | Ni | 72 | 1.603 | 4423 | 0.78 | 2000 | |
| 63 | Cu | 72 | 0.597 | 6388 | 3.66 | 2000 | |
| 66 | Zn | 72 | 5.961 | 7083 | 2.49 | 2000 | >RL |
| 75 | As | 72 | 0.036 | 165 | 8.98 | 2000 | |
| 78 | Se | 72 | 0.162 | 76 | 10.37 | 2000 | |
| 88 | Sr | 115 | 0.431 | 1977 | 6.62 | 2000 | |
| 95 | Mo | 115 | 4.673 | 18172 | 1.01 | 2000 | J |
| 107 | Ag | 115 | 0.007 | 140 | 16.67 | 500 | |
| 111 | Cd | 115 | 0.000 | 10 | 115.51 | 2000 | |
| 118 | Sn | 115 | 0.143 | 962 | 13.41 | 2000 | |
| 121 | Sb | 115 | 0.060 | 489 | 14.34 | 500 | |
| 137 | Ba | 115 | 0.307 | 593 | 9.04 | 2000 | |
| 205 | Tl | 209 | 0.002 | 86 | 9.80 | 2000 | |
| 208 | Pb | 209 | 0.035 | 1675 | 5.17 | 2000 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 875518 | 0.67 | 900744 | 97.20 | 70 | 120 | |
| 72 | Ge | 678811 | 0.67 | 691836 | 98.12 | 70 | 120 | |
| 115 | In | 6404543 | 1.17 | 6634288 | 96.54 | 70 | 120 | |
| 209 | Bi | 16094472 | 1.27 | 16365010 | 98.35 | 70 | 120 | |

# Sample Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/16 2:18 PM | Sample Name | 1605121-47A |
| Data Batch | 160520.b | Comment | SAMPICPMS_TWDOD |
| Data File Name | 097_WS.d | Dilution | 1 |

| Mass | Name | IS | Conc (ppb) | CPS | %RSD | High Limit | Flag |
|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 0.013 | 14 | 11.18 | 2000 | |
| 9 | Be | 45 | -0.004 | 3 | 69.28 | 2000 | |
| 11 | B | 45 | 30.948 | 711 | 2.58 | 2000 | >RL |
| 23 | Na | 45 | 353.542 | 292786 | 0.26 | 25000 | >RL |
| 24 | Mg | 45 | 10.201 | 4600 | 1.96 | 25000 | |
| 27 | Al | 45 | 19.730 | 2885 | 3.04 | 10000 | J |
| 39 | K | 45 | 31.047 | 55574 | 0.84 | 25000 | |
| 44 | Ca | 45 | 84.275 | 1907 | 5.00 | 25000 | |
| 47 | Ti | 45 | 0.283 | 41 | 57.52 | 2000 | |
| 51 | V | 45 | 0.257 | 3858 | 1.62 | 2000 | |
| 52 | Cr | 45 | 1.348 | 8485 | 4.02 | 2000 | |
| 55 | Mn | 45 | 1.252 | 3853 | 2.37 | 2000 | |
| 56 | Fe | 45 | 56.862 | 277184 | 0.50 | 10000 | J |
| 59 | Co | 72 | 0.030 | 392 | 4.28 | 2000 | |
| 60 | Ni | 72 | 1.077 | 3120 | 4.46 | 2000 | |
| 63 | Cu | 72 | 0.131 | 3193 | 1.60 | 2000 | |
| 66 | Zn | 72 | 4.935 | 5940 | 2.61 | 2000 | J |
| 75 | As | 72 | 0.024 | 154 | 7.09 | 2000 | |
| 78 | Se | 72 | 0.061 | 71 | 18.37 | 2000 | |
| 88 | Sr | 115 | 0.594 | 2692 | 2.04 | 2000 | |
| 95 | Mo | 115 | 3.989 | 15783 | 1.63 | 2000 | J |
| 107 | Ag | 115 | 0.006 | 127 | 18.42 | 500 | |
| 111 | Cd | 115 | -0.001 | 9 | 94.38 | 2000 | |
| 118 | Sn | 115 | 0.117 | 879 | 8.39 | 2000 | |
| 121 | Sb | 115 | 0.051 | 442 | 7.74 | 500 | |
| 137 | Ba | 115 | 0.363 | 709 | 7.07 | 2000 | |
| 205 | Tl | 209 | 0.001 | 77 | 4.35 | 2000 | |
| 208 | Pb | 209 | 0.036 | 1725 | 3.95 | 2000 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 880704 | 1.29 | 900744 | 97.78 | 70 | 120 | |
| 72 | Ge | 682613 | 1.72 | 691836 | 98.67 | 70 | 120 | |
| 115 | In | 6513177 | 0.73 | 6634288 | 98.17 | 70 | 120 | |
| 209 | Bi | 16077163 | 1.86 | 16365010 | 98.24 | 70 | 120 | |

# Continuing Calibration Verification (CCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 14:24 | Sample Name | CCV4-160520 |
| Data Batch | 160520.b | Comment | CCV ICPMS_TW |
| Data File Name | 100_CCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 209.123 | 9388 | 0.80 | 200 | 104.6 | 90 | 110 | |
| 9 | Be | 45 | 208.207 | 11994 | 0.48 | 200 | 104.1 | 90 | 110 | |
| 11 | B | 45 | 203.797 | 4212 | 3.86 | 200 | 101.9 | 90 | 110 | |
| 23 | Na | 45 | 5148.990 | 3633551 | 0.68 | 5000 | 103.0 | 90 | 110 | |
| 24 | Mg | 45 | 5123.233 | 1794203 | 0.40 | 5000 | 102.5 | 90 | 110 | |
| 27 | Al | 45 | 4980.045 | 626267 | 0.50 | 5000 | 99.6 | 90 | 110 | |
| 39 | K | 45 | 5038.185 | 1755471 | 0.35 | 5000 | 100.8 | 90 | 110 | |
| 44 | Ca | 45 | 4785.666 | 92998 | 0.86 | 5000 | 95.7 | 90 | 110 | |
| 47 | Ti | 45 | 199.374 | 26410 | 2.03 | 200 | 99.7 | 90 | 110 | |
| 51 | V | 45 | 202.096 | 919918 | 0.37 | 200 | 101.0 | 90 | 110 | |
| 52 | Cr | 45 | 202.131 | 1098976 | 0.19 | 200 | 101.1 | 90 | 110 | |
| 55 | Mn | 45 | 202.769 | 586339 | 1.07 | 200 | 101.4 | 90 | 110 | |
| 56 | Fe | 45 | 5041.066 | 23208886 | 2.16 | 5000 | 100.8 | 90 | 110 | |
| 59 | Co | 72 | 207.997 | 1837266 | 0.54 | 200 | 104.0 | 90 | 110 | |
| 60 | Ni | 72 | 206.739 | 502343 | 0.77 | 200 | 103.4 | 90 | 110 | |
| 63 | Cu | 72 | 206.988 | 1385843 | 0.86 | 200 | 103.5 | 90 | 110 | |
| 66 | Zn | 72 | 203.079 | 225616 | 1.76 | 200 | 101.5 | 90 | 110 | |
| 75 | As | 72 | 199.013 | 186865 | 0.89 | 200 | 99.5 | 90 | 110 | |
| 78 | Se | 72 | 200.798 | 10616 | 0.97 | 200 | 100.4 | 90 | 110 | |
| 88 | Sr | 115 | 201.110 | 805597 | 1.18 | 200 | 100.6 | 90 | 110 | |
| 95 | Mo | 115 | 199.684 | 757215 | 0.24 | 200 | 99.8 | 90 | 110 | |
| 107 | Ag | 115 | 203.488 | 2469488 | 0.16 | 200 | 101.7 | 90 | 110 | |
| 111 | Cd | 115 | 199.985 | 355504 | 0.18 | 200 | 100.0 | 90 | 110 | |
| 118 | Sn | 115 | 197.462 | 739911 | 0.69 | 200 | 98.7 | 90 | 110 | |
| 121 | Sb | 115 | 198.318 | 1139914 | 0.61 | 200 | 99.2 | 90 | 110 | |
| 137 | Ba | 115 | 198.384 | 361502 | 0.28 | 200 | 99.2 | 90 | 110 | |
| 205 | Tl | 209 | 198.777 | 5414678 | 1.21 | 200 | 99.4 | 90 | 110 | |
| 208 | Pb | 209 | 196.887 | 7201152 | 0.36 | 200 | 98.4 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 851803 | 0.12 | 900744 | 94.57 | 70 | 120 | |
| 72 | Ge | 657385 | 0.52 | 691836 | 95.02 | 70 | 120 | |
| 115 | In | 6255271 | 0.87 | 6634288 | 94.29 | 70 | 120 | |
| 209 | Bi | 15713189 | 1.11 | 16365010 | 96.02 | 70 | 120 | |

# Low Level Calibration Verification (LLCV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 14:41 | Sample Name | LCVL4-160520 |
| Data Batch | 160520.b | Comment | LCVLICPMS_TW |
| Data File Name | 102LCCV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 10.685 | 502 | 3.49 | 10 | 106.9 | 70 | 130 | |
| 9 | Be | 45 | 1.096 | 68 | 6.41 | 1 | 109.6 | 70 | 130 | |
| 11 | B | 45 | 23.853 | 554 | 7.94 | 20 | 119.3 | 70 | 130 | |
| 23 | Na | 45 | 93.918 | 103987 | 0.70 | 100 | 93.9 | 70 | 130 | |
| 24 | Mg | 45 | 99.544 | 36480 | 0.51 | 100 | 99.5 | 70 | 130 | |
| 27 | Al | 45 | 99.184 | 13048 | 0.80 | 100 | 99.2 | 70 | 130 | |
| 39 | K | 45 | 105.038 | 80572 | 0.51 | 100 | 105.0 | 70 | 130 | |
| 44 | Ca | 45 | 92.119 | 2039 | 1.77 | 100 | 92.1 | 70 | 130 | |
| 47 | Ti | 45 | 5.333 | 723 | 9.71 | 5 | 106.7 | 70 | 130 | |
| 51 | V | 45 | 1.049 | 7481 | 3.19 | 1 | 104.9 | 70 | 130 | |
| 52 | Cr | 45 | 5.152 | 29482 | 1.43 | 5 | 103.0 | 70 | 130 | |
| 55 | Mn | 45 | 4.912 | 14610 | 1.67 | 5 | 98.2 | 70 | 130 | |
| 56 | Fe | 45 | 99.465 | 474042 | 0.99 | 100 | 99.5 | 70 | 130 | |
| 59 | Co | 72 | 5.203 | 47305 | 0.83 | 5 | 104.1 | 70 | 130 | |
| 60 | Ni | 72 | 5.133 | 13200 | 2.09 | 5 | 102.7 | 70 | 130 | |
| 63 | Cu | 72 | 5.024 | 36741 | 1.23 | 5 | 100.5 | 70 | 130 | |
| 66 | Zn | 72 | 5.226 | 6207 | 1.40 | 5 | 104.5 | 70 | 130 | |
| 75 | As | 72 | 5.050 | 4995 | 1.79 | 5 | 101.0 | 70 | 130 | |
| 78 | Se | 72 | 5.706 | 375 | 1.39 | 5 | 114.1 | 70 | 130 | |
| 88 | Sr | 115 | 4.972 | 21117 | 3.12 | 5 | 99.4 | 70 | 130 | |
| 95 | Mo | 115 | 4.710 | 18774 | 0.76 | 5 | 94.2 | 70 | 130 | |
| 107 | Ag | 115 | 1.888 | 24096 | 1.18 | 2 | 94.4 | 70 | 130 | |
| 111 | Cd | 115 | 0.955 | 1792 | 2.86 | 1 | 95.5 | 70 | 130 | |
| 118 | Sn | 115 | 4.754 | 19110 | 1.41 | 5 | 95.1 | 70 | 130 | |
| 121 | Sb | 115 | 1.846 | 11275 | 1.66 | 2 | 92.3 | 70 | 130 | |
| 137 | Ba | 115 | 4.953 | 9493 | 1.16 | 5 | 99.1 | 70 | 130 | |
| 205 | Tl | 209 | 0.994 | 26913 | 0.64 | 1 | 99.4 | 70 | 130 | |
| 208 | Pb | 209 | 0.974 | 35718 | 1.32 | 1 | 97.4 | 70 | 130 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 869866 | 0.59 | 900744 | 96.57 | 70 | 120 | |
| 72 | Ge | 675027 | 0.39 | 691836 | 97.57 | 70 | 120 | |
| 115 | In | 6564471 | 0.91 | 6634288 | 98.95 | 70 | 120 | |
| 209 | Bi | 15594017 | 0.83 | 16365010 | 95.29 | 70 | 120 | |

# Continuing Calibration Blank (CCB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/20/2016 14:48 | Sample Name | CCB4-160520 |
| Data Batch | 160520.b | Comment | CCB ICPMS_TW |
| Data File Name | 103_CCB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | -0.025 | 11 | 58.7 | 2 | 5 | |
| 9 | Be | 45 | -0.019 | 2 | 24.7 | 0.4 | 0.3 | |
| 11 | B | 45 | 0.364 | 63 | 39.7 | 10 | 10 | |
| 23 | Na | 45 | -7.059 | 30783 | 0.7 | 50 | 100 | |
| 24 | Mg | 45 | -1.361 | 396 | 1.0 | 50 | 100 | |
| 27 | Al | 45 | -0.498 | 243 | 17.8 | 50 | 10 | |
| 39 | K | 45 | 4.451 | 44003 | 0.3 | 50 | 100 | |
| 44 | Ca | 45 | 1.218 | 230 | 6.8 | 50 | 100 | |
| 47 | Ti | 45 | 0.044 | 8 | 65.5 | 4 | 3 | |
| 51 | V | 45 | 0.114 | 3035 | 8.6 | 4 | 3 | |
| 52 | Cr | 45 | -0.015 | 788 | 5.7 | 2 | 2 | |
| 55 | Mn | 45 | -0.019 | 49 | 10.4 | 2 | 3 | |
| 56 | Fe | 45 | 0.164 | 7056 | 6.1 | 50 | 50 | |
| 59 | Co | 72 | -0.003 | 86 | 9.8 | 2 | 3 | |
| 60 | Ni | 72 | -0.033 | 309 | 9.1 | 2 | 3 | |
| 63 | Cu | 72 | -0.124 | 1360 | 4.9 | 2 | 2 | |
| 66 | Zn | 72 | -0.033 | 207 | 14.0 | 4 | 2 | |
| 75 | As | 72 | -0.001 | 124 | 10.6 | 2 | 2 | |
| 78 | Se | 72 | 0.097 | 70 | 21.7 | 1 | 2 | |
| 88 | Sr | 115 | 0.011 | 251 | 13.3 | 4 | 3 | |
| 95 | Mo | 115 | -0.004 | 14 | 35.3 | 2 | 2 | |
| 107 | Ag | 115 | 0.002 | 71 | 57.9 | 0.4 | 1 | |
| 111 | Cd | 115 | -0.004 | 2 | 86.6 | 0.4 | 0.3 | |
| 118 | Sn | 115 | 0.031 | 519 | 5.5 | 4 | 3 | |
| 121 | Sb | 115 | 0.006 | 166 | 31.5 | 2 | 0.8 | |
| 137 | Ba | 115 | 0.015 | 47 | 18.9 | 2 | 3 | |
| 205 | Tl | 209 | 0.000 | 26 | 61.6 | 2 | 0.5 | |
| 208 | Pb | 209 | -0.002 | 280 | 20.0 | 0.4 | 0.3 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 838258 | 0.89 | 900744 | 93.06 | 70 | 120 | |
| 72 | Ge | 652989 | 0.94 | 691836 | 94.38 | 70 | 120 | |
| 115 | In | 6222740 | 1.27 | 6634288 | 93.80 | 70 | 120 | |
| 209 | Bi | 15341203 | 0.92 | 16365010 | 93.74 | 70 | 120 | |

# ICP-MS4_160523F
# For

# DHL Work Order
# 1605121

# Lab Data Review Check List
## EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

| PROJECT AND BATCH NUMBERS ARE LISTED ON THE RUN LOG | Run ID: ICP-MS4_160523F<br>SOP: MET-ICPMS-01 | | | |
|---|---|---|---|---|
| **Review Item** | **Yes** | **No** | **N/A** | **2nd Level Review** |
| **Data Folder Contents**<br>1. Is the Prep Batch Report included?<br>***Check the Prep Start/End Dates, Sample Amounts, Bottle #s*** | X | | | X |
| 2. Are the reagents and spikes listed on the Prep Batch Report current with a valid expiration date?<br>***All standard/QC sample preparations shall be documented in LIMS*** | X | | | |
| 3. Is the Run Log and instrument sequence included?<br>***Check the Test Code, Sample Type, Batch ID, and Analysis Date/Time*** | X | | | |

## Daily Demonstration of Performance

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in the Variance/Comment Section on page 2.**

| Review Item | Frequency | Limits | Pass | Fail (List Batch/Sample) **See Run Log** | | 2nd Level Review |
|---|---|---|---|---|---|---|
| Tune | Before ICAL | RSD ≤ 5% / Peak Width@10% <0.9amu | X | | | X |
| P/A Factor | Before ICAL | Increasing trend | X | | | |
| Initial Calibration Curve (ICAL) (Blank + 4 Standards) | Prior to samples and when ICV fails | R ≥ 0.995 (DoD)<br>R ≥ 0.998 (6020A) | X | | | |
| **Review Item** | **Frequency** | **Limits** | **Pass** | **Fail** | **N/A** | **Review** |
| ICSA (N/A for Method 200.8+U) | After calibration & every 12 hours | < RL (except Mn & Zn) | X | | | X |
| ICSAB (N/A for Method 200.8+U) | After calibration & every 12 hours | 80-120% (correct for ICSA result) | X | | | |
| **Note: LCVLs and ICSA/ICSAB are N/A for Method 200.8 or project-specific exceptions** | | | | | | |
| ICV (Second Source Verification) | After ICAL | 90-110% | X | | | X |
| ICB | After calibration | < MDL | X | | | |
| CCV | Every 10 samples | 90-110% | X | | | |
| CCB | Every 10 samples | < MDL (ALL + DoD) | X | | | |
| Internal Standards | Every sample and QC sample | > 70% (6020A)<br>60-125% (200.8)<br>30-120% (DoD) | X | | | |
| LCVL (6020A test code) | After ICAL, every 10 samples and end of run | 70-130% | | | X | |
| LCVL (All metals test codes except 200.8/6020A) | After ICAL and end of run | 70-130% | X | | | |
| Method Blank (MB) | Every Batch | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | X | | | |
| Filter/TCLP/SPLP Blank | Filter-Dissolved only TCLP / SPLP | < MDL / <½ RL (DoD) or <1/10 the sample/reg limit | X | | | |
| Lab Control Sample (LCS) | Every Batch | 80-120% | X | | | |
| Lab Control Sample Dup (LCSD) | Every Batch | 80-120% | X | | | |
| LCSD - RPD | Every LCS/LCSD | 15 (H2O) / 20 (Soil) | X | | | |
| Matrix Spike/ Matrix Spike Duplicate (MS/MSD) | Every Batch | 80-120% | | X | | |
| MSD - RPD | Every MS/MSD | 15 (H2O) / 20 (Soil) | | X | | |
| Dilution Test (SD) - RPD | Every Batch | 10 | X | | | |
| Post Digestion Spike (PDS) | Every Batch | 75-125 / 80-120 (6020A) | X | | | |

# Lab Data Review Check List
## EPA Method 6020 / 6020A / 200.8 - Trace Metals by ICP-MS

| Review Item | Criteria | Yes | No | N/A | 2nd Level Review |
|---|---|---|---|---|---|
| **Sample Analysis**<br>1. Are all sample hold times met? | 6 months | X | | | X |
| 2. Are all samples with concentrations > the highest standard used for calibration diluted and reanalyzed? | All results > high point of ICAL must be diluted | X | | | |
| **3. Are ALL reported analytes and reported results > MDL highlighted by the analyst?** | | X | **Confirm with analyst if LIMS result does not match Labcore** | | |

## VARIANCE REPORT

**QC items that do not meet method/SOP/project requirements will be described on the run log. All variances that impact data quality will be described in this section.**

| NON-CONFORMANCES / VARIANCE | Criteria | Yes | No | N/A | 2nd Level |
|---|---|---|---|---|---|
| 1. Are all non-conformances and corrective actions included and noted? | All deviations from the method and SOP that affect data quality | X | | | X |
| 2. Does the variance require approval by the Technical Director/General Manager/QA Manager? | | X | | | |

TECHNICAL DIRECTOR / QA MANAGER APPROVAL
SIGNATURE AND DATE STAMP:

Description and Corrective Actions of QC items that do not meet method/SOP/project requirements:

****INCLUDE VARIANCE ITEM / REASON / CORRECTIVE ACTION / IMPACT ON DATA****

| VARIANCE ITEM | REASON | CORRECTIVE ACTION |
|---|---|---|
| __ CCV out of control (± 10%) | __ Carryover from previous run | __ Reanalyze QC to confirm |
| __ CCB out of control (> MDL / >½ RL) | __ Cross contamination | __ Recalibrate |
| __ MB out of control (> RL / >½ RL) | __ Lab Artifact | __ Reprep/Reanalyze sample |
| __ LCS __ LCSD out of control (± 20%) | __ Prep Spike error (describe) | __ Reprep/Reanalyze Batch |
| __ MS __ MSD out of control (± 20%) | __ Matrix Effect | __ Reanalyze Batch/Sample/QC |
| __ RPD out of control for MS/MSD (15/25) | __ High Levels of Target Metals | __ Verify reagents are clean |
| __ Internal Standard(s) out of control (see Method) | __ Insufficient sample for QC | __ Reanalyze sample to confirm |
| __ No MS/MSD prepared - LCS/LCSD used instead | __ Digestion/Prep Error | __ Sample results ND w/ dilution |
| __ Missing QC (other than MS/MSD) | __ Analytical Error | __ Client notified and approved |
| __ QC sample(s) was mis-spiked | __ Client Request | __ Flag Data/ Case Narative |
| __ ICSA/ICSAB missing or out of control (± 20%) | | __ Accept data |
| __ LCVL out of control (± 30%) | | __ Cal Std high and sample ND |
| __ Other (describe below) | __ Other (describe below) | __ Other (describe below) |

**General Comments and Impact on Data**: See Run Log

Analyst: _____ Date of Completion: 05/24/2016

Second-Level Review: _____ Date Stamp: 05/24/2016

***REVIEWED/APPROVED***
*By Sherri Herschmann at 11:37:09 AM, 5/24/2016*

**DHL Analytical, Inc.**

**Run ID:** ICP-MS4_160523F **Run No.:** 85956

**Analytical Run Date:** 5/23/2016 **InstrumentID:** ICP-MS4

**Analyst:** Ryan Oliver

| SampID | DF | TestCode | SampType | Batch ID | Analysis Date/Time | Q | Comments |
|---|---|---|---|---|---|---|---|
| BLANK STD 1 | 1 | ICPMS_TWDOD | CAL | R85956 | 5/23/2016 10:41:00 AM | | |
| L2-160523 | 1 | ICPMS_TWDOD | CAL | R85956 | 5/23/2016 10:43:00 AM | | |
| L-160523 | 1 | ICPMS_TWDOD | CAL | R85956 | 5/23/2016 10:45:00 AM | | |
| 10X-160523 | 1 | ICPMS_TWDOD | CAL | R85956 | 5/23/2016 10:47:00 AM | | |
| 5X-160523 | 1 | ICPMS_TWDOD | CAL | R85956 | 5/23/2016 10:49:00 AM | | |
| 2X-160523 | 1 | ICPMS_TWDOD | CAL | R85956 | 5/23/2016 10:51:00 AM | | |
| H-160523 | 1 | ICPMS_TWDOD | CAL | R85956 | 5/23/2016 10:53:00 AM | | |
| H2-160523 | 1 | ICPMS_TWDOD | CAL | R85956 | 5/23/2016 10:55:00 AM | | |
| ICSA-160523 | 1 | ICPMS_TWDOD | ICSA | R85956 | 5/23/2016 11:03:00 AM | | |
| ICSAB-160523 | 1 | ICPMS_TWDOD | ICSB | R85956 | 5/23/2016 11:05:00 AM | | |
| ICV-160523 | 1 | ICPMS_TWDOD | ICV | R85956 | 5/23/2016 11:13:00 AM | | |
| LCVL-160523 | 1 | ICPMS_TWDOD | LCVL | R85956 | 5/23/2016 11:22:00 AM | | |
| ICB-160523 | 1 | ICPMS_TWDOD | ICB | R85956 | 5/23/2016 11:30:00 AM | | |
| CCV4-160523 | 1 | ICPMS_TWDOD | CCV | R85956 | 5/23/2016 3:32:00 PM | | |
| LCVL4-160523 | 1 | ICPMS_TWDOD | LCVL | R85956 | 5/23/2016 3:42:00 PM | | |
| CCB4-160523 | 1 | ICPMS_TWDOD | CCB | R85956 | 5/23/2016 3:45:00 PM | | |
| MB-75166 | 5 | ICPMS_TSDOD1 | MBLK | 75166 | 5/23/2016 3:47:00 PM | | |
| LCS-75166 | 5 | ICPMS_TSDOD1 | LCS | 75166 | 5/23/2016 3:49:00 PM | | |
| LCSD-75166 | 5 | ICPMS_TSDOD1 | LCSD | 75166 | 5/23/2016 3:51:00 PM | | |
| 1605096-14A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 3:55:00 PM | | |
| 1605096-14A SD | 25 | ICPMS_TSDOD1 | SD | 75166 | 5/23/2016 3:57:00 PM | | |
| 1605074-40A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 3:59:00 PM | | |
| 1605074-41A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:01:00 PM | | |
| 1605096-01A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:03:00 PM | | |
| 1605096-02A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:05:00 PM | | |
| 1605096-03A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:07:00 PM | | |
| 1605096-04A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:09:00 PM | | |
| 1605096-05A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:11:00 PM | | |
| 1605096-06A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:13:00 PM | | |
| 1605096-07A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:15:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160520- | 10 PPM Ag+Sb PDS | | 11/18/2016 |
| MET-PDS-160520- | 10 PPM CUSTOM PDS SOLUTI | | 11/18/2016 |
| MET-PDS-160520- | 250 PPM Naturals+Al+Fe PDS | | 11/18/2016 |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 11:37:25 AM, 5/24/2016*

**Run ID: ICP-MS4_160523F** **Run No.:** 85956

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1605096-14A PDS | 5 | ICPMS_TSDOD1 | PDS | 75166 | 5/23/2016 4:17:00 PM | | |
| 1605096-14A MS | 5 | ICPMS_TSDOD1 | MS | 75166 | 5/23/2016 4:19:00 PM | | |
| 1605096-14A MSD | 5 | ICPMS_TSDOD1 | MSD | 75166 | 5/23/2016 4:21:00 PM | | |
| CCV5-160523 | 1 | ICPMS_TWDOD | CCV | R85956 | 5/23/2016 4:23:00 PM | | |
| LCVL5-160523 | 1 | ICPMS_TWDOD | LCVL | R85956 | 5/23/2016 4:27:00 PM | | |
| CCB5-160523 | 1 | ICPMS_TWDOD | CCB | R85956 | 5/23/2016 4:29:00 PM | | |
| 1605096-08A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:31:00 PM | | |
| 1605096-09A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:33:00 PM | | |
| 1605096-10A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:35:00 PM | | |
| 1605096-11A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:37:00 PM | | |
| 1605096-12A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:39:00 PM | | |
| 1605096-13A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:41:00 PM | | |
| 1605096-15A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:43:00 PM | | |
| 1605096-16A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:45:00 PM | | |
| 1605096-17A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:47:00 PM | | |
| 1605096-18A | 5 | ICPMS_TSDOD1 | SAMP | 75166 | 5/23/2016 4:49:00 PM | | |
| CCV6-160523 | 1 | ICPMS_TWDOD | CCV | R85956 | 5/23/2016 4:51:00 PM | | |
| LCVL6-160523 | 1 | ICPMS_TWDOD | LCVL | R85956 | 5/23/2016 4:55:00 PM | | |
| CCB6-160523 | 1 | ICPMS_TWDOD | CCB | R85956 | 5/23/2016 4:57:00 PM | | |
| MB-75237 | 5 | ICPMS_TSDOD1 | MBLK | 75237 | 5/23/2016 5:00:00 PM | | |
| LCS-75237 | 5 | ICPMS_TSDOD1 | LCS | 75237 | 5/23/2016 5:02:00 PM | | |
| LCSD-75237 | 5 | ICPMS_TSDOD1 | LCSD | 75237 | 5/23/2016 5:04:00 PM | | |
| 1605121-01A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:08:00 PM | | |
| 1605121-01A SD | 25 | ICPMS_TSDOD1 | SD | 75237 | 5/23/2016 5:10:00 PM | | |
| 1605098-30A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:12:00 PM | | |
| 1605098-35A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:14:00 PM | | |
| 1605098-38A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:16:00 PM | | |
| 1605121-02A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:18:00 PM | | |
| 1605121-03A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:20:00 PM | | |
| 1605121-04A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:22:00 PM | | |
| 1605121-05A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:24:00 PM | | |
| 1605121-06A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:26:00 PM | | |
| 1605121-07A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:28:00 PM | | |
| 1605121-01A PDS | 5 | ICPMS_TSDOD1 | PDS | 75237 | 5/23/2016 5:30:00 PM | | |
| 1605121-01A MS | 5 | ICPMS_TSDOD1 | MS | 75237 | 5/23/2016 5:32:00 PM | | S-flag Pb- Low |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160520- | 10 PPM Ag+Sb PDS | | 11/18/2016 |
| MET-PDS-160520- | 10 PPM CUSTOM PDS SOLUTI | | 11/18/2016 |
| MET-PDS-160520- | 250 PPM Naturals+Al+Fe PDS | | 11/18/2016 |

**Run ID: ICP-MS4_160523F** **Run No.:** 85956

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1605121-01A MSD | 5 | ICPMS_TSDOD1 | MSD | 75237 | 5/23/2016 5:34:00 PM | | S-flag Pb- High; R-flag Pb; Rerunning to verify per JD; Data accepted |
| CCV7-160523 | 1 | ICPMS_TWDOD | CCV | R85956 | 5/23/2016 5:36:00 PM | | |
| LCVL7-160523 | 1 | ICPMS_TWDOD | LCVL | R85956 | 5/23/2016 5:40:00 PM | | |
| CCB7-160523 | 1 | ICPMS_TWDOD | CCB | R85956 | 5/23/2016 5:42:00 PM | | |
| 1605121-08A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:44:00 PM | | |
| 1605121-09A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:46:00 PM | | |
| 1605121-10A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:48:00 PM | | |
| 1605121-11A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:50:00 PM | | |
| 1605121-12A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:52:00 PM | | |
| 1605121-13A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:54:00 PM | | |
| 1605121-14A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:56:00 PM | | |
| 1605121-15A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 5:58:00 PM | | |
| 1605121-16A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 6:00:00 PM | | |
| 1605121-17A | 5 | ICPMS_TSDOD1 | SAMP | 75237 | 5/23/2016 6:02:00 PM | | |
| CCV8-160523 | 1 | ICPMS_TWDOD | CCV | R85956 | 5/23/2016 6:04:00 PM | | |
| LCVL8-160523 | 1 | ICPMS_TWDOD | LCVL | R85956 | 5/23/2016 6:08:00 PM | | |
| CCB8-160523 | 1 | ICPMS_TWDOD | CCB | R85956 | 5/23/2016 6:10:00 PM | | |
| MB-75236 | 5 | ICPMS_TSDOD1 | MBLK | 75236 | 5/23/2016 6:12:00 PM | | |
| LCS-75236 | 5 | ICPMS_TSDOD1 | LCS | 75236 | 5/23/2016 6:14:00 PM | | |
| LCSD-75236 | 5 | ICPMS_TSDOD1 | LCSD | 75236 | 5/23/2016 6:16:00 PM | | |
| 1605098-17A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:20:00 PM | | |
| 1605098-17A SD | 25 | ICPMS_TSDOD1 | SD | 75236 | 5/23/2016 6:22:00 PM | | |
| 1605071-32A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:24:00 PM | | |
| 1605071-38A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:26:00 PM | | |
| 1605098-12A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:28:00 PM | | |
| 1605098-13A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:30:00 PM | | |
| 1605098-14A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:32:00 PM | | |
| 1605098-15A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:34:00 PM | | |
| 1605098-16A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:36:00 PM | | |
| 1605098-18A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:38:00 PM | | |
| 1605098-19A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:40:00 PM | | |
| 1605098-17A PDS | 5 | ICPMS_TSDOD1 | PDS | 75236 | 5/23/2016 6:42:00 PM | | |
| 1605098-17A MS | 5 | ICPMS_TSDOD1 | MS | 75236 | 5/23/2016 6:44:00 PM | | |
| 1605098-17A MSD | 5 | ICPMS_TSDOD1 | MSD | 75236 | 5/23/2016 6:46:00 PM | | |
| CCV9-160523 | 1 | ICPMS_TWDOD | CCV | R85956 | 5/23/2016 6:48:00 PM | | |

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160520- | 10 PPM Ag+Sb PDS | | 11/18/2016 |
| MET-PDS-160520- | 10 PPM CUSTOM PDS SOLUTI | | 11/18/2016 |
| MET-PDS-160520- | 250 PPM Naturals+Al+Fe PDS | | 11/18/2016 |

**DHL Analytical, Inc.**

**Run ID: ICP-MS4_160523F** **Run No.:** 85956

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| LCVL9-160523 | 1 | ICPMS_TWDOD | LCVL | R85956 | 5/23/2016 6:52:00 PM | | |
| CCB9-160523 | 1 | ICPMS_TWDOD | CCB | R85956 | 5/23/2016 6:54:00 PM | | |
| 1605098-20A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:56:00 PM | | |
| 1605098-21A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 6:58:00 PM | | |
| 1605098-22A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 7:00:00 PM | | |
| 1605098-23A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 7:02:00 PM | | |
| 1605098-24A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 7:04:00 PM | | |
| 1605098-25A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 7:06:00 PM | | |
| 1605098-26A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 7:08:00 PM | | |
| 1605098-27A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 7:10:00 PM | | |
| 1605098-28A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 7:12:00 PM | | |
| 1605098-29A | 5 | ICPMS_TSDOD1 | SAMP | 75236 | 5/23/2016 7:14:00 PM | | |
| CCV10-160523 | 1 | ICPMS_TWDOD | CCV | R85956 | 5/23/2016 7:16:00 PM | | |
| LCVL10-160523 | 1 | ICPMS_TWDOD | LCVL | R85956 | 5/23/2016 7:20:00 PM | | |
| CCB10-160523 | 1 | ICPMS_TWDOD | CCB | R85956 | 5/23/2016 7:22:00 PM | | |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 11:46:09 AM, 5/24/2016*

| Std ID | Std Name | Type | Exp. Date |
|---|---|---|---|
| MET-CCV-160511 | ICPMS CCV 200/5000 PPB | | 08/10/2016 |
| MET-H2CAL-1605 | ICPMS High Cal2 2000ppb std 8 | | 08/10/2016 |
| MET-HCAL-16051 | ICPMS High Cal 500ppb/10ppm s | | 08/10/2016 |
| MET-ICV-160511 | ICPMS ICV 100 ppb | | 08/10/2016 |
| MET-IS-160511 | INTERNAL STANDARD 1 PPM | | 11/09/2016 |
| MET-L2CAL-16051 | ICPMS Low Cal2 1/20ppb std 2 | | 08/10/2016 |
| MET-LCAL-160511 | ICPMS Low Cal 10/200ppb std 3 | | 08/10/2016 |
| MET-LCAL10X-16 | ICPMS Low Cal 10/200ppb std 4 | | 08/10/2016 |
| MET-LCAL5X-160 | ICPMS Low Cal 10/200ppb std 5 | | 08/09/2016 |
| MET-LCVLSPIKE- | LCVL METALS SPIKE (100/500 | | 11/07/2016 |
| MET-MCAL-16051 | ICPMS Mid Cal 250/5000ppb std | | 08/10/2016 |
| MET-PA-160421 | ICPMS PA FACTOR SOLUTION | | 10/20/2016 |
| MET-PDS-160520- | 10 PPM Ag+Sb PDS | | 11/18/2016 |
| MET-PDS-160520- | 10 PPM CUSTOM PDS SOLUTI | | 11/18/2016 |
| MET-PDS-160520- | 250 PPM Naturals+Al+Fe PDS | | 11/18/2016 |

# Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\160523.b

## Acquisition Order

| # | Sequence Flow |
|---|---|
| 1 | Calibration Standards |
| 2 | Unknown Samples |
| 3 | Blank Samples |

**Calibration Standards:**

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 1 | CCB | | CAL ICPMS_TW | 1101 | |
| 2 | CCB | | CAL ICPMS_TW | 1101 | |
| 3 | CCB | | CAL ICPMS_TW | 1101 | |
| 4 | CCB | | CAL ICPMS_TW | 1102 | |
| 5 | CCB | | CAL ICPMS_TW | 1102 | |
| 6 | CCB | | CAL ICPMS_TW | 1102 | |
| 7 | CCB | | CAL ICPMS_TW | 1102 | |
| 8 | CCB | | CAL ICPMS_TW | 1103 | |
| 9 | CCB | | CAL ICPMS_TW | 1103 | |
| 10 | CCB | | CAL ICPMS_TW | 1103 | |
| 11 | CCB | | CAL ICPMS_TW | 1103 | |
| 12 | CalBlk | BLANK STD 1 | CAL ICPMS_TW | 2101 | |
| 13 | CalStd | L2-160523 | CAL ICPMS_TW | 2102 | |
| 14 | CalStd | L-160523 | CAL ICPMS_TW | 2103 | |
| 15 | CalStd | 10X-160523 | CAL ICPMS_TW | 2104 | |
| 16 | CalStd | 5X-160523 | CAL ICPMS_TW | 2105 | |
| 17 | CalStd | 2X-160523 | CAL ICPMS_TW | 2106 | |
| 18 | CalStd | H-160523 | CAL ICPMS_TW | 2107 | |
| 19 | CalStd | H2-160523 | CAL ICPMS_TW | 2108 | |
| 20 | ICB | BLANK | CCB ICPMS_TW | 1101 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | 1 | | |
| 13 | 2 | | |
| 14 | 3 | | |
| 15 | 4 | | |
| 16 | 5 | | |
| 17 | 6 | | |
| 18 | 7 | | |
| 19 | 8 | | |

# Sample List

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 20 | | | | | |
| 21 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 22 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 23 | ICSA | ICSA-160523 | ICSAICPMS_TW | 2109 | |
| 24 | ICSB | ICSAB-160523 | ICSBICPMS_TW | 2110 | |
| 25 | ICB | BLANK | CCB ICPMS_TW | 1101 | |
| 26 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 27 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 28 | ICV | ICV-160523 | ICV ICPMS_TW | 2111 | |
| 29 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 30 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 31 | LLICV | LCVL-160523 | LCVLICPMS_TW | 2112 | |
| 32 | ICB | ICB-160523 | ICB ICPMS_TW | 1102 | |
| 33 | ICB | ICB-160523 | ICB ICPMS_TW | 1103 | |
| 34 | PB_W | MB-75178 | MBLKICPMS_TW | 2201 | |
| 35 | LCS_W | LCS-75178 | LCS ICPMS_TW | 2202 | |
| 36 | LCS_W | LCSD-75178 | LCSDICPMS_TW | 2203 | |
| 37 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 38 | AllRef | 1605153-03A | SAMPICPMS_TW | 2204 | |
| 39 | SD | 1605153-03A SD | SD ICPMS_TW | 2205 | |
| 40 | SAMP_W | 1605152-01C | SAMPICPMS_TW | 2206 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 21 | | | |
| 22 | | | |
| 23 | | | |
| 24 | | | |
| 25 | | | |
| 26 | | | |
| 27 | | | |
| 28 | | | |
| 29 | | | |
| 30 | | | |
| 31 | | | |
| 32 | | | |
| 33 | | | |
| 34 | | 1 | |
| 35 | | 1 | |
| 36 | | 1 | |
| 37 | | | |
| 38 | | 100 | |
| 39 | | 500 | |
| 40 | | 10 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 41 | SAMP_W | 1605162-01A | SAMP200.8 | 2210 | |
| 42 | SAMP_W | 1605149-04A | SAMPICPMS_TW | 2211 | |
| 43 | SAMP_W | 1605149-08A | SAMPICPMS_TW | 2212 | |
| 44 | PDS | 1605153-03A PDS | PDS ICPMS_TW | 2207 | |
| 45 | MS_W | 1605153-03A MS | MS ICPMS_TW | 2208 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 46 | MS_W | 1605153-03A MSD | MSD ICPMS_TW | 2209 |
| 47 | CCB | RINSE | CCB ICPMS_TW | 1101 |
| 48 | CCB | RINSE | CCB ICPMS_TW | 1102 |
| 49 | CCB | RINSE | CCB ICPMS_TW | 1103 |
| 50 | SAMP_W | 1605149-04A | SAMPICPMS_TW | 2211 |
| 51 | CCV | CCV1-160523 | CCV ICPMS_TW | 1207 |
| 52 | CCB | CCB1-160523 | CCB ICPMS_TW | 1102 |
| 53 | LLCCV | LCVL1-160523 | LCVLICPMS_TW | 2112 |
| 54 | CCB | CCB1-160523 | CCB ICPMS_TW | 1103 |
| 55 | SAMP_W | 1605149-04A | SAMPICPMS_TW | 2504 |
| 56 | PB | MB-75261 | MBLK6020A_S | 2301 |
| 57 | LCS_S | LCS-75261 | LCS 6020A_S | 2302 |
| 58 | LCS_S | LCSD-75261 | LCSD6020A_S | 2303 |
| 59 | CCB | RINSE | CCB ICPMS_TW | 1101 |
| 60 | AllRef | 1605185-01A | SAMP6020A_S | 2304 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 41 | | 10 | |
| 42 | | 1 | |
| 43 | | 1 | |
| 44 | | 100 | |
| 45 | | 100 | |
| 46 | | 100 | |
| 47 | | | |
| 48 | | | |
| 49 | | | |
| 50 | | 1 | |
| 51 | | | |
| 52 | | | |
| 53 | | | |
| 54 | | | |
| 55 | | 1 | |
| 56 | | 5 | Skip |
| 57 | | 5 | Skip |
| 58 | | 5 | Skip |
| 59 | | | Skip |
| 60 | | 5 | Skip |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 61 | SD | 1605185-01A SD | SD 6020A_S | 2305 | |
| 62 | Sample | 1605191-01D | SAMP6020A_S | 2306 | |
| 63 | Sample | 1605191-02D | SAMP6020A_S | 2307 | |
| 64 | Sample | 1605191-03D | SAMP6020A_S | 2308 | |
| 65 | Sample | 1605191-04D | SAMP6020A_S | 2309 | |
| 66 | Sample | 1605191-05D | SAMP6020A_S | 2310 | |
| 67 | Sample | 1605191-06D | SAMP6020A_S | 2311 | |
| 68 | Sample | 1605185-02A | SAMP6020A_S | 2312 | |
| 69 | Sample | 1605185-03A | SAMP6020A_S | 2401 | |
| 70 | Sample | 1605185-04A | SAMP6020A_S | 2402 | |
| 71 | PDS | 1605185-01A PDS | PDS 6020A_S | 2403 | |
| 72 | MS_S | 1605185-01A MS | MS 6020A_S | 2404 | |
| 73 | MS_S | 1605185-01A MSD | MSD 6020A_S | 2405 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 74 | CCV | CCV2-160523 | CCV ICPMS_TW | 1207 |
| 75 | CCB | CCB2-160523 | CCB ICPMS_TW | 1102 |
| 76 | LLCCV | LCVL2-160523 | LCVLICPMS_TW | 2112 |
| 77 | CCB | CCB2-160523 | CCB ICPMS_TW | 1103 |
| 78 | Sample | 1605187-01A | SAMPICPMS_TS | 2406 |
| 79 | Sample | 1605187-02A | SAMPICPMS_TS | 2407 |
| 80 | Sample | 1605187-03A | SAMPICPMS_TS | 2408 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 61 | | 25 | Skip |
| 62 | | 5 | Skip |
| 63 | | 5 | Skip |
| 64 | | 5 | Skip |
| 65 | | 5 | Skip |
| 66 | | 5 | Skip |
| 67 | | 5 | Skip |
| 68 | | 5 | Skip |
| 69 | | 5 | Skip |
| 70 | | 5 | Skip |
| 71 | | 5 | Skip |
| 72 | | 5 | Skip |
| 73 | | 5 | Skip |
| 74 | | | Skip |
| 75 | | | Skip |
| 76 | | | Skip |
| 77 | | | Skip |
| 78 | | 5 | Skip |
| 79 | | 5 | Skip |
| 80 | | 5 | Skip |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 81 | Sample | 1605187-04A | SAMPICPMS_TS | 2409 | |
| 82 | Sample | 1605187-05A | SAMPICPMS_TS | 2410 | |
| 83 | Sample | 1605187-06A | SAMPICPMS_TS | 2411 | |
| 84 | Sample | 1605187-07A | SAMPICPMS_TS | 2412 | |
| 85 | Sample | 1605187-08A | SAMPICPMS_TS | 2501 | |
| 86 | Sample | 1605187-09A | SAMPICPMS_TS | 2502 | |
| 87 | Sample | 1605187-10A | SAMPICPMS_TS | 2503 | |
| 88 | CCV | CCV3-160523 | CCV ICPMS_TW | 1207 | |
| 89 | CCB | CCB3-160523 | CCB ICPMS_TW | 1102 | |
| 90 | LLCCV | LCVL3-160523 | LCVLICPMS_TW | 2512 | |
| 91 | CCB | CCB3-160523 | CCB ICPMS_TW | 1103 | |
| 92 | PB | MB-75256 | MBLKICPMS_TS | 3101 | |
| 93 | LCS_S | LCS-75256 | LCS ICPMS_TS | 3102 | |
| 94 | LCS_S | LCSD-75256 | LCSDICPMS_TS | 3103 | |
| 95 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 96 | AllRef | 1605186-02A | SAMPICPMS_TS | 3104 | |
| 97 | SD | 1605186-02A SD | SD ICPMS_TS | 3105 | |
| 98 | Sample | 1605186-01A | SAMPICPMS_TS | 3106 | |
| 99 | PDS | 1605186-02A PDS | PDS ICPMS_TS | 3107 | |
| 100 | MS_S | 1605186-02A MS | MS ICPMS_TS | 3108 | |

# Sample List

| # | Level | Dilution | Skip |
|---|---|---|---|
| 81 | | 5 | Skip |
| 82 | | 5 | Skip |
| 83 | | 5 | Skip |
| 84 | | 5 | Skip |
| 85 | | 5 | Skip |
| 86 | | 5 | Skip |
| 87 | | 5 | Skip |
| 88 | | | Skip |
| 89 | | | Skip |
| 90 | | | Skip |
| 91 | | | Skip |
| 92 | | 5 | Skip |
| 93 | | 5 | Skip |
| 94 | | 5 | Skip |
| 95 | | | Skip |
| 96 | | 5 | Skip |
| 97 | | 25 | Skip |
| 98 | | 5 | Skip |
| 99 | | 5 | Skip |
| 100 | | 5 | Skip |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 101 | MS_S | 1605186-02A MSD | MSD ICPMS_TS | 3109 | |
| 102 | CCV | CCV4-160523 | CCV ICPMS_TW | 1207 | |
| 103 | CCB | CCB4-160523 | CCB ICPMS_TW | 1102 | |
| 104 | LLCCV | LCVL4-160523 | LCVLICPMS_TW | 2512 | |
| 105 | CCB | CCB4-160523 | CCB ICPMS_TW | 1103 | |
| 106 | PB | MB-62609 | MBLKICPMS_TSDOD | 3401 | |
| 107 | Sample | PAINT CHIPS AW-13 | SAMPICPMS_TSDOD | 3402 | |
| 108 | LCS_S | LCS-62609 | LCS ICPMS_TSDOD | 3403 | |
| 109 | LCS_S | LCSD-62609 | LCSDICPMS_TSDOD | 3404 | |
| 110 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 111 | AllRef | 1403264-10A | SAMPICPMS_TSDOD | 3405 | |
| 112 | SD | 1403264-10A SD | SD ICPMS_TSDOD | 3406 | |
| 113 | Sample | 1403263-08A | SAMPICPMS_TSDOD | 3407 | |
| 114 | Sample | 1403263-09A | SAMPICPMS_TSDOD | 3408 | |
| 115 | Sample | 1403264-01A | SAMPICPMS_TSDOD | 3409 | |
| 116 | Sample | 1403264-02A | SAMPICPMS_TSDOD | 3410 | |
| 117 | Sample | 1403264-03A | SAMPICPMS_TSDOD | 3411 | |
| 118 | Sample | 1403264-04A | SAMPICPMS_TSDOD | 3412 | |
| 119 | Sample | 1403264-05A | SAMPICPMS_TSDOD | 3501 | |
| 120 | Sample | 1403264-06A | SAMPICPMS_TSDOD | 3502 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 101 | | 5 | Skip |
| 102 | | | Skip |
| 103 | | | Skip |
| 104 | | | Skip |
| 105 | | | Skip |
| 106 | | 5 | Skip |
| 107 | | 50 | Skip |

# Sample List

| | | | |
|---|---|---|---|
| 108 | | 5 | Skip |
| 109 | | 5 | Skip |
| 110 | | | Skip |
| 111 | | 5 | Skip |
| 112 | | 25 | Skip |
| 113 | | 5 | Skip |
| 114 | | 5 | Skip |
| 115 | | 5 | Skip |
| 116 | | 5 | Skip |
| 117 | | 5 | Skip |
| 118 | | 5 | Skip |
| 119 | | 5 | Skip |
| 120 | | 5 | Skip |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 121 | Sample | 1403264-07A | SAMPICPMS_TSDOD | 3503 | |
| 122 | PDS | 1403264-10A PDS | PDS ICPMS_TSDOD | 3504 | |
| 123 | MS_S | 1403264-10A MS | MS ICPMS_TSDOD | 3505 | |
| 124 | MS_S | 1403264-10A MSD | MSD ICPMS_TSDOD | 3506 | |
| 125 | CCV | CCV5-140402 | CCV ICPMS_TW | 1207 | |
| 126 | CCB | CCB5-140402 | CCB ICPMS_TW | 1102 | |
| 127 | LLCCV | LCVL5-140402 | LCVLICPMS_TW | 2511 | |
| 128 | CCB | CCB5-140402 | CCB ICPMS_TW | 1103 | |
| 129 | Sample | 1403264-08A | SAMPICPMS_TSDOD | 3507 | |
| 130 | Sample | 1403264-09A | SAMPICPMS_TSDOD | 3508 | |
| 131 | Sample | 1403264-11A | SAMPICPMS_TSDOD | 3509 | |
| 132 | Sample | 1403264-12A | SAMPICPMS_TSDOD | 3510 | |
| 133 | Sample | 1403264-13A | SAMPICPMS_TSDOD | 3511 | |
| 134 | Sample | 1403264-14A | SAMPICPMS_TSDOD | 3512 | |
| 135 | Sample | 1403264-15A | SAMPICPMS_TSDOD | 3310 | |
| 136 | Sample | 1403264-16A | SAMPICPMS_TSDOD | 3311 | |
| 137 | Sample | 1403264-17A | SAMPICPMS_TSDOD | 3312 | |
| 138 | Sample | 1403264-12A | SAMPICPMS_TSDOD | 3510 | |
| 139 | CCV | CCV6-140402 | CCV ICPMS_TW | 1207 | |
| 140 | CCB | CCB6-140402 | CCB ICPMS_TW | 1102 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 121 | | 5 | Skip |
| 122 | | 5 | Skip |
| 123 | | 5 | Skip |
| 124 | | 5 | Skip |
| 125 | | | Skip |
| 126 | | | Skip |
| 127 | | | Skip |
| 128 | | | Skip |
| 129 | | 5 | Skip |
| 130 | | 5 | Skip |
| 131 | | 5 | Skip |
| 132 | | 5 | Skip |
| 133 | | 5 | Skip |
| 134 | | 5 | Skip |
| 135 | | 5 | Skip |

# Sample List

| | | | |
|---|---|---|---|
| 136 | 5 | Skip | |
| 137 | 5 | Skip | |
| 138 | 5 | Skip | |
| 139 | | Skip | |
| 140 | | Skip | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 141 | LLCCV | LCVL6-140402 | LCVLICPMS_TW | 2511 | |
| 142 | CCB | CCB6-140402 | CCB ICPMS_TW | 1103 | |
| 143 | CCB | CCB6-140402 | CCB ICPMS_TW | 1102 | |
| 144 | CCB | CCB6-140402 | CCB ICPMS_TW | 1102 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 141 | | | Skip |
| 142 | | | Skip |
| 143 | | | Skip |
| 144 | | | Skip |

**Unknown Samples:**

**Blank Samples:**

## Periodic Block

| # | Block Name | Period | Unit | Reset By |
|---|---|---|---|---|

## Sublist

# Sample List

Batch Folder C:\Agilent\ICPMH\1\DATA\160523.b

## Acquisition Order

| # | Sequence Flow |
|---|---|
| 1 | Calibration Standards |
| 2 | Unknown Samples |
| 3 | Blank Samples |

**Calibration Standards:**

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 1 | CCB | | CAL ICPMS_TW | 1101 | |
| 2 | CCB | | CAL ICPMS_TW | 1101 | |
| 3 | CCB | | CAL ICPMS_TW | 1101 | |
| 4 | CCB | | CAL ICPMS_TW | 1102 | |
| 5 | CCB | | CAL ICPMS_TW | 1102 | |
| 6 | CCB | | CAL ICPMS_TW | 1102 | |
| 7 | CCB | | CAL ICPMS_TW | 1102 | |
| 8 | CCB | | CAL ICPMS_TW | 1103 | |
| 9 | CCB | | CAL ICPMS_TW | 1103 | |
| 10 | CCB | | CAL ICPMS_TW | 1103 | |
| 11 | CCB | | CAL ICPMS_TW | 1103 | |
| 12 | CalBlk | BLANK STD 1 | CAL ICPMS_TW | 2101 | |
| 13 | CalStd | L2-160523 | CAL ICPMS_TW | 2102 | |
| 14 | CalStd | L-160523 | CAL ICPMS_TW | 2103 | |
| 15 | CalStd | 10X-160523 | CAL ICPMS_TW | 2104 | |
| 16 | CalStd | 5X-160523 | CAL ICPMS_TW | 2105 | |
| 17 | CalStd | 2X-160523 | CAL ICPMS_TW | 2106 | |
| 18 | CalStd | H-160523 | CAL ICPMS_TW | 2107 | |
| 19 | CalStd | H2-160523 | CAL ICPMS_TW | 2108 | |
| 20 | ICB | BLANK | CCB ICPMS_TW | 1101 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 1 | | | Skip |
| 2 | | | Skip |
| 3 | | | Skip |
| 4 | | | Skip |
| 5 | | | Skip |
| 6 | | | Skip |
| 7 | | | Skip |
| 8 | | | Skip |
| 9 | | | Skip |
| 10 | | | Skip |
| 11 | | | Skip |
| 12 | 1 | | Skip |
| 13 | 2 | | Skip |
| 14 | 3 | | Skip |
| 15 | 4 | | Skip |
| 16 | 5 | | Skip |
| 17 | 6 | | Skip |
| 18 | 7 | | Skip |
| 19 | 8 | | Skip |

# Sample List

| | | | | | |
|---|---|---|---|---|---|
| 20 | | | Skip | | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 21 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 22 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 23 | ICSA | ICSA-160523 | ICSAICPMS_TW | 2109 | |
| 24 | ICSB | ICSAB-160523 | ICSBICPMS_TW | 2110 | |
| 25 | ICB | BLANK | CCB ICPMS_TW | 1101 | |
| 26 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 27 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 28 | ICV | ICV-160523 | ICV ICPMS_TW | 2111 | |
| 29 | ICB | BLANK | CCB ICPMS_TW | 1102 | |
| 30 | ICB | BLANK | CCB ICPMS_TW | 1103 | |
| 31 | LLICV | LCVL-160523 | LCVLICPMS_TW | 2112 | |
| 32 | ICB | ICB-160523 | ICB ICPMS_TW | 1102 | |
| 33 | ICB | ICB-160523 | ICB ICPMS_TW | 1103 | |
| 34 | PB_W | MB-75178 | MBLKICPMS_TW | 2201 | |
| 35 | LCS_W | LCS-75178 | LCS ICPMS_TW | 2202 | |
| 36 | LCS_W | LCSD-75178 | LCSDICPMS_TW | 2203 | |
| 37 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 38 | AllRef | 1605153-03A | SAMPICPMS_TW | 2204 | |
| 39 | SD | 1605153-03A SD | SD ICPMS_TW | 2205 | |
| 40 | SAMP_W | 1605152-01C | SAMPICPMS_TW | 2206 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 21 | | | Skip |
| 22 | | | Skip |
| 23 | | | Skip |
| 24 | | | Skip |
| 25 | | | Skip |
| 26 | | | Skip |
| 27 | | | Skip |
| 28 | | | Skip |
| 29 | | | Skip |
| 30 | | | Skip |
| 31 | | | Skip |
| 32 | | | Skip |
| 33 | | | Skip |
| 34 | | 1 | Skip |
| 35 | | 1 | Skip |
| 36 | | 1 | Skip |
| 37 | | | Skip |
| 38 | | 100 | Skip |
| 39 | | 500 | Skip |
| 40 | | 10 | Skip |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 41 | SAMP_W | 1605162-01A | SAMP200.8 | 2210 | |
| 42 | SAMP_W | 1605149-04A | SAMPICPMS_TW | 2211 | |
| 43 | SAMP_W | 1605149-08A | SAMPICPMS_TW | 2212 | |
| 44 | PDS | 1605153-03A PDS | PDS ICPMS_TW | 2207 | |
| 45 | MS_W | 1605153-03A MS | MS ICPMS_TW | 2208 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 46 | MS_W | 1605153-03A MSD | MSD ICPMS_TW | 2209 |
| 47 | CCB | RINSE | CCB ICPMS_TW | 1101 |
| 48 | CCB | RINSE | CCB ICPMS_TW | 1102 |
| 49 | CCB | RINSE | CCB ICPMS_TW | 1103 |
| 50 | SAMP_W | 1605149-04A | SAMPICPMS_TW | 2211 |
| 51 | CCV | CCV1-160523 | CCV ICPMS_TW | 1207 |
| 52 | CCB | CCB1-160523 | CCB ICPMS_TW | 1102 |
| 53 | LLCCV | LCVL1-160523 | LCVLICPMS_TW | 2112 |
| 54 | CCB | CCB1-160523 | CCB ICPMS_TW | 1103 |
| 55 | SAMP_W | 1605149-04A | SAMPICPMS_TW | 2504 |
| 56 | PB | MB-75261 | MBLK6020A_S | 2301 |
| 57 | LCS_S | LCS-75261 | LCS 6020A_S | 2302 |
| 58 | LCS_S | LCSD-75261 | LCSD6020A_S | 2303 |
| 59 | CCB | RINSE | CCB ICPMS_TW | 1101 |
| 60 | AllRef | 1605185-01A | SAMP6020A_S | 2304 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 41 | | 10 | Skip |
| 42 | | 1 | Skip |
| 43 | | 1 | Skip |
| 44 | | 100 | Skip |
| 45 | | 100 | Skip |
| 46 | | 100 | Skip |
| 47 | | | Skip |
| 48 | | | Skip |
| 49 | | | Skip |
| 50 | | 1 | Skip |
| 51 | | | Skip |
| 52 | | | Skip |
| 53 | | | Skip |
| 54 | | | Skip |
| 55 | | 1 | Skip |
| 56 | | 5 | |
| 57 | | 5 | |
| 58 | | 5 | |
| 59 | | | |
| 60 | | 5 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 61 | SD | 1605185-01A SD | SD 6020A_S | 2305 | |
| 62 | Sample | 1605191-01D | SAMP6020A_S | 2306 | |
| 63 | Sample | 1605191-02D | SAMP6020A_S | 2307 | |
| 64 | Sample | 1605191-03D | SAMP6020A_S | 2308 | |
| 65 | Sample | 1605191-04D | SAMP6020A_S | 2309 | |
| 66 | Sample | 1605191-05D | SAMP6020A_S | 2310 | |
| 67 | Sample | 1605191-06D | SAMP6020A_S | 2311 | |
| 68 | Sample | 1605185-02A | SAMP6020A_S | 2312 | |
| 69 | Sample | 1605185-03A | SAMP6020A_S | 2401 | |
| 70 | Sample | 1605185-04A | SAMP6020A_S | 2402 | |
| 71 | PDS | 1605185-01A PDS | PDS 6020A_S | 2403 | |
| 72 | MS_S | 1605185-01A MS | MS 6020A_S | 2404 | |
| 73 | MS_S | 1605185-01A MSD | MSD 6020A_S | 2405 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 74 | CCV | CCV2-160523 | CCV ICPMS_TW | 1207 |
| 75 | CCB | CCB2-160523 | CCB ICPMS_TW | 1102 |
| 76 | CCB | CCB2-160523 | CCB ICPMS_TW | 1103 |
| 77 | LLCCV | LCVL2-160523 | LCVLICPMS_TW | 2112 |
| 78 | CCB | CCB2-160523 | CCB ICPMS_TW | 1103 |
| 79 | Sample | 1605187-01A | SAMPICPMS_TS | 2406 |
| 80 | Sample | 1605187-02A | SAMPICPMS_TS | 2407 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 61 | | 25 | |
| 62 | | 5 | |
| 63 | | 5 | |
| 64 | | 5 | |
| 65 | | 5 | |
| 66 | | 5 | |
| 67 | | 5 | |
| 68 | | 5 | |
| 69 | | 5 | |
| 70 | | 5 | |
| 71 | | 5 | |
| 72 | | 5 | |
| 73 | | 5 | |
| 74 | | | |
| 75 | | | |
| 76 | | | |
| 77 | | | |
| 78 | | | |
| 79 | | 5 | |
| 80 | | 5 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 81 | Sample | 1605187-03A | SAMPICPMS_TS | 2408 | |
| 82 | Sample | 1605187-04A | SAMPICPMS_TS | 2409 | |
| 83 | Sample | 1605187-05A | SAMPICPMS_TS | 2410 | |
| 84 | Sample | 1605187-06A | SAMPICPMS_TS | 2411 | |
| 85 | Sample | 1605187-07A | SAMPICPMS_TS | 2412 | |
| 86 | Sample | 1605187-08A | SAMPICPMS_TS | 2501 | |
| 87 | Sample | 1605187-09A | SAMPICPMS_TS | 2502 | |
| 88 | Sample | 1605187-10A | SAMPICPMS_TS | 2503 | |
| 89 | CCV | CCV3-160523 | CCV ICPMS_TW | 1207 | |
| 90 | CCB | CCB3-160523 | CCB ICPMS_TW | 1102 | |
| 91 | CCB | CCB3-160523 | CCB ICPMS_TW | 1102 | |
| 92 | CCB | CCB3-160523 | CCB ICPMS_TW | 1103 | |
| 93 | CCB | CCB3-160523 | CCB ICPMS_TW | 1103 | |
| 94 | CCB | CCB3-160523 | CCB ICPMS_TW | 1103 | |
| 95 | LLCCV | LCVL3-160523 | LCVLICPMS_TW | 2512 | |
| 96 | CCB | CCB3-160523 | CCB ICPMS_TW | 1103 | |
| 97 | PB | MB-75256 | MBLKICPMS_TS | 3101 | |
| 98 | LCS_S | LCS-75256 | LCS ICPMS_TS | 3102 | |
| 99 | LCS_S | LCSD-75256 | LCSDICPMS_TS | 3103 | |
| 100 | CCB | RINSE | CCB ICPMS_TW | 1101 | |

# Sample List

| # | Level | Dilution | Skip |
|---|---|---|---|
| 81 | | 5 | |
| 82 | | 5 | |
| 83 | | 5 | |
| 84 | | 5 | |
| 85 | | 5 | |
| 86 | | 5 | |
| 87 | | 5 | |
| 88 | | 5 | |
| 89 | | | |
| 90 | | | |
| 91 | | | |
| 92 | | | |
| 93 | | | |
| 94 | | | |
| 95 | | | |
| 96 | | | |
| 97 | | 5 | |
| 98 | | 5 | |
| 99 | | 5 | |
| 100 | | | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 101 | PB | MB-75256 | MBLKICPMS_TS | 3101 | |
| 102 | LCS_S | LCS-75256 | LCS ICPMS_TS | 3102 | |
| 103 | LCS_S | LCSD-75256 | LCSDICPMS_TS | 3103 | |
| 104 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 105 | AllRef | 1605186-02A | SAMPICPMS_TS | 3104 | |
| 106 | SD | 1605186-02A SD | SD ICPMS_TS | 3105 | |
| 107 | Sample | 1605186-01A | SAMPICPMS_TS | 3106 | |
| 108 | PDS | 1605186-02A PDS | PDS ICPMS_TS | 3107 | |
| 109 | MS_S | 1605186-02A MS | MS ICPMS_TS | 3108 | |
| 110 | MS_S | 1605186-02A MSD | MSD ICPMS_TS | 3109 | |
| 111 | CCB | CCB4-160523 | CCB ICPMS_TW | 1102 | |
| 112 | AllRef | 1605186-02A | SAMPICPMS_TS | 3501 | |
| 113 | SD | 1605186-02A SD | SD ICPMS_TS | 3502 | |
| 114 | Sample | 1605186-01A | SAMPICPMS_TS | 3503 | |
| 115 | PDS | 1605186-02A PDS | PDS ICPMS_TS | 3504 | |
| 116 | MS_S | 1605186-02A MS | MS ICPMS_TS | 3505 | |
| 117 | MS_S | 1605186-02A MSD | MSD ICPMS_TS | 3506 | |
| 118 | SAMP_W | 1605152-01C | SAMPICPMS_TW | 3507 | |
| 119 | SAMP_W | 1605152-01C | SAMPICPMS_TW | 3508 | |
| 120 | CCB | CCB4-160523 | CCB ICPMS_TW | 1102 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 101 | | 5 | |
| 102 | | 5 | |
| 103 | | 5 | |
| 104 | | | |
| 105 | | 5000 | |
| 106 | | 25000 | |
| 107 | | 5000 | |

# Sample List

| | | |
|---|---|---|
| 108 | | 5000 |
| 109 | | 5000 |
| 110 | | 5000 |
| 111 | | |
| 112 | | 50 |
| 113 | | 250 |
| 114 | | 50 |
| 115 | | 50 |
| 116 | | 50 |
| 117 | | 50 |
| 118 | | 10 |
| 119 | | 1 |
| 120 | | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 121 | CCB | CCB4-160523 | CCB ICPMS_TW | 1103 | |
| 122 | PB_W | MB-75255 | MBLKTCLP_MET | 4101 | |
| 123 | PB_W | MB-75242-TCLP | MBLKTCLP_MET | 4102 | |
| 124 | LCS_W | LCS-75255 | LCS TCLP_MET | 4103 | |
| 125 | LCS_W | LCSD-75255 | LCSDTCLP_MET | 4104 | |
| 126 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 127 | AllRef | 1605186-01A | SAMPTCLP_MET | 4105 | |
| 128 | SD | 1605186-01A SD | SD TCLP_MET | 4106 | |
| 129 | SAMP_W | 1605186-02A | SAMPTCLP_MET | 4107 | |
| 130 | PDS | 1605186-01A PDS | PDS TCLP_MET | 4108 | |
| 131 | MS_W | 1605186-01A MS | MS TCLP_MET | 4109 | |
| 132 | MS_W | 1605186-01A MSD | MSD TCLP_MET | 4110 | |
| 133 | CCB | CCB4-160523 | CCB ICPMS_TW | 1102 | |
| 134 | CCB | CCB4-160523 | CCB ICPMS_TW | 1103 | |
| 135 | CCB | CCB4-160523 | CCB ICPMS_TW | 1103 | |
| 136 | CCV | CCV4-160523 | CCV ICPMS_TW | 1207 | |
| 137 | CCB | CCB4-160523 | CCB ICPMS_TW | 1102 | |
| 138 | CCB | CCB4-160523 | CCB ICPMS_TW | 1103 | |
| 139 | LLCCV | LCVL4-160523 | LCVLICPMS_TW | 2512 | |
| 140 | CCB | CCB4-160523 | CCB ICPMS_TW | 1103 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 121 | | | |
| 122 | | 1 | |
| 123 | | 1 | |
| 124 | | 1 | |
| 125 | | 1 | |
| 126 | | | |
| 127 | | 5 | |
| 128 | | 25 | |
| 129 | | 5 | |
| 130 | | 5 | |
| 131 | | 5 | |
| 132 | | 5 | |
| 133 | | | |
| 134 | | | |
| 135 | | | |

# Sample List

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 141 | PB | MB-75166 | MBLKICPMS_TSDOD1 | 3201 | |
| 142 | LCS_S | LCS-75166 | LCS ICPMS_TSDOD1 | 3202 | |
| 143 | LCS_S | LCSD-75166 | LCSDICPMS_TSDOD1 | 3203 | |
| 144 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 145 | AllRef | 1605096-14A | SAMPICPMS_TSDOD1 | 3204 | |
| 146 | SD | 1605096-14A SD | SD ICPMS_TSDOD1 | 3205 | |
| 147 | Sample | 1605074-40A | SAMPICPMS_TSDOD1 | 3206 | |
| 148 | Sample | 1605074-41A | SAMPICPMS_TSDOD1 | 3207 | |
| 149 | Sample | 1605096-01A | SAMPICPMS_TSDOD1 | 3208 | |
| 150 | Sample | 1605096-02A | SAMPICPMS_TSDOD1 | 3209 | |
| 151 | Sample | 1605096-03A | SAMPICPMS_TSDOD1 | 3210 | |
| 152 | Sample | 1605096-04A | SAMPICPMS_TSDOD1 | 3211 | |
| 153 | Sample | 1605096-05A | SAMPICPMS_TSDOD1 | 3212 | |
| 154 | Sample | 1605096-06A | SAMPICPMS_TSDOD1 | 3301 | |
| 155 | Sample | 1605096-07A | SAMPICPMS_TSDOD1 | 3302 | |
| 156 | PDS | 1605096-14A PDS | PDS ICPMS_TSDOD1 | 3303 | |
| 157 | MS_S | 1605096-14A MS | MS ICPMS_TSDOD1 | 3304 | |
| 158 | MS_S | 1605096-14A MSD | MSD ICPMS_TSDOD1 | 3305 | |
| 159 | CCV | CCV5-160523 | CCV ICPMS_TW | 1207 | |
| 160 | CCB | CCB5-160523 | CCB ICPMS_TW | 1102 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 141 | | 5 | |
| 142 | | 5 | |
| 143 | | 5 | |
| 144 | | | |
| 145 | | 5 | |
| 146 | | 25 | |
| 147 | | 5 | |
| 148 | | 5 | |
| 149 | | 5 | |
| 150 | | 5 | |
| 151 | | 5 | |
| 152 | | 5 | |
| 153 | | 5 | |
| 154 | | 5 | |
| 155 | | 5 | |
| 156 | | 5 | |
| 157 | | 5 | |
| 158 | | 5 | |
| 159 | | | |
| 160 | | | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 161 | LLCCV | LCVL5-160523 | LCVLICPMS_TW | 2511 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 162 | CCB | CCB5-160523 | CCB ICPMS_TW | 1103 |
| 163 | Sample | 1605096-08A | SAMPICPMS_TSDOD1 | 3306 |
| 164 | Sample | 1605096-09A | SAMPICPMS_TSDOD1 | 3307 |
| 165 | Sample | 1605096-10A | SAMPICPMS_TSDOD1 | 3308 |
| 166 | Sample | 1605096-11A | SAMPICPMS_TSDOD1 | 3309 |
| 167 | Sample | 1605096-12A | SAMPICPMS_TSDOD1 | 3310 |
| 168 | Sample | 1605096-13A | SAMPICPMS_TSDOD1 | 3311 |
| 169 | Sample | 1605096-15A | SAMPICPMS_TSDOD1 | 3312 |
| 170 | Sample | 1605096-16A | SAMPICPMS_TSDOD1 | 3401 |
| 171 | Sample | 1605096-17A | SAMPICPMS_TSDOD1 | 3402 |
| 172 | Sample | 1605096-18A | SAMPICPMS_TSDOD1 | 3403 |
| 173 | CCV | CCV6-160523 | CCV ICPMS_TW | 1207 |
| 174 | CCB | CCB6-160523 | CCB ICPMS_TW | 1102 |
| 175 | LLCCV | LCVL6-160523 | LCVLICPMS_TW | 2511 |
| 176 | CCB | CCB6-160523 | CCB ICPMS_TW | 1103 |
| 177 | PB | MB-75237 | MBLKICPMS_TSDOD1 | 4101 |
| 178 | LCS_S | LCS-75237 | LCS ICPMS_TSDOD1 | 4102 |
| 179 | LCS_S | LCSD-75237 | LCSDICPMS_TSDOD1 | 4103 |
| 180 | CCB | RINSE | CCB ICPMS_TW | 1101 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 161 | | | |
| 162 | | | |
| 163 | | 5 | |
| 164 | | 5 | |
| 165 | | 5 | |
| 166 | | 5 | |
| 167 | | 5 | |
| 168 | | 5 | |
| 169 | | 5 | |
| 170 | | 5 | |
| 171 | | 5 | |
| 172 | | 5 | |
| 173 | | | |
| 174 | | | |
| 175 | | | |
| 176 | | | |
| 177 | | 5 | |
| 178 | | 5 | |
| 179 | | 5 | |
| 180 | | | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 181 | AllRef | 1605121-01A | SAMPICPMS_TSDOD1 | 4104 | |
| 182 | SD | 1605121-01A SD | SD ICPMS_TSDOD1 | 4105 | |
| 183 | Sample | 1605098-30A | SAMPICPMS_TSDOD1 | 4106 | |
| 184 | Sample | 1605098-35A | SAMPICPMS_TSDOD1 | 4107 | |
| 185 | Sample | 1605098-38A | SAMPICPMS_TSDOD1 | 4108 | |
| 186 | Sample | 1605121-02A | SAMPICPMS_TSDOD1 | 4109 | |
| 187 | Sample | 1605121-03A | SAMPICPMS_TSDOD1 | 4110 | |
| 188 | Sample | 1605121-04A | SAMPICPMS_TSDOD1 | 4111 | |
| 189 | Sample | 1605121-05A | SAMPICPMS_TSDOD1 | 4112 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 190 | Sample | 1605121-06A | SAMPICPMS_TSDOD1 | 4201 |
| 191 | Sample | 1605121-07A | SAMPICPMS_TSDOD1 | 4202 |
| 192 | PDS | 1605121-01A PDS | PDS ICPMS_TSDOD1 | 4203 |
| 193 | MS_S | 1605121-01A MS | MS ICPMS_TSDOD1 | 4204 |
| 194 | MS_S | 1605121-01A MSD | MSD ICPMS_TSDOD1 | 4205 |
| 195 | CCV | CCV7-160523 | CCV ICPMS_TW | 1207 |
| 196 | CCB | CCB7-160523 | CCB ICPMS_TW | 1102 |
| 197 | LLCCV | LCVL7-160523 | LCVLICPMS_TW | 2511 |
| 198 | CCB | CCB7-160523 | CCB ICPMS_TW | 1103 |
| 199 | Sample | 1605121-08A | SAMPICPMS_TSDOD1 | 4206 |
| 200 | Sample | 1605121-09A | SAMPICPMS_TSDOD1 | 4207 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 181 | | 5 | |
| 182 | | 25 | |
| 183 | | 5 | |
| 184 | | 5 | |
| 185 | | 5 | |
| 186 | | 5 | |
| 187 | | 5 | |
| 188 | | 5 | |
| 189 | | 5 | |
| 190 | | 5 | |
| 191 | | 5 | |
| 192 | | 5 | |
| 193 | | 5 | |
| 194 | | 5 | |
| 195 | | | |
| 196 | | | |
| 197 | | | |
| 198 | | | |
| 199 | | 5 | |
| 200 | | 5 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 201 | Sample | 1605121-10A | SAMPICPMS_TSDOD1 | 4208 | |
| 202 | Sample | 1605121-11A | SAMPICPMS_TSDOD1 | 4209 | |
| 203 | Sample | 1605121-12A | SAMPICPMS_TSDOD1 | 4210 | |
| 204 | Sample | 1605121-13A | SAMPICPMS_TSDOD1 | 4211 | |
| 205 | Sample | 1605121-14A | SAMPICPMS_TSDOD1 | 4212 | |
| 206 | Sample | 1605121-15A | SAMPICPMS_TSDOD1 | 4301 | |
| 207 | Sample | 1605121-16A | SAMPICPMS_TSDOD1 | 4302 | |
| 208 | Sample | 1605121-17A | SAMPICPMS_TSDOD1 | 4303 | |
| 209 | CCV | CCV8-160523 | CCV ICPMS_TW | 1207 | |
| 210 | CCB | CCB8-160523 | CCB ICPMS_TW | 1102 | |
| 211 | LLCCV | LCVL8-160523 | LCVLICPMS_TW | 2510 | |
| 212 | CCB | CCB8-160523 | CCB ICPMS_TW | 1103 | |
| 213 | PB | MB-75236 | MBLKICPMS_TSDOD1 | 4310 | |
| 214 | LCS_S | LCS-75236 | LCS ICPMS_TSDOD1 | 4311 | |
| 215 | LCS_S | LCSD-75236 | LCSDICPMS_TSDOD1 | 4312 | |
| 216 | CCB | RINSE | CCB ICPMS_TW | 1101 | |
| 217 | AllRef | 1605098-17A | SAMPICPMS_TSDOD1 | 4401 | |

# Sample List

| | | | | |
|---|---|---|---|---|
| 218 | SD | 1605098-17A SD | SD ICPMS_TSDOD1 | 4402 |
| 219 | Sample | 1605071-32A | SAMPICPMS_TSDOD1 | 4403 |
| 220 | Sample | 1605071-38A | SAMPICPMS_TSDOD1 | 4404 |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 201 | | 5 | |
| 202 | | 5 | |
| 203 | | 5 | |
| 204 | | 5 | |
| 205 | | 5 | |
| 206 | | 5 | |
| 207 | | 5 | |
| 208 | | 5 | |
| 209 | | | |
| 210 | | | |
| 211 | | | |
| 212 | | | |
| 213 | | 5 | |
| 214 | | 5 | |
| 215 | | 5 | |
| 216 | | | |
| 217 | | 5 | |
| 218 | | 25 | |
| 219 | | 5 | |
| 220 | | 5 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 221 | Sample | 1605098-12A | SAMPICPMS_TSDOD1 | 4405 | |
| 222 | Sample | 1605098-13A | SAMPICPMS_TSDOD1 | 4406 | |
| 223 | Sample | 1605098-14A | SAMPICPMS_TSDOD1 | 4407 | |
| 224 | Sample | 1605098-15A | SAMPICPMS_TSDOD1 | 4408 | |
| 225 | Sample | 1605098-16A | SAMPICPMS_TSDOD1 | 4409 | |
| 226 | Sample | 1605098-18A | SAMPICPMS_TSDOD1 | 4410 | |
| 227 | Sample | 1605098-19A | SAMPICPMS_TSDOD1 | 4411 | |
| 228 | PDS | 1605098-17A PDS | PDS ICPMS_TSDOD1 | 4412 | |
| 229 | MS_S | 1605098-17A MS | MS ICPMS_TSDOD1 | 4501 | |
| 230 | MS_S | 1605098-17A MSD | MSD ICPMS_TSDOD1 | 4502 | |
| 231 | CCV | CCV9-160523 | CCV ICPMS_TW | 1207 | |
| 232 | CCB | CCB9-160523 | CCB ICPMS_TW | 1102 | |
| 233 | LLCCV | LCVL9-160523 | LCVLICPMS_TW | 2510 | |
| 234 | CCB | CCB9-160523 | CCB ICPMS_TW | 1103 | |
| 235 | Sample | 1605098-20A | SAMPICPMS_TSDOD1 | 4503 | |
| 236 | Sample | 1605098-21A | SAMPICPMS_TSDOD1 | 4504 | |
| 237 | Sample | 1605098-22A | SAMPICPMS_TSDOD1 | 4505 | |
| 238 | Sample | 1605098-23A | SAMPICPMS_TSDOD1 | 4506 | |
| 239 | Sample | 1605098-24A | SAMPICPMS_TSDOD1 | 4507 | |
| 240 | Sample | 1605098-25A | SAMPICPMS_TSDOD1 | 4508 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 221 | | 5 | |
| 222 | | 5 | |
| 223 | | 5 | |

# Sample List

| | | |
|---|---|---|
| 224 | | 5 |
| 225 | | 5 |
| 226 | | 5 |
| 227 | | 5 |
| 228 | | 5 |
| 229 | | 5 |
| 230 | | 5 |
| 231 | | |
| 232 | | |
| 233 | | |
| 234 | | |
| 235 | | 5 |
| 236 | | 5 |
| 237 | | 5 |
| 238 | | 5 |
| 239 | | 5 |
| 240 | | 5 |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 241 | Sample | 1605098-26A | SAMPICPMS_TSDOD1 | 4509 | |
| 242 | Sample | 1605098-27A | SAMPICPMS_TSDOD1 | 4510 | |
| 243 | Sample | 1605098-28A | SAMPICPMS_TSDOD1 | 4511 | |
| 244 | Sample | 1605098-29A | SAMPICPMS_TSDOD1 | 4512 | |
| 245 | CCV | CCV10-160523 | CCV ICPMS_TW | 1207 | |
| 246 | CCB | CCB10-160523 | CCB ICPMS_TW | 1102 | |
| 247 | LLCCV | LCVL10-160523 | LCVLICPMS_TW | 2509 | |
| 248 | CCB | CCB10-160523 | CCB ICPMS_TW | 1102 | |
| 249 | AllRef | 1605186-01A | SAMPTCLP_MET | 3404 | |
| 250 | SD | 1605186-01A SD | SD TCLP_MET | 3405 | |
| 251 | SAMP_W | 1605186-02A | SAMPTCLP_MET | 3406 | |
| 252 | PDS | 1605186-01A PDS | PDS TCLP_MET | 3407 | |
| 253 | MS_W | 1605186-01A MS | MS TCLP_MET | 3408 | |
| 254 | MS_W | 1605186-01A MSD | MSD TCLP_MET | 3409 | |
| 255 | CCV | CCV11-160523 | CCV ICPMS_TW | 1207 | |
| 256 | CCB | CCB11-160523 | CCB ICPMS_TW | 1102 | |
| 257 | LLCCV | LCVL11-160523 | LCVLICPMS_TW | 2509 | |
| 258 | CCB | CCB11-160523 | CCB ICPMS_TW | 1102 | |
| 259 | CCB | CCB11-160523 | CCB ICPMS_TW | 1102 | |
| 260 | CCB | CCB11-160523 | CCB ICPMS_TW | 1102 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 241 | | 5 | |
| 242 | | 5 | |
| 243 | | 5 | |
| 244 | | 5 | |
| 245 | | | |
| 246 | | | |
| 247 | | | |
| 248 | | | |
| 249 | | 1 | |
| 250 | | 5 | |
| 251 | | 1 | |

# Sample List

| | |
|---|---|
| 252 | 1 |
| 253 | 1 |
| 254 | 1 |
| 255 | |
| 256 | |
| 257 | |
| 258 | |
| 259 | |
| 260 | |

| # | Sample Type | Sample Name | Comment | Vial# | File Name |
|---|---|---|---|---|---|
| 261 | CCB | CCB11-160523 | CCB ICPMS_TW | 1103 | |
| 262 | CCB | CCB11-160523 | CCB ICPMS_TW | 1103 | |
| 263 | CCB | CCB11-160523 | CCB ICPMS_TW | 1103 | |

| # | Level | Dilution | Skip |
|---|---|---|---|
| 261 | | | |
| 262 | | | |
| 263 | | | |

**Unknown Samples:**

**Blank Samples:**

## Periodic Block

| # | Block Name | Period | Unit | Reset By |
|---|---|---|---|---|

## Sublist

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/19/2016 10:13:48 AM**
Digestion:
Prep End Date:

Prep Batch **75237** Prep Code: **3050_IDOD** Technician: **Will Boston**

Prep Factor Units: mL/g

| Equipment List |
|---|
| Hot Block #3 |
| Thermometer #71 |
| Balance #20 |
| Pipette #P-01 |
| Pipette#-P-09 |

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605098-30A | Soil | | 1.08 | 50 | 50.000 | 1 of 1 | |
| 1605098-35A | Soil | | 1.04 | 50 | 50.000 | 1 of 1 | |
| 1605098-38A | Soil | | 1.06 | 50 | 50.000 | 1 of 1 | |
| 1605121-01A | Soil | | 1.10 | 50 | 50.000 | 1 of 1 | |
| 1605121-01AMS | Soil | | 1.08 | 50 | 50.000 | of | |
| 1605121-01AMSD | Soil | | 1.01 | 50 | 50.000 | of | |
| 1605121-02A | Soil | | 1.20 | 50 | 50.000 | 1 of 1 | |
| 1605121-03A | Soil | | 1.07 | 50 | 50.000 | 1 of 1 | |
| 1605121-04A | Soil | | 1.12 | 50 | 50.000 | 1 of 1 | |
| 1605121-05A | Soil | | 1.06 | 50 | 50.000 | 1 of 1 | |
| 1605121-06A | Soil | | 1.08 | 50 | 50.000 | 1 of 1 | |
| 1605121-07A | Soil | | 1.09 | 50 | 50.000 | 1 of 1 | |
| 1605121-08A | Soil | | 1.12 | 50 | 50.000 | 1 of 1 | |
| 1605121-09A | Soil | | 1.11 | 50 | 50.000 | 1 of 1 | |
| 1605121-10A | Soil | | 1.15 | 50 | 50.000 | 1 of 1 | |
| 1605121-11A | Soil | | 1.16 | 50 | 50.000 | 1 of 1 | |
| 1605121-12A | Soil | | 1.06 | 50 | 50.000 | 1 of 1 | |
| 1605121-13A | Soil | | 1.06 | 50 | 50.000 | 1 of 1 | |
| 1605121-14A | Soil | | 1.18 | 50 | 50.000 | 1 of 1 | |
| 1605121-15A | Soil | | 1.19 | 50 | 50.000 | 1 of 1 | |
| 1605121-16A | Soil | | 1.15 | 50 | 50.000 | 1 of 1 | |
| 1605121-17A | Soil | | 1.10 | 50 | 50.000 | 1 of 1 | |
| LCS-75237 | Soil | | 1 | 50 | 50.000 | of | |
| LCSD-75237 | Soil | | 1 | 50 | 50.000 | of | |
| MB-75237 | Soil | | 1 | 50 | 50.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 10056 | Digestion Vessels | 1 | vessel | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 10 | ml | 01/10/2026 |
| 10137 | Hydrochloric Acid (trace metal grade) | 5 | ml | 01/10/2026 |
| 10318 | Hydrogen Peroxide, 30% | 3 | ml | 10/29/2016 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160406-1 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.5 | 07/05/2016 |
| MET-SPIKE-160511-1 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 1 | 08/09/2016 |
| MET-SPIKE-160511-2 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 1 | 08/09/2016 |

12:28-12:43
12:44-14:44
15:15-17:15
17:33-17:48

REVIEWED/APPROVED
By Sherri Herschmann at 12:03:11 PM, 5/24/2016

05-20-16

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/12/2016 5:00:00 PM**
Digestion: **Start: 5/12/2015 5:15:00 PM / Stop: 5/16/2016 8:30:00 AM**
Prep End Date: **5/16/2016 3:30:00 PM**

Prep Batch **75144** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605098-11A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-12A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-13A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-14A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-15A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-16A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-17A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling - hard clay enough for MS/MSD | | | | | | |
| 1605098-18A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-19A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-20A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-21A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-22A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling- hard copy | | | | | | |
| 1605098-23A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-24A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-25A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-26A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-27A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605098-28A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-29A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605098-30A | Soil | | 0 | 0 | #Num! | 1 of 1 | |

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/13/2016 1:00:00 PM**
Digestion: **Start: 5/13/2016 2:00:00 PM / Stop: 5/17/2016 9:00:00 AM**
Prep End Date: **5/17/2016 12:00:00 PM**

Prep Batch **75155** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-01A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling - MS/MSD | | | | | | |
| 1605121-02A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-03A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-04A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-05A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-06A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-07A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-08A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-09A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-10A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-11A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-12A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-13A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-14A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-15A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-16A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| 1605121-17A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-18A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |
| 1605121-19A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |

**DHL Analytical, Inc.**

# PREP BATCH REPORT

Prep Start Date: **5/13/2016 1:00:00 PM**
Digestion: **Start: 5/13/2016 2:00:00 PM / Stop: 5/17/2016 9:00:00 AM**
Prep End Date: **5/17/2016 12:00:00 PM**

Prep Batch **75155** Prep Code: **ISM2MM_PREP** Technician: **Jennifer Barker**

Prep Factor Units: **mL/**

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605121-20A | Soil | | 0 | 0 | #Num! | 1 of 1 | |
| | Sieve only no subsampling hard clay | | | | | | |

# MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

| | | | | |
|---|---|---|---|---|
| **ANALYST:** | CVD | **BALANCE #:** | 26 | |
| **TEST DATE:** | 05/19/2016 | **Water is at Room Temperatue (70-73°F) / (21-23°C)** | | |
| **PIPETTER LAB ID:** | P-01, P-09 | **WATER TEMP (°C):** | **21-23°C** | |
| **TEST VOLUME:** | See Below | **WATER DENSITY:** | **0.998** | **(0.9980-0.9976)** |

| | |
|---|---|
| **REFERENCE:** | DoD QSM 5.0 |
| **# of REPLICATES:** | 3 |
| **LABWARE TYPE:** | MECHANICAL VOLUMETRIC PIPETTE |
| **FREQUENCY:** | DAILY BEFORE USE |
| **MEAN CRITERIA:** | ± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME) |
| **RSD CRITERIA:** | < 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS) |

| | |
|---|---|
| **1) RECORD ROOM AND WATER TEMPERATURE** | **% TEST VOL = Volume of H2O at °C/Test Volume * 100** |
| **2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.** | **%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100** |
| **3) WEIGH 3 REPLICATES AT THE TEST VOLUME.** | |
| **4) DETERMINE TOTAL WT.** | |
| **5) CALCULATE VOLUME OF H2O AT °C (in mL)** | **VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY** |

| | | | | | BIAS | PRECISION |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-01** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| 1 | 5.00 | 4.9999 | 4.9899 | 99.80 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 4.9998 | 4.9898 | 99.80 | | |
| 3 | | 4.9952 | 4.9852 | 99.70 | | |
| **AVERAGE (MEAN)** | | **4.998** | **4.988** | 99.77 | | 0.054 |
| | | | | | | PASS |

| **PIPETTE ID: P-09** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
|---|---|---|---|---|---|---|
| 1 | 0.20 | 0.2007 | 0.2003 | 100.15 | PASS | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | 0.2025 | 0.2021 | 101.05 | | |
| 3 | | 0.2027 | 0.2023 | 101.15 | | |
| **AVERAGE (MEAN)** | | **0.202** | **0.202** | 100.78 | | 0.545 |
| | | | | | | PASS |

| **PIPETTE ID:** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
|---|---|---|---|---|---|---|
| 1 | | | | | | RSD MUST BE ≤ 1% OF TEST VOLUME VALUE |
| 2 | | | | | | |
| 3 | | | | | | |
| **AVERAGE (MEAN)** | | | | | | |
| | | | | | | |

5/19/16
Analyst / Date

05/24/2016
Review and Approved / Date

# MECHANICAL VOLUMETRIC PIPETTE VOLUME DAILY CHECK - DOD QSM 5.0

| | | | | |
|---|---|---|---|---|
| **ANALYST:** | RO | **BALANCE #:** | 30 | |
| **TEST DATE:** | 05/23/2016 | **Water is at Room Temperatue (70-73°F) / (21-23°C)** | | |
| **PIPETTER LAB ID:** | See Below | **WATER TEMP (°C):** | **21-23°C** | |
| **TEST VOLUME:** | See Below | **WATER DENSITY:** | **0.998** | **(0.9980-0.9976)** |

| | |
|---|---|
| **REFERENCE:** | DoD QSM 5.0 |
| **# of REPLICATES:** | 3 |
| **LABWARE TYPE:** | MECHANICAL VOLUMETRIC PIPETTE |
| **FREQUENCY:** | DAILY BEFORE USE |
| **MEAN CRITERIA:** | ± 2% OF NOMINAL VOLUME (VOLUME OF USE/TEST VOLUME) |
| **RSD CRITERIA:** | < 1% OF NOMINAL VOLUME (BASED ON MINIMUM OF 3 REPLICATE MEASUREMENTS) |

| | |
|---|---|
| **1) RECORD ROOM AND WATER TEMPERATURE** | **% TEST VOL = Volume of H2O at °C/Test Volume * 100** |
| **2) TARE VESSEL ON BALANCE. ADD TEST VOLUME.** | **%RSD = STDEV (Mean Volume)/AVERAGE (Mean Volume) *100** |
| **3) WEIGH 3 REPLICATES AT THE TEST VOLUME.** | |
| **4) DETERMINE TOTAL WT.** | |
| **5) CALCULATE VOLUME OF H2O AT °C (in mL)** | **VOLUME OF H2O AT °C = TOTAL WT * WATER DENSITY** |

| | | | | | BIAS | PRECISION |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-31** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| **1** | **4.00** | 4.0171 | 4.0091 | **100.23** | **PASS** | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| **2** | | 3.9879 | 3.9799 | **99.50** | | |
| **3** | | 3.9865 | 3.9785 | **99.46** | | |
| **AVERAGE (MEAN)** | | **3.997** | **3.989** | **99.73** | | **0.432** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-21** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| **1** | **1.00** | 0.9989 | 0.9969 | **99.69** | **PASS** | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| **2** | | 0.9957 | 0.9937 | **99.37** | | |
| **3** | | 0.9956 | 0.9936 | **99.36** | | |
| **AVERAGE (MEAN)** | | **0.997** | **0.995** | **99.47** | | **0.188** |
| | | | | | | **PASS** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **PIPETTE ID: P-39** | **TEST VOLUME (mL)** | **TOTAL WT (g)** | **Volume of $H_2O$ at °C** | **% TEST VOL (98-102%)** | **MEAN CRITERIA (± 2%)** | **% RSD Calculated** |
| **1** | **0.500** | 0.5002 | 0.4992 | **99.84** | **PASS** | **RSD MUST BE ≤ 1% OF TEST VOLUME VALUE** |
| **2** | | 0.5022 | 0.5012 | **100.24** | | |
| **3** | | 0.4996 | 0.4986 | **99.72** | | |
| **AVERAGE (MEAN)** | | **0.501** | **0.500** | **99.93** | | **0.272** |
| | | | | | | **PASS** |

5/23/2016
Analyst / Date

**05/24/2016**
Review and Approved / Date

# DHL Analytical, Inc.

# PREP BATCH REPORT



Prep Start Date: **5/19/2016 10:13:48 AM**
Digestion: **Start: 5/19/2016 12:28:00 PM / Stop: 5/19/2016 5:48:00 PM**
Prep End Date: **5/20/2016 8:43:16 AM**

Prep Batch **75237** Prep Code: **3050_IDOD** Technician: **Will Boston**

Prep Factor Units: **mL/g**

**Equipment List**

- Hot Block #3
- Thermometer #71
- Balance #20
- Pipette #P-01
- Pipette#-P-09

| Sample ID | Matrix | pH | SampAmt | Fin Vol | Factor | Bottle # | Cleanup |
|---|---|---|---|---|---|---|---|
| 1605098-30A | Soil | | 1.08 | 50 | 46.296 | 1 of 1 | |
| 1605098-35A | Soil | | 1.04 | 50 | 48.077 | 1 of 1 | |
| 1605098-38A | Soil | | 1.06 | 50 | 47.170 | 1 of 1 | |
| 1605121-01A | Soil | | 1.1 | 50 | 45.455 | 1 of 1 | |
| 1605121-01A MS | Soil | | 1.08 | 50 | 46.296 | of | |
| 1605121-01A MSD | Soil | | 1.01 | 50 | 49.505 | of | |
| 1605121-01A PDS | Soil | | 1.1 | 50 | 45.455 | of | |
| 1605121-01A SD | Soil | | 1.1 | 50 | 45.455 | of | |
| 1605121-02A | Soil | | 1.2 | 50 | 41.667 | 1 of 1 | |
| 1605121-03A | Soil | | 1.07 | 50 | 46.729 | 1 of 1 | |
| 1605121-04A | Soil | | 1.12 | 50 | 44.643 | 1 of 1 | |
| 1605121-05A | Soil | | 1.06 | 50 | 47.170 | 1 of 1 | |
| 1605121-06A | Soil | | 1.08 | 50 | 46.296 | 1 of 1 | |
| 1605121-07A | Soil | | 1.08 | 50 | 46.296 | 1 of 1 | |
| 1605121-08A | Soil | | 1.12 | 50 | 44.643 | 1 of 1 | |
| 1605121-09A | Soil | | 1.11 | 50 | 45.045 | 1 of 1 | |
| 1605121-10A | Soil | | 1.15 | 50 | 43.478 | 1 of 1 | |
| 1605121-11A | Soil | | 1.16 | 50 | 43.103 | 1 of 1 | |
| 1605121-12A | Soil | | 1.06 | 50 | 47.170 | 1 of 1 | |
| 1605121-13A | Soil | | 1.06 | 50 | 47.170 | 1 of 1 | |
| 1605121-14A | Soil | | 1.18 | 50 | 42.373 | 1 of 1 | |
| 1605121-15A | Soil | | 1.18 | 50 | 42.373 | 1 of 1 | |
| 1605121-16A | Soil | | 1.15 | 50 | 43.478 | 1 of 1 | |
| 1605121-17A | Soil | | 1.1 | 50 | 45.455 | 1 of 1 | |
| LCS-75237 | Soil | | 1 | 50 | 50.000 | of | |
| LCSD-75237 | Soil | | 1 | 50 | 50.000 | of | |
| MB-75237 | Soil | | 1 | 50 | 50.000 | of | |

| Number | Reagent Name | Amt | Units | Exp. Da |
|---|---|---|---|---|
| 10056 | Digestion Vessels | 1 | vessel | 02/10/2026 |
| 10136 | Nitric Acid (Trace Metal Grade) | 10 | ml | 01/10/2026 |
| 10137 | Hydrochloric Acid (trace metal grade) | 5 | ml | 01/10/2026 |
| 10318 | Hydrogen Peroxide, 30% | 3 | ml | 10/29/2016 |

| Spk ID | Spike Name | SampType | Amt (mL or g) | Exp. Date |
|---|---|---|---|---|
| MET-150914-10 | AL PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-150914-9 | FE PRIMARY STD 1000 PPM | LCS/MS/MSD | 0.25 | 10/01/2016 |
| MET-SPIKE-160406-1 | 2500 PPM NATURALS CAL | LCS/MS/MSD | 0.5 | 07/05/2016 |
| MET-SPIKE-160511-1 | 50 PPM Custom+Sn,Ti,B,Mo,Sr CAL | LCS/MS/MSD | 1 | 08/09/2016 |
| MET-SPIKE-160511-2 | 50 PPM Sb+Ag CAL | LCS/MS/MSD | 1 | 08/09/2016 |

***REVIEWED/APPROVED***

*By Sherri Herschmann at 12:06:33 PM, 5/24/2016*

# Calibration Summary Report

**Date Acquired** 5/23/2016 10:41
**Data Batch** 160523.b

| Level | Calibration File Name |
|---|---|
| 1 | 012CALB.d |
| 2 | 013CALS.d |
| 3 | 014CALS.d |
| 4 | 015CALS.d |
| 5 | 016CALS.d |
| 6 | 017CALS.d |
| 7 | 018CALS.d |
| 8 | 019CALS.d |

**Calibration Table**

| Ele | Corr Coef | Curve Equation |
|---|---|---|
| As | 1.0000 | y = 0.0014 * x + 2.8167E-004 |
| Be | 1.0000 | y = 5.9114E-005 * x + 2.9353E-006 |
| B | 1.0000 | y = 2.1736E-005 * x + 1.9548E-004 |
| Na | 0.9999 | y = 8.0916E-004 * x + 0.0378 |
| Mg | 1.0000 | y = 4.0716E-004 * x + 0.0022 |
| Al | 1.0000 | y = 1.5051E-004 * x + 0.0025 |
| K | 0.9999 | y = 4.1449E-004 * x + 0.0614 |
| Ca | 1.0000 | y = 2.2383E-005 * x + 0.0011 |
| Ti | 1.0000 | y = 1.5574E-004 * x + 2.4626E-006 |
| V | 1.0000 | y = 0.0050 * x + 0.0047 |
| Cr | 1.0000 | y = 0.0060 * x + 0.0013 |
| Mn | 1.0000 | y = 0.0034 * x + 2.3576E-004 |
| Fe | 1.0000 | y = 0.0051 * x + 0.0128 |
| Co | 1.0000 | y = 0.0130 * x + 1.6569E-004 |
| Ni | 1.0000 | y = 0.0034 * x + 0.0012 |
| Cu | 1.0000 | y = 0.0094 * x + 0.0023 |
| Zn | 1.0000 | y = 0.0016 * x + 5.3931E-004 |
| Se | 1.0000 | y = 8.2217E-005 * x + 1.3839E-004 |
| Sr | 0.9999 | y = 6.9275E-004 * x + 1.7507E-004 |
| Mo | 1.0000 | y = 5.7772E-004 * x + 5.8427E-006 |
| Ag | 0.9999 | y = 0.0018 * x + 5.0866E-006 |
| Cd | 1.0000 | y = 2.7114E-004 * x + 5.3819E-007 |
| Sn | 1.0000 | y = 5.7939E-004 * x + 8.1217E-005 |
| Sb | 1.0000 | y = 9.0284E-004 * x + 2.1461E-005 |
| Tl | 1.0000 | y = 0.0017 * x + 3.0027E-006 |
| Ba | 1.0000 | y = 2.8780E-004 * x + 1.4284E-005 |
| Pb | 1.0000 | y = 0.0023 * x + 4.2707E-005 |
| Li | 1.0000 | y = 4.4727E-005 * x + 1.5412E-005 |

REVIEWED BY
By Janice Whitt at 1:09:12 PM, 5/23/2016

# Calibration Summary Report

**Level 7 Cal**

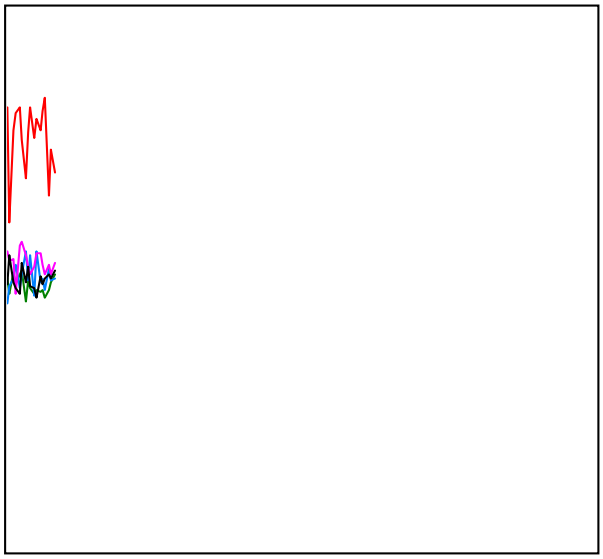
| Ele | Conc | Calc | %Rec |
|---|---|---|---|
| As | 500 | 501.58 | 100 |
| Be | 500 | 509.04 | 102 |
| B | 500 | 503.43 | 101 |
| Na | 10000 | 10289.89 | 103 |
| Mg | 10000 | 10177.23 | 102 |
| Al | 10000 | 9993.09 | 100 |
| K | 10000 | 10214.27 | 102 |
| Ca | 10000 | 9855.94 | 99 |
| Ti | 500 | 493.20 | 99 |
| V | 500 | 509.55 | 102 |
| Cr | 500 | 505.18 | 101 |
| Mn | 500 | 501.60 | 100 |
| Fe | 10000 | 9960.71 | 100 |
| Co | 500 | 504.63 | 101 |
| Ni | 500 | 509.37 | 102 |
| Cu | 500 | 516.68 | 103 |
| Zn | 500 | 510.66 | 102 |
| Se | 500 | 504.06 | 101 |
| Sr | 500 | 480.45 | 96 |
| Mo | 500 | 489.49 | 98 |
| Ag | 500 | 497.86 | 100 |
| Cd | 500 | 490.04 | 98 |
| Sn | 500 | 493.35 | 99 |
| Sb | 500 | 498.86 | 100 |
| Tl | 500 | 499.66 | 100 |
| Ba | 500 | 492.56 | 99 |
| Pb | 500 | 491.91 | 98 |

**Level 8 Cal**

| Ele | Conc | Calc | %Rec |
|---|---|---|---|
| As | 2000 | 1999.84 | 100 |
| Be | 2000 | 1997.32 | 100 |
| B | 2000 | 1999.79 | 100 |
| Na | 25000 | 24864.22 | 101 |
| Mg | 25000 | 24911.90 | 100 |
| K | 25000 | 24898.11 | 100 |
| Ca | 25000 | 25076.46 | 100 |
| Ti | 2000 | 2002.16 | 100 |
| V | 2000 | 1997.60 | 100 |
| Cr | 2000 | 1998.52 | 100 |
| Mn | 2000 | 1999.70 | 100 |
| Co | 2000 | 1998.85 | 100 |
| Ni | 2000 | 1997.15 | 100 |
| Cu | 2000 | 1994.95 | 100 |
| Zn | 2000 | 1996.85 | 100 |
| Se | 2000 | 1998.41 | 100 |
| Sr | 2000 | 2005.86 | 100 |
| Mo | 2000 | 2002.88 | 100 |
| Cd | 2000 | 2002.48 | 100 |
| Sn | 2000 | 2001.85 | 100 |
| Tl | 2000 | 2000.08 | 100 |
| Ba | 2000 | 2002.16 | 100 |
| Pb | 2000 | 2002.50 | 100 |
| Li | 2000 | 1996.24 | 100 |

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# Current Signal



| Mass | Range | Count | Avg. Count | RSD [%] |
|---|---|---|---|---|
| 51 | 200 | 139 | 151.8 | 8.48 |
| 59 | 2000 | 1016 | 977.5 | 3.51 |
| 89 | 2000 | 1005 | 1008.6 | 5.33 |
| 140 | 5000 | 2643 | 2653.6 | 4.28 |
| 205 | 5000 | 2588 | 2500.5 | 3.98 |
| 156/140 | 1 | 0.416 % | 0.361 % | 49.12 |
| 75 | 20 | 8 | 6.0 | 47.51 |
| 78 | 20 | 9 | 8.9 | 46.87 |
| 56 | 5000 | 3619 | 3697.9 | 2.82 |
| 31 | 500 | 218 | 204.4 | 11.07 |

**Integration Time [sec]** 0.10

**## Plasma Parameters ##**

| | | | |
|---|---|---|---|
| RF Power | 1550 | Carrier Gas | 0.53 |
| RF Matching | 1.90 | Option Gas | 0.0 |
| Smpl Depth | 8.0 | Nebulizer Pump | 0.10 |
| S/C Temp | 2 | | |

**## Lenses Parameters ##**

| | | | |
|---|---|---|---|
| Extract 1 | 0.0 | Omega Lens | 6.5 |
| Extract 2 | -200.0 | Cell Entrance | -40 |
| Omega Bias | -90 | Cell Exit | -60 |
| Deflect | 1.8 | | |

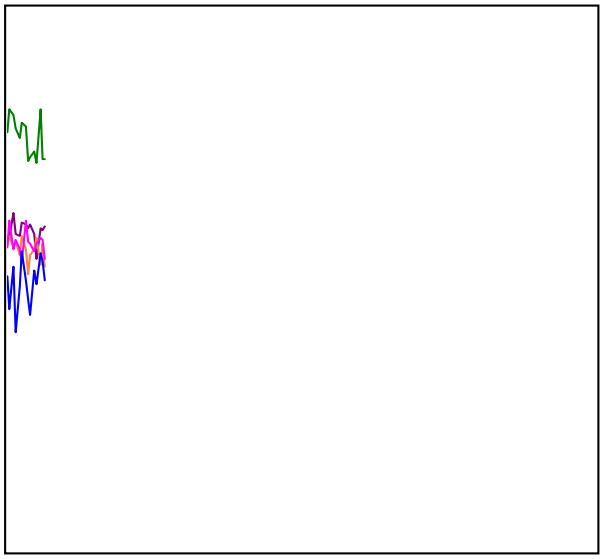
**## Cell Parameters ##**

| | | | |
|---|---|---|---|
| Use Gas | true | 3rd Gas Flow | 0 |
| He Flow | 4.7 | OctP Bias | -18.0 |
| H2 Flow | 0.0 | OctP RF | 200 |
| Energy Discrimination | 3.0 | | |

**Meters**

| | | | | | |
|---|---|---|---|---|---|
| IF/BK Press | 2.23E+2 | Pa | Carrier Gas(BP) | 2.57E+2 | kPa |
| Analyzer Press | 2.02E-4 | Pa | Reflected Power | 1 | W |
| Forward Power | 1550 | W | | | |

# Current Signal



| Mass | Range | Count | Avg. Count | RSD [%] |
|---|---|---|---|---|
| 7 | 2000 | 1195 | 1175.5 | 3.25 |
| 59 | 2000 | 1443 | 1519.8 | 4.94 |
| 89 | 5000 | 2607 | 2765.2 | 3.91 |
| 140 | 5000 | 2677 | 2830.2 | 3.92 |
| 205 | 5000 | 1806 | 1915.5 | 4.14 |
| 156/140 | 2 | 1.233 % | 1.130 % | 16.46 |
| 78 | 5000 | 2299 | 2307.8 | 2.34 |
| 63 | 500 | 249 | 246.4 | 8.79 |
| 75 | 10000 | 6159 | 6248.2 | 1.25 |
| **Integration Time [sec]** | | 0.10 | | |

**## Plasma Parameters ##**

| | | | |
|---|---|---|---|
| RF Power | 1550 | Carrier Gas | 0.53 |
| RF Matching | 1.90 | Option Gas | 0.0 |
| Smpl Depth | 8.0 | Nebulizer Pump | 0.10 |
| S/C Temp | 2 | | |

**## Lenses Parameters ##**

| | | | |
|---|---|---|---|
| Extract 1 | 0.0 | Omega Lens | 6.5 |
| Extract 2 | -200.0 | Cell Entrance | -40 |
| Omega Bias | -90 | Cell Exit | -60 |
| Deflect | 7.0 | | |

**## Cell Parameters ##**

| | | | |
|---|---|---|---|
| Use Gas | false | 3rd Gas Flow | 0 |
| He Flow | 4.2 | OctP Bias | -18.0 |
| H2 Flow | 0.0 | OctP RF | 200 |
| Energy Discrimination | 3.0 | | |

**Meters**

| | | | | | |
|---|---|---|---|---|---|
| IF/BK Press | 2.22E+2 | Pa | Carrier Gas(BP) | 2.56E+2 | kPa |
| Analyzer Press | 1.15E-4 | Pa | Reflected Power | 1 | W |
| Forward Power | 1550 | W | | | |

# US EPA Tune Check Sample Report

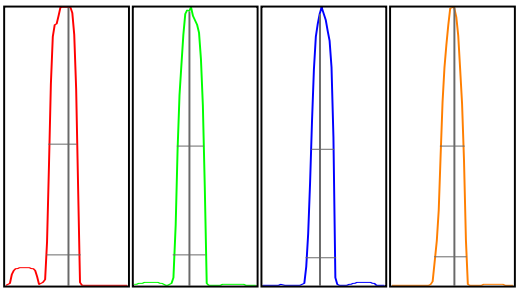
**Batch Folder** C:\Agilent\ICPMH\1\DATA\DHL TEMPLATE Li.b
**Report Comment**
**Instrument Name** ICPMS4 JP12361998

**[No gas]**

| Mass | Count (Mean) | RSD% (Actual) | RSD% (Required) | RSD% (Flag) |
|---|---|---|---|---|
| 7 | 679972 | 0.31 | 5.00 | |
| 59 | 866598 | 0.70 | 5.00 | |
| 115 | 1209526 | 0.83 | 5.00 | |
| 205 | 1027821 | 1.04 | 5.00 | |

| Mass | Replicate 1 Count | Replicate 2 Count | Replicate 3 Count | Replicate 4 Count | Replicate 5 Count |
|---|---|---|---|---|---|
| 7 | 678094 | 677691 | 680079 | 681628 | 682370 |
| 59 | 868590 | 856230 | 870874 | 866547 | 870748 |
| 115 | 1195979 | 1206736 | 1215765 | 1222350 | 1206798 |
| 205 | 1040280 | 1013800 | 1027603 | 1021630 | 1035791 |

**Integration Time [sec] =** 0.1



| Mass | Peak Height | Axis (Actual) | Axis (Required) | Axis (Flag) | Width-X% (Actual) | Width-X% (Required) | Width-X% (Flag) |
|---|---|---|---|---|---|---|---|
| 7 | 103908 | 7.05 | 6.9 - 7.1 | | 0.803 | 0.850 | |
| 59 | 144998 | 58.90 | 58.9 - 59.1 | | 0.763 | 0.850 | |
| 115 | 234368 | 114.95 | 114.9 - 115.1 | | 0.680 | 0.850 | |
| 205 | 201934 | 205.05 | 204.9 - 205.1 | | 0.762 | 0.850 | |

**X% =** 10 **Int Time [sec] =** 0.1 **Acq Time [sec] =** 135.05 **Y Axis =** Linear

**Tune Parameters**

**## Plasma Paramters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| RF Power | 1550 | W | Nebulizer Pump | 0.10 | rps |
| RF Matching | 1.90 | V | S/C Temp | 2 | ℃ |
| Smpl Depth | 8.0 | mm | Gas Switch | Dilution Gas | |
| Carrier Gas | 0.53 | L/min | Makeup/Dilution Gas | 0.52 | L/min |
| Option Gas | 0.0 | % | | | |

**## Lenses Parameters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| Extract 1 | 0.0 | V | Cell Entrance | -40 | V |
| Extract 2 | -200.0 | V | Cell Exit | -60 | V |
| Omega Bias | -90 | V | Deflect | 7.0 | V |
| Omega Lens | 6.5 | V | Plate Bias | -60 | V |

**## Cell Parameters ##**

| ParameterName | Value | Unit | ParameterName | Value | Unit |
|---|---|---|---|---|---|
| Use Gas | false | | OctP Bias | -18.0 | V |
| He Flow | 0.0 | mL/min | OctP RF | 200 | V |
| H2 Flow | 0.0 | mL/min | Energy Discrimination | 3.0 | V |
| 3rd Gas Flow | 0 | % | | | |

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By Janice Whitt at 1:09:24 PM, 5/23/2016

# P/A Factor Tuning Report

## Current Sample

Sample Name: CCB1-160523
Data File: 052_CCB.d
Acquired: 05/23/2016 12:15:32

## Detector Parameters and P/A Factors

Discriminator: 4.5 mV
AnalogHV: 1761 V
PulseHV: 1217 V

Acquired: 05/23/2016 10:07:12

| Mass[u] | Element | P/A Factor |
|---|---|---|
| 6 | Li | 0.097837 |
| 9 | Be | 0.111012 |
| 23 | Na | 0.119192 |
| 24 | Mg | 0.123724 |
| 27 | Al | 0.128077 |
| 39 | K | 0.129771 |
| 45 | Sc | 0.130862 |
| 48 | | 0.132135 |
| 51 | V | 0.130933 |
| 52 | Cr | 0.136231 |
| 55 | Mn | 0.137648 |
| 59 | Co | 0.141543 |
| 60 | Ni | 0.142563 |
| 63 | Cu | 0.144932 |
| 66 | Zn | 0.144574 |
| 72 | | 0.143658 |
| 74 | Ge | 0.143964 |
| 75 | As | 0.142622 |
| 88 | Sr | 0.143956 |
| 89 | | 0.143507 |
| 95 | | 0.143591 |
| 97 | Mo | 0.143375 |
| 98 | Mo | 0.143813 |
| 99 | [Mo] | 0.145738 |
| 101 | | 0.146466 |
| 105 | | 0.148942 |
| 111 | Cd | 0.150174 |
| 114 | Cd | 0.149276 |
| 115 | In | 0.149915 |
| 118 | Sn | 0.149082 |
| 121 | | 0.149568 |
| 123 | Sb | 0.149873 |
| 135 | Ba | 0.152643 |
| 138 | | 0.150322 |
| 175 | | 0.154881 |
| 193 | | 0.155592 |
| 205 | Tl | 0.157007 |
| 206 | [Pb] | 0.157788 |
| 207 | [Pb] | 0.157904 |
| 208 | Pb | 0.157038 |
| 209 | Bi | 0.156907 |
| 232 | | 0.157055 |
| 238 | U | 0.157339 |
| 44 | Ca | Signal too low |
| 78 | Se | Signal too low |
| 107 | Ag | Signal too low |
| 172 | | Signal too low |

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By Janice Whitt at 1:09:27 PM, 5/23/2016

# Calibration Blank Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 10:41 | Sample Name | BLANK STD 1 |
| Data Batch | 160523.b | Comment | CAL ICPMS_TW |
| Data File Name | 012CALB.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 14 | 55.79 |
| 9 | Be | 45 | 3 | 57.28 |
| 11 | B | 45 | 177 | 6.54 |
| 23 | Na | 45 | 34139 | 1.60 |
| 24 | Mg | 45 | 1980 | 4.08 |
| 27 | Al | 45 | 2288 | 3.85 |
| 39 | K | 45 | 55476 | 1.42 |
| 44 | Ca | 45 | 961 | 7.56 |
| 47 | Ti | 45 | 2 | 86.60 |
| 51 | V | 45 | 4266 | 2.62 |
| 52 | Cr | 45 | 1141 | 7.79 |
| 55 | Mn | 45 | 213 | 11.80 |
| 56 | Fe | 45 | 11561 | 2.68 |
| 59 | Co | 72 | 112 | 20.22 |
| 60 | Ni | 72 | 821 | 7.77 |
| 63 | Cu | 72 | 1579 | 1.41 |
| 66 | Zn | 72 | 366 | 16.95 |
| 75 | As | 72 | 191 | 9.42 |
| 78 | Se | 72 | 94 | 12.11 |
| 88 | Sr | 115 | 1100 | 1.05 |
| 95 | Mo | 115 | 37 | 45.45 |
| 107 | Ag | 115 | 32 | 56.98 |
| 111 | Cd | 115 | 3 | 100.05 |
| 118 | Sn | 115 | 510 | 3.92 |
| 121 | Sb | 115 | 134 | 16.51 |
| 137 | Ba | 115 | 90 | 18.52 |
| 205 | Tl | 209 | 42 | 27.72 |
| 208 | Pb | 209 | 600 | 8.94 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD |
|---|---|---|---|
| 45 | Sc | 904202 | 1.28 |
| 72 | Ge | 677615 | 0.38 |
| 115 | In | 6287303 | 2.85 |
| 209 | Bi | 14081817 | 3.17 |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 10:43 | Sample Name | L2-160523 |
| Data Batch | 160523.b | Comment | CAL ICPMS_TW |
| Data File Name | 013CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 54 | 30.93 |
| 9 | Be | 45 | 59 | 24.19 |
| 11 | B | 45 | 218 | 11.69 |
| 23 | Na | 45 | 49106 | 0.27 |
| 24 | Mg | 45 | 9386 | 3.13 |
| 27 | Al | 45 | 4806 | 2.74 |
| 39 | K | 45 | 62560 | 0.51 |
| 44 | Ca | 45 | 1323 | 4.63 |
| 47 | Ti | 45 | 147 | 13.82 |
| 51 | V | 45 | 8479 | 3.30 |
| 52 | Cr | 45 | 6574 | 2.86 |
| 55 | Mn | 45 | 3288 | 2.00 |
| 56 | Fe | 45 | 102248 | 1.34 |
| 59 | Co | 72 | 8973 | 2.16 |
| 60 | Ni | 72 | 3143 | 6.28 |
| 63 | Cu | 72 | 8237 | 2.17 |
| 66 | Zn | 72 | 1521 | 7.87 |
| 75 | As | 72 | 1135 | 3.69 |
| 78 | Se | 72 | 145 | 17.13 |
| 88 | Sr | 115 | 5162 | 3.36 |
| 95 | Mo | 115 | 3446 | 4.72 |
| 107 | Ag | 115 | 11258 | 2.34 |
| 111 | Cd | 115 | 1519 | 7.20 |
| 118 | Sn | 115 | 3828 | 0.96 |
| 121 | Sb | 115 | 5552 | 2.01 |
| 137 | Ba | 115 | 1890 | 3.23 |
| 205 | Tl | 209 | 22877 | 0.82 |
| 208 | Pb | 209 | 31445 | 1.13 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 900571 | 0.45 | 904202 | 99.60 | 70 | 120 | |
| 72 | Ge | 670627 | 1.48 | 677615 | 98.97 | 70 | 120 | |
| 115 | In | 6190956 | 0.22 | 6287303 | 98.47 | 70 | 120 | |
| 209 | Bi | 13796768 | 1.16 | 14081817 | 97.98 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 10:45 | Sample Name | L-160523 |
| Data Batch | 160523.b | Comment | CAL ICPMS_TW |
| Data File Name | 014CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 422 | 6.67 |
| 9 | Be | 45 | 513 | 4.28 |
| 11 | B | 45 | 314 | 7.81 |
| 23 | Na | 45 | 179567 | 0.71 |
| 24 | Mg | 45 | 75498 | 0.67 |
| 27 | Al | 45 | 28659 | 1.69 |
| 39 | K | 45 | 129305 | 0.51 |
| 44 | Ca | 45 | 4762 | 0.26 |
| 47 | Ti | 45 | 1509 | 5.75 |
| 51 | V | 45 | 48612 | 0.96 |
| 52 | Cr | 45 | 54862 | 0.14 |
| 55 | Mn | 45 | 30512 | 2.78 |
| 56 | Fe | 45 | 906138 | 0.11 |
| 59 | Co | 72 | 86261 | 0.31 |
| 60 | Ni | 72 | 24301 | 0.57 |
| 63 | Cu | 72 | 65859 | 0.98 |
| 66 | Zn | 72 | 11289 | 1.37 |
| 75 | As | 72 | 9325 | 1.65 |
| 78 | Se | 72 | 634 | 3.42 |
| 88 | Sr | 115 | 41872 | 0.51 |
| 95 | Mo | 115 | 34142 | 1.36 |
| 107 | Ag | 115 | 110269 | 0.50 |
| 111 | Cd | 115 | 16671 | 1.71 |
| 118 | Sn | 115 | 35109 | 1.10 |
| 121 | Sb | 115 | 54278 | 1.52 |
| 137 | Ba | 115 | 17059 | 2.93 |
| 205 | Tl | 209 | 230034 | 0.72 |
| 208 | Pb | 209 | 309141 | 0.69 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 904779 | 0.88 | 904202 | 100.06 | 70 | 120 | |
| 72 | Ge | 670882 | 0.39 | 677615 | 99.01 | 70 | 120 | |
| 115 | In | 6230915 | 0.35 | 6287303 | 99.10 | 70 | 120 | |
| 209 | Bi | 13793986 | 0.79 | 14081817 | 97.96 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 10:47 | Sample Name | 10X-160523 |
| Data Batch | 160523.b | Comment | CAL ICPMS_TW |
| Data File Name | 015CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 1995 | 3.01 |
| 9 | Be | 45 | 2601 | 0.94 |
| 11 | B | 45 | 1111 | 3.78 |
| 23 | Na | 45 | 767294 | 0.52 |
| 24 | Mg | 45 | 369675 | 1.08 |
| 27 | Al | 45 | 137134 | 0.22 |
| 39 | K | 45 | 428254 | 0.61 |
| 44 | Ca | 45 | 20275 | 2.18 |
| 47 | Ti | 45 | 6760 | 3.23 |
| 51 | V | 45 | 227873 | 1.94 |
| 52 | Cr | 45 | 268227 | 0.39 |
| 55 | Mn | 45 | 151812 | 0.06 |
| 56 | Fe | 45 | 4554936 | 0.43 |
| 59 | Co | 72 | 437181 | 0.92 |
| 60 | Ni | 72 | 119086 | 0.70 |
| 63 | Cu | 72 | 322274 | 0.51 |
| 66 | Zn | 72 | 55804 | 0.51 |
| 75 | As | 72 | 46279 | 0.92 |
| 78 | Se | 72 | 2853 | 2.51 |
| 88 | Sr | 115 | 205994 | 0.17 |
| 95 | Mo | 115 | 174091 | 0.88 |
| 107 | Ag | 115 | 553943 | 0.92 |
| 111 | Cd | 115 | 82554 | 0.32 |
| 118 | Sn | 115 | 174025 | 0.99 |
| 121 | Sb | 115 | 274641 | 0.79 |
| 137 | Ba | 115 | 85763 | 0.27 |
| 205 | Tl | 209 | 1162224 | 0.27 |
| 208 | Pb | 209 | 1552470 | 0.96 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 888520 | 1.86 | 904202 | 98.27 | 70 | 120 | |
| 72 | Ge | 663382 | 1.33 | 677615 | 97.90 | 70 | 120 | |
| 115 | In | 6119290 | 1.44 | 6287303 | 97.33 | 70 | 120 | |
| 209 | Bi | 13721704 | 3.04 | 14081817 | 97.44 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 10:49 | Sample Name | 5X-160523 |
| Data Batch | 160523.b | Comment | CAL ICPMS_TW |
| Data File Name | 016CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 4022 | 2.28 |
| 9 | Be | 45 | 5208 | 1.03 |
| 11 | B | 45 | 2090 | 6.59 |
| 23 | Na | 45 | 1482695 | 0.22 |
| 24 | Mg | 45 | 731448 | 0.66 |
| 27 | Al | 45 | 268102 | 0.93 |
| 39 | K | 45 | 800264 | 0.09 |
| 44 | Ca | 45 | 39793 | 0.32 |
| 47 | Ti | 45 | 13629 | 2.19 |
| 51 | V | 45 | 450460 | 0.19 |
| 52 | Cr | 45 | 529709 | 0.67 |
| 55 | Mn | 45 | 301095 | 0.26 |
| 56 | Fe | 45 | 9087517 | 1.57 |
| 59 | Co | 72 | 867230 | 0.62 |
| 60 | Ni | 72 | 232640 | 0.43 |
| 63 | Cu | 72 | 637526 | 0.42 |
| 66 | Zn | 72 | 111543 | 1.58 |
| 75 | As | 72 | 91397 | 0.61 |
| 78 | Se | 72 | 5646 | 0.25 |
| 88 | Sr | 115 | 405534 | 0.98 |
| 95 | Mo | 115 | 344042 | 1.66 |
| 107 | Ag | 115 | 1104806 | 0.81 |
| 111 | Cd | 115 | 163760 | 1.13 |
| 118 | Sn | 115 | 348511 | 0.44 |
| 121 | Sb | 115 | 546794 | 0.64 |
| 137 | Ba | 115 | 171815 | 0.48 |
| 205 | Tl | 209 | 2336598 | 0.56 |
| 208 | Pb | 209 | 3097207 | 0.33 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 879951 | 0.58 | 904202 | 97.32 | 70 | 120 | |
| 72 | Ge | 661139 | 0.69 | 677615 | 97.57 | 70 | 120 | |
| 115 | In | 6149856 | 1.42 | 6287303 | 97.81 | 70 | 120 | |
| 209 | Bi | 13593824 | 2.28 | 14081817 | 96.53 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 10:51 | Sample Name | 2X-160523 |
| Data Batch | 160523.b | Comment | CAL ICPMS_TW |
| Data File Name | 017CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 10158 | 2.48 |
| 9 | Be | 45 | 13366 | 1.11 |
| 11 | B | 45 | 4926 | 3.90 |
| 23 | Na | 45 | 3700424 | 0.50 |
| 24 | Mg | 45 | 1842485 | 0.20 |
| 27 | Al | 45 | 674718 | 1.07 |
| 39 | K | 45 | 1925190 | 0.56 |
| 44 | Ca | 45 | 99227 | 1.57 |
| 47 | Ti | 45 | 34276 | 0.98 |
| 51 | V | 45 | 1126479 | 0.23 |
| 52 | Cr | 45 | 1337611 | 0.46 |
| 55 | Mn | 45 | 751245 | 0.54 |
| 56 | Fe | 45 | 22912045 | 0.43 |
| 59 | Co | 72 | 2147838 | 0.23 |
| 60 | Ni | 72 | 579579 | 1.00 |
| 63 | Cu | 72 | 1589846 | 0.57 |
| 66 | Zn | 72 | 273371 | 0.47 |
| 75 | As | 72 | 229135 | 0.29 |
| 78 | Se | 72 | 13921 | 2.74 |
| 88 | Sr | 115 | 1027359 | 0.51 |
| 95 | Mo | 115 | 872922 | 0.12 |
| 107 | Ag | 115 | 2766127 | 0.67 |
| 111 | Cd | 115 | 411961 | 0.87 |
| 118 | Sn | 115 | 876724 | 0.39 |
| 121 | Sb | 115 | 1383479 | 0.63 |
| 137 | Ba | 115 | 434262 | 0.39 |
| 205 | Tl | 209 | 5947641 | 0.36 |
| 208 | Pb | 209 | 7903967 | 0.16 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 891953 | 0.79 | 904202 | 98.65 | 70 | 120 | |
| 72 | Ge | 663268 | 0.23 | 677615 | 97.88 | 70 | 120 | |
| 115 | In | 6058043 | 1.31 | 6287303 | 96.35 | 70 | 120 | |
| 209 | Bi | 13829886 | 0.53 | 14081817 | 98.21 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 10:53 | Sample Name | H-160523 |
| Data Batch | 160523.b | Comment | CAL ICPMS_TW |
| Data File Name | 018CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 20339 | 0.70 |
| 9 | Be | 45 | 26681 | 0.80 |
| 11 | B | 45 | 9875 | 3.47 |
| 23 | Na | 45 | 7415179 | 1.62 |
| 24 | Mg | 45 | 3675807 | 0.05 |
| 27 | Al | 45 | 1335716 | 1.13 |
| 39 | K | 45 | 3808036 | 0.76 |
| 44 | Ca | 45 | 196537 | 0.82 |
| 47 | Ti | 45 | 68103 | 0.69 |
| 51 | V | 45 | 2279167 | 0.43 |
| 52 | Cr | 45 | 2673841 | 0.59 |
| 55 | Mn | 45 | 1505829 | 0.41 |
| 56 | Fe | 45 | 44791023 | 1.36 |
| 59 | Co | 72 | 4333632 | 0.07 |
| 60 | Ni | 72 | 1162385 | 0.75 |
| 63 | Cu | 72 | 3202470 | 0.85 |
| 66 | Zn | 72 | 551113 | 0.61 |
| 75 | As | 72 | 461164 | 0.32 |
| 78 | Se | 72 | 27499 | 1.50 |
| 88 | Sr | 115 | 2071588 | 0.38 |
| 95 | Mo | 115 | 1759082 | 0.34 |
| 107 | Ag | 115 | 5562354 | 1.28 |
| 111 | Cd | 115 | 826540 | 0.24 |
| 118 | Sn | 115 | 1778907 | 1.25 |
| 121 | Sb | 115 | 2802214 | 1.01 |
| 137 | Ba | 115 | 881929 | 0.21 |
| 205 | Tl | 209 | 11933830 | 1.10 |
| 208 | Pb | 209 | 15814357 | 0.88 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 886620 | 0.63 | 904202 | 98.06 | 70 | 120 | |
| 72 | Ge | 661371 | 0.53 | 677615 | 97.60 | 70 | 120 | |
| 115 | In | 6222293 | 2.02 | 6287303 | 98.97 | 70 | 120 | |
| 209 | Bi | 13894584 | 1.34 | 14081817 | 98.67 | 70 | 120 | |

# Calibration Standard Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 10:55 | Sample Name | H2-160523 |
| Data Batch | 160523.b | Comment | CAL ICPMS_TW |
| Data File Name | 019CALS.d | Dilution | 1 |

| Mass | Name | IS | CPS | %RSD |
|---|---|---|---|---|
| 7 | Li | 45 | 79991 | 0.83 |
| 9 | Be | 45 | 105763 | 0.57 |
| 11 | B | 45 | 39112 | 1.45 |
| 23 | Na | 45 | 18057534 | 3.58 |
| 24 | Mg | 45 | 9088289 | 1.47 |
| 27 | Al | 45 | 1269 | 16.03 |
| 39 | K | 45 | 9298592 | 1.18 |
| 44 | Ca | 45 | 503718 | 0.10 |
| 47 | Ti | 45 | 279312 | 0.68 |
| 51 | V | 45 | 9015007 | 1.15 |
| 52 | Cr | 45 | 10684407 | 2.93 |
| 55 | Mn | 45 | 6064120 | 1.50 |
| 56 | Fe | 45 | 35308 | 20.24 |
| 59 | Co | 72 | 17361777 | 1.84 |
| 60 | Ni | 72 | 4607152 | 1.02 |
| 63 | Cu | 72 | 12501757 | 0.38 |
| 66 | Zn | 72 | 2178676 | 0.19 |
| 75 | As | 72 | 1859138 | 0.52 |
| 78 | Se | 72 | 110000 | 0.32 |
| 88 | Sr | 115 | 8401070 | 0.86 |
| 95 | Mo | 115 | 6994842 | 0.76 |
| 107 | Ag | 115 | 2126 | 23.63 |
| 111 | Cd | 115 | 3282273 | 1.18 |
| 118 | Sn | 115 | 7011933 | 0.68 |
| 121 | Sb | 115 | 4685 | 3.78 |
| 137 | Ba | 115 | 3483257 | 0.41 |
| 205 | Tl | 209 | 47207017 | 0.33 |
| 208 | Pb | 209 | 63612418 | 1.06 |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 895774 | 0.77 | 904202 | 99.07 | 70 | 120 | |
| 72 | Ge | 668943 | 0.70 | 677615 | 98.72 | 70 | 120 | |
| 115 | In | 6045106 | 0.72 | 6287303 | 96.15 | 70 | 120 | |
| 209 | Bi | 13730344 | 1.07 | 14081817 | 97.50 | 70 | 120 | |

# Interference Check Solution A (ICS-A) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 11:03 | Sample Name | ICSA-160523 |
| Data Batch | 160523.b | Comment | ICSAICPMS_TW |
| Data File Name | 023ICSA.d | Dilution | 1 |

| Mass | Name | Conc | CPS | %RSD | MDL S | MDL Aq | QC Flag |
|---|---|---|---|---|---|---|---|
| 9 | Be | 0.149 | 10 | 10.0 | 1.2 | 0.8 | |
| 11 | B | 11.290 | 376 | 17.9 | 30 | 30 | |
| 51 | V | -0.180 | 3253 | 2.5 | 10 | 10 | |
| 52 | Cr | 0.410 | 3167 | 4.0 | 8 | 5 | |
| 55 | Mn | 1.407 | 4265 | 3.6 | 8 | 10 | |
| 59 | Co | 0.554 | 4687 | 1.5 | 8 | 10 | |
| 60 | Ni | 0.586 | 2057 | 3.0 | 8 | 10 | |
| 63 | Cu | 0.967 | 7251 | 2.3 | 8 | 10 | |
| 66 | Zn | 1.505 | 1906 | 6.7 | 10 | 5 | |
| 75 | As | 0.715 | 812 | 3.7 | 4 | 5 | |
| 78 | Se | 0.189 | 98 | 21.9 | 2 | 5 | |
| 88 | Sr | 1.411 | 6641 | 3.1 | 10 | 10 | |
| 107 | Ag | 0.156 | 1640 | 6.2 | 0.8 | 2 | |
| 111 | Cd | 0.568 | 891 | 4.2 | 1.2 | 1 | |
| 118 | Sn | 1.490 | 5444 | 3.5 | 10 | 10 | |
| 121 | Sb | 0.409 | 2254 | 3.4 | 4 | 2.5 | |
| 137 | Ba | 0.358 | 677 | 12.8 | 8 | 10 | |
| 205 | Tl | 0.053 | 1181 | 6.8 | 4 | 1.5 | |
| 208 | Pb | 0.115 | 3836 | 3.0 | 1.2 | 1 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 853276 | 1.55 | 904202 | 94.37 | 70 | 120 | |
| 72 | Ge | 636672 | 0.65 | 677615 | 93.96 | 70 | 120 | |
| 115 | In | 5764026 | 0.57 | 6287303 | 91.68 | 70 | 120 | |
| 209 | Bi | 12438504 | 1.71 | 14081817 | 88.33 | 70 | 120 | |

# Interference Check Solution AB (ICS-AB) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 11:05 | Sample Name | ICSAB-160523 |
| Data Batch | 160523.b | Comment | ICSBICPMS_TW |
| Data File Name | 024ICSB.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 51 | V | 45 | 40.430 | 177045 | 0.63 | 40 | 101.1 | 80 | 120 | |
| 52 | Cr | 45 | 21.277 | 108980 | 0.68 | 20 | 106.4 | 80 | 120 | |
| 55 | Mn | 45 | 19.721 | 56943 | 0.66 | 20 | 98.6 | 80 | 120 | |
| 59 | Co | 72 | 39.986 | 330797 | 0.91 | 40 | 100.0 | 80 | 120 | |
| 60 | Ni | 72 | 38.440 | 85195 | 0.48 | 40 | 96.1 | 80 | 120 | |
| 63 | Cu | 72 | 21.070 | 127190 | 0.48 | 20 | 105.3 | 80 | 120 | |
| 66 | Zn | 72 | 20.526 | 21663 | 1.72 | 20 | 102.6 | 80 | 120 | |
| 75 | As | 72 | 20.358 | 18198 | 0.82 | 20 | 101.8 | 80 | 120 | |
| 78 | Se | 72 | 19.723 | 1121 | 6.78 | 20 | 98.6 | 80 | 120 | |
| 107 | Ag | 115 | 19.288 | 197546 | 1.17 | 20 | 96.4 | 80 | 120 | |
| 111 | Cd | 115 | 10.185 | 15746 | 3.02 | 10 | 101.9 | 80 | 120 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 849875 | 0.06 | 904202 | 93.99 | 70 | 120 | |
| 72 | Ge | 636925 | 0.26 | 677615 | 94.00 | 70 | 120 | |
| 115 | In | 5701078 | 0.43 | 6287303 | 90.68 | 70 | 120 | |
| 209 | Bi | 12549877 | 1.59 | 14081817 | 89.12 | 70 | 120 | |

# Initial Calibration Verification (ICV) Report

| | | | |
|---|---|---|---|
| Date Acquired | 5/23/2016 11:13 | Sample Name | ICV-160523 |
| Data Batch | 160523.b | Comment | ICV ICPMS_TW |
| Data File Name | 028_ICV.d | Dilution | 1 |

| Mass | Name | IS | Conc | CPS | %RSD | Exp | %Rec | Low | High | Flag |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Li | 45 | 100.423 | 4248 | 0.95 | 100 | 100.4 | 90 | 110 | |
| 9 | Be | 45 | 101.646 | 5667 | 0.58 | 100 | 101.6 | 90 | 110 | |
| 11 | B | 45 | 104.978 | 2336 | 4.70 | 100 | 105.0 | 90 | 110 | |
| 23 | Na | 45 | 2586.060 | 2008198 | 0.89 | 2500 | 103.4 | 90 | 110 | |
| 24 | Mg | 45 | 2562.125 | 985387 | 0.56 | 2500 | 102.5 | 90 | 110 | |
| 27 | Al | 45 | 2504.172 | 357686 | 0.60 | 2500 | 100.2 | 90 | 110 | |
| 39 | K | 45 | 2581.178 | 1066381 | 0.58 | 2500 | 103.2 | 90 | 110 | |
| 44 | Ca | 45 | 2372.478 | 51065 | 1.75 | 2500 | 94.9 | 90 | 110 | |
| 47 | Ti | 45 | 101.067 | 14843 | 3.44 | 100 | 101.1 | 90 | 110 | |
| 51 | V | 45 | 101.914 | 488235 | 1.04 | 100 | 101.9 | 90 | 110 | |
| 52 | Cr | 45 | 105.134 | 592568 | 0.63 | 100 | 105.1 | 90 | 110 | |
| 55 | Mn | 45 | 99.716 | 318433 | 0.67 | 100 | 99.7 | 90 | 110 | |
| 56 | Fe | 45 | 2559.322 | 12244428 | 2.69 | 2500 | 102.4 | 90 | 110 | |
| 59 | Co | 72 | 102.839 | 935257 | 0.89 | 100 | 102.8 | 90 | 110 | |
| 60 | Ni | 72 | 103.357 | 250435 | 1.06 | 100 | 103.4 | 90 | 110 | |
| 63 | Cu | 72 | 103.718 | 682030 | 0.10 | 100 | 103.7 | 90 | 110 | |
| 66 | Zn | 72 | 102.929 | 117929 | 0.21 | 100 | 102.9 | 90 | 110 | |
| 75 | As | 72 | 101.739 | 99208 | 0.58 | 100 | 101.7 | 90 | 110 | |
| 78 | Se | 72 | 102.180 | 5980 | 1.29 | 100 | 102.2 | 90 | 110 | |
| 88 | Sr | 115 | 97.362 | 445614 | 0.82 | 100 | 97.4 | 90 | 110 | |
| 95 | Mo | 115 | 96.288 | 366620 | 0.97 | 100 | 96.3 | 90 | 110 | |
| 107 | Ag | 115 | 97.154 | 1150101 | 0.40 | 100 | 97.2 | 90 | 110 | |
| 111 | Cd | 115 | 97.549 | 174298 | 0.87 | 100 | 97.5 | 90 | 110 | |
| 118 | Sn | 115 | 100.644 | 384806 | 0.52 | 100 | 100.6 | 90 | 110 | |
| 121 | Sb | 115 | 97.820 | 582167 | 0.42 | 100 | 97.8 | 90 | 110 | |
| 137 | Ba | 115 | 96.935 | 183943 | 0.07 | 100 | 96.9 | 90 | 110 | |
| 205 | Tl | 209 | 99.429 | 2451582 | 0.42 | 100 | 99.4 | 90 | 110 | |
| 208 | Pb | 209 | 99.012 | 3286154 | 0.32 | 100 | 99.0 | 90 | 110 | |

**QC ISTD Table**

| Mass | Name | CPS | %RSD | Ref CPS | %Rec | Low | High | QC Flag |
|---|---|---|---|---|---|---|---|---|
| 45 | Sc | 942688 | 0.94 | 904202 | 104.26 | 70 | 120 | |
| 72 | Ge | 700315 | 0.23 | 677615 | 103.35 | 70 | 120 | |
| 115 | In | 6591165 | 1.48 | 6287303 | 104.83 | 70 | 120 | |
| 209 | Bi | 14342513 | 0.82 | 14081817 | 101.85 | 70 | 120 | |