



12/19/11

## Technical Report for

**KRW Consulting, Inc.**

**XOM PCU T35X-2G**

**1108-11A**

**Accutest Job Number: D30325**

**Sampling Date: 12/12/11**

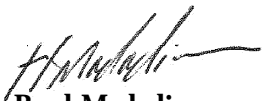
### Report to:

**KRW Consulting, Inc.**  
**8000 West 14th Avenue Suite 200**  
**Lakewood, CO 80214**  
**cburger@krwconsulting.com; gknell@krwconsulting.com;**  
**dknudson@krwconsulting.com; jhess@krwconsulting.com;**  
**ATTN: Dwayne Knudson**

**Total number of pages in report: 139**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
**Brad Madadian**  
**Laboratory Director**

**Client Service contact: 303-425-6021**

Certifications: CO, ID, NE, NM, ND (R-027) (PW) UT (NELAP CO00049)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.  
Test results relate only to samples analyzed.

# Table of Contents

-1-

<b>Section 1: Sample Summary .....</b>	<b>4</b>
<b>Section 2: Case Narrative/Conformance Summary .....</b>	<b>5</b>
<b>Section 3: Sample Results .....</b>	<b>9</b>
<b>3.1: D30325-1: CUTTINGS PIT .....</b>	<b>10</b>
<b>3.2: D30325-1A: CUTTINGS PIT .....</b>	<b>16</b>
<b>Section 4: Misc. Forms .....</b>	<b>18</b>
<b>4.1: Chain of Custody .....</b>	<b>19</b>
<b>Section 5: GC/MS Volatiles - QC Data Summaries .....</b>	<b>21</b>
<b>5.1: Method Blank Summary .....</b>	<b>22</b>
<b>5.2: Blank Spike Summary .....</b>	<b>23</b>
<b>5.3: Matrix Spike/Matrix Spike Duplicate Summary .....</b>	<b>24</b>
<b>Section 6: GC/MS Volatiles - Raw Data .....</b>	<b>25</b>
<b>6.1: Samples .....</b>	<b>26</b>
<b>6.2: Method Blanks .....</b>	<b>33</b>
<b>Section 7: GC/MS Semi-volatiles - QC Data Summaries .....</b>	<b>37</b>
<b>7.1: Method Blank Summary .....</b>	<b>38</b>
<b>7.2: Blank Spike Summary .....</b>	<b>39</b>
<b>7.3: Matrix Spike/Matrix Spike Duplicate Summary .....</b>	<b>40</b>
<b>Section 8: GC/MS Semi-volatiles - Raw Data .....</b>	<b>41</b>
<b>8.1: Samples .....</b>	<b>42</b>
<b>8.2: Method Blanks .....</b>	<b>59</b>
<b>Section 9: GC Volatiles - QC Data Summaries .....</b>	<b>76</b>
<b>9.1: Method Blank Summary .....</b>	<b>77</b>
<b>9.2: Blank Spike Summary .....</b>	<b>78</b>
<b>9.3: Matrix Spike/Matrix Spike Duplicate Summary .....</b>	<b>79</b>
<b>Section 10: GC Volatiles - Raw Data .....</b>	<b>80</b>
<b>10.1: Samples .....</b>	<b>81</b>
<b>10.2: Method Blanks .....</b>	<b>86</b>
<b>Section 11: GC Semi-volatiles - QC Data Summaries .....</b>	<b>91</b>
<b>11.1: Method Blank Summary .....</b>	<b>92</b>
<b>11.2: Blank Spike Summary .....</b>	<b>93</b>
<b>11.3: Matrix Spike/Matrix Spike Duplicate Summary .....</b>	<b>94</b>
<b>Section 12: GC Semi-volatiles - Raw Data .....</b>	<b>95</b>
<b>12.1: Samples .....</b>	<b>96</b>
<b>12.2: Method Blanks .....</b>	<b>99</b>
<b>Section 13: Metals Analysis - QC Data Summaries .....</b>	<b>102</b>
<b>13.1: Prep QC MP6490: Ba,Cd,Cr,Cu,Pb,Ni,Se,Ag,Zn .....</b>	<b>103</b>
<b>13.2: Prep QC MP6491: As .....</b>	<b>113</b>
<b>13.3: Prep QC MP6492: Hg .....</b>	<b>118</b>
<b>13.4: Prep QC MP6499: Ca,Mg,Na,Sodium Adsorption Ratio .....</b>	<b>122</b>
<b>Section 14: General Chemistry - QC Data Summaries .....</b>	<b>130</b>
<b>14.1: Method Blank and Spike Results Summary .....</b>	<b>131</b>

# Table of Contents

Sections:

-2-

<b>14.2:</b> Duplicate Results Summary .....	132
<b>Section 15: Misc. Forms (Accutest Labs of New England, Inc.) .....</b>	<b>133</b>
<b>15.1:</b> Chain of Custody .....	134
<b>Section 16: General Chemistry - QC Data (Accutest Labs of New England, Inc.) .....</b>	<b>136</b>
<b>16.1:</b> Method Blank and Spike Results Summary .....	137
<b>16.2:</b> Duplicate Results Summary .....	138
<b>16.3:</b> Matrix Spike Results Summary .....	139

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16



Sample Summary

KRW Consulting, Inc.

Job No: D30325

XOM PCU T35X-2G  
Project No: 1108-11A

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D30325-1	12/12/11	13:45	DS	12/14/11	SO	Soil	CUTTINGS PIT
D30325-1A	12/12/11	13:45	DS	12/14/11	SO	Soil	CUTTINGS PIT

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** KRW Consulting, Inc.

**Job No** D30325

**Site:** XOM PCU T35X-2G

**Report Date** 12/19/2011 5:34:02 PM

On 12/14/2011, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D30325 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

**Matrix:** SO

**Batch ID:** V3V877

- All samples were analyzed within the recommended method holding time.
- Sample(s) D30165-1MS, D30165-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30165-1MS, D30165-1MSD have surrogates outside control limits. Probable cause due to matrix interference.

### Extractables by GCMS By Method SW846 8270C BY SIM

**Matrix:** SO

**Batch ID:** OP5018

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D30326-1MS, D30326-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The matrix spike (MS) and matrix spike duplicate (MSD) recovery(s) of Acenaphthene are outside control limits. Outside control limits due to possible matrix interference.

### Volatiles by GC By Method SW846 8015B

**Matrix:** SO

**Batch ID:** GGB808

- All samples were analyzed within the recommended method holding time.
- Sample(s) D30323-1MS, D30323-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### Extractables by GC By Method SW846-8015B

**Matrix:** SO

**Batch ID:** OP5019

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D30205-1MS, D30205-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Metals By Method SW846 6010B

**Matrix:** AQ

**Batch ID:** MP6499

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30364-3AMS, D30364-3AMSD were used as the QC samples for the metals analysis.

**Matrix:** SO

**Batch ID:** MP6490

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30323-3MS, D30323-3MSD, D30323-3SDL were used as the QC samples for the metals analysis.
- The matrix spike duplicate (MSD) recovery(s) of Zinc are outside control limits. Probable cause due to matrix interference.
- The serial dilution RPD(s) for Cadmium, Selenium, Barium, Chromium, Lead, Nickel, Zinc are outside control limits for sample MP6490-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- D30325-1 for Selenium: Elevated detection limit due to dilution required for possible matrix interference.

## Metals By Method SW846 6020

**Matrix:** SO

**Batch ID:** MP6491

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30323-3MS, D30323-3MSD, D30323-3SDL were used as the QC samples for the metals analysis.

## Metals By Method SW846 7471A

**Matrix:** SO

**Batch ID:** MP6492

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30323-3MS, D30323-3MSD were used as the QC samples for the metals analysis.
- The matrix spike duplicate (MSD) recovery(s) of Mercury are outside control limits. Probable cause due to matrix interference.

## Wet Chemistry By Method ASTM D1498-76M

**Matrix:** SO

**Batch ID:** GN12915

- Sample(s) D30325-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

## Wet Chemistry By Method SM19 2540B M

**Matrix:** SO

**Batch ID:** GN12901

- The data for SM19 2540B M meets quality control requirements.

## Wet Chemistry By Method SW846 3060/7196A M

**Matrix:** SO

**Batch ID:** R11155

- The data for SW846 3060/7196A M meets quality control requirements.
- D30325-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

## Wet Chemistry By Method SW846 3060A/7196A

**Matrix:** SO

**Batch ID:** M:GP13932

- The data for SW846 3060A/7196A meets quality control requirements.
- D30325-1 for Chromium, Hexavalent: Analysis performed at Accutest Laboratories, Marlborough, MA.

**Wet Chemistry By Method SW846 9045C****Matrix:** SO**Batch ID:** GN12910

- The following samples were run outside of holding time for method SW846 9045C: D30325-1

**Wet Chemistry By Method USDA HANDBOOK 60****Matrix:** SO**Batch ID:** MP6499

- D30325-1A for Sodium Adsorption Ratio: Calculated as:  $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Accutest Mountain States

**Job No** D30325

**Site:** KRWCCOL: XOM PCU T35X-2G

**Report Date** 12/19/2011 6:01:31 PM

1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 12/12/2011 and were received at Accutest on 12/14/2011 properly preserved, at XXXXNO TEMPERATURE FOUNDXXXX Deg. C and intact. These Samples received an Accutest job number of D30325. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Wet Chemistry By Method SW846 3060A/7196A

**Matrix** SO

**Batch ID:** GP13932

- All samples were distilled within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30414-3DUP, D30414-3MS were used as the QC samples for Chromium, Hexavalent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(D30325).



## Sample Results

## Report of Analysis

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUTTINGS PIT	<b>Date Sampled:</b>	12/12/11
<b>Lab Sample ID:</b>	D30325-1	<b>Date Received:</b>	12/14/11
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	67.7
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	XOM PCU T35X-2G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V15157.D	1	12/16/11	KV	n/a	n/a	V3V877
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.02 g	5.0 ml	100 ul
Run #2			

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.293	0.097	0.043	mg/kg	
108-88-3	Toluene	0.611	0.19	0.097	mg/kg	
100-41-4	Ethylbenzene	0.137	0.19	0.049	mg/kg	J
1330-20-7	Xylene (total)	1.41	0.39	0.19	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	105%		61-130%
460-00-4	4-Bromofluorobenzene	125%		53-131%
17060-07-0	1,2-Dichloroethane-D4	108%		62-130%

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	CUTTINGS PIT	<b>Date Sampled:</b>	12/12/11
<b>Lab Sample ID:</b>	D30325-1	<b>Date Received:</b>	12/14/11
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	67.7
<b>Method:</b>	SW846 8270C BY SIM SW846 3546		
<b>Project:</b>	XOM PCU T35X-2G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G07321.D	4	12/17/11	ME	12/15/11	OP5018	E3G271
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	1.0 ml
Run #2		

## COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.039	0.031	mg/kg	
120-12-7	Anthracene	ND	0.039	0.035	mg/kg	
56-55-3	Benzo(a)anthracene	0.115	0.098	0.051	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.098	0.071	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.191	0.098	0.073	mg/kg	
207-08-9	Benzo(k)fluoranthene	0.0620	0.098	0.043	mg/kg	J
218-01-9	Chrysene	0.162	0.098	0.043	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.098	0.073	mg/kg	
206-44-0	Fluoranthene	0.178	0.039	0.039	mg/kg	
86-73-7	Fluorene	0.0670	0.039	0.033	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.12	0.11	mg/kg	
91-20-3	Naphthalene	0.182	0.039	0.037	mg/kg	
129-00-0	Pyrene	0.0728	0.039	0.037	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	48%		10-145%
321-60-8	2-Fluorobiphenyl	51%		10-130%
1718-51-0	Terphenyl-d14	79%		22-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUTTINGS PIT	<b>Date Sampled:</b>	12/12/11
<b>Lab Sample ID:</b>	D30325-1	<b>Date Received:</b>	12/14/11
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	67.7
<b>Method:</b>	SW846 8015B		
<b>Project:</b>	XOM PCU T35X-2G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB14318.D	1	12/15/11	SK	n/a	n/a	GGB808
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.0 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	31.8	19	9.7	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	91%		60-140%		

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUTTINGS PIT	<b>Date Sampled:</b>	12/12/11
<b>Lab Sample ID:</b>	D30325-1	<b>Date Received:</b>	12/14/11
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	67.7
<b>Method:</b>	SW846-8015B SW846 3546		
<b>Project:</b>	XOM PCU T35X-2G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD12344.D	1	12/16/11	TR	12/15/11	OP5019	GFD639
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	206	20	13	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	79%		43-136%		

ND = Not detected      MDL - Method Detection Limit  
RL = Reporting Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

Client Sample ID: CUTTINGS PIT

Lab Sample ID: D30325-1

Matrix: SO - Soil

Project: XOM PCU T35X-2G

Date Sampled: 12/12/11

Date Received: 12/14/11

Percent Solids: 67.7

## Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	6.7	0.60	mg/kg	5	12/15/11	12/16/11 GJ	SW846 6020 <sup>1</sup>	SW846 3050B <sup>5</sup>
Barium	8650	15	mg/kg	10	12/15/11	12/16/11 JB	SW846 6010B <sup>3</sup>	SW846 3050B <sup>4</sup>
Cadmium	< 1.5	1.5	mg/kg	1	12/15/11	12/16/11 JB	SW846 6010B <sup>3</sup>	SW846 3050B <sup>4</sup>
Chromium	16.4	1.5	mg/kg	1	12/15/11	12/16/11 JB	SW846 6010B <sup>3</sup>	SW846 3050B <sup>4</sup>
Copper	23.6	1.5	mg/kg	1	12/15/11	12/16/11 JB	SW846 6010B <sup>3</sup>	SW846 3050B <sup>4</sup>
Lead	15.0	7.5	mg/kg	1	12/15/11	12/16/11 JB	SW846 6010B <sup>3</sup>	SW846 3050B <sup>4</sup>
Mercury	< 0.15	0.15	mg/kg	1	12/16/11	12/16/11 JB	SW846 7471A <sup>2</sup>	SW846 7471A <sup>6</sup>
Nickel	13.2	4.5	mg/kg	1	12/15/11	12/16/11 JB	SW846 6010B <sup>3</sup>	SW846 3050B <sup>4</sup>
Selenium <sup>a</sup>	< 75	75	mg/kg	10	12/15/11	12/16/11 JB	SW846 6010B <sup>3</sup>	SW846 3050B <sup>4</sup>
Silver	< 4.5	4.5	mg/kg	1	12/15/11	12/16/11 JB	SW846 6010B <sup>3</sup>	SW846 3050B <sup>4</sup>
Zinc	41.6	4.5	mg/kg	1	12/15/11	12/16/11 JB	SW846 6010B <sup>3</sup>	SW846 3050B <sup>4</sup>

(1) Instrument QC Batch: MA2056

(2) Instrument QC Batch: MA2057

(3) Instrument QC Batch: MA2059

(4) Prep QC Batch: MP6490

(5) Prep QC Batch: MP6491

(6) Prep QC Batch: MP6492

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

## Report of Analysis

**Client Sample ID:** CUTTINGS PIT**Lab Sample ID:** D30325-1**Matrix:** SO - Soil**Project:** XOM PCU T35X-2G**Date Sampled:** 12/12/11**Date Received:** 12/14/11**Percent Solids:** 67.7**General Chemistry**

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent <sup>a</sup>	< 0.59	0.59	mg/kg	1	12/19/11 15:36	AMA	SW846 3060A/7196A
Chromium, Trivalent <sup>b</sup>	15.8	2.1	mg/kg	1	12/19/11 15:36	AMA	SW846 3060/7196A M
Redox Potential Vs H2	220		mv	1	12/15/11	CJ	ASTM D1498-76M
Solids, Percent	67.7		%	1	12/15/11	SWT	SM19 2540B M
Specific Conductivity	2650	1.0	umhos/cm	1	12/19/11	CJ	DEPT.OF AG, BOOK N9
pH	11.11		su	1	12/15/11 12:30	JK	SW846 9045C

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	CUTTINGS PIT	<b>Date Sampled:</b>	12/12/11
<b>Lab Sample ID:</b>	D30325-1A	<b>Date Received:</b>	12/14/11
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	67.7
<b>Project:</b>	XOM PCU T35X-2G		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	26.6	2.0	mg/l	1	12/16/11	12/16/11 JB	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>
Magnesium	< 1.0	1.0	mg/l	1	12/16/11	12/16/11 JB	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>
Sodium	509	2.0	mg/l	1	12/16/11	12/16/11 JB	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>

(1) Instrument QC Batch: MA2059  
(2) Prep QC Batch: MP6499

RL = Reporting Limit



Report of Analysis

<b>Client Sample ID:</b>	CUTTINGS PIT	<b>Date Sampled:</b>	12/12/11
<b>Lab Sample ID:</b>	D30325-1A	<b>Date Received:</b>	12/14/11
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	67.7
<b>Project:</b>	XOM PCU T35X-2G		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	26.6		ratio	1	12/16/11 18:24	JB	USDA HANDBOOK 60

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit

## Misc. Forms

---

### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Mountain States  
4036 Youngfield Street Wheat Ridge, Co 80033  
TEL. 303-425-6021 877-737-4521  
FAX 303-425-6021

FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job # <b>D 30325</b>

Client / Reporting Information				Project Information				Requested Analysis ( see TEST CODE sheet)												Matrix Codes													
Company Name <b>KRW CONSULTING</b>				Project Name <b>XOM PCU T35X-2G</b>				<div>TABLE 910</div>													<div>DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank</div>												
Street Address <b>8000 W 14TH AVE STE 200</b>				Street:																													
City State Zip <b>LAKEWOOD CO 80214</b>				Billing Information ( If different from Report to )																													
Project Contact <b>DWAYNE KNUDSON</b>				Company Name																													
E-mail				Street Address																													
Phone # <b>970 675 4066</b>				City State Zip																													
Fax #																																	
Sampler(s) Name(s) <b>DAVID SANDERS 7202739944</b>				Project PO# <b>1108-11A</b>																													
Phone #																																	
Project Manager <b>JOE HESS</b>				Attention: PO#																													
Accout Sample #				Collection																													
Field ID / Point of Collection				MEOH/DI Vial #																													
Date				Time																													
Sampled by				Matrix																													
# of bottles				Number of preserved Bottles																													

## D30325: Chain of Custody

Page 1 of 2

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D30325

Client: KRW CONSULTING

Immediate Client Services Action Required: No

Date / Time Received: 12/14/2011 4:51:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XOM PCU T35X-2G

Airbill #'s: HD/CO

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:			Infrared gun
3. Cooler media:			Ice (bag)

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input type="checkbox"/>	
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input type="checkbox"/>	
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:			Intact

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume rec'd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

## GC/MS Volatiles

5

### QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

**Method Blank Summary**

Page 1 of 1

**Job Number:** D30325  
**Account:** KRWCCOL KRW Consulting, Inc.  
**Project:** XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V877-MB	3V15151.D	1	12/16/11	KV	n/a	n/a	V3V877

The QC reported here applies to the following samples:

Method: SW846 8260B

D30325-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	22	ug/kg	
100-41-4	Ethylbenzene	ND	100	25	ug/kg	
108-88-3	Toluene	ND	100	50	ug/kg	
1330-20-7	Xylene (total)	ND	200	100	ug/kg	

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	109% 61-130%
460-00-4	4-Bromofluorobenzene	108% 53-131%
17060-07-0	1,2-Dichloroethane-D4	130% 62-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D30325

**Account:** KRWCCOL KRW Consulting, Inc.

**Project:** XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V877-BS	3V15152.D	1	12/16/11	KV	n/a	n/a	V3V877

The QC reported here applies to the following samples:

Method: SW846 8260B

D30325-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	57.7	115	70-130
100-41-4	Ethylbenzene	50	49.8	100	70-130
108-88-3	Toluene	50	51.1	102	70-130
1330-20-7	Xylene (total)	150	153	102	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	110%	61-130%
460-00-4	4-Bromofluorobenzene	127%	53-131%
17060-07-0	1,2-Dichloroethane-D4	117%	62-130%

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D30325  
**Account:** KRWCCOL KRW Consulting, Inc.  
**Project:** XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D30165-1MS	3V15154.D	1	12/16/11	KV	n/a	n/a	V3V877
D30165-1MSD	3V15155.D	1	12/16/11	KV	n/a	n/a	V3V877
D30165-1	3V15153.D	1	12/16/11	KV	n/a	n/a	V3V877

The QC reported here applies to the following samples:

Method: SW846 8260B

D30325-1

CAS No.	Compound	D30165-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3320	3780	114	3850	116	2	70-134/30
100-41-4	Ethylbenzene	66.0	J	3320	3410	101	3440	102	1	70-137/30
108-88-3	Toluene	ND		3320	3300	99	3360	101	2	70-130/30
1330-20-7	Xylene (total)	755		9960	10700	100	10800	101	1	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D30165-1	Limits
2037-26-5	Toluene-D8	104%	105%	104%	61-130%
460-00-4	4-Bromofluorobenzene	137% * b	135% * b	133% * a	53-131%
17060-07-0	1,2-Dichloroethane-D4	117%	114%	122%	62-130%

(a) Outside control limits due to matrix interference. Confirmed by MS/MSD.

(b) Outside control limits due to matrix interference.





GC/MS Volatiles

Raw Data



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3121611.S\  
 Data File : 3V15157.D  
 Acq On : 16 Dec 2011 1:44 pm  
 Operator : koroushv  
 Sample : D30325-1, 50x  
 Misc : MS3099,V3V877,5.019,,100,5,1  
 ALS Vial : 11 Sample Multiplier: 1

Quant Time: Dec 19 14:24:48 2011  
 Quant Method : C:\msdchem\1\METHODS\V3AP850TVH850.M  
 Quant Title : 8260  
 QLast Update : Sat Nov 26 09:28:41 2011  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.889	168	286391	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.681	114	503836	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.316	117	527193	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.312	152	310665	50.00	ug/l	0.00

## System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.284	102	42119	53.75	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	107.50%
61) Toluene-d8	14.071	98	783245	52.49	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	104.98%
69) 4-Bromofluorobenzene	16.266	95	304535	62.28	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	124.56%

## Target Compounds

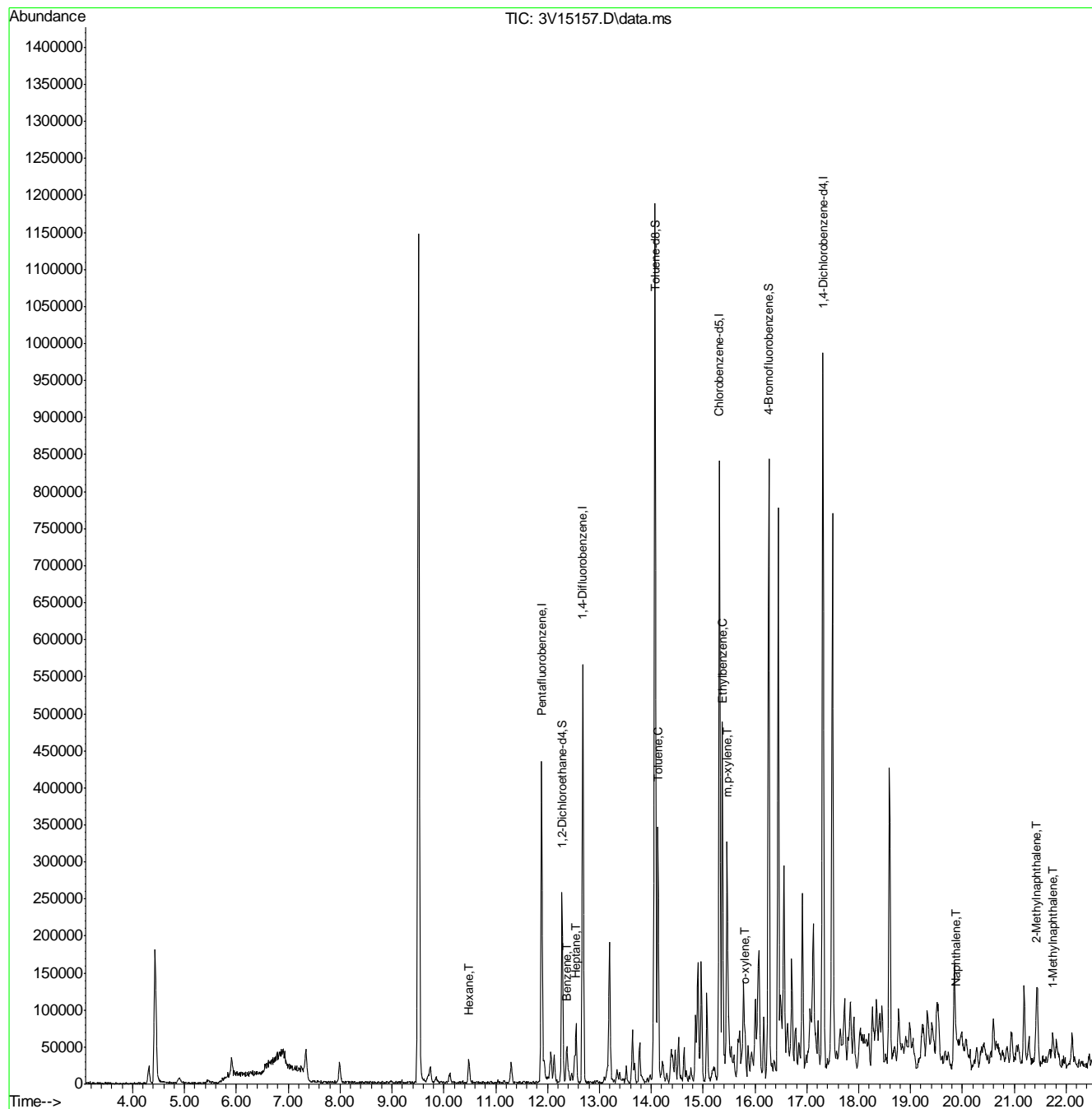
						Qvalue
41) Hexane	10.483	57	15081	3.10	ug/l	100
43) Heptane	12.550	43	27604	5.21	ug/l	92
50) Benzene	12.373	78	43624	3.00	ug/l	100
62) Toluene	14.132	92	69408	6.27	ug/l	98
66) Ethylbenzene	15.383	91	24576	1.41	ug/l	96
72) m,p-xylene	15.460	106	100986	12.40	ug/l	97
73) o-xylene	15.813	106	15121	2.05	ug/l	96
91) Naphthalene	19.892	128	41229	2.53	ug/l	100
94) 2-Methylnaphthalene	21.425	142	61361	12.73	ug/l #	94
95) 1-Methylnaphthalene	21.749	142	22293	4.54	ug/l #	90

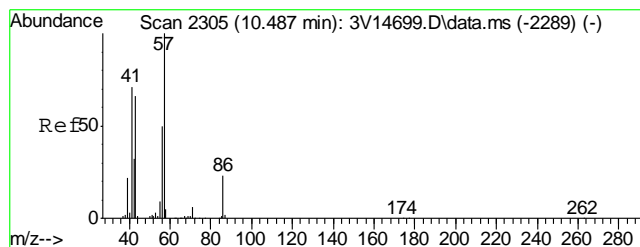
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3121611.S\  
Data File : 3V15157.D  
Acq On : 16 Dec 2011 1:44 pm  
Operator : koroushv  
Sample : D30325-1, 50x  
Misc : MS3099,V3V877,5.019,,100,5,1  
ALS Vial : 11 Sample Multiplier: 1

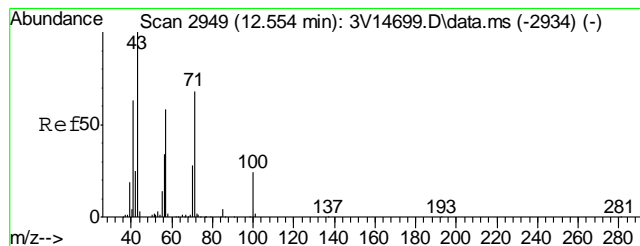
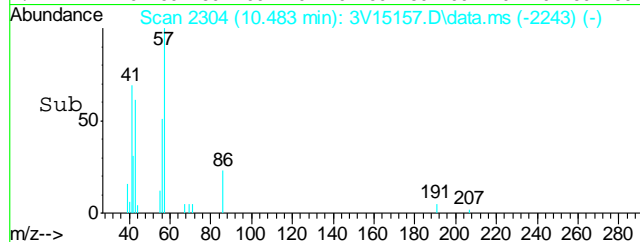
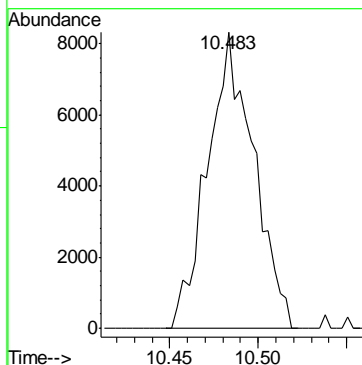
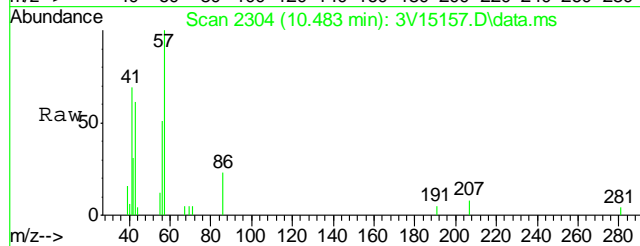
Quant Time: Dec 19 14:24:48 2011  
Quant Method : C:\msdchem\1\METHODS\V3AP850TVH850.M  
Quant Title : 8260  
QLast Update : Sat Nov 26 09:28:41 2011  
Response via : Initial Calibration





#41  
Hexane  
Concen: 3.10 ug/l  
RT: 10.483 min Scan# 2304  
Delta R.T. -0.004 min  
Lab File: 3V15157.D  
Acq: 16 Dec 2011 1:44 pm

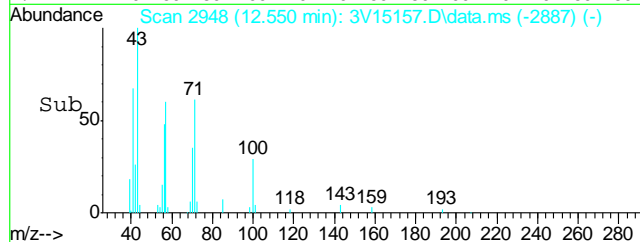
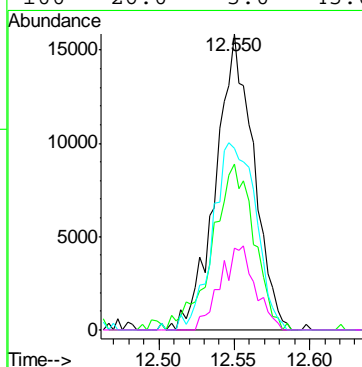
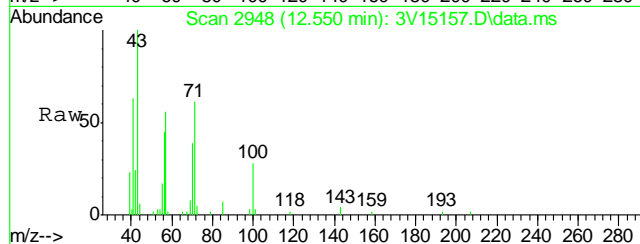
Tgt Ion: 57 Resp: 15081

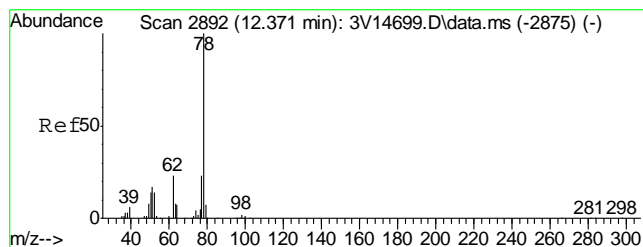


#43  
Heptane  
Concen: 5.21 ug/l  
RT: 12.550 min Scan# 2948  
Delta R.T. -0.004 min  
Lab File: 3V15157.D  
Acq: 16 Dec 2011 1:44 pm

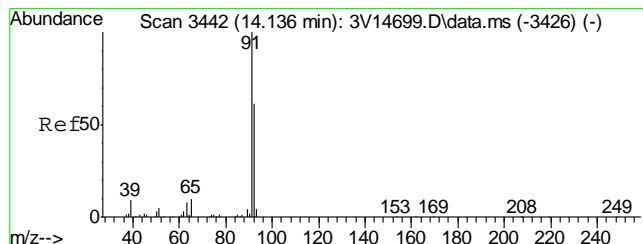
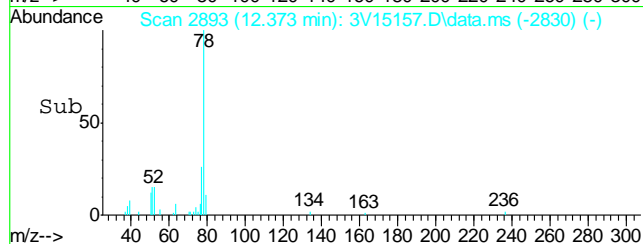
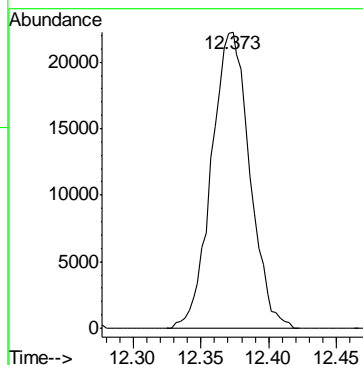
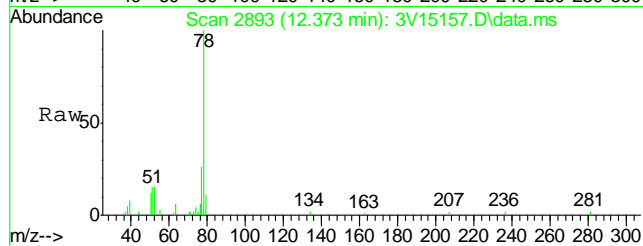
Tgt Ion: 43 Resp: 27604

Ion	Ratio	Lower	Upper
43	100		
57	61.3	34.2	74.2
71	71.3	44.5	84.5
100	26.0	5.0	45.0



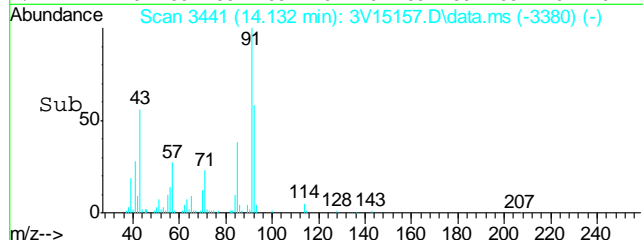
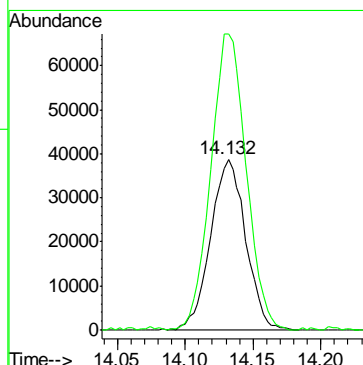
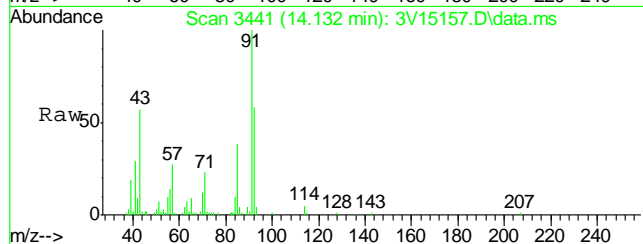


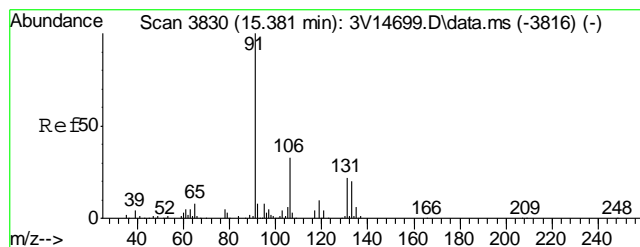
#50  
Benzene  
Concen: 3.00 ug/l  
RT: 12.373 min Scan# 2893  
Delta R.T. 0.002 min  
Lab File: 3V15157.D  
Acq: 16 Dec 2011 1:44 pm  
Tgt Ion: 78 Resp: 43624



#62  
Toluene  
Concen: 6.27 ug/l  
RT: 14.132 min Scan# 3441  
Delta R.T. -0.004 min  
Lab File: 3V15157.D  
Acq: 16 Dec 2011 1:44 pm

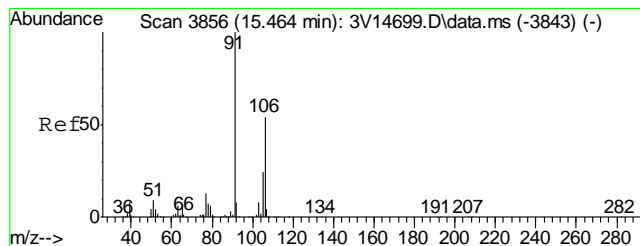
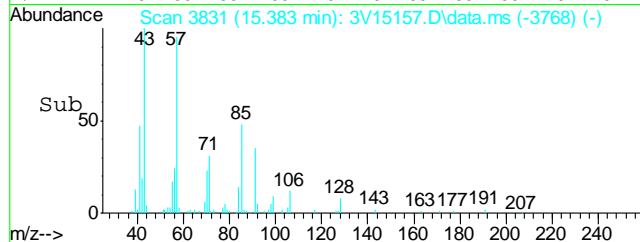
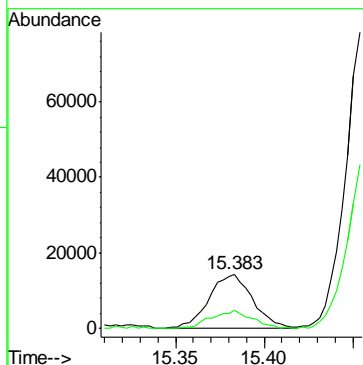
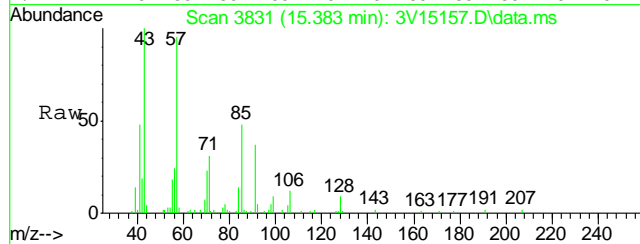
Tgt Ion: 92 Resp: 69408  
Ion Ratio Lower Upper  
92 100  
91 175.6 152.7 192.7





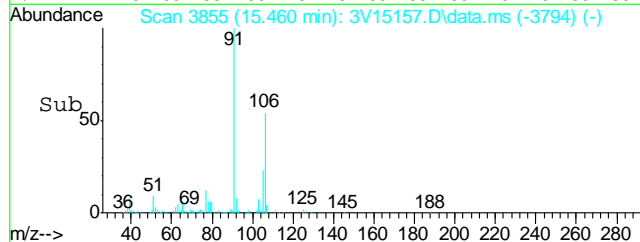
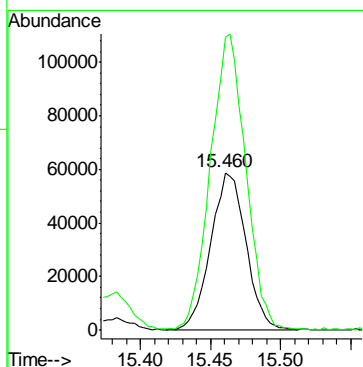
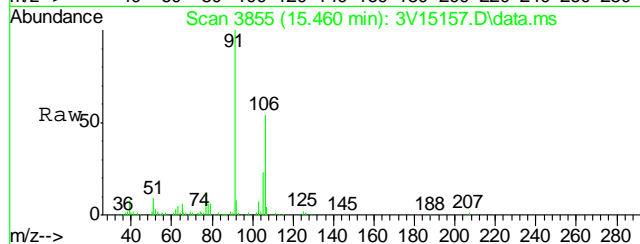
#66  
Ethylbenzene  
Concen: 1.41 ug/l  
RT: 15.383 min Scan# 3831  
Delta R.T. 0.003 min  
Lab File: 3V15157.D  
Acq: 16 Dec 2011 1:44 pm

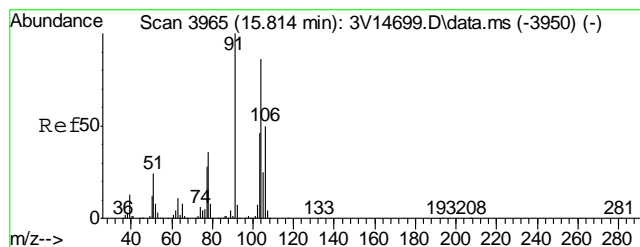
Tgt Ion: 91 Resp: 24576  
Ion Ratio Lower Upper  
91 100  
106 31.1 13.5 53.5



#72  
m,p-xylene  
Concen: 12.40 ug/l  
RT: 15.460 min Scan# 3855  
Delta R.T. -0.004 min  
Lab File: 3V15157.D  
Acq: 16 Dec 2011 1:44 pm

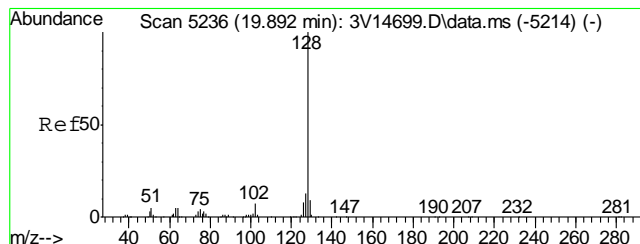
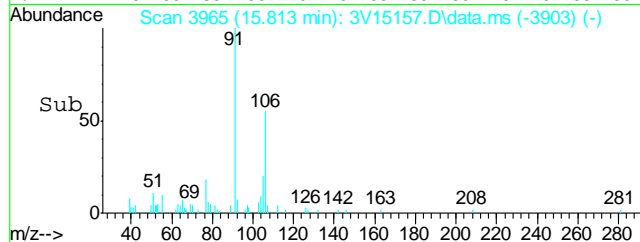
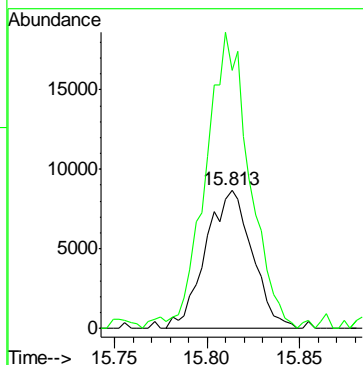
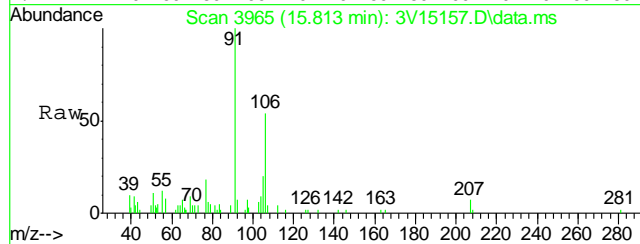
Tgt Ion: 106 Resp: 100986  
Ion Ratio Lower Upper  
106 100  
91 188.7 164.6 204.6





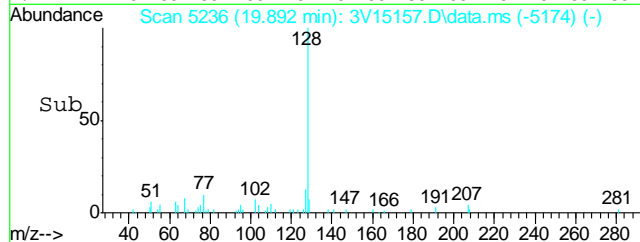
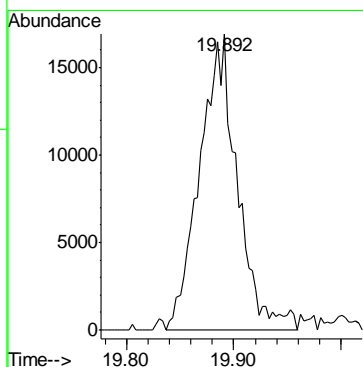
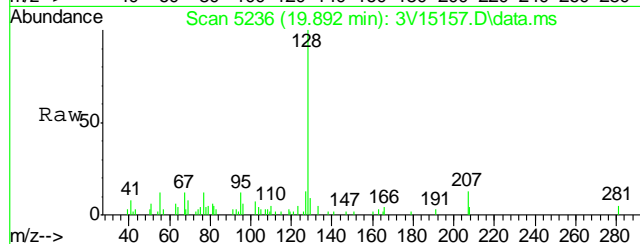
#73  
o-xylene  
Concen: 2.05 ug/l  
RT: 15.813 min Scan# 3965  
Delta R.T. 0.000 min  
Lab File: 3V15157.D  
Acq: 16 Dec 2011 1:44 pm

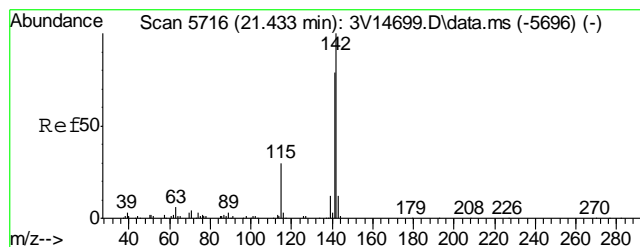
Tgt Ion:106 Resp: 15121  
Ion Ratio Lower Upper  
106 100  
91 203.7 157.7 236.5



#91  
Naphthalene  
Concen: 2.53 ug/l  
RT: 19.892 min Scan# 5236  
Delta R.T. -0.001 min  
Lab File: 3V15157.D  
Acq: 16 Dec 2011 1:44 pm

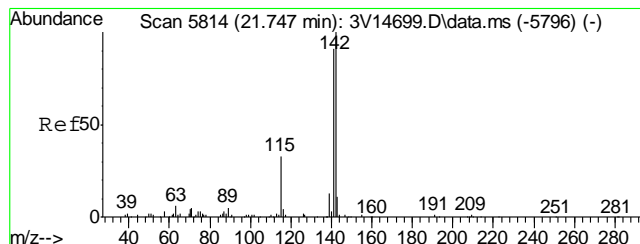
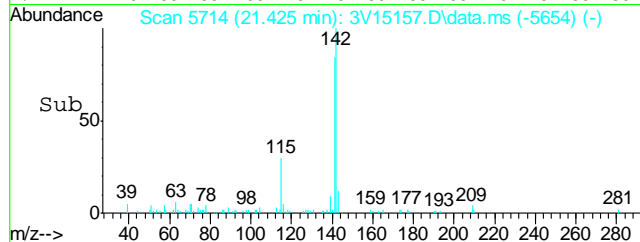
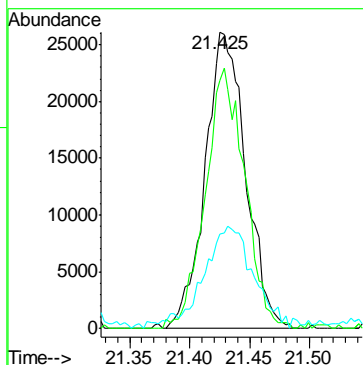
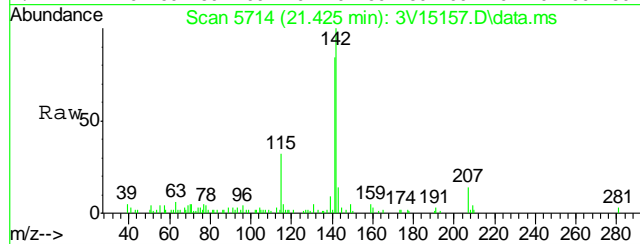
Tgt Ion:128 Resp: 41229





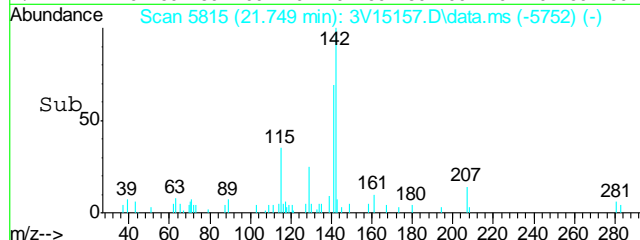
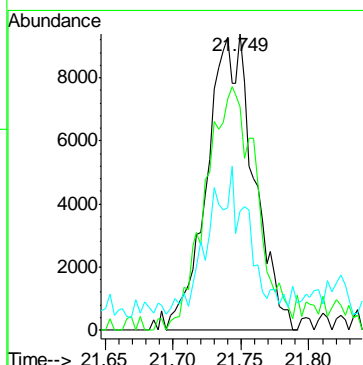
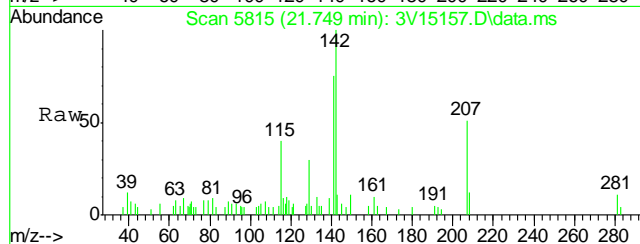
#94  
2-Methylnaphthalene  
Concen: 12.73 ug/l  
RT: 21.425 min Scan# 5714  
Delta R.T. -0.007 min  
Lab File: 3V15157.D  
Acq: 16 Dec 2011 1:44 pm

Tgt Ion	Ratio	Lower	Upper
142	100		
141	85.6	67.4	101.2
115	40.6	24.3	36.5#



#95  
1-Methylnaphthalene  
Concen: 4.54 ug/l  
RT: 21.749 min Scan# 5815  
Delta R.T. 0.002 min  
Lab File: 3V15157.D  
Acq: 16 Dec 2011 1:44 pm

Tgt Ion	Ratio	Lower	Upper
142	100		
141	90.4	72.6	109.0
115	53.3	26.2	39.2#





## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3121611.S\  
Data File : 3V15151.D  
Acq On : 16 Dec 2011 10:39 am  
Operator : koroushv  
Sample : MB  
Misc : MS3099,V3V877,5.00,,100,5,1  
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 16 11:04:25 2011  
Quant Method : C:\msdchem\1\METHODS\V3AP850TVH850.M  
Quant Title : 8260  
QLast Update : Sat Nov 26 09:28:41 2011  
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.888	168	188013	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.681	114	351899	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.315	117	355332	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.308	152	192299	50.00	ug/l	0.00

## System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.283	102	33333	64.80	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	129.60%
61) Toluene-d8	14.074	98	547885	54.48	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	108.96%
69) 4-Bromofluorobenzene	16.262	95	177261	53.79	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	107.58%

## Target Compounds

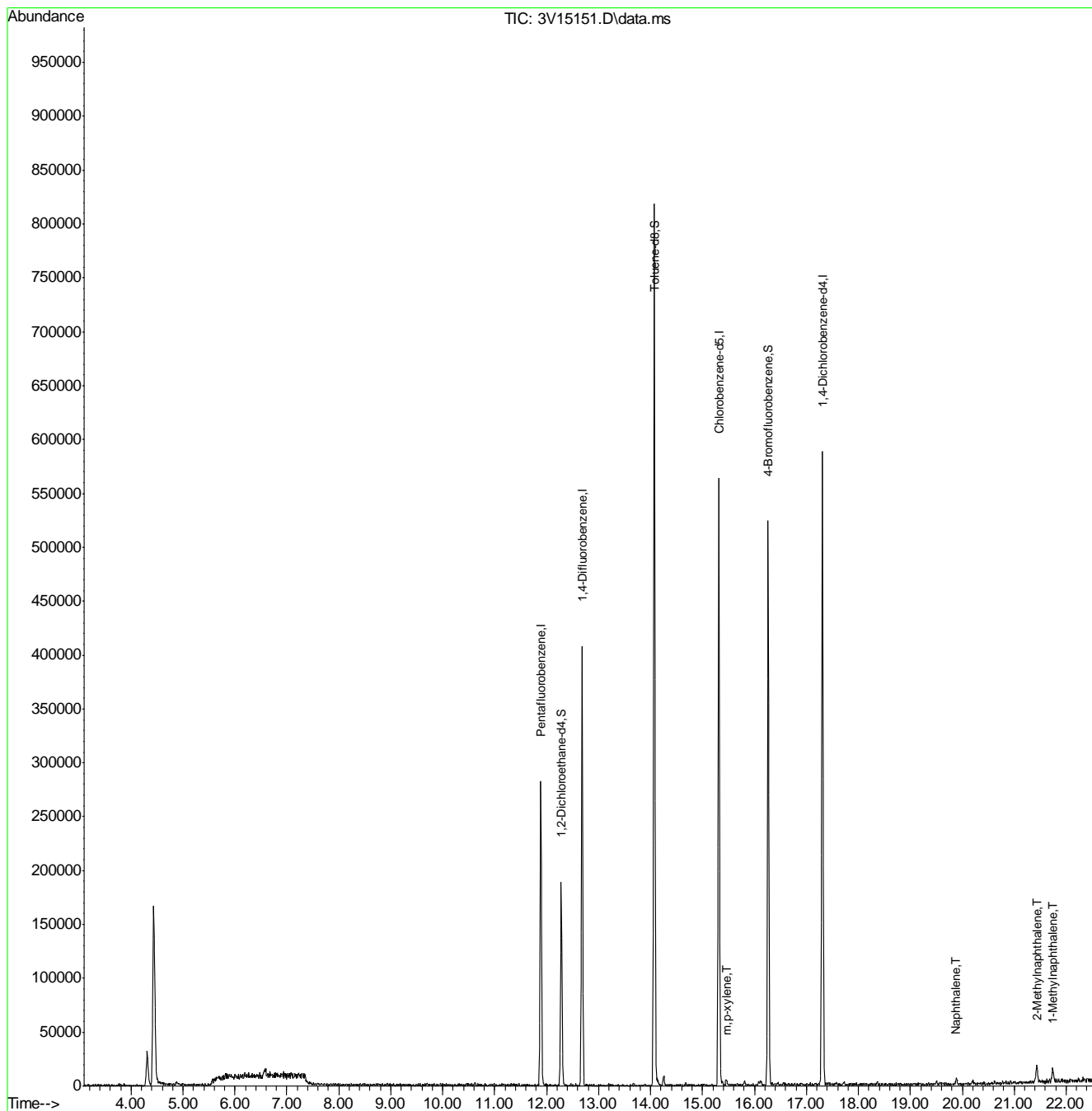
						Qvalue
72) m,p-xylene	15.457	106	1871	0.70	ug/l #	73
91) Naphthalene	19.878	128	7951	0.79	ug/l	100
94) 2-Methylnaphthalene	21.435	142	11486	3.37	ug/l	93
95) 1-Methylnaphthalene	21.739	142	9100	2.89	ug/l #	88

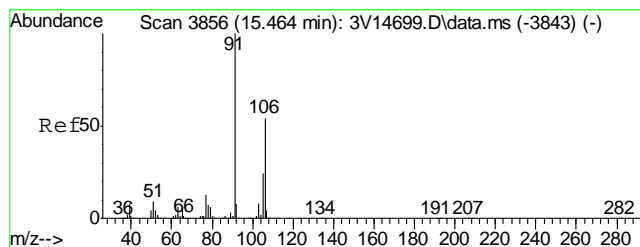
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3121611.S\  
Data File : 3V15151.D  
Acq On : 16 Dec 2011 10:39 am  
Operator : koroushv  
Sample : MB  
Misc : MS3099,V3V877,5.00,,100,5,1  
ALS Vial : 5 Sample Multiplier: 1

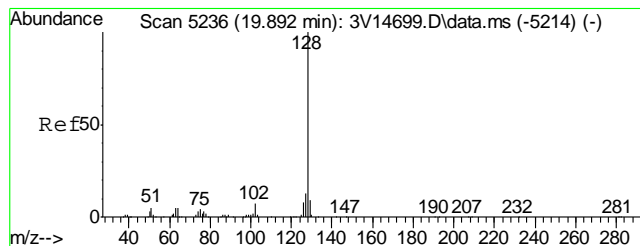
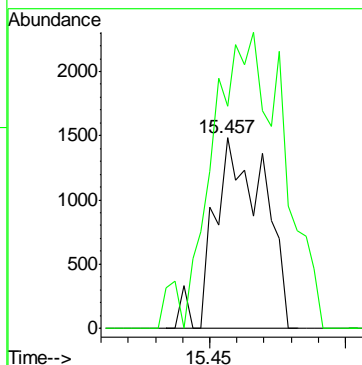
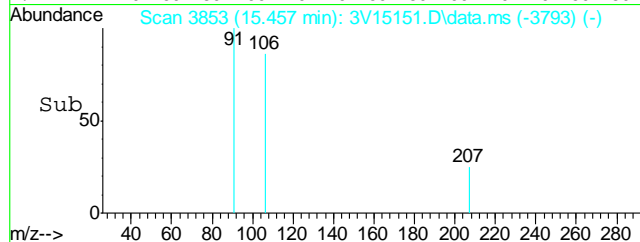
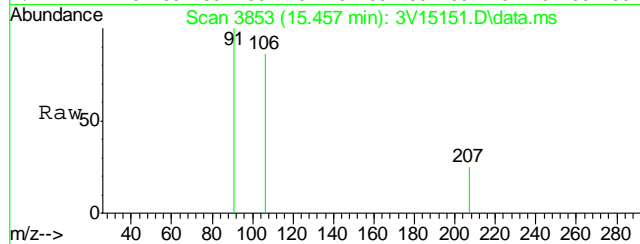
Quant Time: Dec 16 11:04:25 2011  
Quant Method : C:\msdchem\1\METHODS\V3AP850TVH850.M  
Quant Title : 8260  
QLast Update : Sat Nov 26 09:28:41 2011  
Response via : Initial Calibration





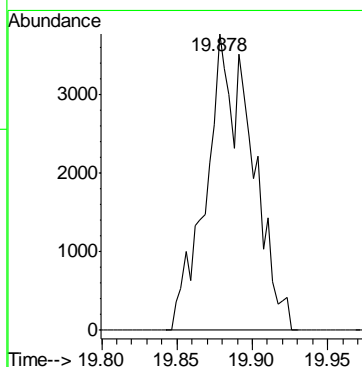
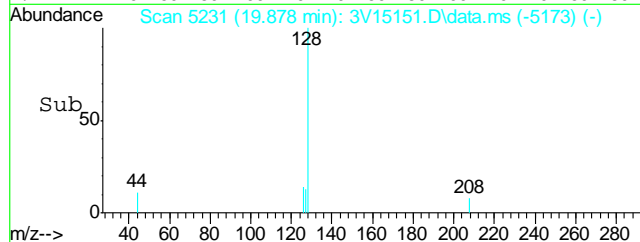
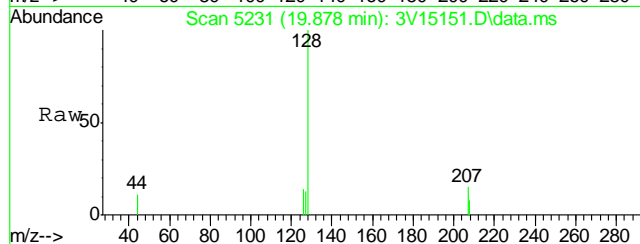
#72  
m,p-xylene  
Concen: 0.70 ug/l  
RT: 15.457 min Scan# 3853  
Delta R.T. -0.007 min  
Lab File: 3V15151.D  
Acq: 16 Dec 2011 10:39 am

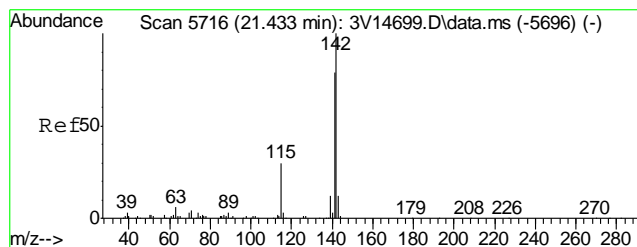
Tgt Ion:106 Resp: 1871  
Ion Ratio Lower Upper  
106 100  
91 223.9 164.6 204.6#



#91  
Naphthalene  
Concen: 0.79 ug/l  
RT: 19.878 min Scan# 5231  
Delta R.T. -0.014 min  
Lab File: 3V15151.D  
Acq: 16 Dec 2011 10:39 am

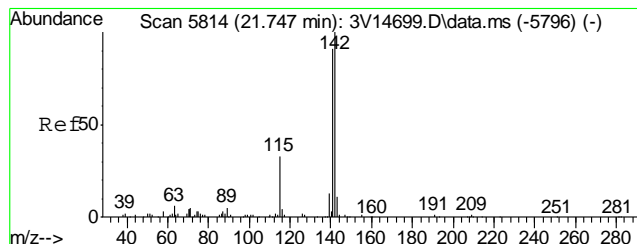
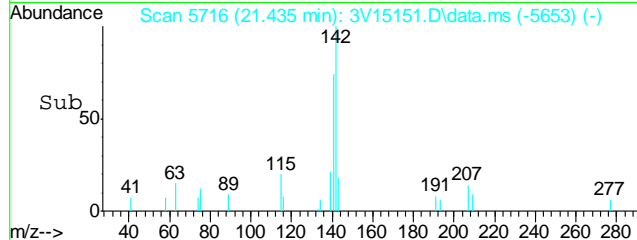
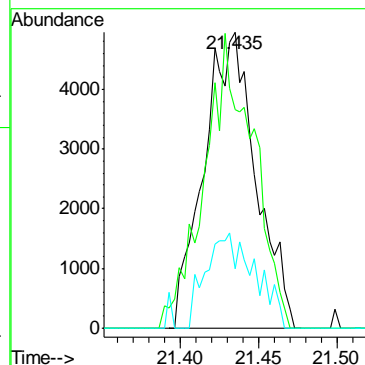
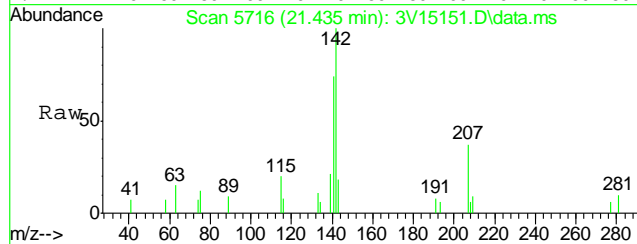
Tgt Ion:128 Resp: 7951





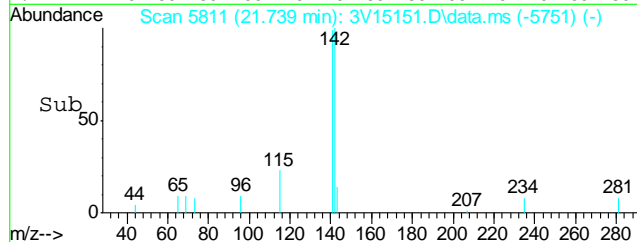
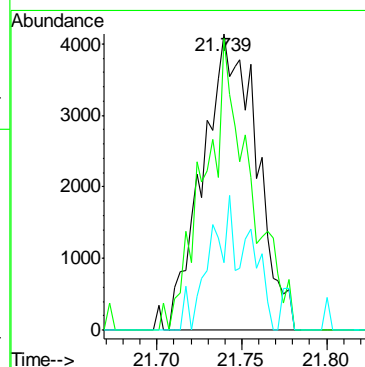
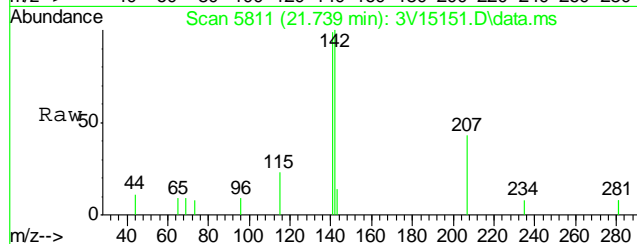
#94  
2-Methylnaphthalene  
Concen: 3.37 ug/l  
RT: 21.435 min Scan# 5716  
Delta R.T. 0.003 min  
Lab File: 3V15151.D  
Acq: 16 Dec 2011 10:39 am

Tgt Ion:	142	Resp:	11486
Ion Ratio	Lower	Upper	
142	100		
141	93.1	67.4	101.2
115	30.3	24.3	36.5



#95  
1-Methylnaphthalene  
Concen: 2.89 ug/l  
RT: 21.739 min Scan# 5811  
Delta R.T. -0.008 min  
Lab File: 3V15151.D  
Acq: 16 Dec 2011 10:39 am

Tgt Ion:	142	Resp:	9100
Ion Ratio	Lower	Upper	
142	100		
141	83.7	72.6	109.0
115	19.7	26.2	39.2#



## GC/MS Semi-volatiles

### QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

**Method Blank Summary**

Page 1 of 1

**Job Number:** D30325  
**Account:** KRWCCOL KRW Consulting, Inc.  
**Project:** XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5018-MB	3G07307.D	1	12/17/11	ME	12/15/11	OP5018	E3G271

**The QC reported here applies to the following samples:****Method:** SW846 8270C BY SIM

D30325-1

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	6.7	5.3	ug/kg	
120-12-7	Anthracene	ND	6.7	6.0	ug/kg	
56-55-3	Benzo(a)anthracene	ND	17	8.7	ug/kg	
50-32-8	Benzo(a)pyrene	ND	17	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	17	12	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	17	7.3	ug/kg	
218-01-9	Chrysene	ND	17	7.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	17	12	ug/kg	
206-44-0	Fluoranthene	ND	6.7	6.7	ug/kg	
86-73-7	Fluorene	ND	6.7	5.7	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	20	18	ug/kg	
91-20-3	Naphthalene	ND	6.7	6.3	ug/kg	
129-00-0	Pyrene	ND	6.7	6.3	ug/kg	

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	77% 10-145%
321-60-8	2-Fluorobiphenyl	77% 10-130%
1718-51-0	Terphenyl-d14	85% 22-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D30325

**Account:** KRWCCOL KRW Consulting, Inc.

**Project:** XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5018-BS	3G07306.D	1	12/17/11	ME	12/15/11	OP5018	E3G271

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D30325-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	68.6	82	34-130
120-12-7	Anthracene	83.3	72.8	87	35-130
56-55-3	Benzo(a)anthracene	83.3	67.8	81	36-130
50-32-8	Benzo(a)pyrene	83.3	73.4	88	36-130
205-99-2	Benzo(b)fluoranthene	83.3	71.3	86	35-130
207-08-9	Benzo(k)fluoranthene	83.3	71.1	85	37-130
218-01-9	Chrysene	83.3	73.3	88	40-130
53-70-3	Dibenzo(a,h)anthracene	83.3	73.4	88	32-130
206-44-0	Fluoranthene	83.3	68.4	82	38-130
86-73-7	Fluorene	83.3	67.0	80	35-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	71.0	85	28-130
91-20-3	Naphthalene	83.3	67.8	81	35-130
129-00-0	Pyrene	83.3	66.8	80	37-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	83%	10-145%
321-60-8	2-Fluorobiphenyl	82%	10-130%
1718-51-0	Terphenyl-d14	85%	22-130%

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D30325  
**Account:** KRWCCOL KRW Consulting, Inc.  
**Project:** XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5018-MS	3G07309.D	1	12/17/11	ME	12/15/11	OP5018	E3G271
OP5018-MSD	3G07310.D	1	12/17/11	ME	12/15/11	OP5018	E3G271
D30326-1	3G07308.D	1	12/17/11	ME	12/15/11	OP5018	E3G271

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D30325-1

CAS No.	Compound	D30326-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		96.2	162	168* a	152	158* a	6	10-155/30
120-12-7	Anthracene	ND		96.2	146	152	150	155	3	10-155/30
56-55-3	Benzo(a)anthracene	ND		96.2	80.4	84	82.2	85	2	10-175/30
50-32-8	Benzo(a)pyrene	ND		96.2	65.8	68	67.9	70	3	10-164/30
205-99-2	Benzo(b)fluoranthene	ND		96.2	66.5	69	64.1	66	4	10-165/30
207-08-9	Benzo(k)fluoranthene	ND		96.2	56.6	59	52.0	54	8	10-178/30
218-01-9	Chrysene	16.4	J	96.2	114	101	120	107	5	10-147/30
53-70-3	Dibenzo(a,h)anthracene	ND		96.2	68.1	71	69.2	72	2	10-144/30
206-44-0	Fluoranthene	ND		96.2	99.0	103	96.1	100	3	10-207/30
86-73-7	Fluorene	66.3		96.2	154	91	146	83	5	10-163/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		96.2	67.7	70	71.3	74	5	10-180/30
91-20-3	Naphthalene	9.6		96.2	72.2	65	72.3	65	0	10-198/30
129-00-0	Pyrene	7.9		96.2	115	111	117	113	2	10-189/30

CAS No.	Surrogate Recoveries	MS	MSD	D30326-1	Limits
4165-60-0	Nitrobenzene-d5	58%	58%	57%	10-145%
321-60-8	2-Fluorobiphenyl	98%	91%	98%	10-130%
1718-51-0	Terphenyl-d14	102%	102%	108%	22-130%

(a) Outside control limits due to possible matrix interference.



GC/MS Semi-volatiles

Raw Data

∞

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121611PAH\  
 Data File : 3g07321.D  
 Acq On : 17 Dec 2011 9:43 am  
 Operator : mikee  
 Sample : D30325-1,4  
 Misc : OP5018,E3G271,30.05,,,1,4  
 ALS Vial : 33 Sample Multiplier: 1

Quant Time: Dec 19 11:22:54 2011  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G270.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Fri Dec 16 17:52:17 2011  
 Response via : Initial Calibration

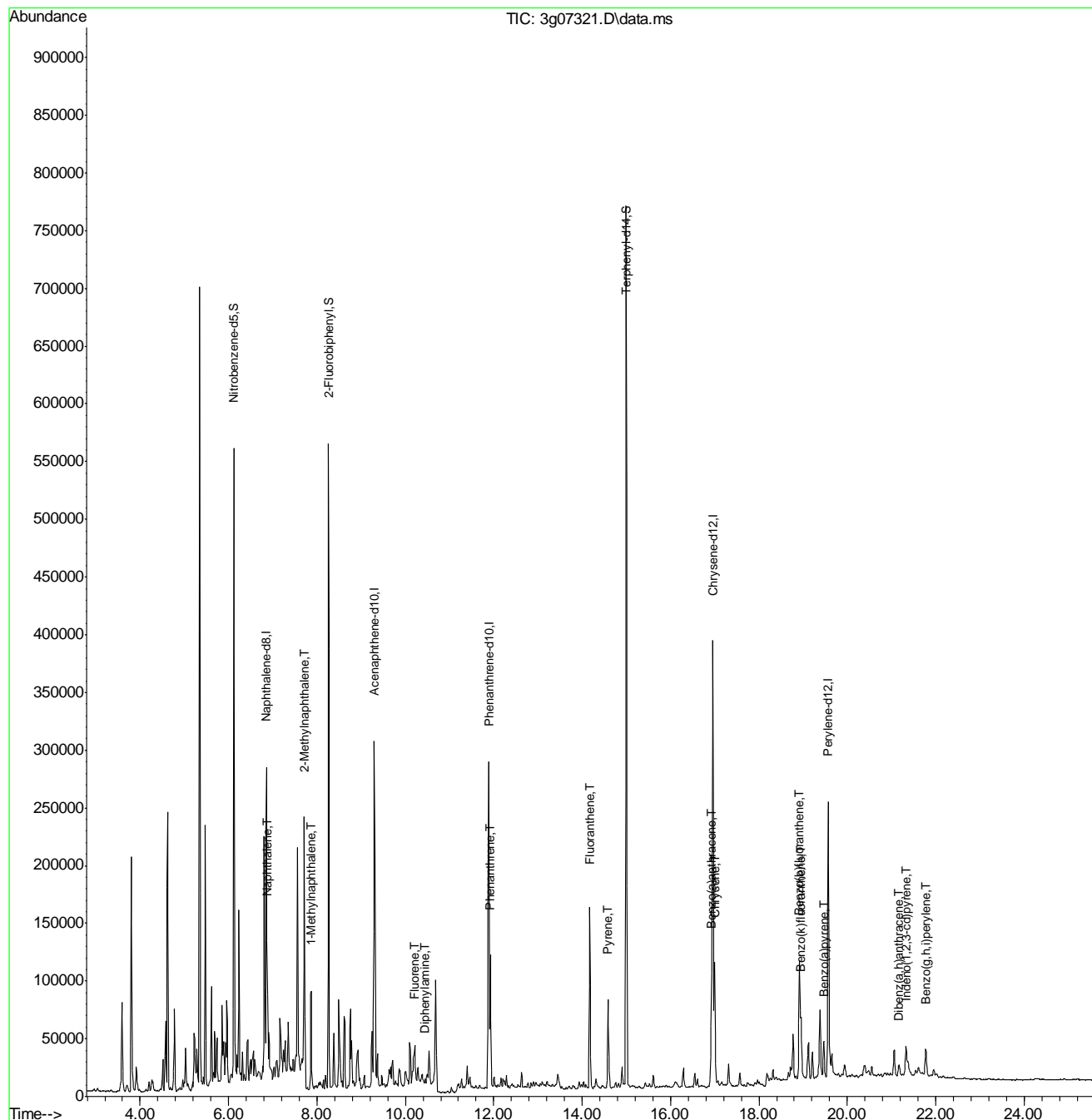
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	6.857	136	258201	4.00	ug/mL	0.00
6) Acenaphthene-d10	9.299	164	173505	4.00	ug/mL	0.00
14) Phenanthrene-d10	11.889	188	310843	4.00	ug/mL	0.02
18) Chrysene-d12	16.957	240	430558	4.00	ug/mL	0.02
23) Perylene-d12	19.563	264	322635	4.00	ug/mL	0.04
System Monitoring Compounds						
2) Nitrobenzene-d5	6.121	82	408861	5.96	ug/mL	-0.01
7) 2-Fluorobiphenyl	8.260	172	520617	6.35	ug/mL	0.00
20) Terphenyl-d14	14.999	244	900660	9.89	ug/mL	0.02
Target Compounds						
3) N-Nitrosodimethylamine	0.000		0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000		0	N.D.	d	
5) Naphthalene	6.869	128	84259	0.93	ug/mL	95
8) 2-Methylnaphthalene	7.716	142	124897	1.97	ug/mL	98
9) 1-Methylnaphthalene	7.870	142	55377m	0.92	ug/mL	
10) Acenaphthylene	0.000		0	N.D.	d	
11) Acenaphthene	0.000		0	N.D.	d	
12) Fluorene	10.209	166	25110	0.34	ug/mL#	57
13) Diphenylamine	10.445	169	3198	0.05	ug/mL	79
15) Phenanthrene	11.928	178	117425	0.99	ug/mL	99
16) Anthracene	0.000		0	N.D.	d	
17) Fluoranthene	14.176	202	130262	0.91	ug/mL	97
19) Pyrene	14.587	202	62907	0.37	ug/mL	92
21) Benzo(a)anthracene	16.930	228	89052	0.58	ug/mL	89
22) Chrysene	17.003	228	129656	0.82	ug/mL	99
24) Benzo(b)fluoranthene	18.911	252	136222m	0.97	ug/mL	
25) Benzo(k)fluoranthene	18.953	252	45330m	0.32	ug/mL	
26) Benzo(a)pyrene	19.469	252	40868	0.34	ug/mL	93
27) Indeno(1,2,3-cd)pyrene	21.330	276	27599m	0.30	ug/mL	
28) Dibenz(a,h)anthracene	21.162	278	8107	0.08	ug/mL	97
29) Benzo(g,h,i)perylene	21.772	276	32143	0.32	ug/mL	95

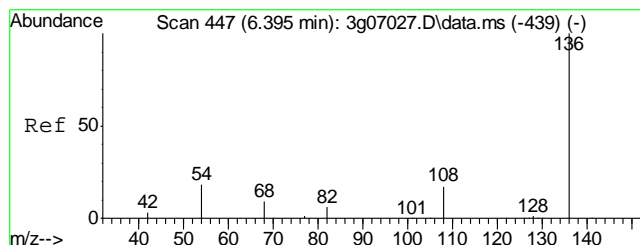
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121611PAH\  
Data File : 3g07321.D  
Acq On : 17 Dec 2011 9:43 am  
Operator : mikee  
Sample : D30325-1,4  
Misc : OP5018,E3G271,30.05,,,1,4  
ALS Vial : 33 Sample Multiplier: 1

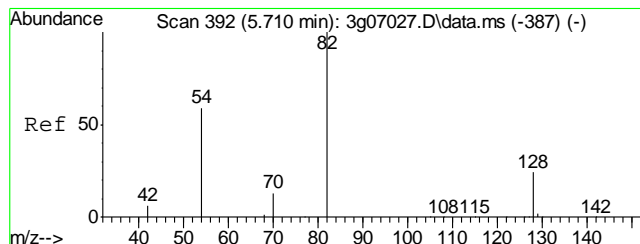
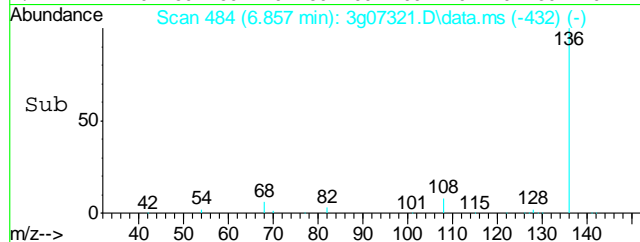
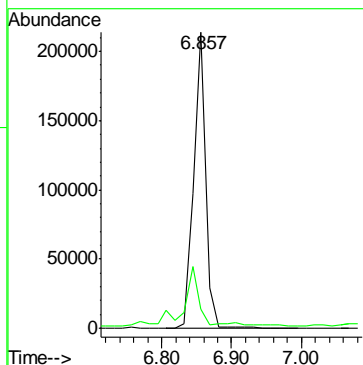
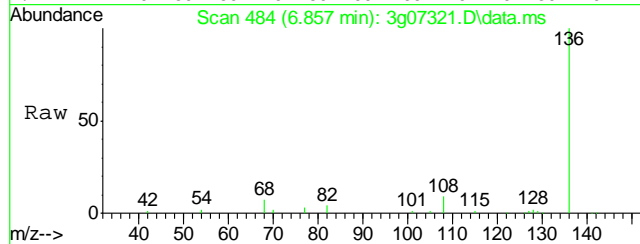
Quant Time: Dec 19 11:22:54 2011  
Quant Method : C:\msdchem\1\METHODS\SIMPE3G270.M  
Quant Title : PAHSIM BASE  
QLast Update : Fri Dec 16 17:52:17 2011  
Response via : Initial Calibration





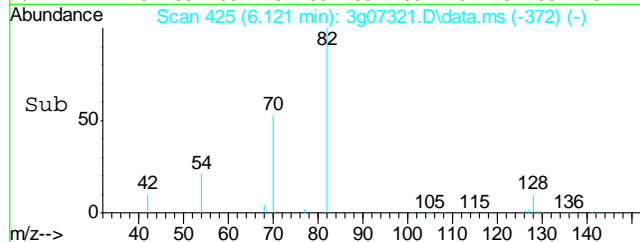
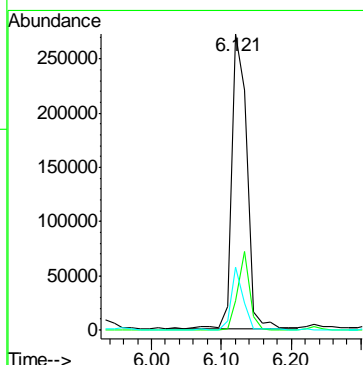
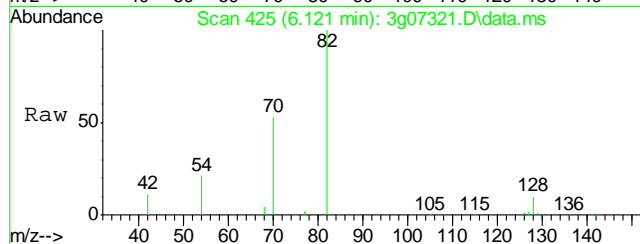
#1  
Naphthalene-d8  
Concen: 4.00 ug/mL  
RT: 6.857 min Scan# 484  
Delta R.T. 0.150 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

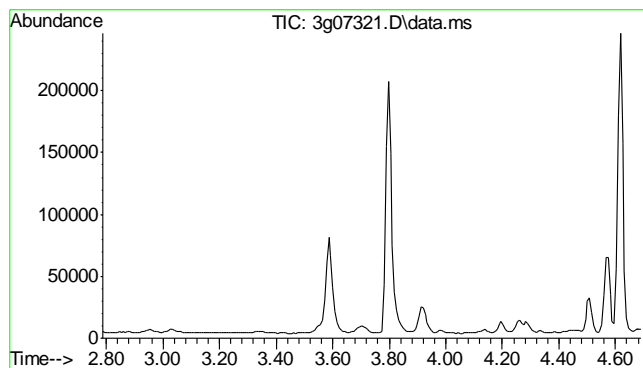
Tgt Ion	Ratio	Lower	Upper
136	100		
68	26.4	0.0	39.9



#2  
Nitrobenzene-d5  
Concen: 5.96 ug/mL  
RT: 6.121 min Scan# 425  
Delta R.T. 0.137 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

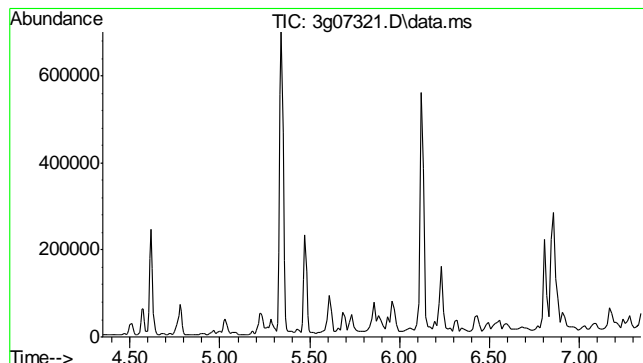
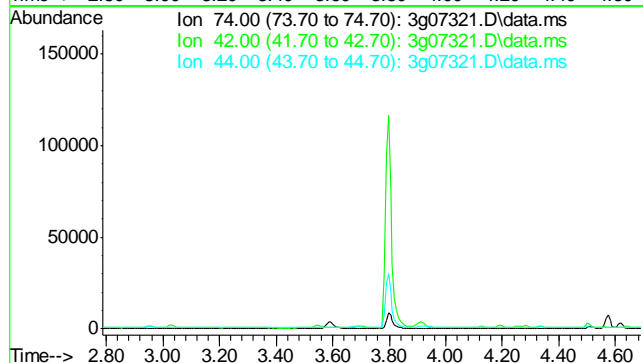
Tgt Ion	Ratio	Lower	Upper
82	100		
128	20.7	0.3	40.3
54	17.0	0.0	37.5





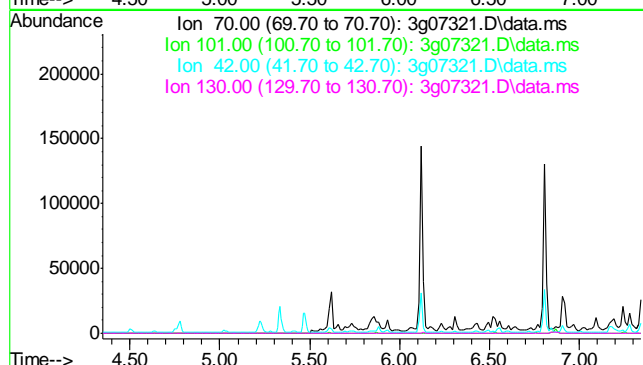
#3  
 N-Nitrosodimethylamine  
 Concen: N.D. ug/mL  
 Expected RT: 3.19 min  
 Lab File: 3g07321.D  
 Acq: 17 Dec 11 9:43 am

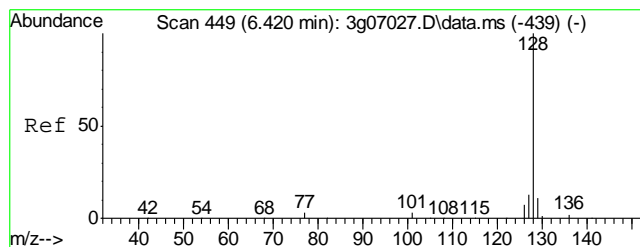
Tgt Ion	Exp Ratio
74	100
42	18.8
44	1.4



#4  
 N-Nitrosodi-propylamine  
 Concen: N.D. ug/mL  
 Expected RT: 5.85 min  
 Lab File: 3g07321.D  
 Acq: 17 Dec 11 9:43 am

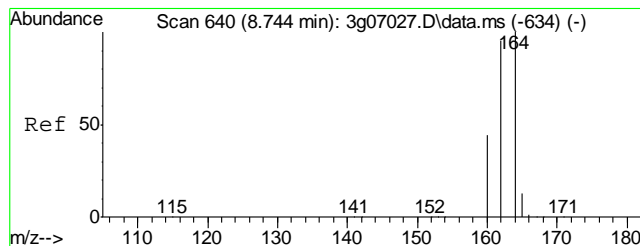
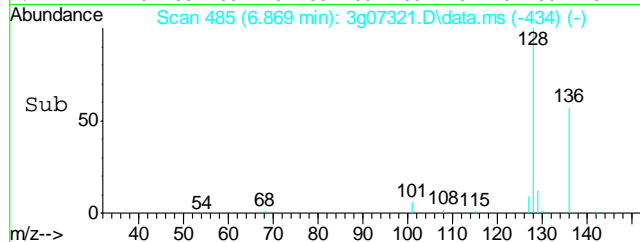
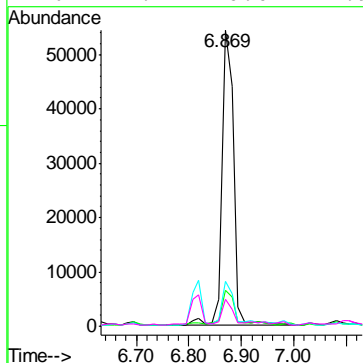
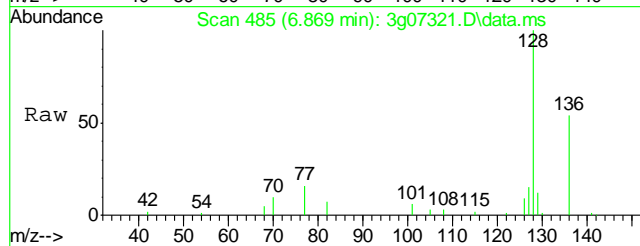
Tgt Ion	Exp Ratio
70	100
101	8.0
42	17.4
130	9.9





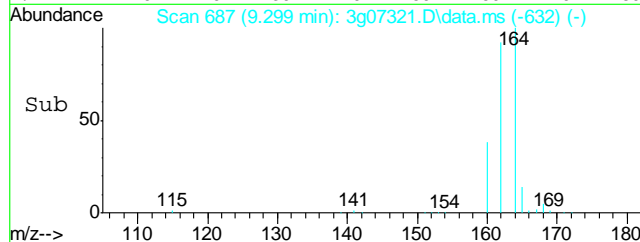
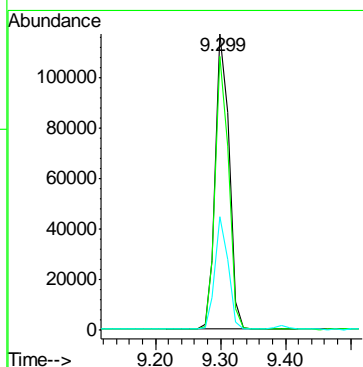
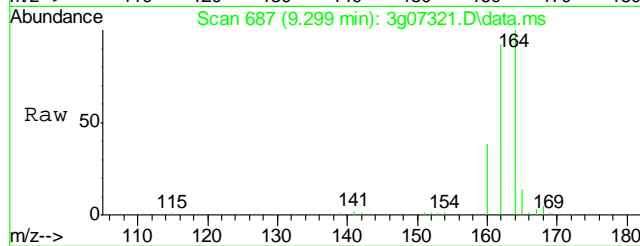
#5  
Naphthalene  
Concen: 0.93 ug/mL  
RT: 6.869 min Scan# 485  
Delta R.T. 0.138 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

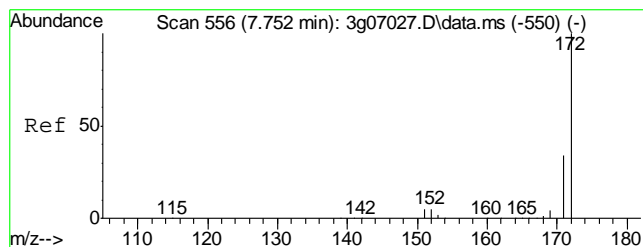
Tgt Ion:	128	Resp:	84259
Ion Ratio	Lower	Upper	
128	100		
129	14.1	0.0	30.9
127	15.7	0.0	33.9
126	7.1	0.0	27.9



#6  
Acenaphthene-d10  
Concen: 4.00 ug/mL  
RT: 9.299 min Scan# 687  
Delta R.T. 0.150 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

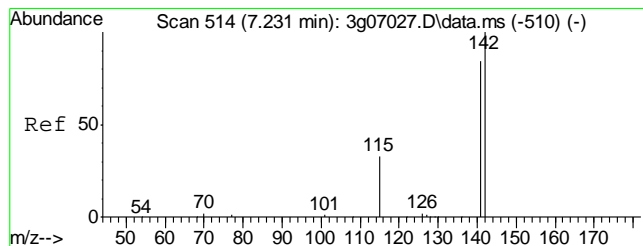
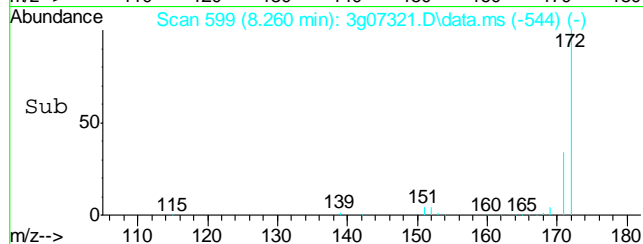
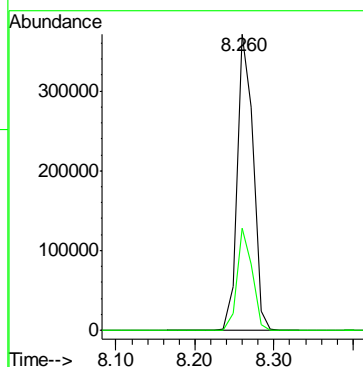
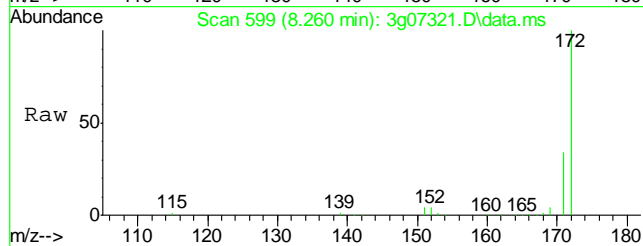
Tgt Ion:	164	Resp:	173505
Ion Ratio	Lower	Upper	
164	100		
162	89.0	71.3	111.3
160	36.8	17.3	57.3





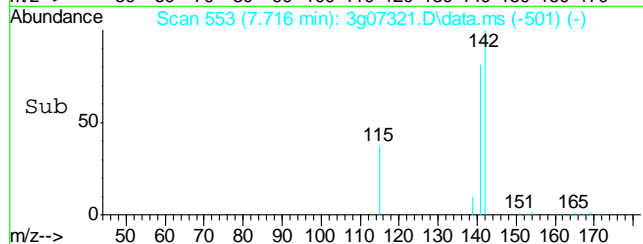
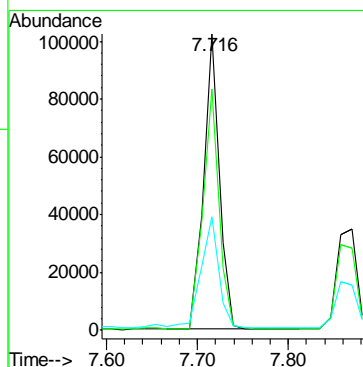
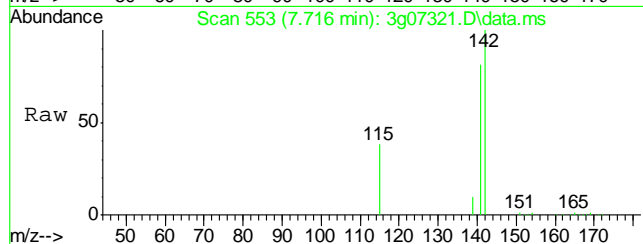
#7  
2-Fluorobiphenyl  
Concen: 6.35 ug/mL  
RT: 8.260 min Scan# 599  
Delta R.T. 0.150 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

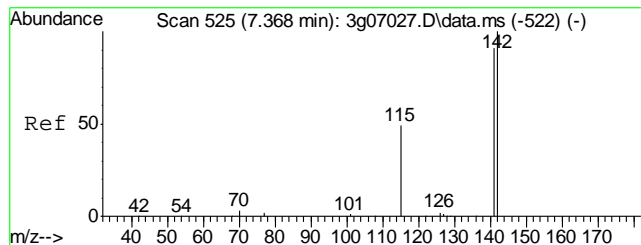
Tgt Ion	Ratio	Lower	Upper
172	100		
171	32.7	12.9	52.9



#8  
2-Methylnaphthalene  
Concen: 1.97 ug/mL  
RT: 7.716 min Scan# 553  
Delta R.T. 0.149 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

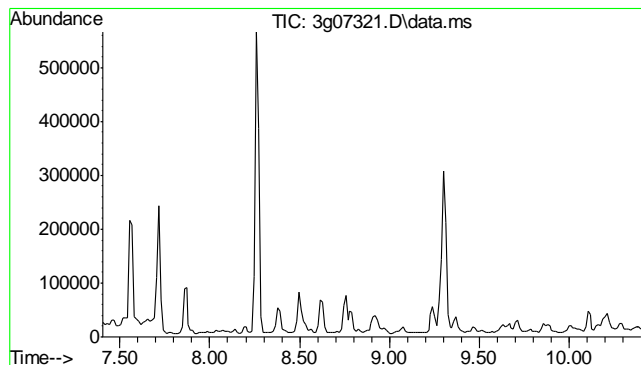
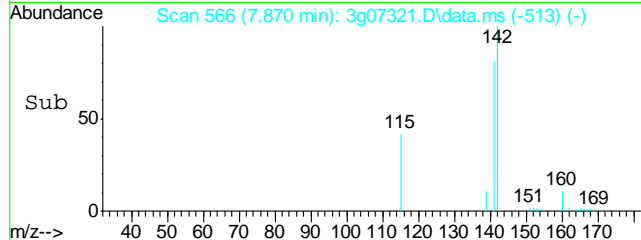
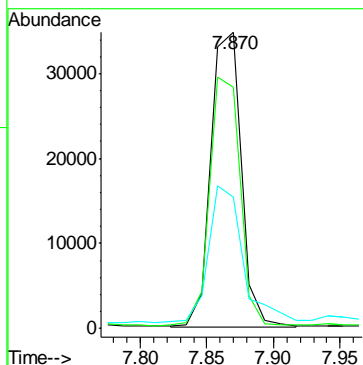
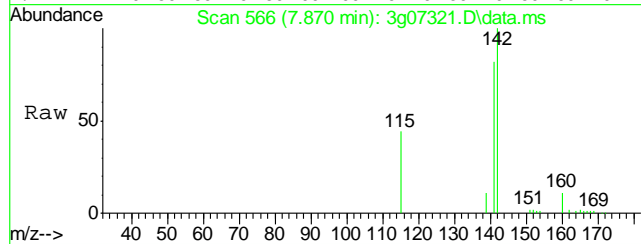
Tgt Ion	Ratio	Lower	Upper
142	100		
141	82.4	62.0	102.0
115	44.6	21.4	61.4





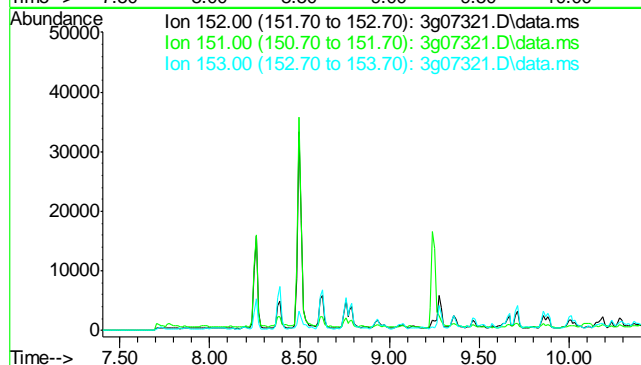
#9  
1-Methylnaphthalene  
Concen: 0.92 ug/mL m  
RT: 7.870 min Scan# 566  
Delta R.T. 0.151 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

Tgt Ion:142	Resp:	55377
Ion Ratio	Lower	Upper
142	100	
141	185.9	68.2 102.4#
115	100.0	34.4 51.6#

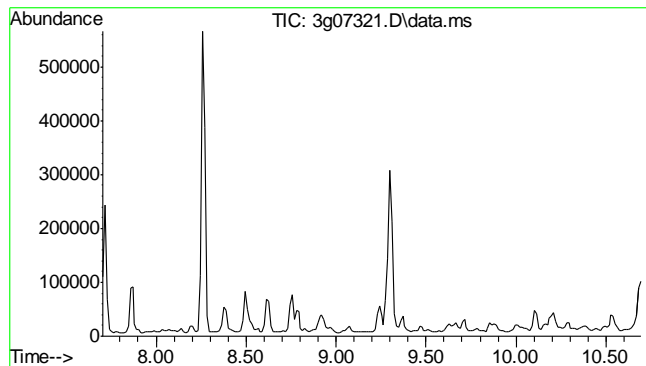


#10  
Acenaphthylene  
Concen: N.D. ug/mL  
Expected RT: 8.90 min  
  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

Tgt Ion: 152	
Sig	Exp Ratio
152	100
151	19.0
153	13.0

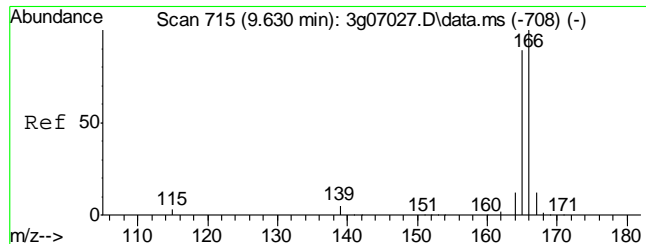
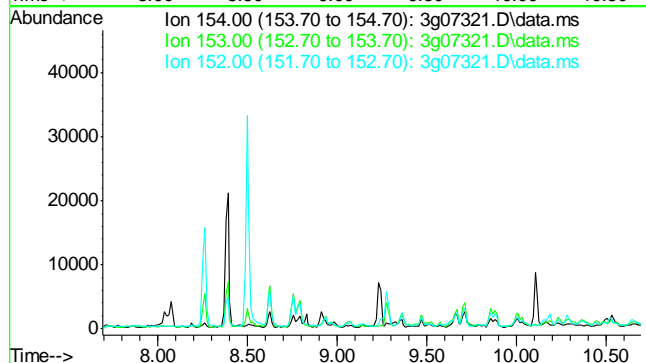






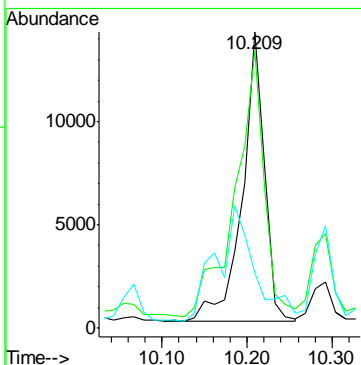
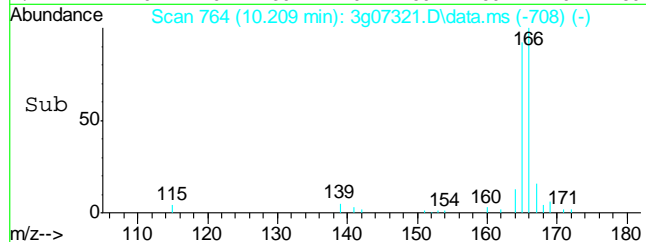
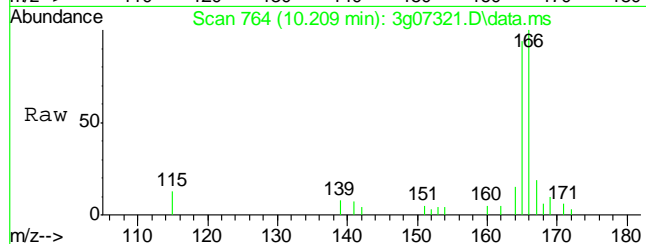
#11  
Acenaphthene  
Concen: N.D. ug/mL  
Expected RT: 9.20 min  
  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

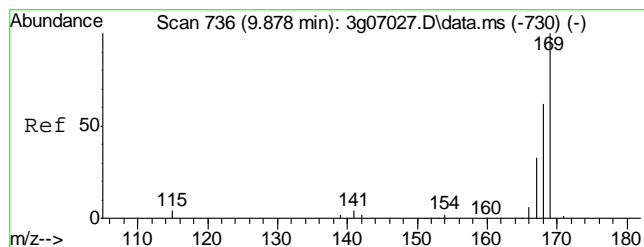
Tgt Ion: 154  
Sig Exp Ratio  
154 100  
153 103.5  
152 49.4



#12  
Fluorene  
Concen: 0.34 ug/mL  
RT: 10.209 min Scan# 764  
Delta R.T. 0.163 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

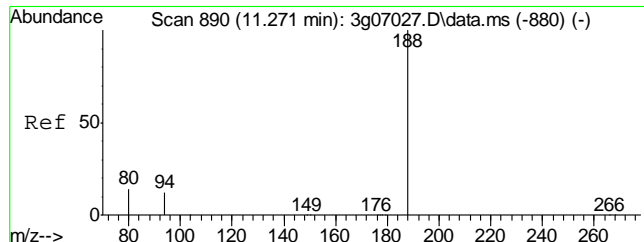
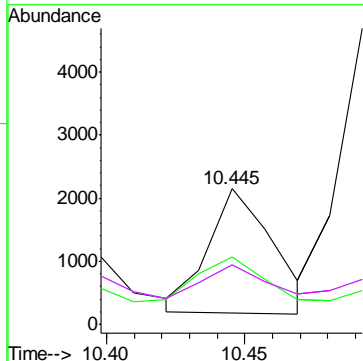
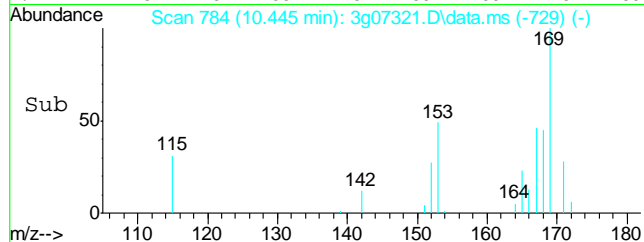
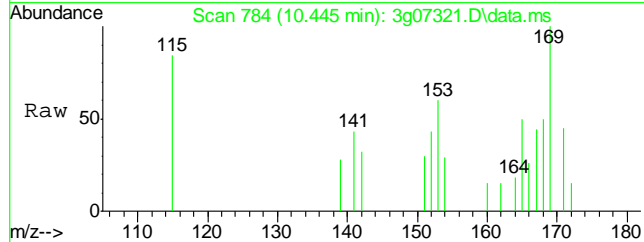
Tgt Ion: 166 Resp: 25110  
Ion Ratio Lower Upper  
166 100  
165 119.9 71.5 111.5#  
167 67.0 0.0 33.2#





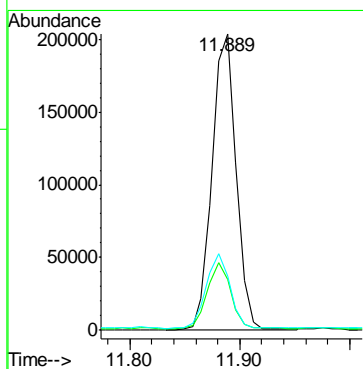
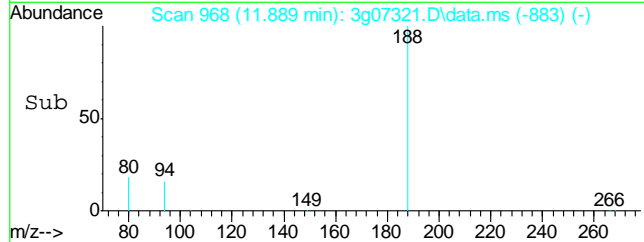
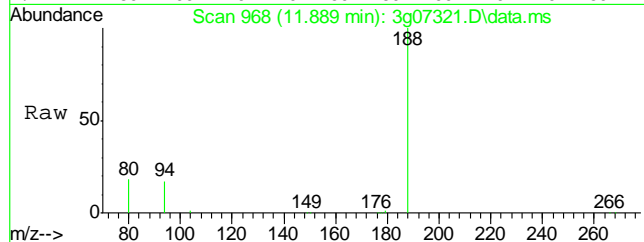
#13  
Diphenylamine  
Concen: 0.05 ug/mL  
RT: 10.445 min Scan# 784  
Delta R.T. 0.155 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

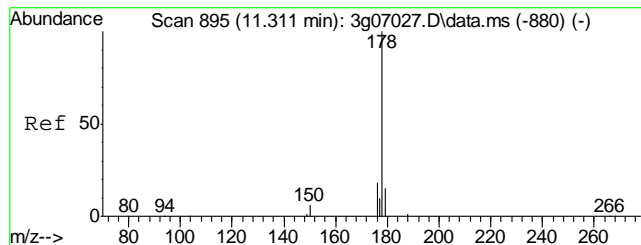
Tgt Ion:	169	Resp:	3198
Ion Ratio	Lower	Upper	
169	100		
168	71.1	41.3	81.3
167	49.9	13.4	53.4
167	49.9	13.4	53.4



#14  
Phenanthrene-d10  
Concen: 4.00 ug/mL  
RT: 11.889 min Scan# 968  
Delta R.T. 0.172 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

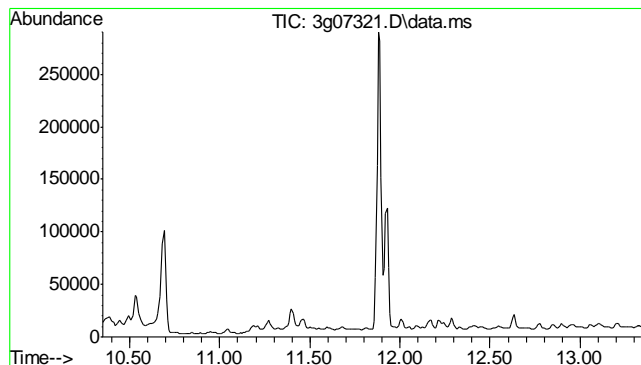
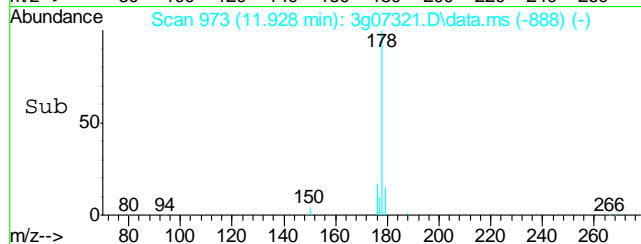
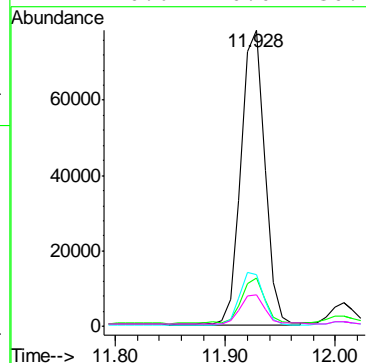
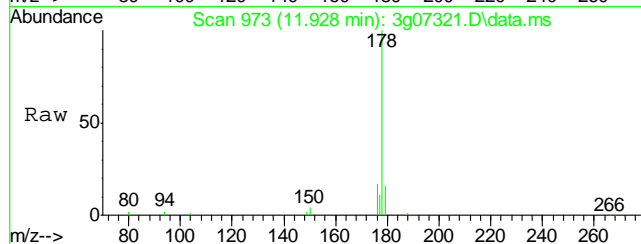
Tgt Ion:	188	Resp:	310843
Ion Ratio	Lower	Upper	
188	100		
94	21.6	4.1	44.1
80	25.0	8.3	48.3





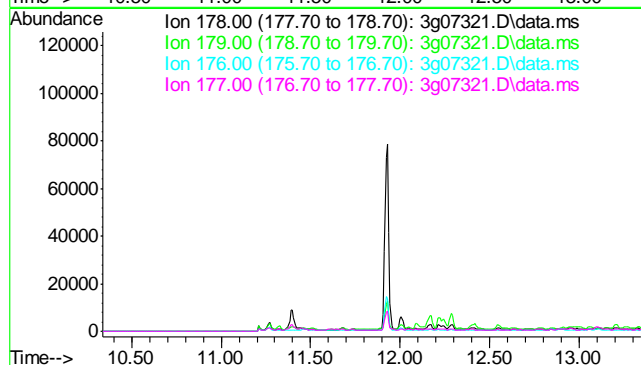
#15  
Phenanthrene  
Concen: 0.99 ug/mL  
RT: 11.928 min Scan# 973  
Delta R.T. 0.169 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

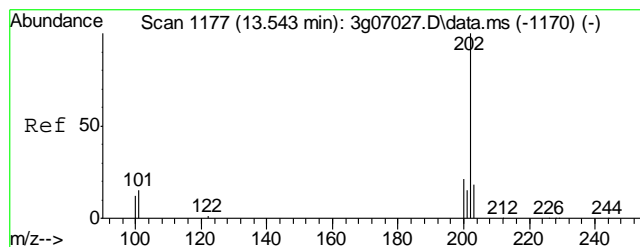
Tgt Ion: 178	Resp: 117425
Ion Ratio	Lower Upper
178 100	
179 15.6	0.0 35.2
176 18.0	0.0 38.4
177 10.6	0.0 30.1



#16  
Anthracene  
Concen: N.D. ug/mL  
Expected RT: 11.84 min  
  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

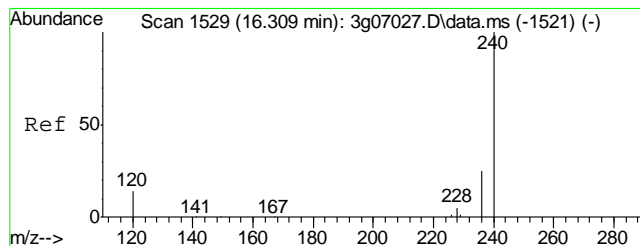
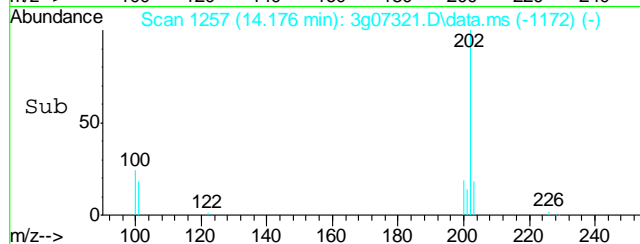
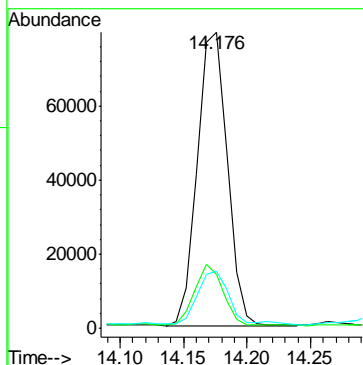
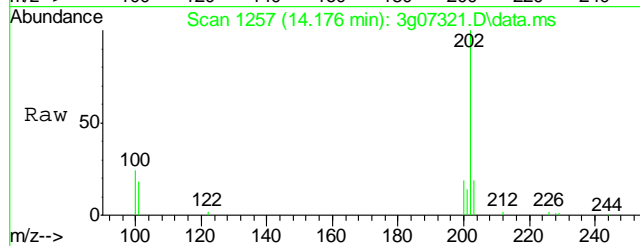
Tgt Ion: 178	
Sig	Exp Ratio
178	100
179	14.9
176	17.8
177	8.7





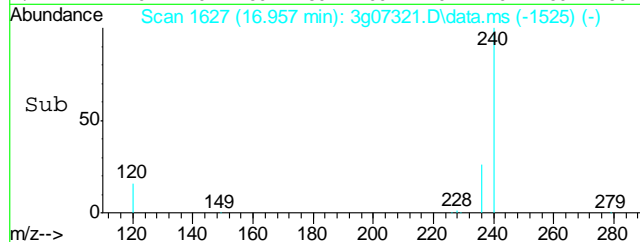
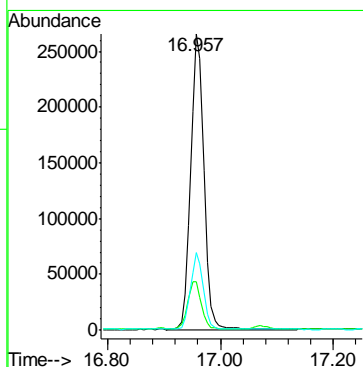
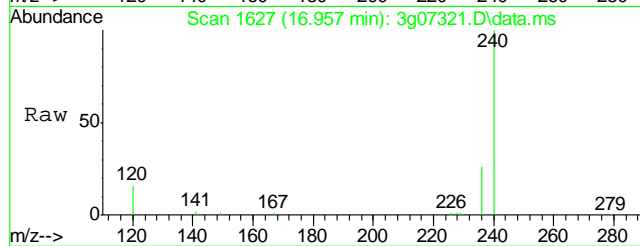
#17  
Fluoranthene  
Concen: 0.91 ug/mL  
RT: 14.176 min Scan# 1257  
Delta R.T. 0.170 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

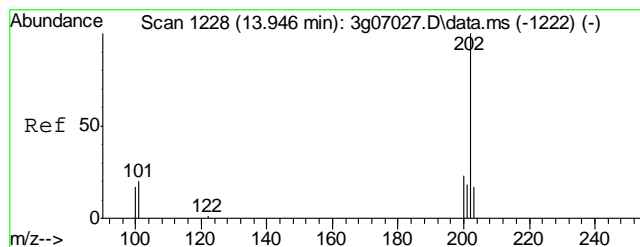
Tgt Ion:	202	Resp:	130262
Ion Ratio	Lower	Upper	
202	100		
101	20.3	1.3	41.3
203	19.3	0.0	37.1



#18  
Chrysene-d12  
Concen: 4.00 ug/mL  
RT: 16.957 min Scan# 1627  
Delta R.T. 0.174 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

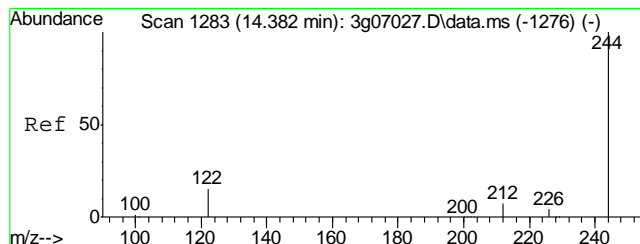
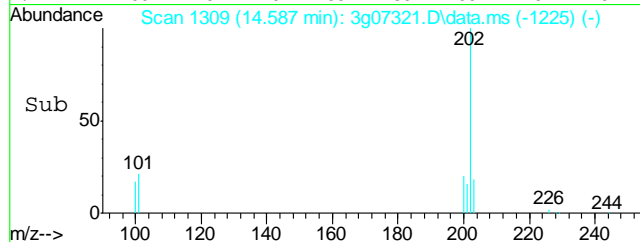
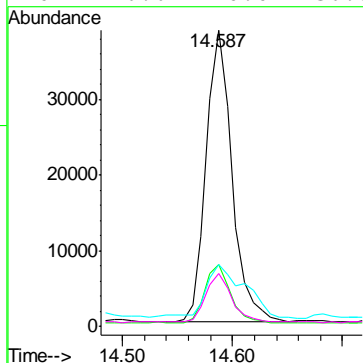
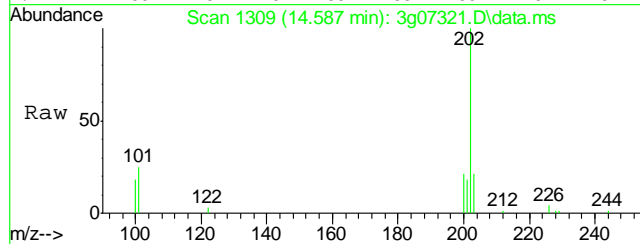
Tgt Ion:	240	Resp:	430558
Ion Ratio	Lower	Upper	
240	100		
120	16.3	0.0	38.2
236	25.1	5.2	45.2





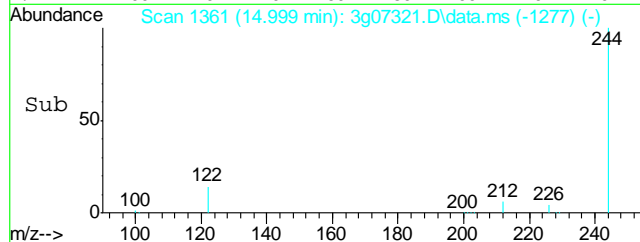
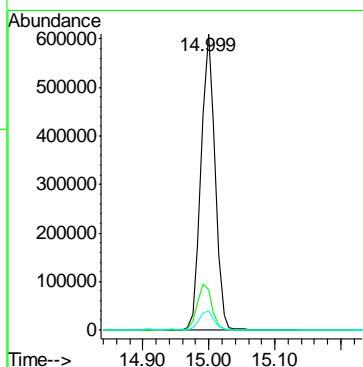
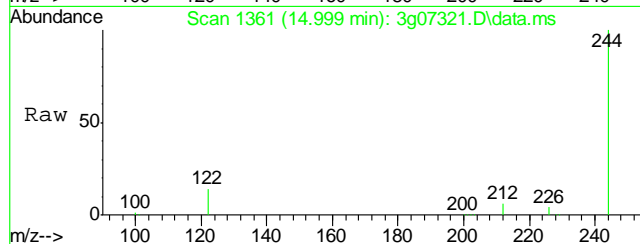
#19  
Pyrene  
Concen: 0.37 ug/mL  
RT: 14.587 min Scan# 1309  
Delta R.T. 0.166 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

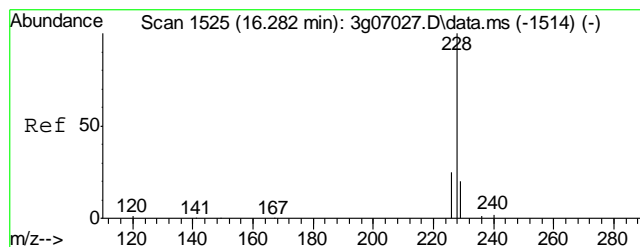
Tgt Ion:	202	Resp:	62907
Ion Ratio	Lower	Upper	
202	100		
200	20.3	0.0	40.0
203	28.2	0.0	37.7
201	16.6	0.0	36.5



#20  
Terphenyl-d14  
Concen: 9.89 ug/mL  
RT: 14.999 min Scan# 1361  
Delta R.T. 0.168 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

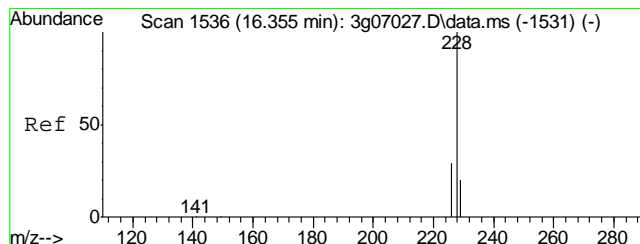
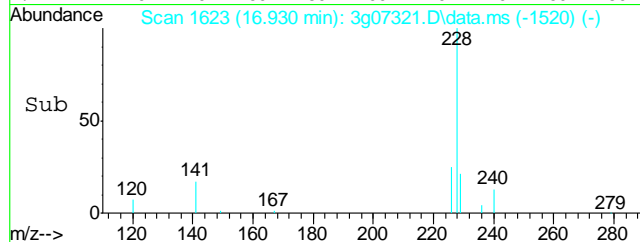
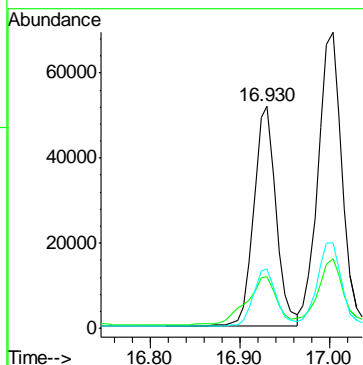
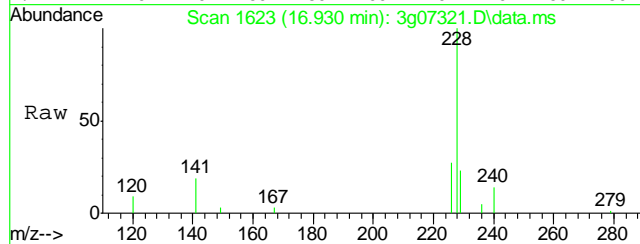
Tgt Ion:	244	Resp:	900660
Ion Ratio	Lower	Upper	
244	100		
122	16.0	0.0	37.9
212	6.4	0.0	26.8





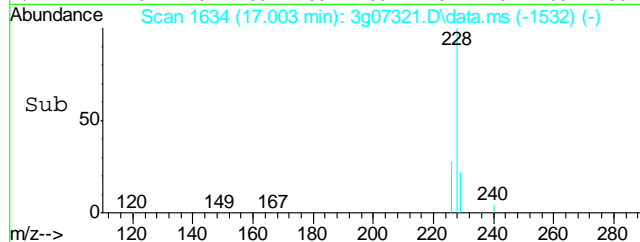
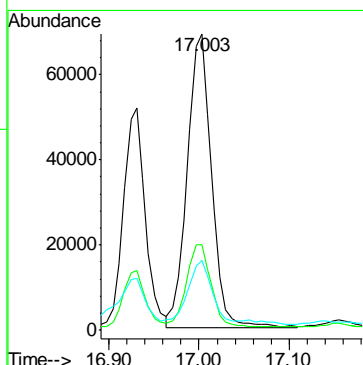
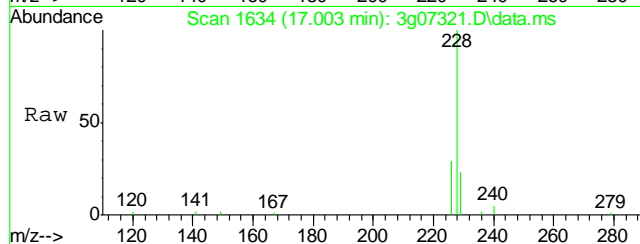
#21  
Benzo(a)anthracene  
Concen: 0.58 ug/mL  
RT: 16.930 min Scan# 1623  
Delta R.T. 0.178 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

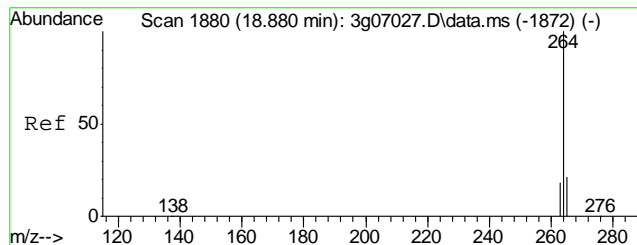
Tgt Ion:	228	Resp:	89052
Ion Ratio	Lower	Upper	
228	100		
229	30.7	0.0	39.5
226	26.8	6.2	46.2



#22  
Chrysene  
Concen: 0.82 ug/mL  
RT: 17.003 min Scan# 1634  
Delta R.T. 0.174 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

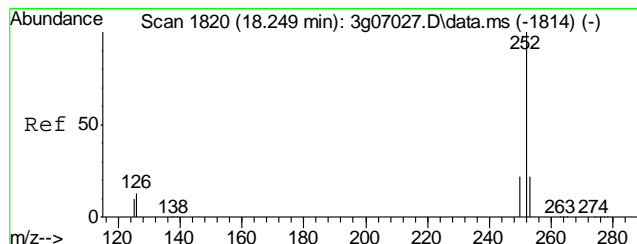
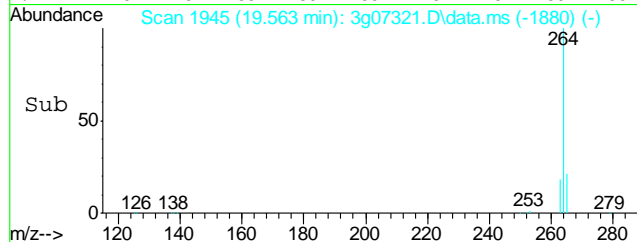
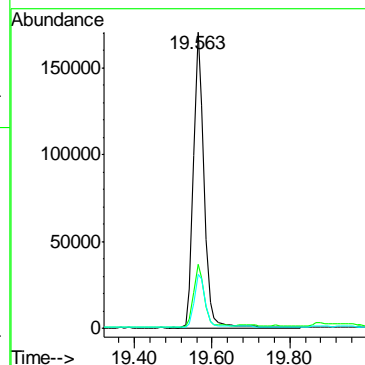
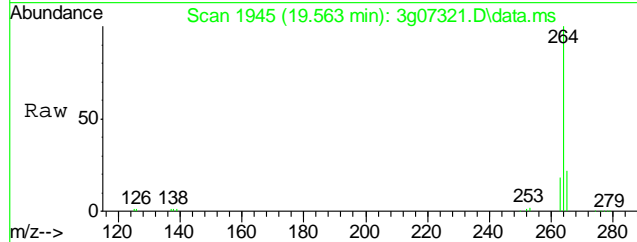
Tgt Ion:	228	Resp:	129656
Ion Ratio	Lower	Upper	
228	100		
226	28.0	8.6	48.6
229	19.8	0.0	39.3





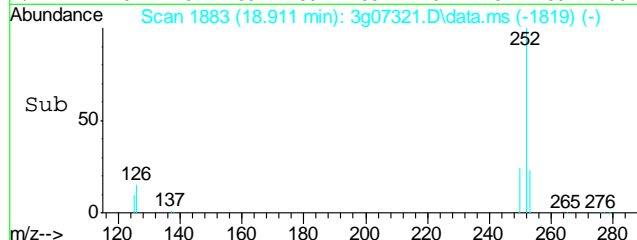
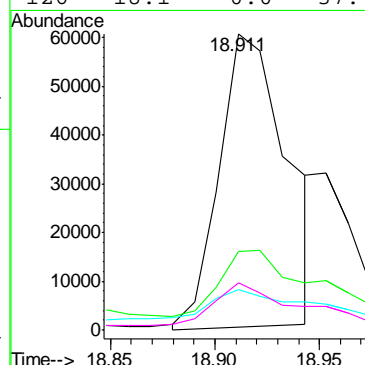
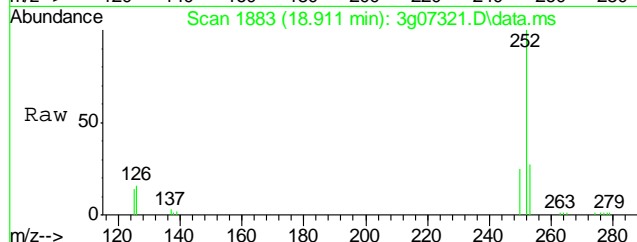
#23  
Perylene-d12  
Concen: 4.00 ug/mL  
RT: 19.563 min Scan# 1945  
Delta R.T. 0.186 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

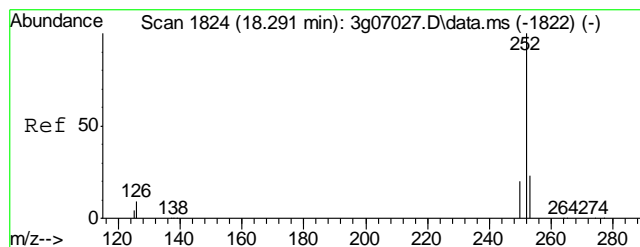
Tgt Ion:	264	Resp:	322635
Ion Ratio	Lower	Upper	
264	100		
265	21.2	1.1	41.1
263	19.9	0.0	38.4



#24  
Benzo(b)fluoranthene  
Concen: 0.97 ug/mL m  
RT: 18.911 min Scan# 1883  
Delta R.T. 0.177 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

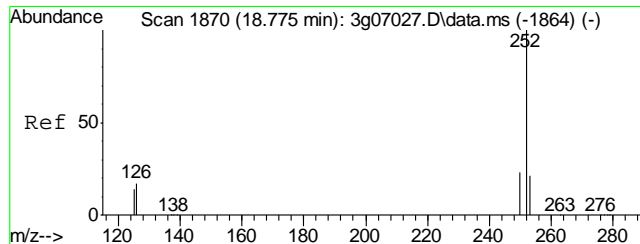
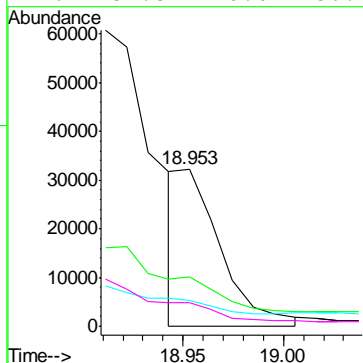
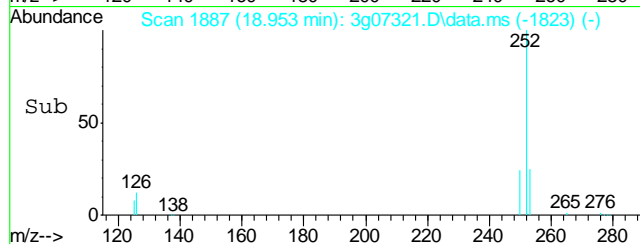
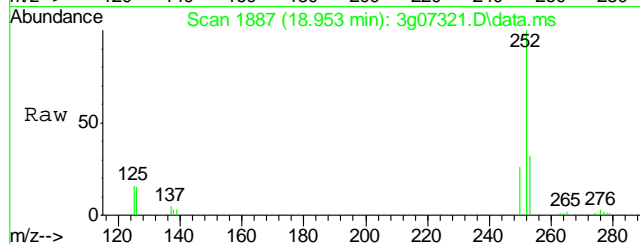
Tgt Ion:	252	Resp:	136222
Ion Ratio	Lower	Upper	
252	100		
253	30.9	1.7	41.7
125	14.0	0.0	32.3
126	18.1	0.0	37.4





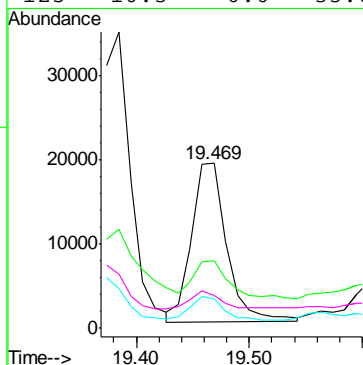
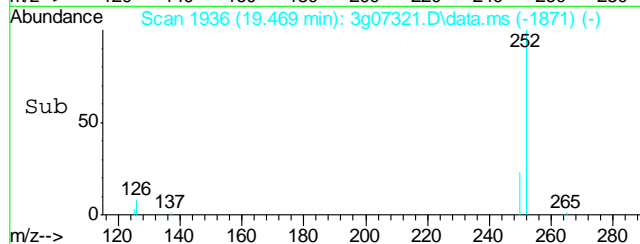
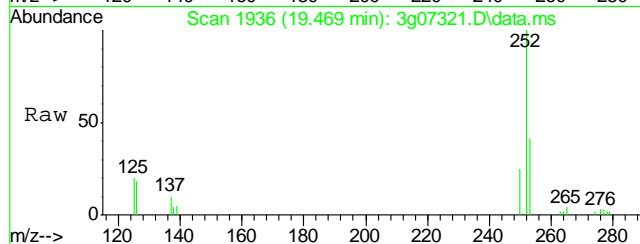
#25  
Benzo(k)fluoranthene  
Concen: 0.32 ug/mL m  
RT: 18.953 min Scan# 1887  
Delta R.T. 0.177 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

Tgt Ion:	252	Resp:	45330
Ion Ratio	Lower	Upper	
252	100		
253	92.4	1.4	41.4#
125	42.1	0.0	30.4#
126	54.3	0.0	36.7#

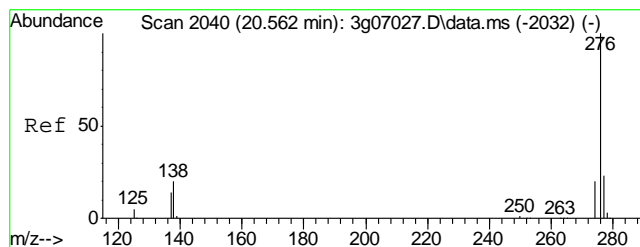


#26  
Benzo(a)pyrene  
Concen: 0.34 ug/mL  
RT: 19.469 min Scan# 1936  
Delta R.T. 0.188 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

Tgt Ion:	252	Resp:	40868
Ion Ratio	Lower	Upper	
252	100		
253	24.7	1.4	41.4
126	13.6	0.0	37.1
125	10.3	0.0	33.0

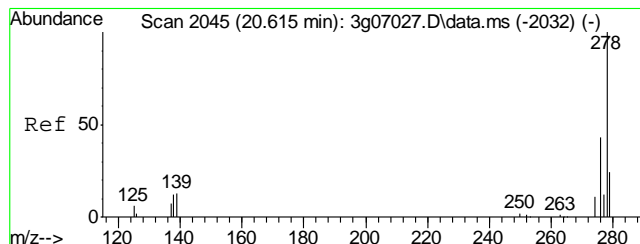
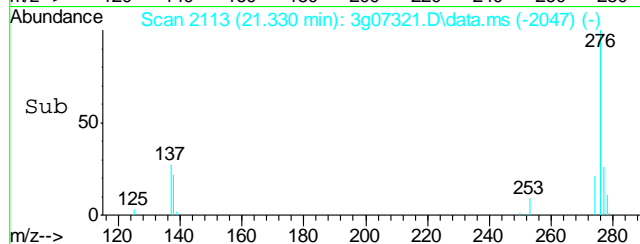
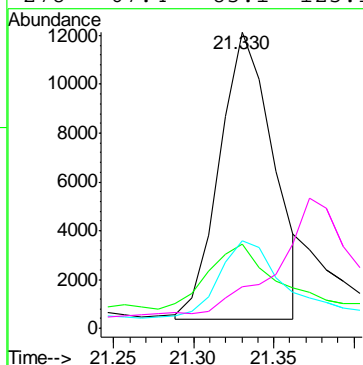
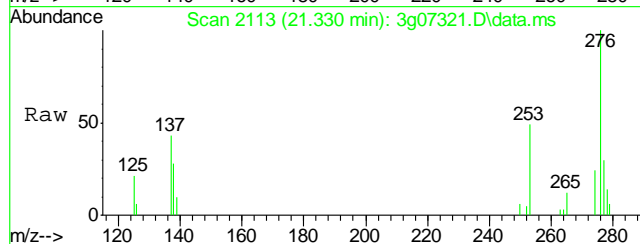






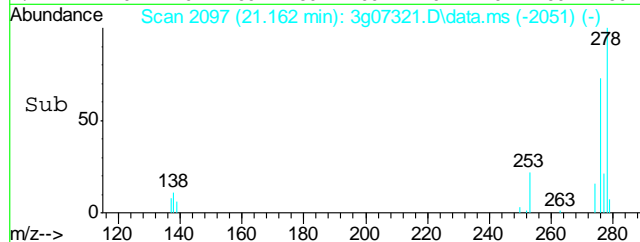
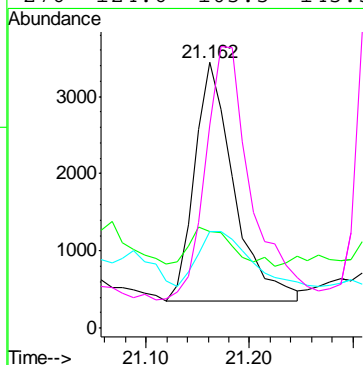
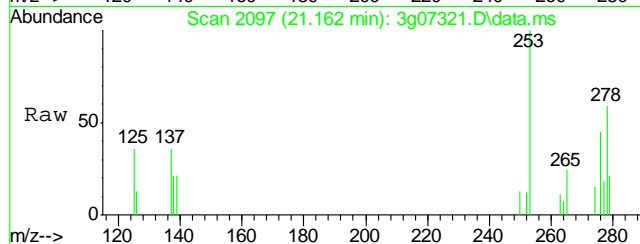
#27  
 Indeno(1,2,3-cd)pyrene  
 Concen: 0.30 ug/mL m  
 RT: 21.330 min Scan# 2113  
 Delta R.T. 0.198 min  
 Lab File: 3g07321.D  
 Acq: 17 Dec 11 9:43 am

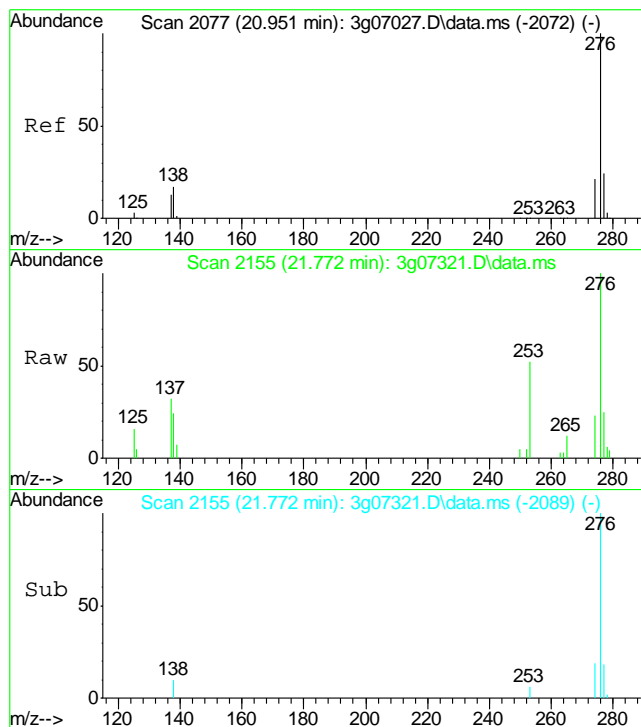
Tgt Ion:	276	Resp:	27599
Ion Ratio	Lower	Upper	
276	100		
138	28.9	1.6	41.6
277	35.8	12.6	52.6
278	67.4	85.1	125.1#



#28  
 Dibenz(a,h)anthracene  
 Concen: 0.08 ug/mL  
 RT: 21.162 min Scan# 2097  
 Delta R.T. -0.018 min  
 Lab File: 3g07321.D  
 Acq: 17 Dec 11 9:43 am

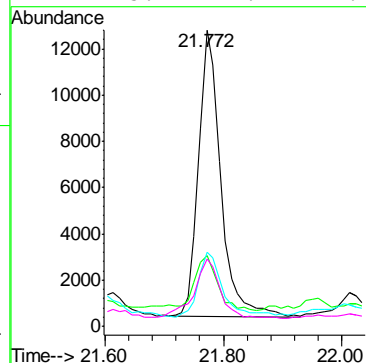
Tgt Ion:	278	Resp:	8107
Ion Ratio	Lower	Upper	
278	100		
139	18.3	0.0	38.8
279	30.6	2.8	42.8
276	124.6	105.5	145.5





#29  
Benzo(g,h,i)perylene  
Concen: 0.32 ug/mL  
RT: 21.772 min Scan# 2155  
Delta R.T. 0.193 min  
Lab File: 3g07321.D  
Acq: 17 Dec 11 9:43 am

Tgt Ion:	276	Resp:	32143
Ion Ratio	Lower	Upper	
276	100		
138	21.8	3.5	43.5
277	25.3	3.2	43.2
274	25.1	1.7	41.7



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121611PAH\  
 Data File : 3g07307.D  
 Acq On : 17 Dec 2011 12:47 am  
 Operator : mikee  
 Sample : OP5018-MB  
 Misc : OP5018,E3G271,30.00,,,1,  
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Dec 19 10:33:31 2011  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G270.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Fri Dec 16 17:52:17 2011  
 Response via : Initial Calibration

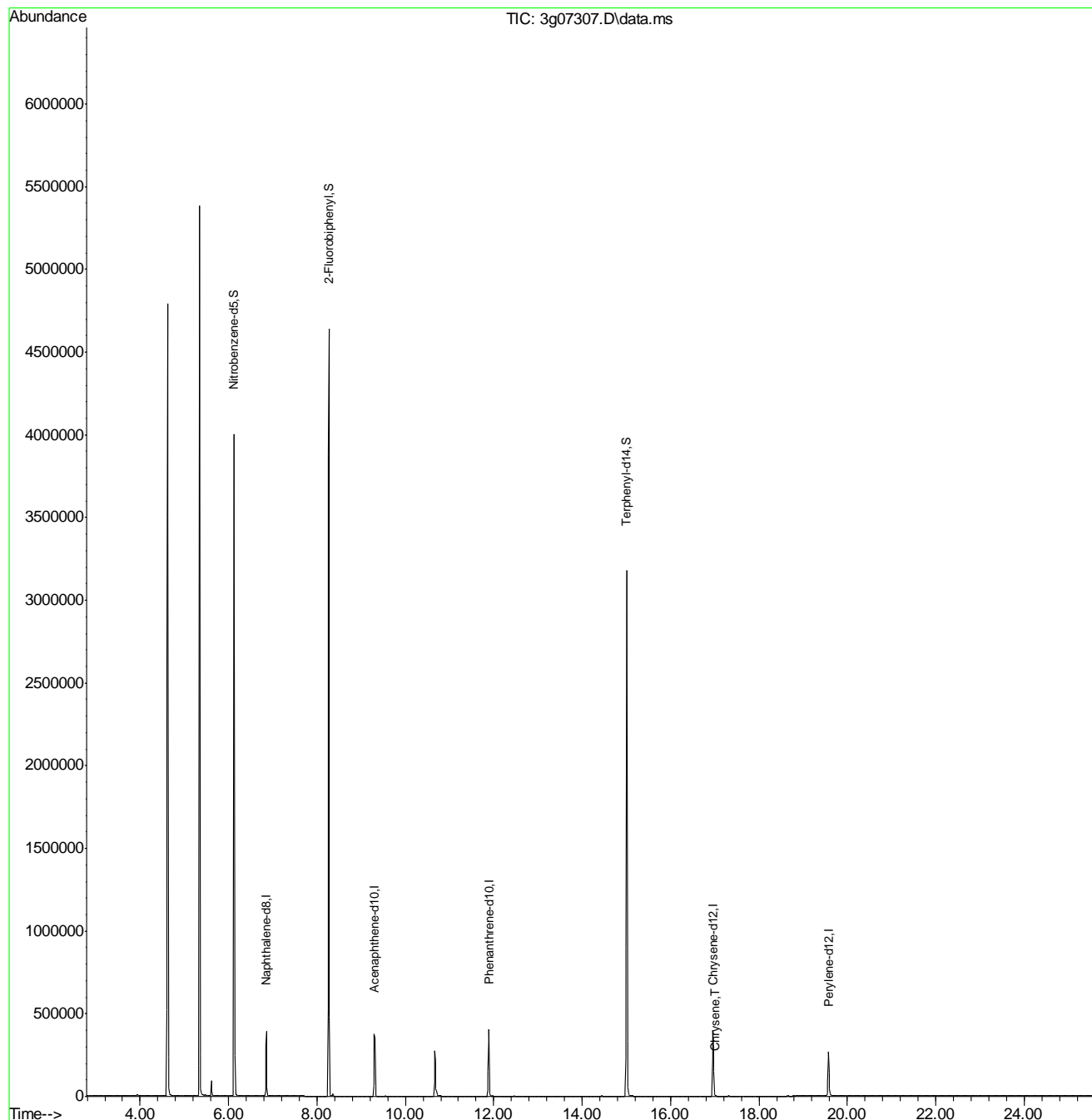
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	6.857	136	380116	4.00	ug/mL	0.00
6) Acenaphthene-d10	9.311	164	250589	4.00	ug/mL	0.01
14) Phenanthrene-d10	11.889	188	402999	4.00	ug/mL	0.02
18) Chrysene-d12	16.964	240	465632	4.00	ug/mL	0.03
23) Perylene-d12	19.574	264	366702	4.00	ug/mL	0.05
System Monitoring Compounds						
2) Nitrobenzene-d5	6.121	82	3908293	38.72	ug/mL	-0.01
7) 2-Fluorobiphenyl	8.272	172	4538971	38.31	ug/mL	0.01
20) Terphenyl-d14	15.007	244	4168586	42.33	ug/mL	0.03
Target Compounds						
						Qvalue
3) N-Nitrosodimethylamine	0.000		0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000		0	N.D.	d	
5) Naphthalene	0.000		0	N.D.	d	
8) 2-Methylnaphthalene	0.000		0	N.D.	d	
9) 1-Methylnaphthalene	0.000		0	N.D.	d	
10) Acenaphthylene	0.000		0	N.D.	d	
11) Acenaphthene	0.000		0	N.D.	d	
12) Fluorene	0.000		0	N.D.	d	
13) Diphenylamine	0.000		0	N.D.	d	
15) Phenanthrene	0.000		0	N.D.	d	
16) Anthracene	0.000		0	N.D.	d	
17) Fluoranthene	0.000		0	N.D.	d	
19) Pyrene	0.000		0	N.D.	d	
21) Benzo(a)anthracene	0.000		0	N.D.	d	
22) Chrysene	17.010	228	1261	0.01	ug/mL	97
24) Benzo(b)fluoranthene	0.000		0	N.D.	d	
25) Benzo(k)fluoranthene	0.000		0	N.D.	d	
26) Benzo(a)pyrene	0.000		0	N.D.	d	
27) Indeno(1,2,3-cd)pyrene	0.000		0	N.D.	d	
28) Dibenz(a,h)anthracene	0.000		0	N.D.	d	
29) Benzo(g,h,i)perylene	0.000		0	N.D.	d	

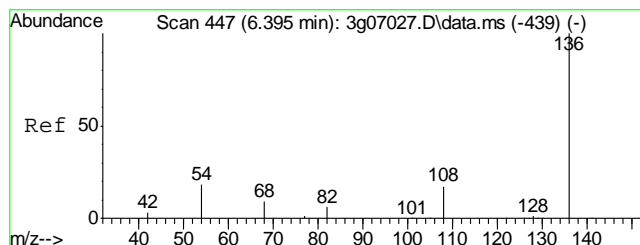
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121611PAH\  
Data File : 3g07307.D  
Acq On : 17 Dec 2011 12:47 am  
Operator : mikey  
Sample : OP5018-MB  
Misc : OP5018,E3G271,30.00,,,1,  
ALS Vial : 19 Sample Multiplier: 1

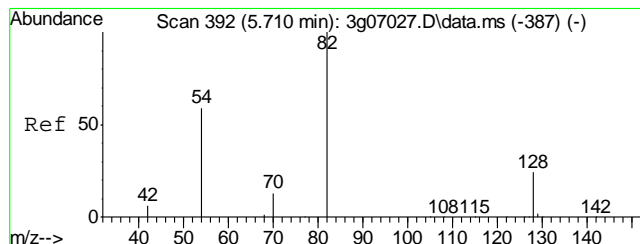
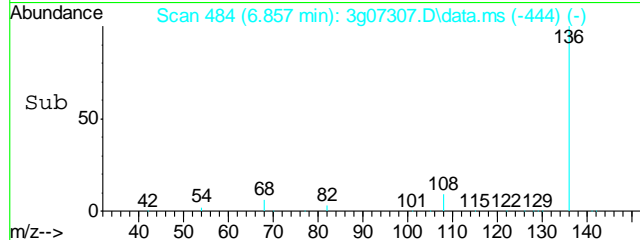
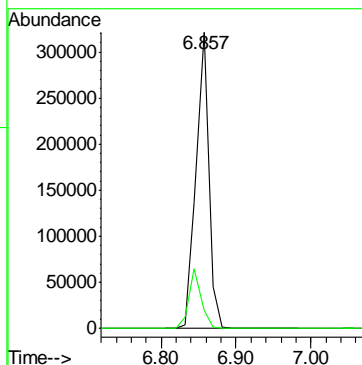
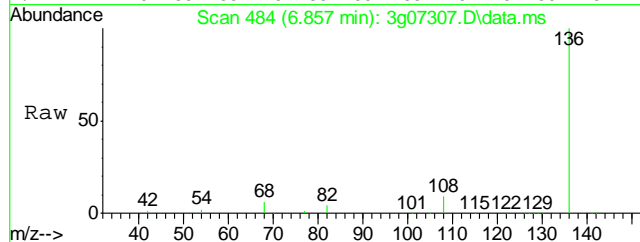
Quant Time: Dec 19 10:33:31 2011  
Quant Method : C:\msdchem\1\METHODS\SIMPE3G270.M  
Quant Title : PAHSIM BASE  
QLast Update : Fri Dec 16 17:52:17 2011  
Response via : Initial Calibration





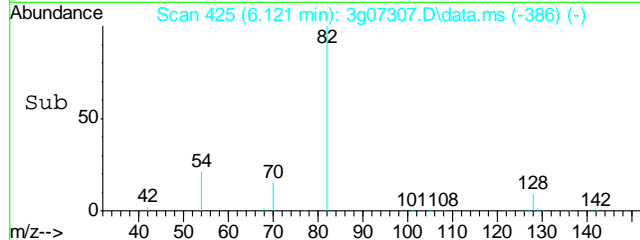
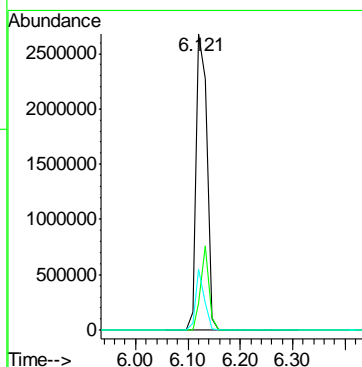
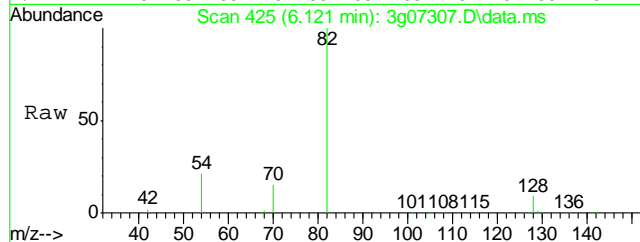
#1  
Naphthalene-d8  
Concen: 4.00 ug/mL  
RT: 6.857 min Scan# 484  
Delta R.T. 0.000 min  
Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

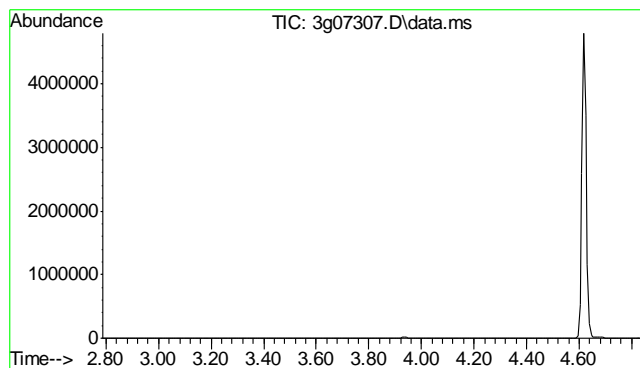
Tgt Ion: 136	Resp: 380116
Ion Ratio	Lower Upper
136	100
68	19.1 0.0 39.9



#2  
Nitrobenzene-d5  
Concen: 38.72 ug/mL  
RT: 6.121 min Scan# 425  
Delta R.T. -0.013 min  
Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

Tgt Ion: 82	Resp: 3908293
Ion Ratio	Lower Upper
82	100
128	21.5 0.3 40.3
54	16.7 0.0 37.5

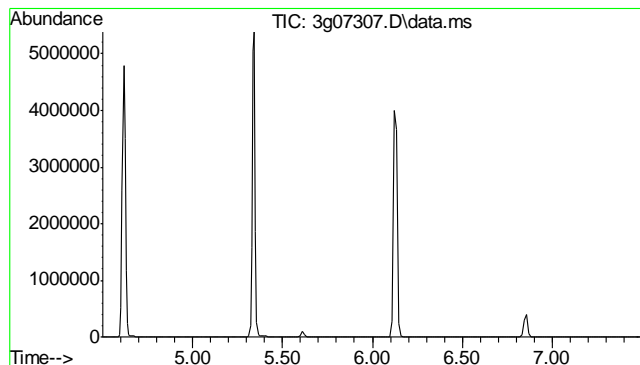
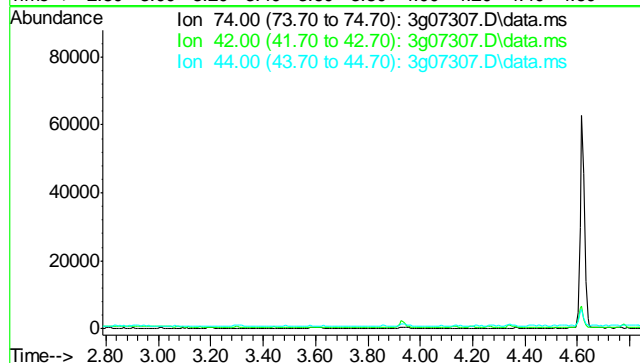




#3  
N-Nitrosodimethylamine  
Concen: N.D. ug/mL  
Expected RT: 3.34 min

Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

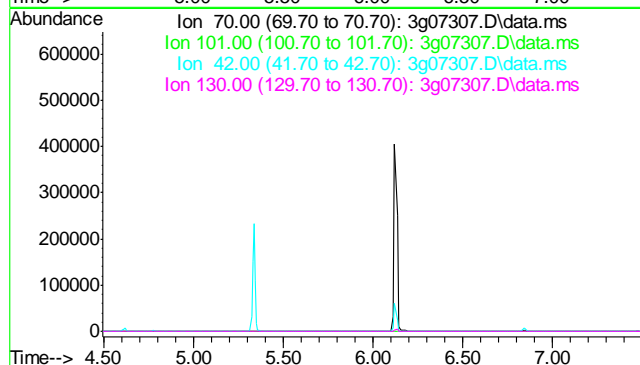
Tgt Ion:	74
Sig	Exp Ratio
74	100
42	18.8
44	1.4

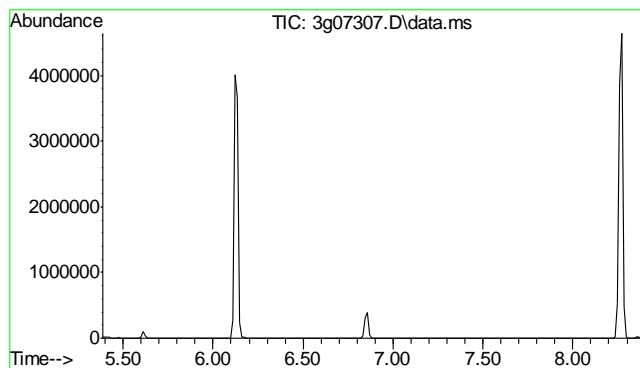


#4  
N-Nitrosodi-propylamine  
Concen: N.D. ug/mL  
Expected RT: 6.00 min

Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

Tgt Ion:	70
Sig	Exp Ratio
70	100
101	8.0
42	17.4
130	9.9

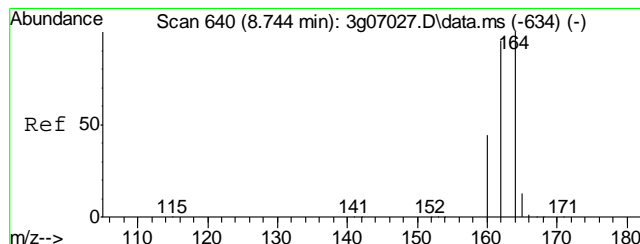
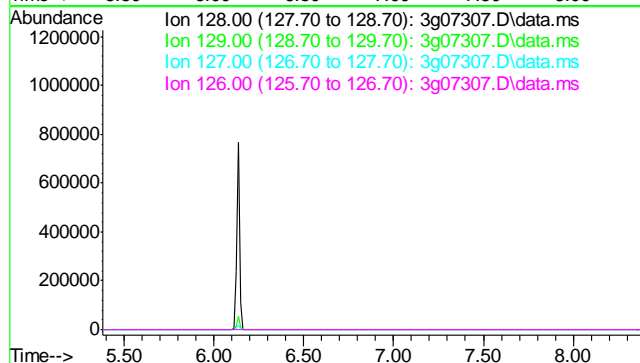




#5  
Naphthalene  
Concen: N.D. ug/mL  
Expected RT: 6.88 min

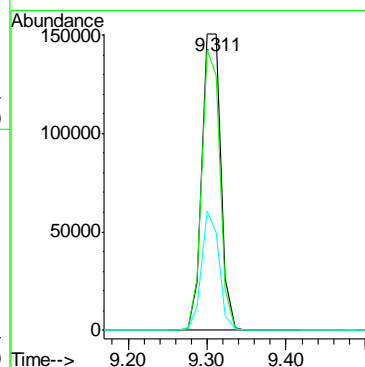
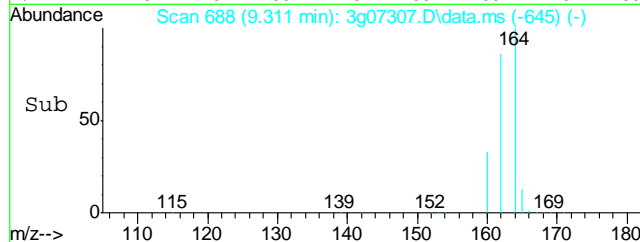
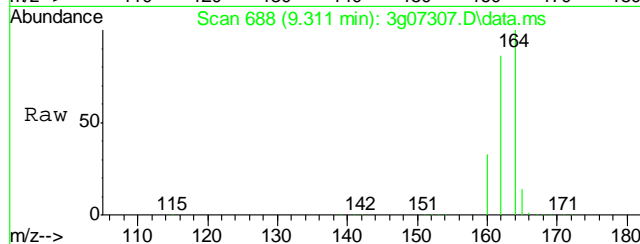
Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

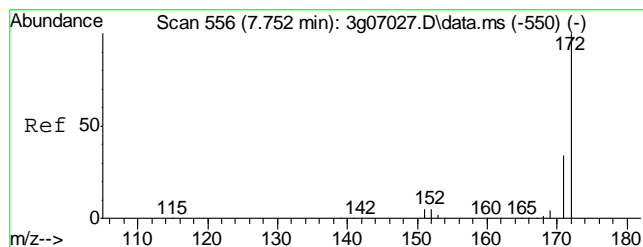
Tgt Ion: 128  
Sig Exp Ratio  
128 100  
129 10.9  
127 13.9  
126 7.9



#6  
Acenaphthene-d10  
Concen: 4.00 ug/mL  
RT: 9.311 min Scan# 688  
Delta R.T. 0.012 min  
Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

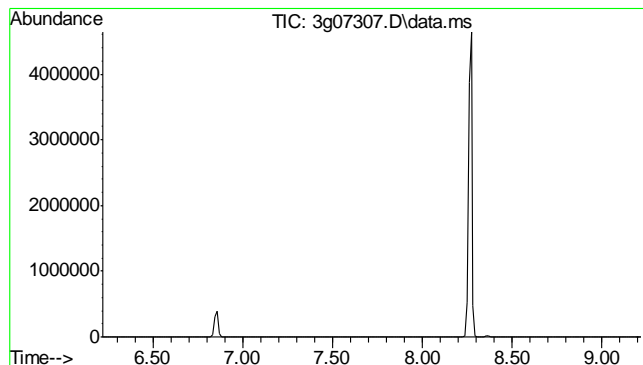
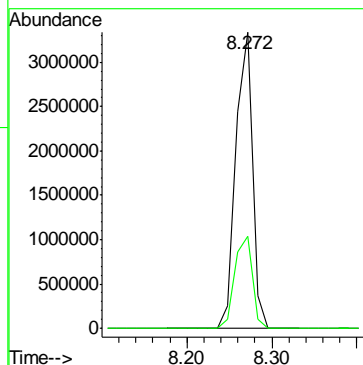
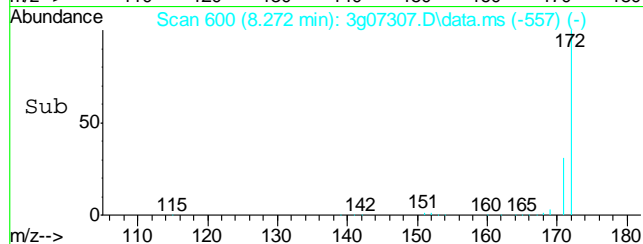
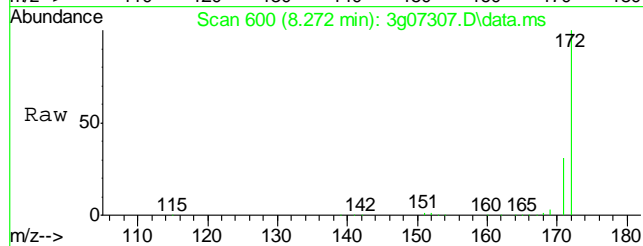
Tgt Ion: 164 Resp: 250589  
Ion Ratio Lower Upper  
164 100  
162 90.6 71.3 111.3  
160 37.0 17.3 57.3





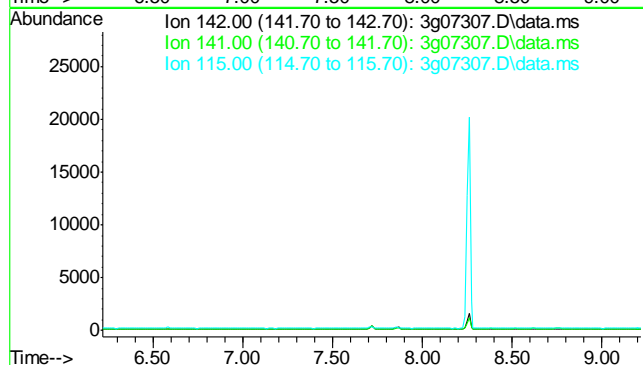
#7  
2-Fluorobiphenyl  
Concen: 38.31 ug/mL  
RT: 8.272 min Scan# 600  
Delta R.T. 0.012 min  
Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

Tgt Ion: 172 Resp: 4538971  
Ion Ratio Lower Upper  
172 100  
171 32.8 12.9 52.9

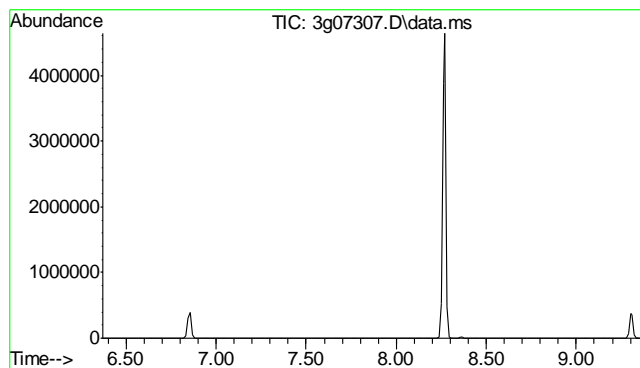


#8  
2-Methylnaphthalene  
Concen: N.D. ug/mL  
Expected RT: 7.72 min  
Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

Tgt Ion: 142  
Sig Exp Ratio  
142 100  
141 82.0  
115 41.4



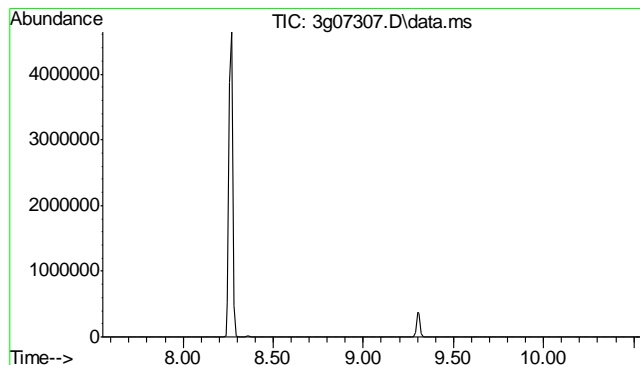
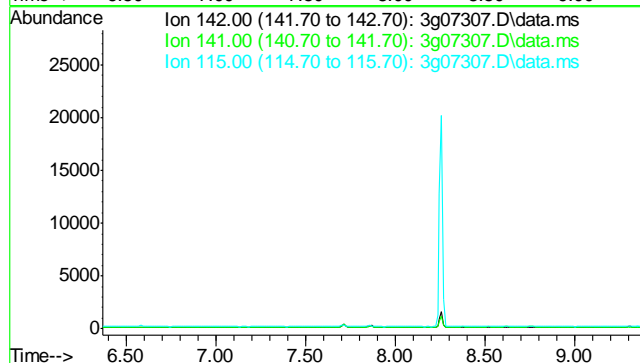




#9  
1-Methylnaphthalene  
Concen: N.D. ug/mL  
Expected RT: 7.87 min

Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

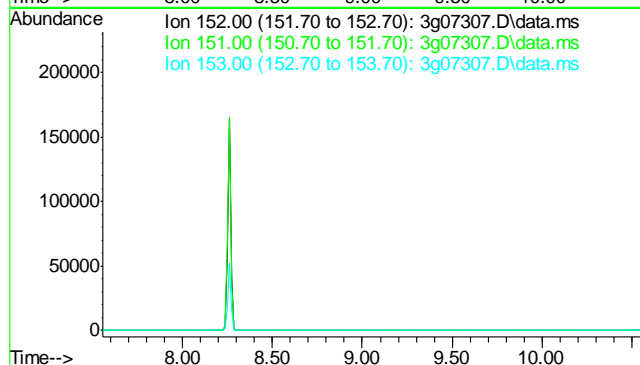
Tgt Ion:	142
Sig	Exp Ratio
142	100
141	85.3
115	43.0

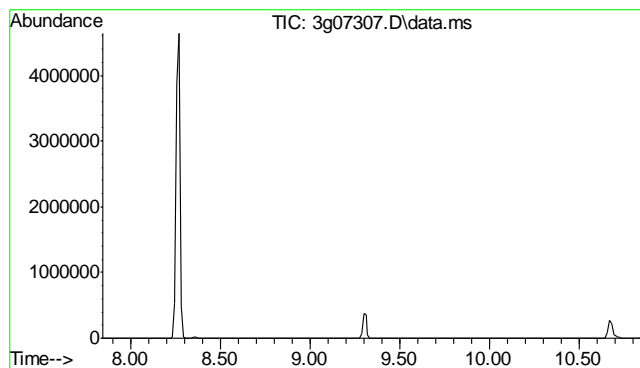


#10  
Acenaphthylene  
Concen: N.D. ug/mL  
Expected RT: 9.05 min

Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

Tgt Ion:	152
Sig	Exp Ratio
152	100
151	19.0
153	13.0

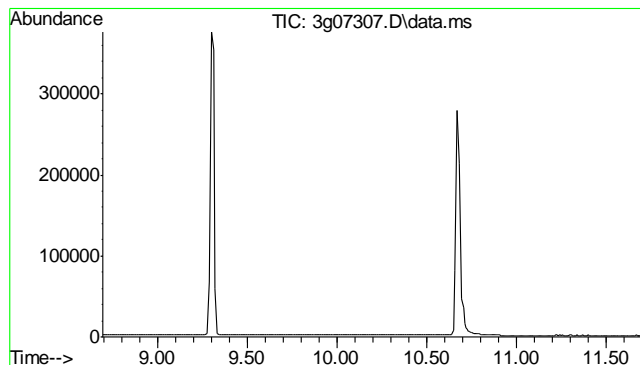
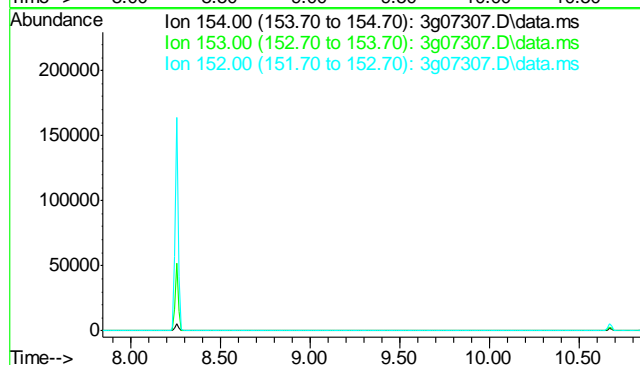




#11  
Acenaphthene  
Concen: N.D. ug/mL  
Expected RT: 9.35 min

Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

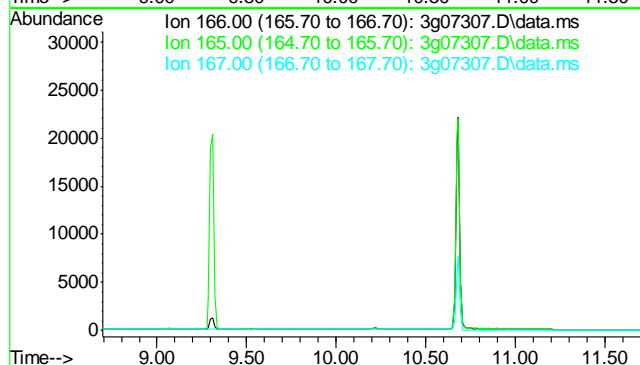
Tgt Ion: 154  
Sig Exp Ratio  
154 100  
153 103.5  
152 49.4

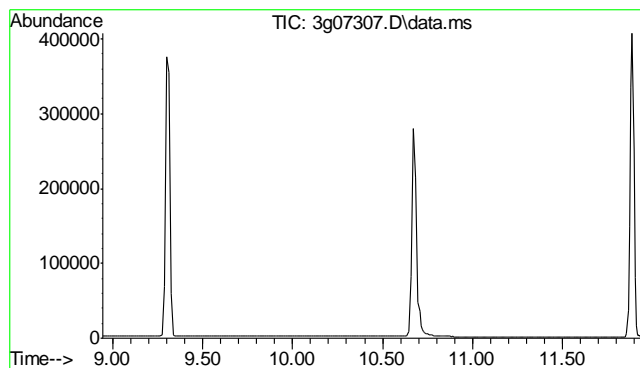


#12  
Fluorene  
Concen: N.D. ug/mL  
Expected RT: 10.20 min

Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

Tgt Ion: 166  
Sig Exp Ratio  
166 100  
165 91.5  
167 13.2

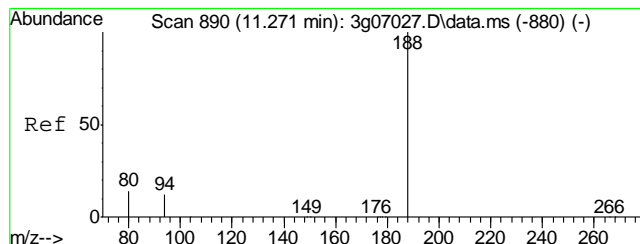
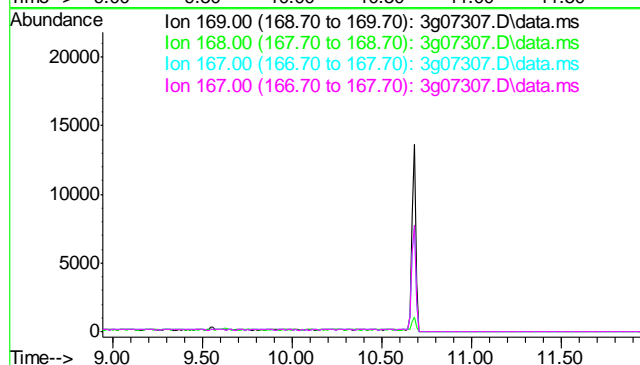




#13  
Diphenylamine  
Concen: N.D. ug/mL  
Expected RT: 10.44 min

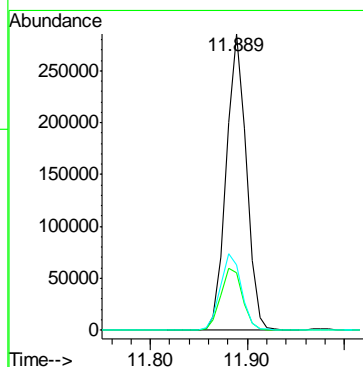
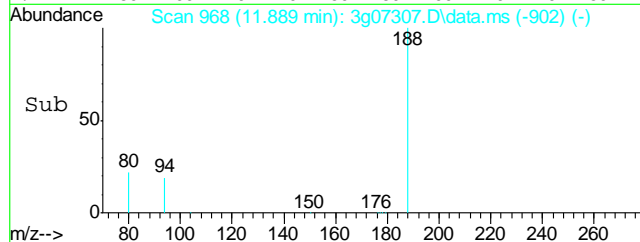
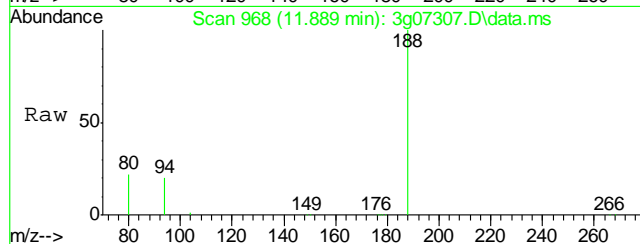
Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

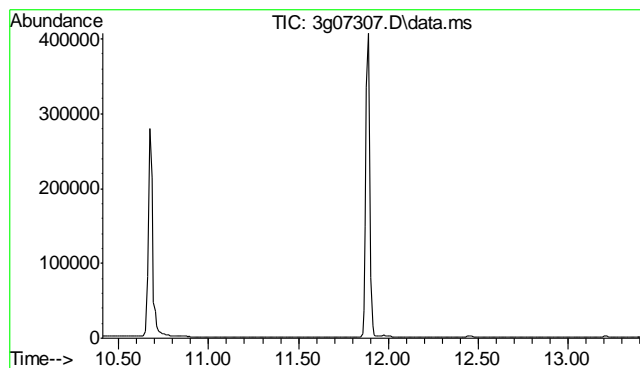
Tgt Ion: 169  
Sig Exp Ratio  
169 100  
168 61.3  
167 33.4  
167 33.4



#14  
Phenanthrene-d10  
Concen: 4.00 ug/mL  
RT: 11.889 min Scan# 968  
Delta R.T. 0.023 min  
Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

Tgt Ion: 188 Resp: 402999  
Ion Ratio Lower Upper  
188 100  
94 22.7 4.1 44.1  
80 26.8 8.3 48.3

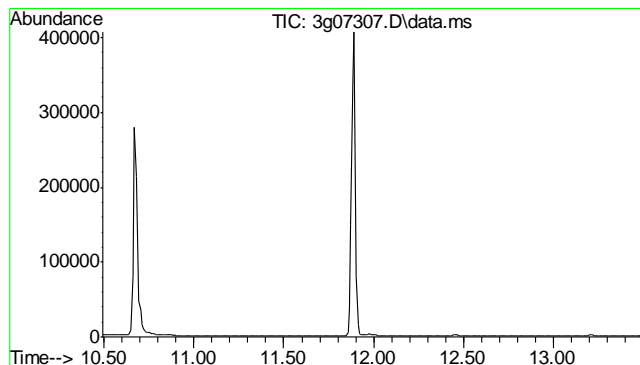
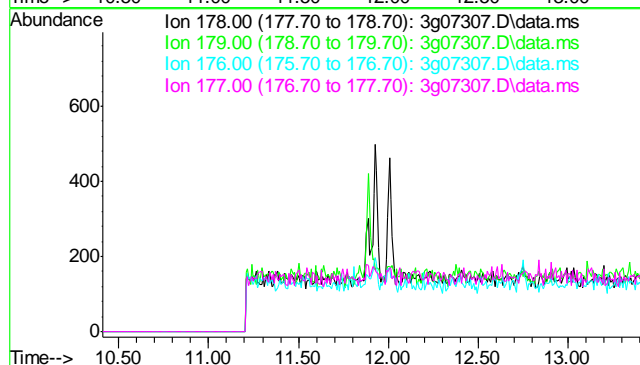




#15  
Phenanthrene  
Concen: N.D. ug/mL  
Expected RT: 11.91 min

Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

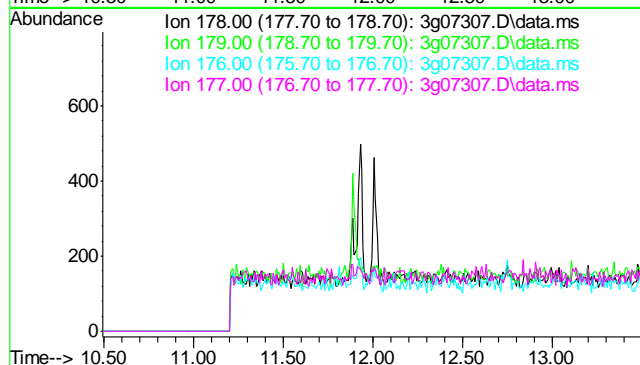
Tgt Ion:	178
Sig	Exp Ratio
178	100
179	15.2
176	18.4
177	10.1

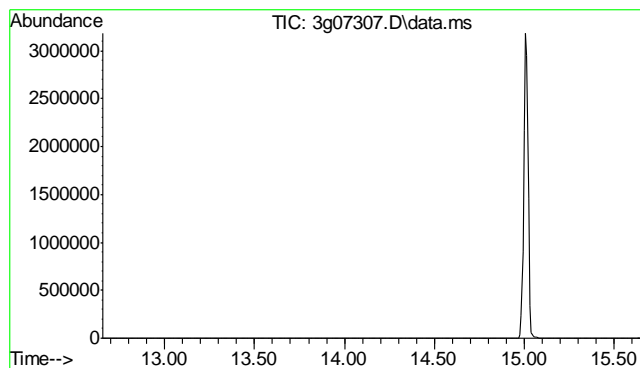


#16  
Anthracene  
Concen: N.D. ug/mL  
Expected RT: 11.99 min

Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

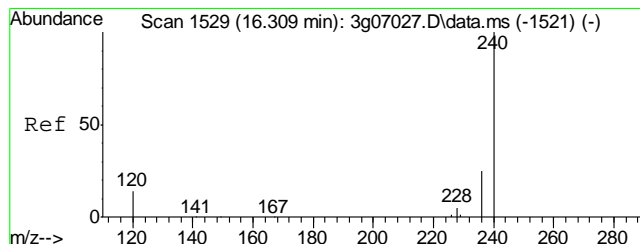
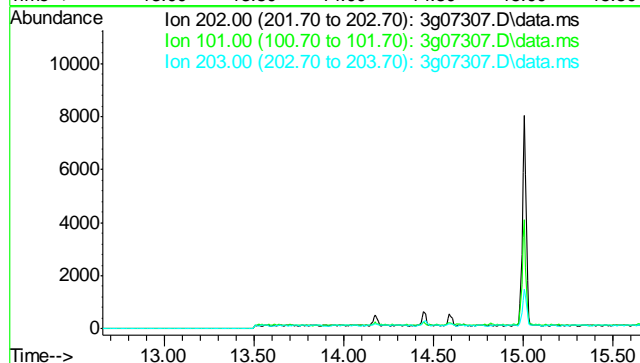
Tgt Ion:	178
Sig	Exp Ratio
178	100
179	14.9
176	17.8
177	8.7





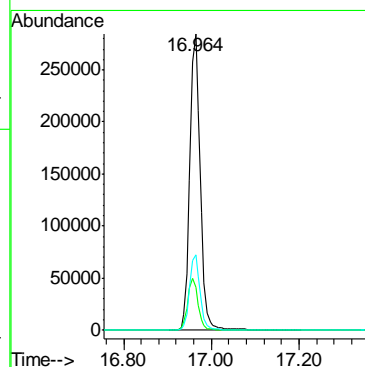
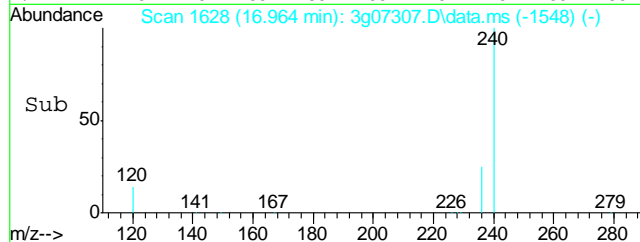
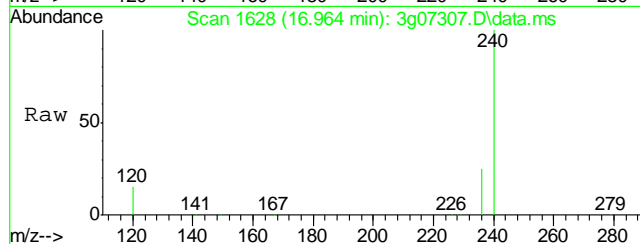
#17  
Fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 14.16 min  
  
Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

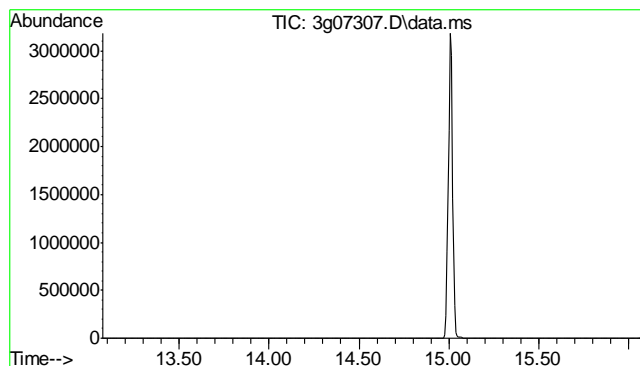
Tgt Ion:	202
Sig	Exp Ratio
202	100
101	21.3
203	17.1



#18  
Chrysene-d12  
Concen: 4.00 ug/mL  
RT: 16.964 min Scan# 1628  
Delta R.T. 0.030 min  
Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

Tgt Ion:	240	Resp:	465632
Ion	Ratio	Lower	Upper
240	100		
120	17.4	0.0	38.2
236	25.3	5.2	45.2

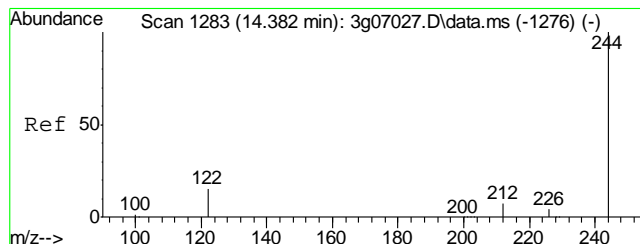
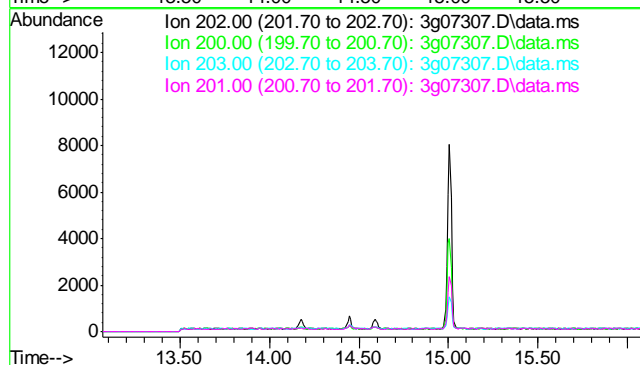




#19  
Pyrene  
Concen: N.D. ug/mL  
Expected RT: 14.57 min

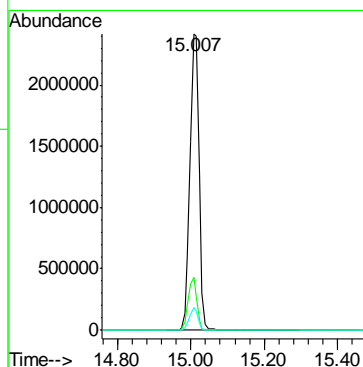
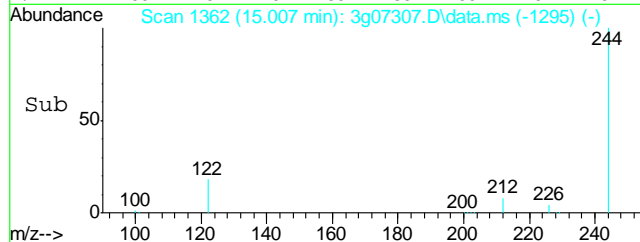
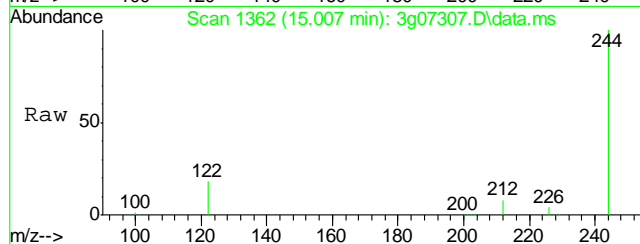
Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

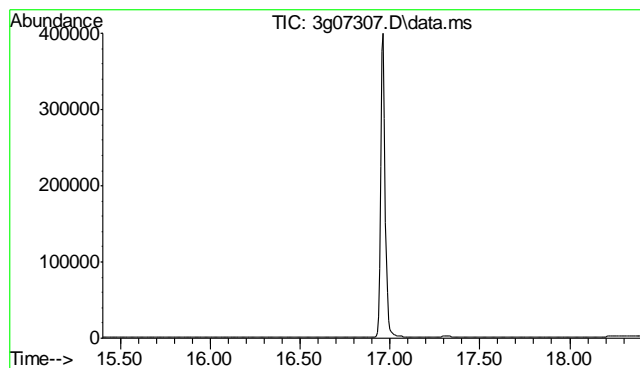
Tgt Ion:	202
Sig	Exp Ratio
202	100
200	20.0
203	17.7
201	16.5



#20  
Terphenyl-d14  
Concen: 42.33 ug/mL  
RT: 15.007 min Scan# 1362  
Delta R.T. 0.026 min  
Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

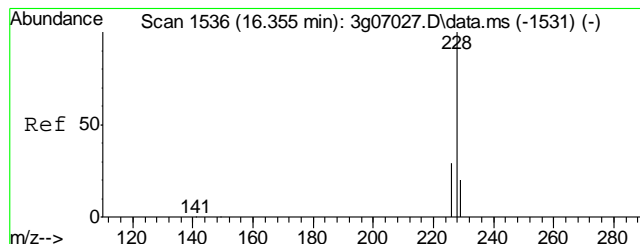
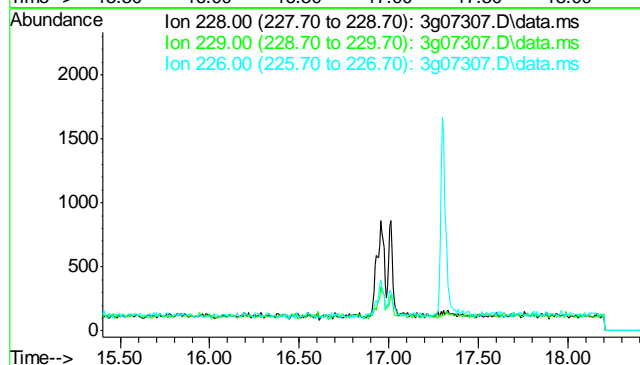
Tgt Ion:	244	Resp:	4168586
Ion	Ratio	Lower	Upper
244	100		
122	16.7	0.0	37.9
212	7.1	0.0	26.8





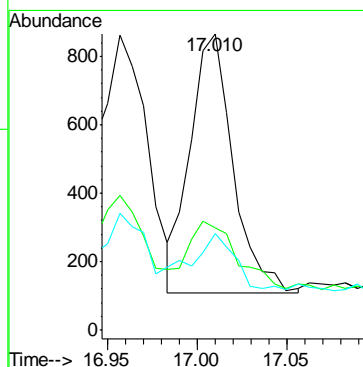
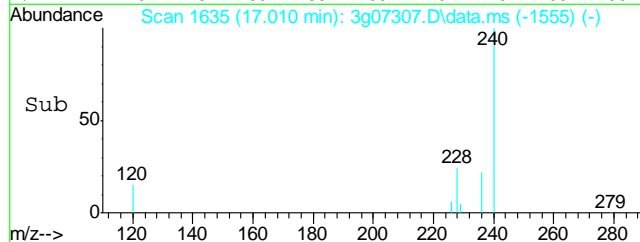
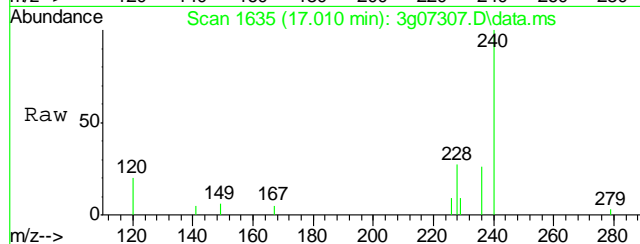
#21  
Benzo(a)anthracene  
Concen: N.D. ug/mL  
Expected RT: 16.90 min  
  
Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

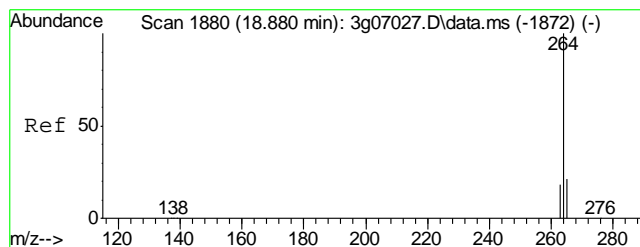
Tgt Ion: 228  
Sig Exp Ratio  
228 100  
229 19.5  
226 26.2



#22  
Chrysene  
Concen: 0.01 ug/mL  
RT: 17.010 min Scan# 1635  
Delta R.T. 0.030 min  
Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

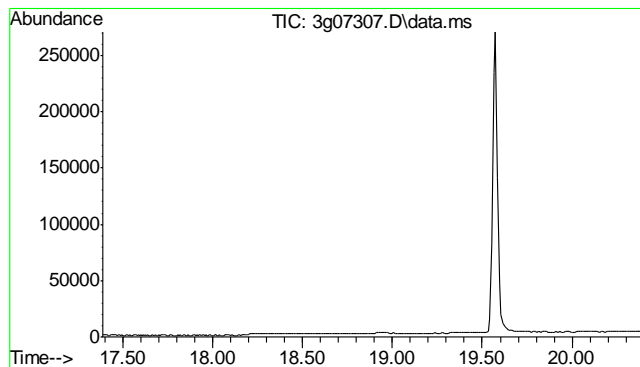
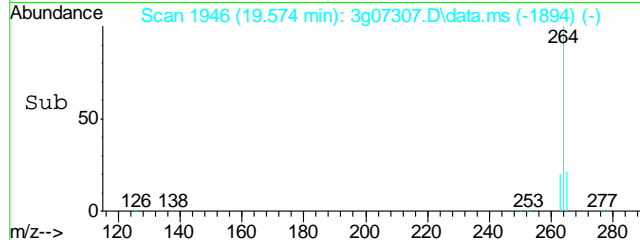
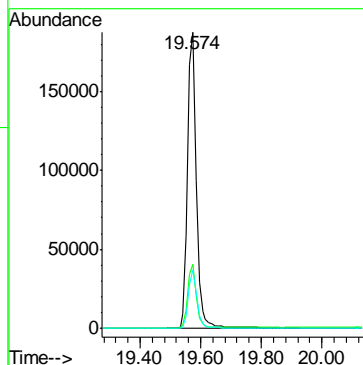
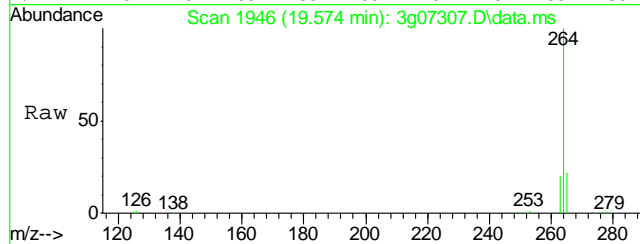
Tgt Ion: 228 Resp: 1261  
Ion Ratio Lower Upper  
228 100  
226 30.4 8.6 48.6  
229 20.5 0.0 39.3





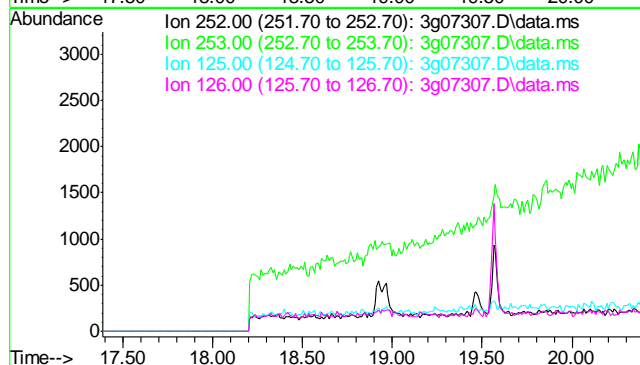
#23  
Perylene-d12  
Concen: 4.00 ug/mL  
RT: 19.574 min Scan# 1946  
Delta R.T. 0.047 min  
Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

Tgt Ion:	264	Resp:	366702
Ion Ratio	Lower	Upper	
264	100		
265	21.1	1.1	41.1
263	19.2	0.0	38.4

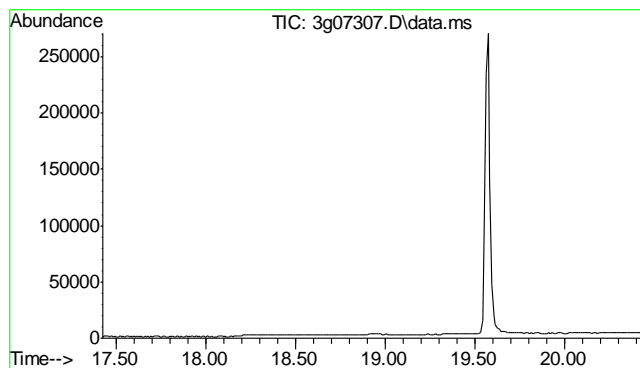


#24  
Benzo(b)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 18.88 min  
  
Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

Tgt Ion:	252
Sig	Exp Ratio
252	100
253	21.7
125	12.3
126	17.4



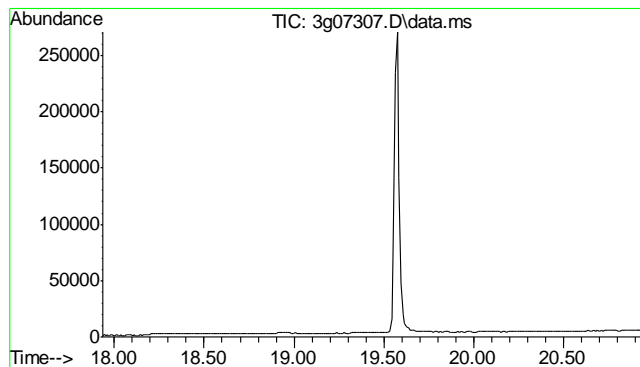
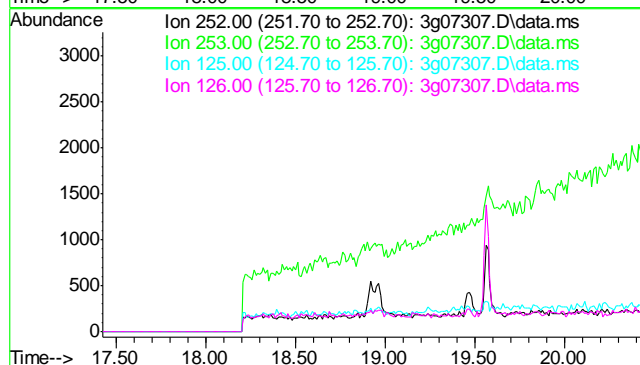




#25  
Benzo(k)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 18.93 min

Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

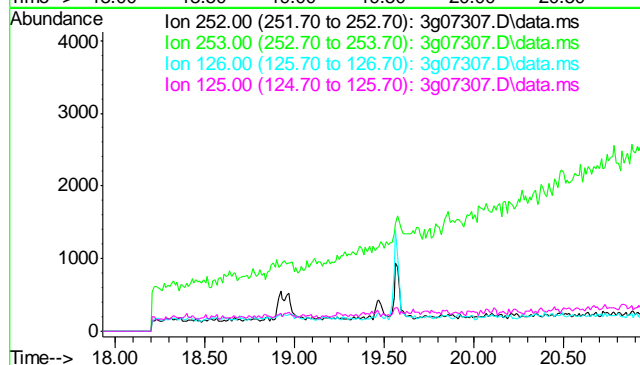
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	21.4
125	10.4
126	16.7

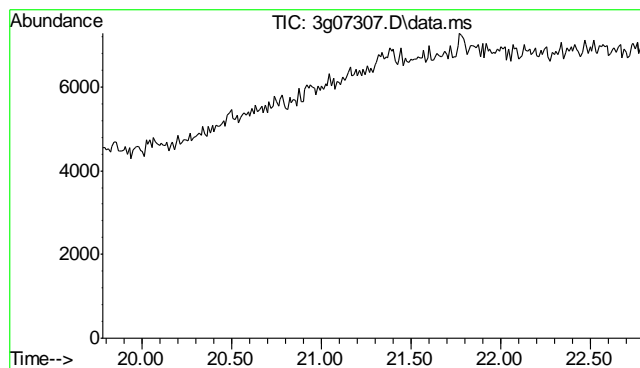


#26  
Benzo(a)pyrene  
Concen: N.D. ug/mL  
Expected RT: 19.43 min

Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

Tgt Ion:	252
Sig	Exp Ratio
252	100
253	21.4
126	17.1
125	13.0

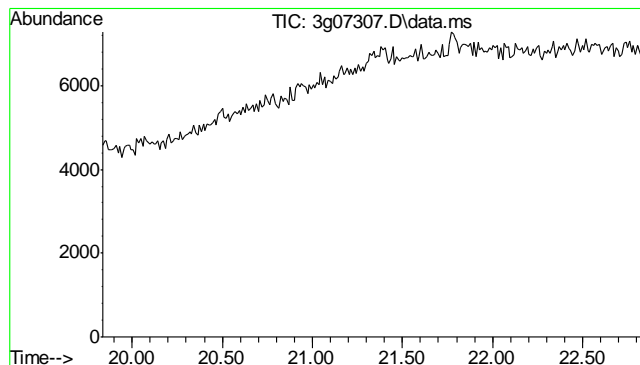
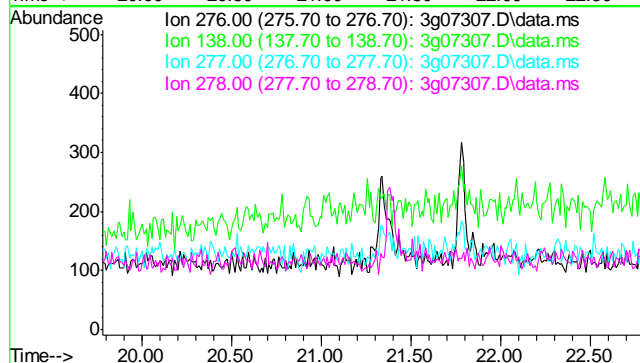




#27  
Indeno(1,2,3-cd)pyrene  
Concen: N.D. ug/mL  
Expected RT: 21.28 min

Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

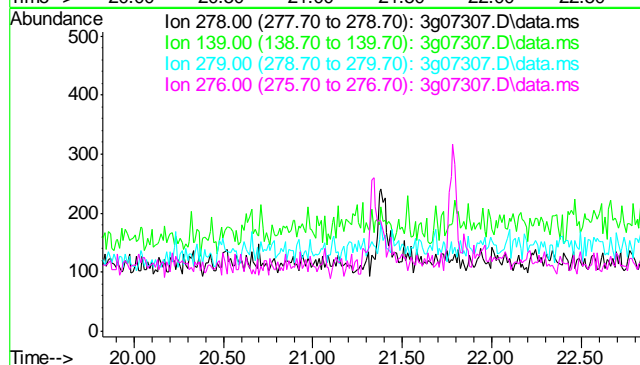
Tgt Ion:	276
Sig	Exp Ratio
276	100
138	21.6
277	32.6
278	105.1

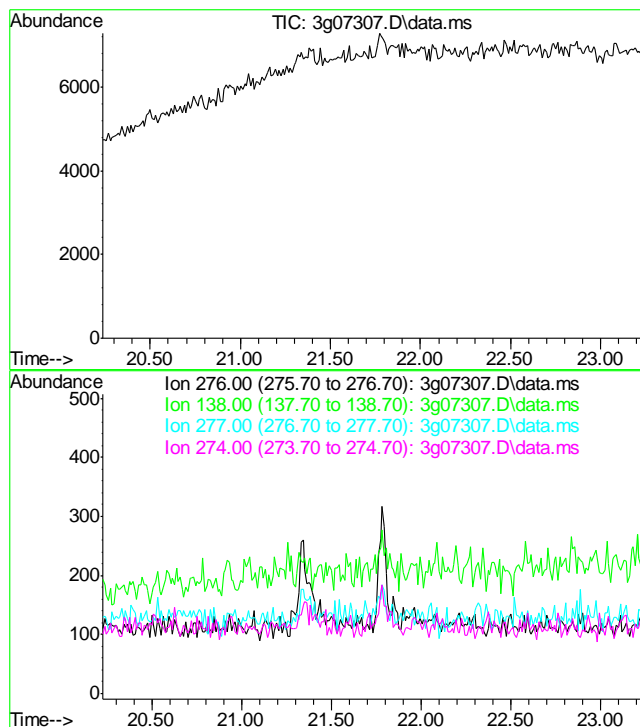


#28  
Dibenz(a,h)anthracene  
Concen: N.D. ug/mL  
Expected RT: 21.33 min

Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

Tgt Ion:	278
Sig	Exp Ratio
278	100
139	18.8
279	22.8
276	125.5





#29  
Benzo(g,h,i)perylene  
Concen: N.D. ug/mL  
Expected RT: 21.73 min

Lab File: 3g07307.D  
Acq: 17 Dec 11 12:47 am

Tgt Ion: 276

Sig	Exp Ratio
276	100
138	23.5
277	23.2
274	21.7

## GC Volatiles

### QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

**Method Blank Summary**

Page 1 of 1

**Job Number:** D30325**Account:** KRWCCOL KRW Consulting, Inc.**Project:** XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB808-MB	GB14312.D	1	12/15/11	SK	n/a	n/a	GGB808

**The QC reported here applies to the following samples:****Method:** SW846 8015B

D30325-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	95% 60-140%

9.1.1

9

Blank Spike Summary

Job Number: D30325  
Account: KRWCCOL KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB808-BS	GB14313.D	1	12/15/11	SK	n/a	n/a	GGB808

The QC reported here applies to the following samples: Method: SW846 8015B

D30325-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	109	99	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	109%	60-140%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D30325  
Account: KRWCCOL KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D30323-1MS	GB14315.D	1	12/15/11	SK	n/a	n/a	GGB808
D30323-1MSD	GB14316.D	1	12/15/11	SK	n/a	n/a	GGB808
D30323-1	GB14314.D	1	12/15/11	SK	n/a	n/a	GGB808

The QC reported here applies to the following samples: Method: SW846 8015B

D30325-1

CAS No.	Compound	D30323-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		143	145	101	144	100	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D30323-1	Limits
120-82-1	1,2,4-Trichlorobenzene	103%	106%	98%	60-140%

GC Volatiles

Raw Data



Judy Melson  
12/16/11 11:06

## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\121511\GB14318.D\FID1A.CH Vial: 8  
 Signal #2 : Y:\1\DATA\121511\GB14318.D\FID2B.CH  
 Acq On : 15 Dec 2011 8:05 pm Operator: StephK  
 Sample : D30325-1, 50X Inst : GC/MS Ins  
 Misc : GC2480,GGB808,5.019,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Dec 16 07:06:12 2011 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Fri Dec 16 07:05:51 2011  
 Response via : Initial Calibration  
 DataAcq Meth : TVB4.M

Volume Inj. :  
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm

	Compound	R.T.	Response	Conc	Units	
-----						
System Monitoring Compounds						
2) S	1,2,4-Trichlorobenzene	14.40	2670125	91.270 %	m	
10) S	1,2,4-Trichlorobenzene (P)	14.40	23565154	102.529 %		
Target Compounds						
1) H	TVH-Gasoline	7.32	23273518	0.327 mg/L		
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d	
5) T	Benzene	4.18	483623	0.845 ug/L		
6) T	Toluene	7.70	1298194	2.291 ug/L		
7) T	Ethylbenzene	10.32	335900	0.689 ug/L		
8) T	m,p-Xylene	10.50	3836204	6.453 ug/L		
9) T	o-Xylene	11.00	643939	1.097 ug/L		
11) T	Naphthalene	14.59	3769346	14.644 ug/L		

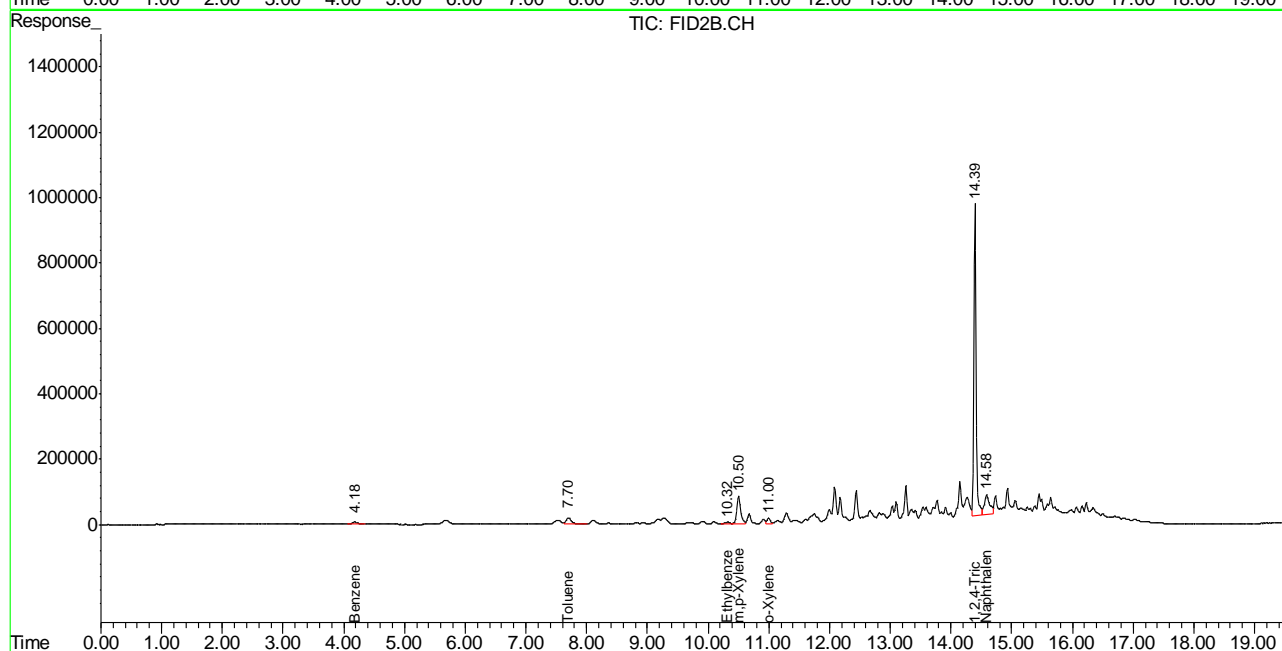
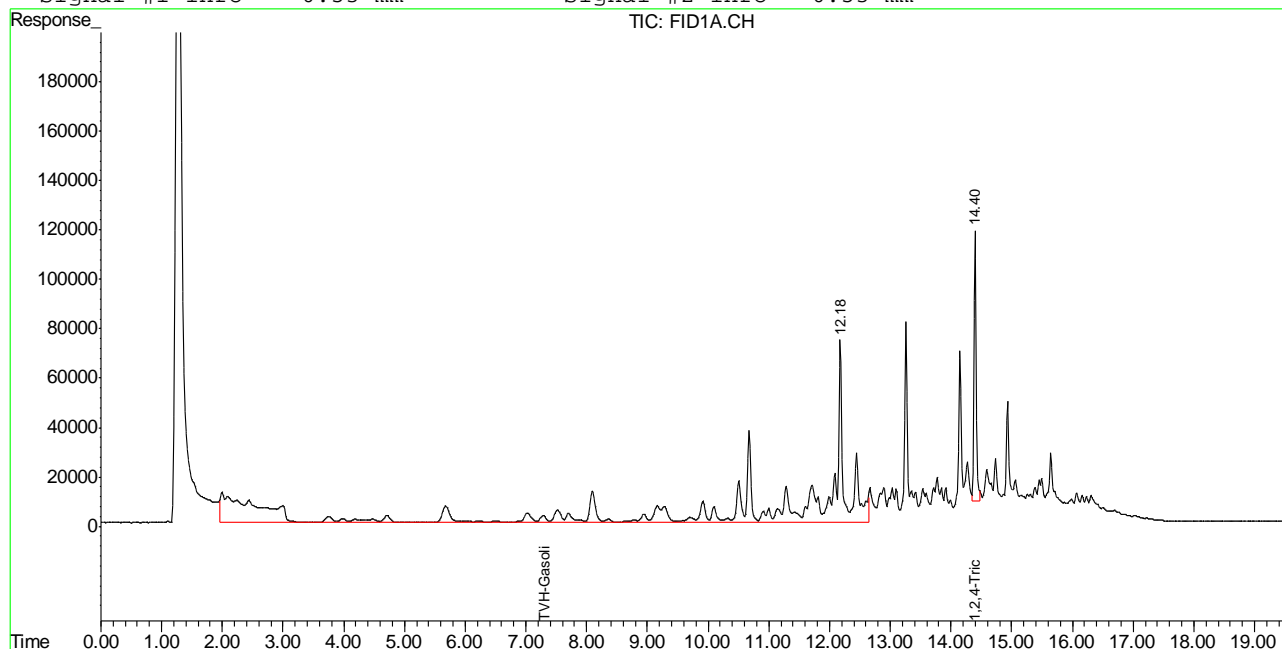
-----  
 (f)=RT Delta > 1/2 Window (m)=manual int.  
 GB14318.D TB791GB791SOIL.M Fri Dec 16 07:16:42 2011 GC

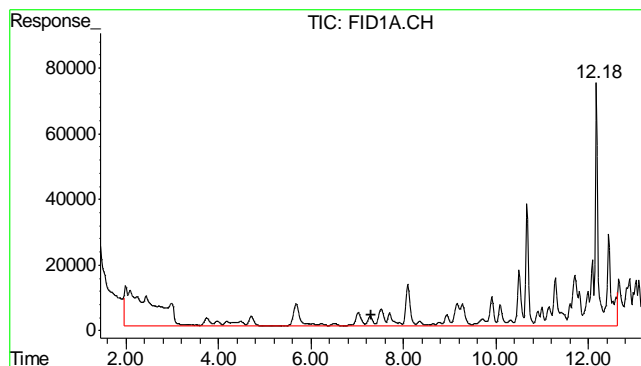
## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\121511\GB14318.D\FID1A.CH Vial: 8  
Signal #2 : Y:\1\DATA\121511\GB14318.D\FID2B.CH  
Acq On : 15 Dec 2011 8:05 pm Operator: StephK  
Sample : D30325-1, 50X Inst : GC/MS Ins  
Misc : GC2480,GGB808,5.019,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Dec 16 6:09 2011 Quant Results File: TB791GB791SOIL.RES

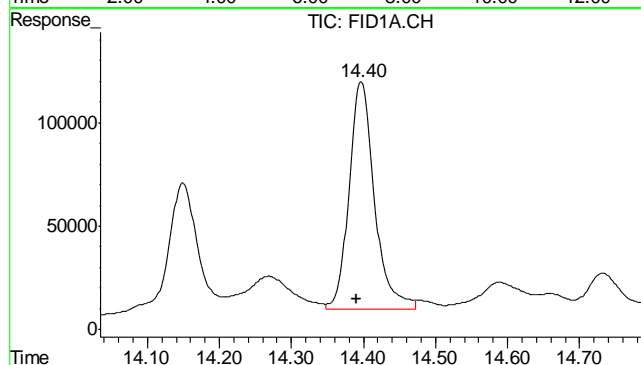
Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Fri Dec 16 07:05:51 2011  
Response via : Multiple Level Calibration  
DataAcq Meth : TVB4.M

Volume Inj. :  
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm

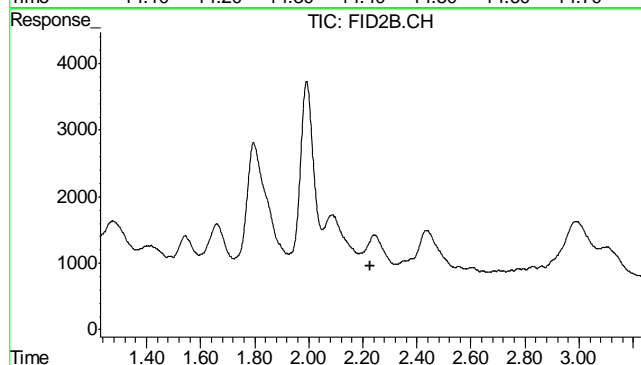




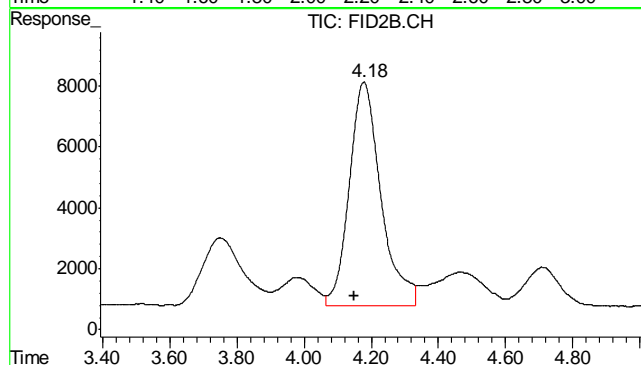
#1 TVH-Gasoline  
 R.T.: 7.315 min  
 Delta R.T.: 0.000 min  
 Response: 23273518  
 Conc: 0.33 mg/L m



#2 1,2,4-Trichlorobenzene  
 R.T.: 14.396 min  
 Delta R.T.: 0.005 min  
 Response: 2670125  
 Conc: 91.27 % m

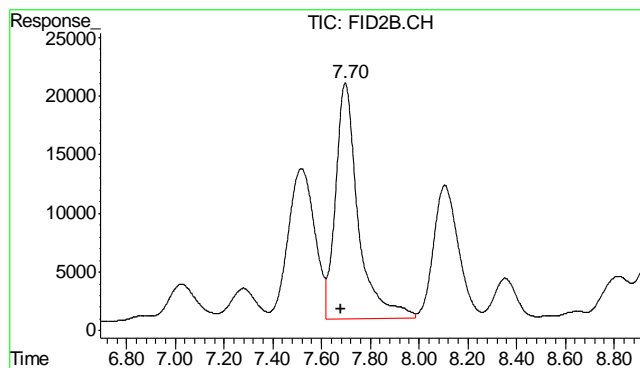


#4 Methyl-t-butyl-ether  
 R.T.: 0.000 min  
 Exp R.T.: 2.229 min  
 Response: 0  
 Conc: N.D.



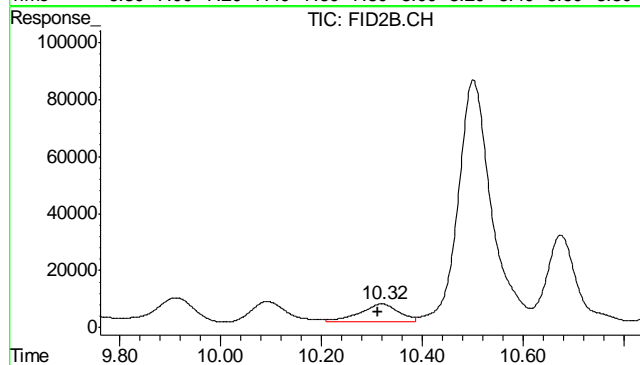
#5 Benzene  
 R.T.: 4.179 min  
 Delta R.T.: 0.028 min  
 Response: 483623  
 Conc: 0.85 ug/L

10.1.1  
 10



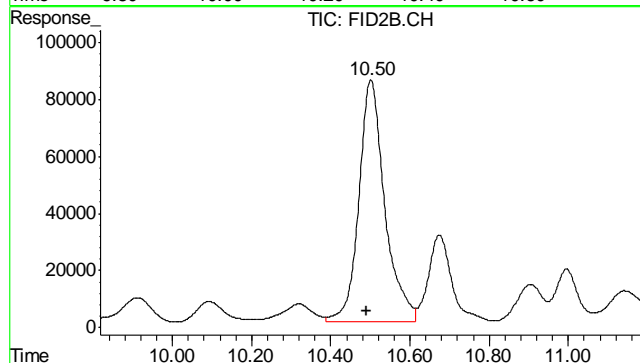
#6 Toluene

R.T.: 7.697 min  
Delta R.T.: 0.017 min  
Response: 1298194  
Conc: 2.29 ug/L



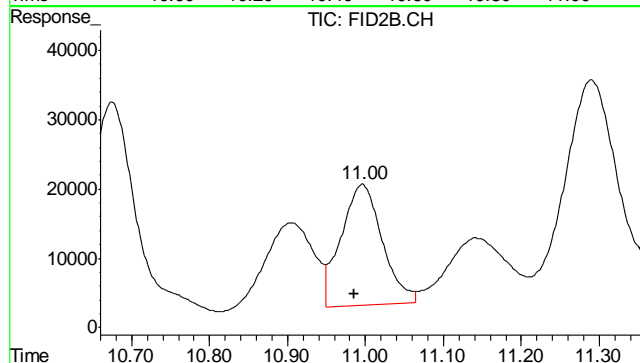
#7 Ethylbenzene

R.T.: 10.320 min  
Delta R.T.: 0.008 min  
Response: 335900  
Conc: 0.69 ug/L



#8 m,p-Xylene

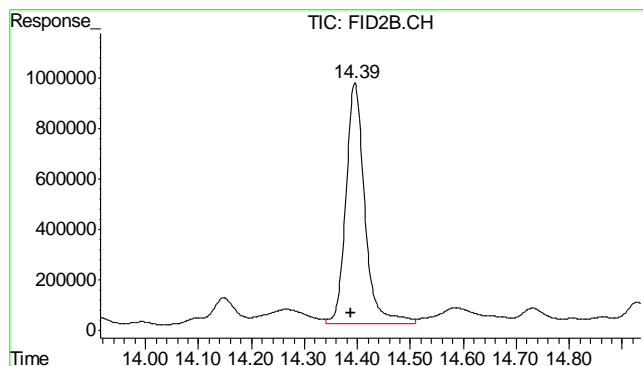
R.T.: 10.501 min  
Delta R.T.: 0.010 min  
Response: 3836204  
Conc: 6.45 ug/L



#9 o-Xylene

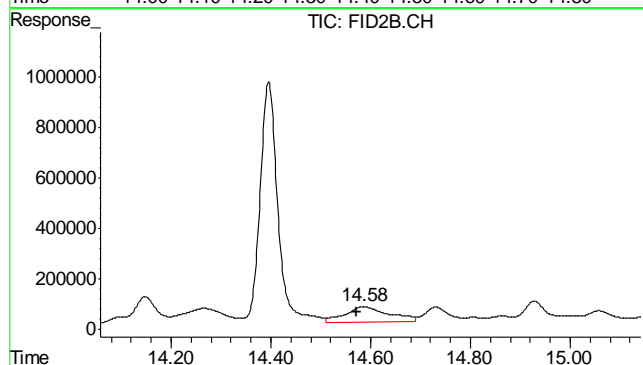
R.T.: 10.996 min  
Delta R.T.: 0.010 min  
Response: 643939  
Conc: 1.10 ug/L

10.1.1 10



#10 1,2,4-Trichlorobenzene (P)

R.T.: 14.396 min  
Delta R.T.: 0.007 min  
Response: 23565154  
Conc: 102.53 %



#11 Naphthalene

R.T.: 14.585 min  
Delta R.T.: 0.014 min  
Response: 3769346  
Conc: 14.64 ug/L

10.1.1  
10

## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\121511\GB14312.D\FID1A.CH Vial: 2  
 Signal #2 : Y:\1\DATA\121511\GB14312.D\FID2B.CH  
 Acq On : 15 Dec 2011 4:31 pm Operator: StephK  
 Sample : MB, S Inst : GC/MS Ins  
 Misc : GC2480,GGB808,5.000,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Dec 16 07:04:47 2011 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Fri Dec 16 07:04:29 2011  
 Response via : Initial Calibration  
 DataAcq Meth : TVB4.M

Volume Inj. :  
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm

	Compound	R.T.	Response	Conc	Units
-----					
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.40	2770757	94.710	%
10) S	1,2,4-Trichlorobenzene (P)	14.40	23369070	101.676	%
Target Compounds					
1) H	TVH-Gasoline	7.32	4987822	<MDL	mg/L
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T	Benzene	0.00	0	N.D.	ug/L d
6) T	Toluene	7.70	168640	0.298	ug/L
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	0.00	0	N.D.	ug/L d
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.58	485863	1.888	ug/L

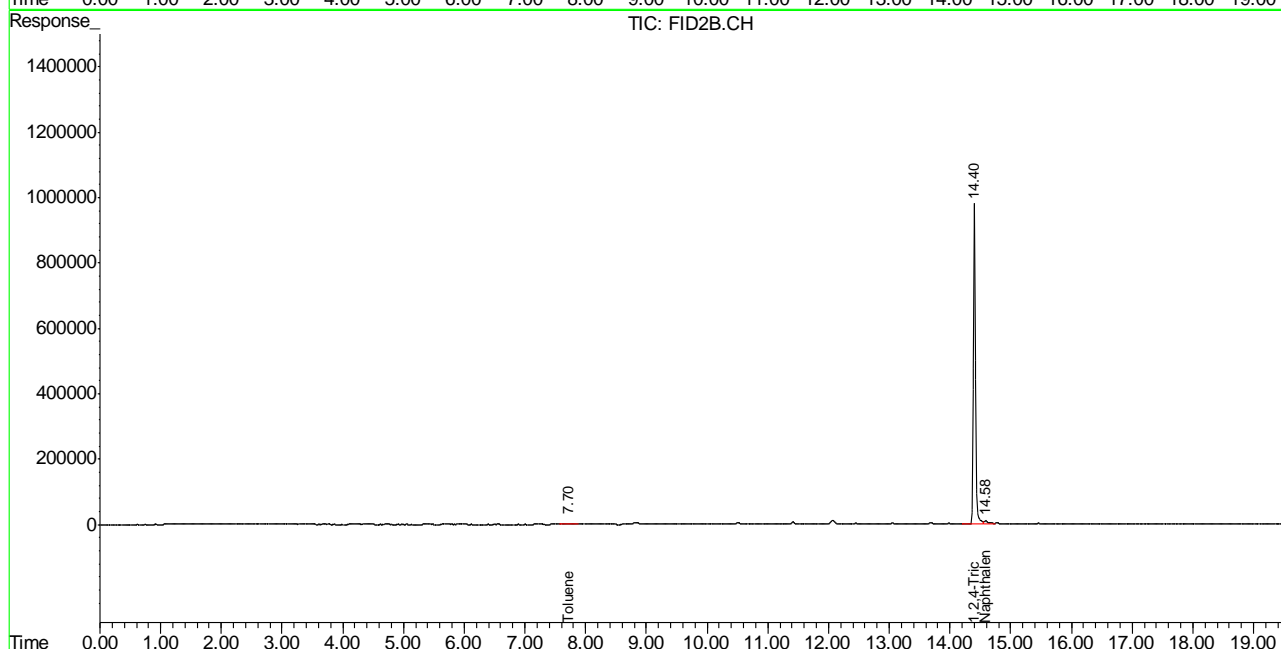
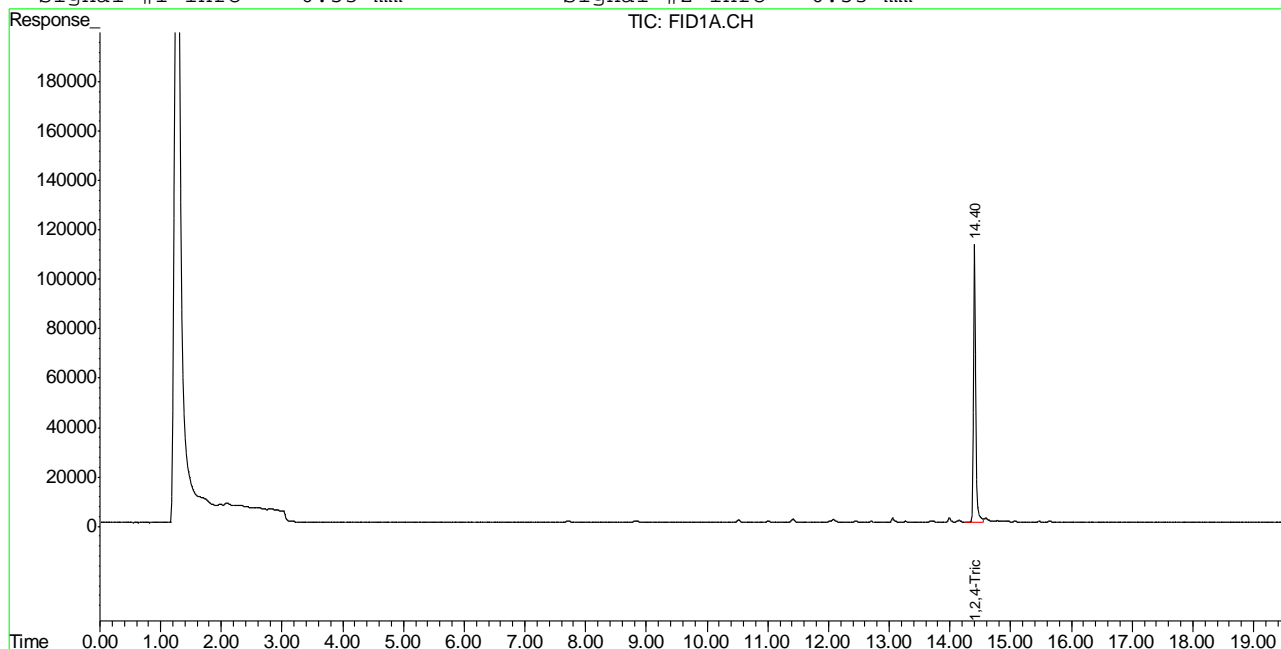
-----  
 (f)=RT Delta > 1/2 Window (m)=manual int.  
 GB14312.D TB791GB791SOIL.M Fri Dec 16 07:16:24 2011 GC

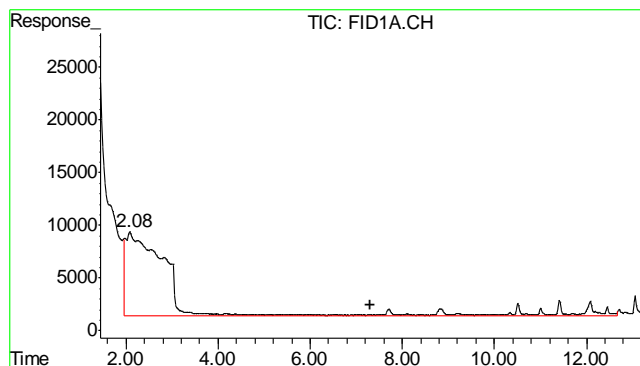
## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\121511\GB14312.D\FID1A.CH Vial: 2  
Signal #2 : Y:\1\DATA\121511\GB14312.D\FID2B.CH  
Acq On : 15 Dec 2011 4:31 pm Operator: StephK  
Sample : MB, S Inst : GC/MS Ins  
Misc : GC2480,GGB808,5.000,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Dec 16 6:07 2011 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Fri Dec 16 07:04:29 2011  
Response via : Multiple Level Calibration  
DataAcq Meth : TVB4.M

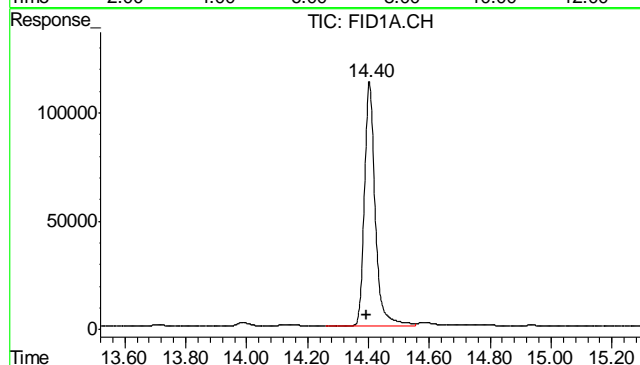
Volume Inj. :  
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





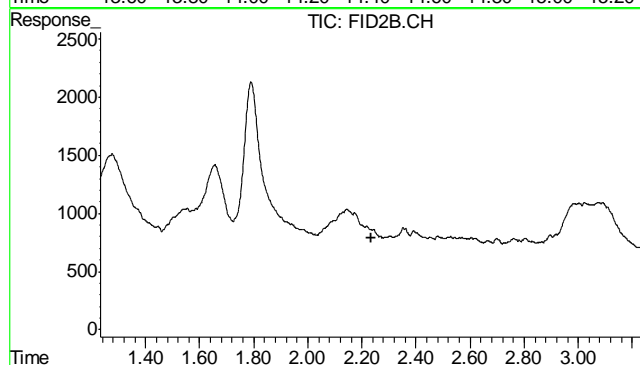
#1 TVH-Gasoline

R.T.: 7.315 min  
Delta R.T.: 0.000 min  
Response: 4987822  
Conc: N.D.



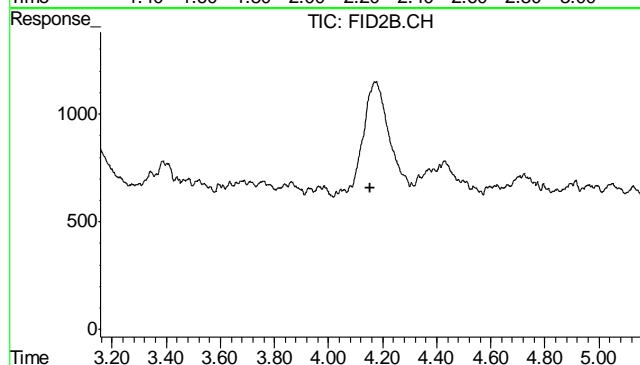
#2 1,2,4-Trichlorobenzene

R.T.: 14.404 min  
Delta R.T.: 0.010 min  
Response: 2770757  
Conc: 94.71 %



#4 Methyl-t-butyl-ether

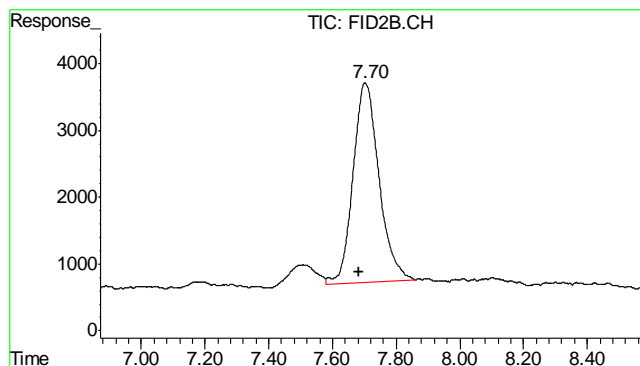
R.T.: 0.000 min  
Exp R.T.: 2.233 min  
Response: 0  
Conc: N.D.



#5 Benzene

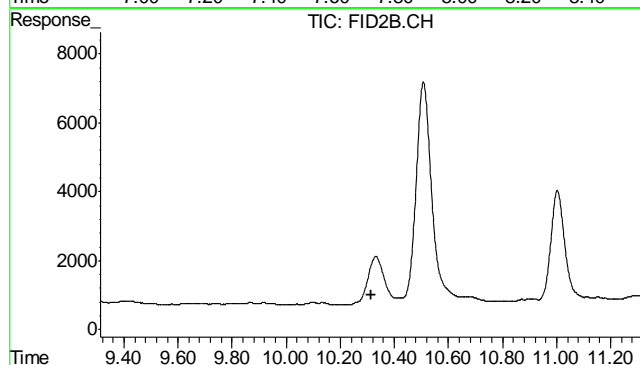
R.T.: 0.000 min  
Exp R.T.: 4.155 min  
Response: 0  
Conc: N.D.





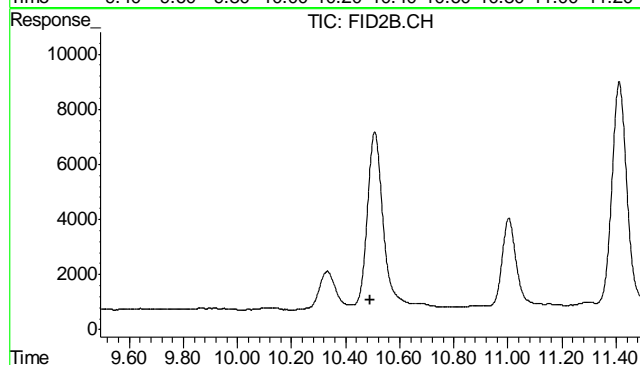
#6 Toluene

R.T.: 7.703 min  
Delta R.T.: 0.020 min  
Response: 168640  
Conc: 0.30 ug/L



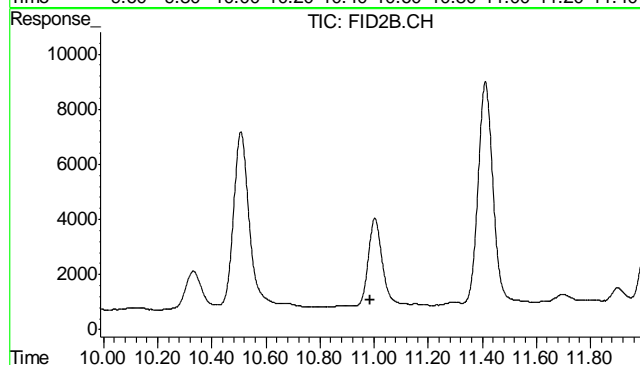
#7 Ethylbenzene

R.T.: 0.000 min  
Exp R.T.: 10.313 min  
Response: 0  
Conc: N.D.



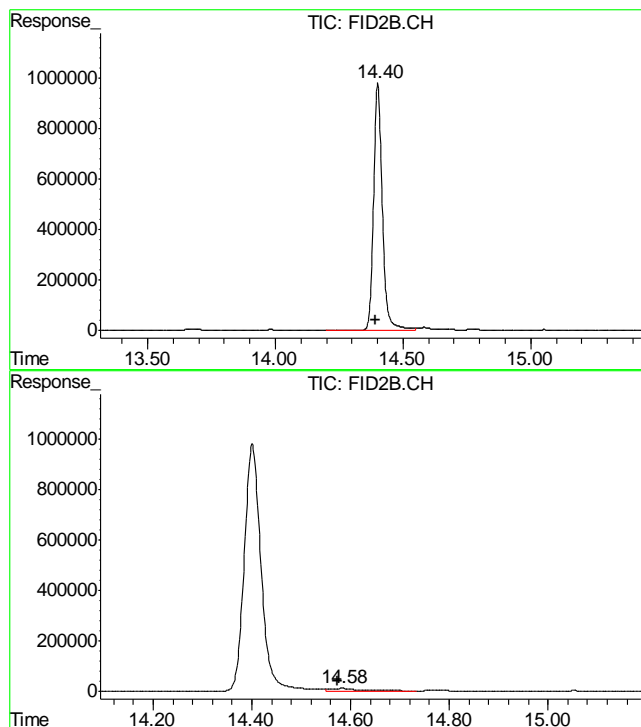
#8 m,p-Xylene

R.T.: 0.000 min  
Exp R.T.: 10.492 min  
Response: 0  
Conc: N.D.



#9 o-Xylene

R.T.: 0.000 min  
Exp R.T.: 10.987 min  
Response: 0  
Conc: N.D.



#10 1,2,4-Trichlorobenzene (P)

R.T.: 14.401 min  
Delta R.T.: 0.010 min  
Response: 23369070  
Conc: 101.68 %

#11 Naphthalene

R.T.: 14.583 min  
Delta R.T.: 0.010 min  
Response: 485863  
Conc: 1.89 ug/L

10.2.1  
10

## GC Semi-volatiles

### QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

**Method Blank Summary**

Page 1 of 1

**Job Number:** D30325**Account:** KRWCCOL KRW Consulting, Inc.**Project:** XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5019-MB	FD12322.D	1	12/15/11	TR	12/15/11	OP5019	GFD639

**The QC reported here applies to the following samples:****Method:** SW846-8015B

D30325-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	13	8.7	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	88% 43-136%

11.1.1  
11

Blank Spike Summary

Job Number: D30325  
Account: KRWCCOL KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5019-BS	FD12323.D	1	12/15/11	TR	12/15/11	OP5019	GFD639

The QC reported here applies to the following samples: Method: SW846-8015B

D30325-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	499	75	58-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	82%	43-136%

11.2.1  
11

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D30325  
Account: KRWCCOL KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5019-MS	FD12324.D	1	12/15/11	TR	12/15/11	OP5019	GFD639
OP5019-MSD	FD12325.D	1	12/15/11	TR	12/15/11	OP5019	GFD639
D30205-1	FD12326.D	1	12/15/11	TR	12/15/11	OP5019	GFD639

The QC reported here applies to the following samples: Method: SW846-8015B

D30325-1

CAS No.	Compound	D30205-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	251		788	803	70	762	65	5	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D30205-1	Limits
84-15-1	o-Terphenyl	75%	82%	83%	43-136%

11.3.1  
11

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2011\DEC\FD121511\FD12344.D Vial: 26  
Acq On : 16 Dec 2011 12:42 am Operator: TEDR  
Sample : D30325-1 Inst : FID5  
Misc : OP5019,GFD639,30.05,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Dec 16 08:26:31 2011 Quant Results File: GFD624.RES

Quant Method : C:\MSDCHEM\2\METHODS\GFD624.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Fri Dec 09 12:22:03 2011  
Response via : Initial Calibration  
DataAcq Meth : JH080911.M

Volume Inj. : 1ul  
Signal Phase : RTX-5  
Signal Info : 530um

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	9.62	35273809	789.957 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	7.42	87793781	2099.846 mg/L

12.1.1  
12

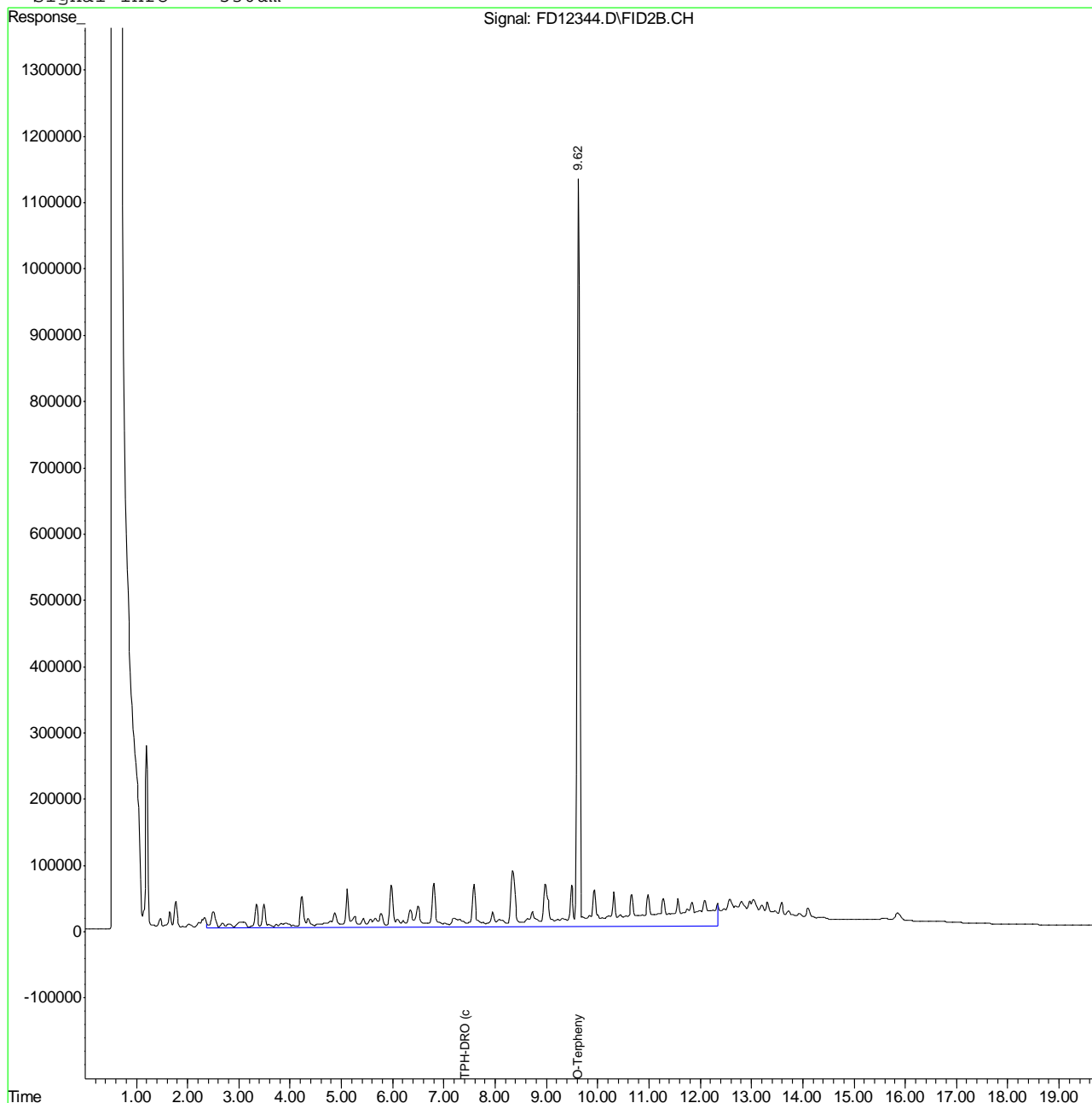


Quantitation Report (QT Reviewed)

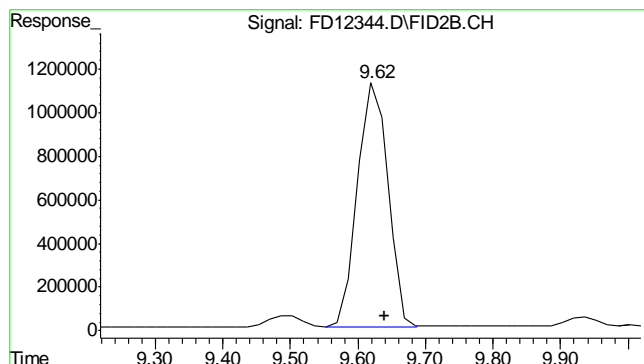
Data File : C:\MSDCHEM\2\DATA\2011\DEC\FD121511\FD12344.D Vial: 26  
 Acq On : 16 Dec 2011 12:42 am Operator: TEDR  
 Sample : D30325-1 Inst : FID5  
 Misc : OP5019,GFD639,30.05,,,2,1 Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Dec 16 8:27 2011 Quant Results File: GFD624.RES

Quant Method : C:\MSDCHEM\2\METHODS\GFD624.M (Chemstation Integrator)  
 Title : 8015B TEH  
 Last Update : Fri Dec 09 12:22:03 2011  
 Response via : Multiple Level Calibration  
 DataAcq Meth : JH080911.M

Volume Inj. : 1ul  
 Signal Phase : RTX-5  
 Signal Info : 530um

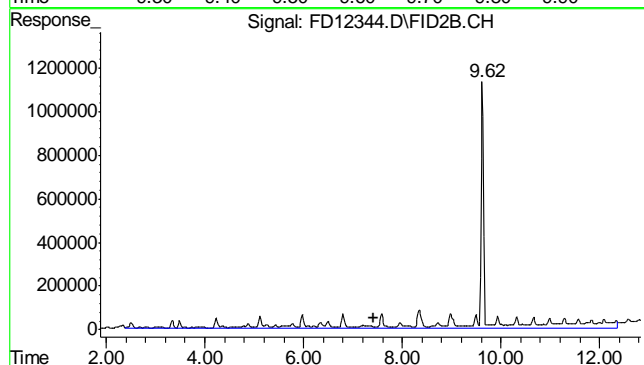


12.1.1  
12



#1 O-Terphenyl

R.T.: 9.622 min  
 Delta R.T.: -0.018 min  
 Response: 35273809  
 Conc: 789.96 mg/L m



#2 TPH-DRO (c10-c28)

R.T.: 7.420 min  
 Delta R.T.: 0.000 min  
 Response: 87793781  
 Conc: 2099.85 mg/L m

12.1.1  
**12**

Judy Melson  
12/16/11 11:58

## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2011\DEC\FD121511\FD12322.D Vial: 4  
Acq On : 12-15-2011 03:18:33 PM Operator: TEDR  
Sample : OP5019-MB Inst : FID5  
Misc : OP5019,GFD639,30.00,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Dec 15 16:14:46 2011 Quant Results File: GFD624.RES

Quant Method : C:\MSDCHEM\2\METHODS\GFD624.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Fri Dec 09 12:22:03 2011  
Response via : Initial Calibration  
DataAcq Meth : JH080911.M

Volume Inj. : 1ul  
Signal Phase : RTX-5  
Signal Info : 530um

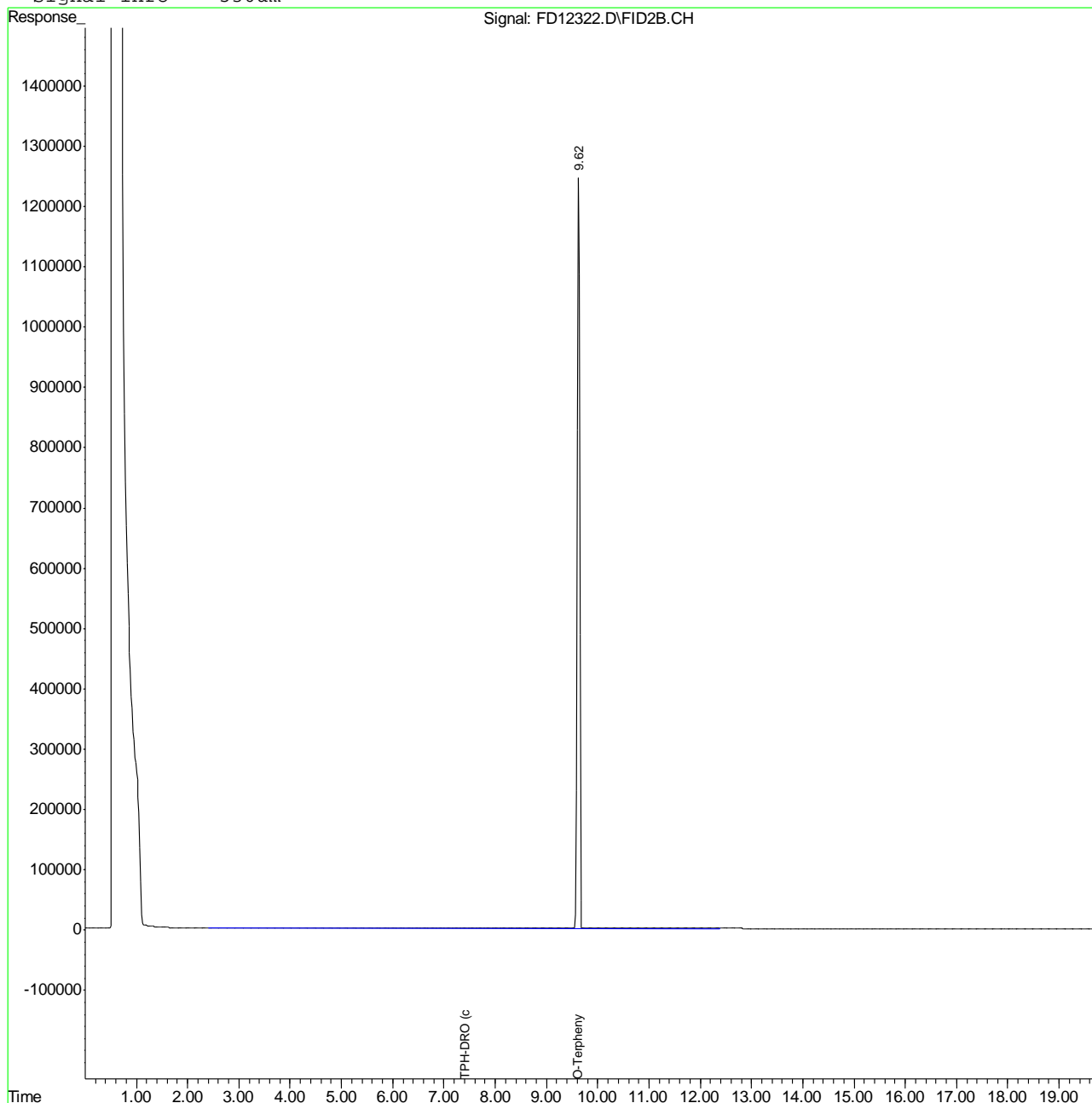
Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	9.62	39403571	882.443 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	7.42	3372980	80.675 mg/L

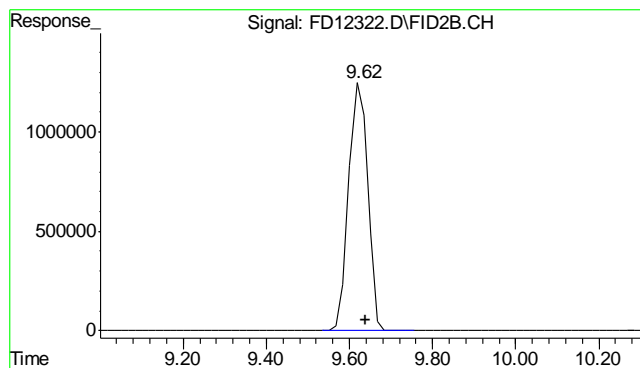
## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2011\DEC\FD121511\FD12322.D Vial: 4  
Acq On : 12-15-2011 03:18:33 PM Operator: TEDR  
Sample : OP5019-MB Inst : FID5  
Misc : OP5019,GFD639,30.00,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Dec 15 16:15 2011 Quant Results File: GFD624.RES

Quant Method : C:\MSDCHEM\2\METHODS\GFD624.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Fri Dec 09 12:22:03 2011  
Response via : Multiple Level Calibration  
DataAcq Meth : JH080911.M

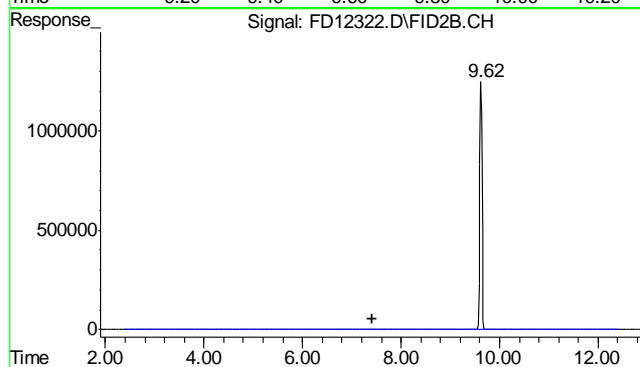
Volume Inj. : 1ul  
Signal Phase : RTX-5  
Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.622 min  
Delta R.T.: -0.018 min  
Response: 39403571  
Conc: 882.44 mg/L m



#2 TPH-DRO (c10-c28)

R.T.: 7.420 min  
Delta R.T.: 0.000 min  
Response: 3372980  
Conc: 80.67 mg/L m

12.2.1  
12

## Metals Analysis

### QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6490  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 12/15/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.59	.59		
Antimony	3.0	.31	.31		
Arsenic	2.5	.59	.59		
Barium	1.0	.11	.11	0.040	<1.0
Beryllium	1.0	.044	.1		
Boron	5.0	.48	.48		
Cadmium	1.0	.027	.27	0.020	<1.0
Calcium	40	.96	1.1		
Chromium	1.0	.018	.031	0.020	<1.0
Cobalt	0.50	.035	.035		
Copper	1.0	.085	.16	0.060	<1.0
Iron	7.0	.34	2		
Lead	5.0	.16	.21	0.23	<5.0
Lithium	0.20	.028	.031		
Magnesium	20	.58	1.4		
Manganese	0.50	.0053	.012		
Molybdenum	1.0	.045	.054		
Nickel	3.0	.043	.099	-0.010	<3.0
Phosphorus	10	1.1	1.2		
Potassium	200	5.5	9.2		
Selenium	5.0	.38	.5	-0.34	<5.0
Silicon	5.0	.38	.51		
Silver	3.0	.018	.051	-0.040	<3.0
Sodium	40	11	11		
Strontium	5.0		.017		
Thallium	1.0	.29	.34		
Tin	5.0	.55	1.3		
Titanium	1.0	.011	.1		
Uranium	5.0	.15	.2		
Vanadium	1.0	.016	.025		
Zinc	3.0	.028	.06	0.34	<3.0

Associated samples MP6490: D30325-1

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6490  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

13.1.1

13



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6490  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 12/15/11

Metal	D30323-3 Original MS		SpikeLot MPICPALL % Rec		QC Limits
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	171	380	236	88.7	75-125
Beryllium	anr				
Boron					
Cadmium	0.17	51.3	58.9	86.8	75-125
Calcium					
Chromium	45.9	95.4	58.9	84.0	75-125
Cobalt					
Copper	12.7	66.7	58.9	91.6	75-125
Iron	anr				
Lead	15.0	114	118	84.0	75-125
Lithium					
Magnesium	anr				
Manganese	anr				
Molybdenum	anr				
Nickel	17.4	64.5	58.9	79.9	75-125
Phosphorus	anr				
Potassium					
Selenium	1.7	103	118	85.9	75-125
Silicon					
Silver	0.0	20.9	23.6	88.7	75-125
Sodium					
Strontium					
Thallium	anr				
Tin					
Titanium					
Uranium	anr				
Vanadium					
Zinc	48.1	94.0	58.9	77.9	75-125

Associated samples MP6490: D30325-1

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6490  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested

13.1.2  
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6490  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 12/15/11

Metal	D30323-3 Original	MSD	Spikelot MPICPALL	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	171	370	233	85.3	2.7	20
Beryllium	anr					
Boron						
Cadmium	0.17	49.0	58.3	83.7	4.6	20
Calcium						
Chromium	45.9	91.3	58.3	77.8	4.4	20
Cobalt						
Copper	12.7	63.7	58.3	87.4	4.6	20
Iron	anr					
Lead	15.0	110	117	81.4	3.6	20
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum	anr					
Nickel	17.4	61.8	58.3	76.1	4.3	20
Phosphorus	anr					
Potassium						
Selenium	1.7	97.4	117	82.0	5.6	20
Silicon						
Silver	0.0	20.0	23.3	85.7	4.4	20
Sodium						
Strontium						
Thallium	anr					
Tin						
Titanium						
Uranium	anr					
Vanadium						
Zinc	48.1	91.3	58.3	74.0N(a)	2.9	20

Associated samples MP6490: D30325-1

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6490  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested  
(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30325  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6490  
 Matrix Type: SOLID

Methods: SW846 6010B  
 Units: mg/kg

Prep Date: 12/15/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	179	200	89.5	80-120
Beryllium	anr			
Boron				
Cadmium	44.7	50	89.4	80-120
Calcium				
Chromium	46.1	50	92.2	80-120
Cobalt				
Copper	44.8	50	89.6	80-120
Iron	anr			
Lead	91.7	100	91.7	80-120
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	44.1	50	88.2	80-120
Phosphorus	anr			
Potassium				
Selenium	90.8	100	90.8	80-120
Silicon				
Silver	18.5	20	92.5	80-120
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium	anr			
Vanadium				
Zinc	44.5	50	89.0	80-120

Associated samples MP6490: D30325-1

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

13.1.3  
13

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6490  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

# SERIAL DILUTION RESULTS SUMMARY

Login Number: D30325  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6490  
 Matrix Type: SOLID

Methods: SW846 6010B  
 Units: ug/l

Prep Date: 12/15/11

Metal	D30323-3 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	1500	1680	11.8*(a)	0-10
Beryllium	anr			
Boron				
Cadmium	1.50	0.00	100.0(b)	0-10
Calcium				
Chromium	401	450	12.1*(a)	0-10
Cobalt				
Copper	111	106	4.5	0-10
Iron	anr			
Lead	131	145	10.1*(a)	0-10
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	152	181	18.5*(a)	0-10
Phosphorus	anr			
Potassium				
Selenium	14.9	0.00	100.0(b)	0-10
Silicon				
Silver	0.00	2.00		0-10
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium	anr			
Vanadium				
Zinc	420	513	22.1*(a)	0-10

Associated samples MP6490: D30325-1

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6490  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: ug/l

Prep Date:

Metal

- (anr) Analyte not requested  
(a) Serial dilution indicates possible matrix interference.  
(b) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).



BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6491  
Matrix Type: SOLID

Methods: SW846 6020  
Units: mg/kg

Prep Date: 12/15/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.14	1.2		
Antimony	0.20	.001	.0095		
Arsenic	0.40	.049	.22	0.14	<0.40
Barium	1.0	.0035	.1		
Beryllium	0.10	.0075	.014		
Boron	20	.97	1		
Cadmium	0.050	.023	.048		
Calcium	200	1.8	8.2		
Chromium	1.0	.021	.24		
Cobalt	0.10	.0033	.003		
Copper	1.0	.011	.063		
Iron	20	.81	3.7		
Lead	0.25	.0012	.015		
Magnesium	50	.067	2.6		
Manganese	0.50	.007	.029		
Molybdenum	0.50	.0044	.023		
Nickel	1.0	.0029	.031		
Phosphorus	30	1.8	3.5		
Potassium	100	2	3.2		
Selenium	0.20	.075	.19		
Silver	0.050	.0008	.002		
Sodium	250	.8	4.4		
Strontium	10	.004	.04		
Thallium	0.10	.015	.02		
Tin	5.0	.006	.028		
Titanium	1.0	.035	.062		
Uranium	0.25	.00038	.0009		
Vanadium	2.0	.052	.29		
Zinc	5.0	.039	.12		

Associated samples MP6491: D30325-1

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6491  
Matrix Type: SOLID

Methods: SW846 6020  
Units: mg/kg

Prep Date: 12/15/11

Metal	D30323-3 Original MS		Spikelot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic	4.8	120	118	97.7	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6491: D30325-1

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30325  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6491  
 Matrix Type: SOLID

Methods: SW846 6020  
 Units: mg/kg

Prep Date: 12/15/11

Metal	D30323-3 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	4.8	118	117	97.0	1.7	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP6491: D30325-1

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits  
 (N) Matrix Spike Rec. outside of QC limits  
 (anr) Analyte not requested

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6491  
Matrix Type: SOLID

Methods: SW846 6020  
Units: mg/kg

Prep Date: 12/15/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	95.4	100	95.4	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6491: D30325-1

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested

13.2.3  
13

# SERIAL DILUTION RESULTS SUMMARY

Login Number: D30325  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6491  
 Matrix Type: SOLID

Methods: SW846 6020  
 Units: ug/l

Prep Date: 12/15/11

Metal	D30323-3			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	41.7	38.5	7.7	0-10	
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6491: D30325-1

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits  
 (anr) Analyte not requested

13.2.4  
13

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6492  
Matrix Type: SOLID

Methods: SW846 7471A  
Units: mg/kg

Prep Date: 12/16/11

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.013	0.0016	<0.10

Associated samples MP6492: D30325-1

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30325  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6492  
 Matrix Type: SOLID

Methods: SW846 7471A  
 Units: mg/kg

Prep Date: 12/16/11

Metal	D30323-3		Spikelot		QC	
	Original	MS	HGWSR1	% Rec	Limits	
Mercury	0.0090	0.43	0.476	88.4	85-115	

Associated samples MP6492: D30325-1

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits  
 (N) Matrix Spike Rec. outside of QC limits  
 (anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30325  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6492  
 Matrix Type: SOLID

Methods: SW846 7471A  
 Units: mg/kg

Prep Date: 12/16/11

Metal	D30323-3 Original MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.0090	0.43	0.497	84.8N(a) 0.0	20

Associated samples MP6492: D30325-1

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.



SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30325  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6492  
 Matrix Type: SOLID

Methods: SW846 7471A  
 Units: mg/kg

Prep Date: 12/16/11

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.41	0.4	102.5	80-120

Associated samples MP6492: D30325-1

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits  
 (anr) Analyte not requested

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6499  
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60  
Units: ug/l

Prep Date: 12/16/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	30	30		
Antimony	150	16	16		
Arsenic	130	30	30		
Barium	50	5.5	5.5		
Beryllium	50	2.2	2.5		
Boron	250	24	24		
Cadmium	50	1.4	1.4		
Calcium	2000	48	75	30.5	<2000
Chromium	50	.9	4		
Cobalt	25	1.8	1.8		
Copper	50	4.3	14		
Iron	350	17	65		
Lead	250	8	11		
Lithium	10	1.4	6		
Magnesium	1000	29	50	-7.5	<1000
Manganese	25	.27	1.6		
Molybdenum	50	2.3	4.4		
Nickel	150	2.2	5		
Phosphorus	500	55	100		
Potassium	5000	280	280		
Selenium	250	19	19		
Silicon	250	19	19		
Silver	150	.9	1.6		
Sodium	2000	570	570	38.5	<2000
Strontium	25		1.3		
Thallium	50	15	15		
Tin	250	28	50		
Titanium	50	.55	1.6		
Uranium	250	7.5	18		
Vanadium	50	.8	1.1		
Zinc	150	1.4	9		

Associated samples MP6499: D30325-1A

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6499  
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

13.4.1

13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30325  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6499  
 Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60  
 Units: ug/l

Prep Date: 12/16/11

Metal	D30364-3A Original MS		Spikelot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	62400	196000	125000	106.9	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	21400	147000	125000	100.5	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	288000	405000	125000	93.6	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6499: D30325-1A

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

13.4.2  
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6499  
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60  
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested

13.4.2  
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30325  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6499  
 Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60  
 Units: ug/l

Prep Date: 12/16/11

	D30364-3A		Spikelot		MSD	QC
Metal	Original MSD		MPICPAL	% Rec	RPD	Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	62400	198000	125000	108.5	1.0	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	21400	146000	125000	99.7	0.7	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	288000	409000	125000	96.8	1.0	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP6499: D30325-1A

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

13.4.2  
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6499  
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60  
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested

13.4.2  
13

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30325  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM PCU T35X-2G

QC Batch ID: MP6499  
 Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60  
 Units: ug/l

Prep Date: 12/16/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	136000	125000	108.8	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	125000	125000	100.0	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	124000	125000	99.2	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6499: D30325-1A

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

13.4.3  
13



SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

QC Batch ID: MP6499  
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

## General Chemistry

### QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Specific Conductivity	GP6154/GN12960			umhos/cm	10008	10100	100.4	90-110%
pH	GN12910			su	8.00	7.97	99.6	99.3-100.7%

Associated Samples:  
Batch GN12910: D30325-1  
Batch GP6154: D30325-1  
(\*) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D30325  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM PCU T35X-2G

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Redox Potential Vs H2	GN12915	D30325-1	mv	220	227	3.1	0-20%

Associated Samples:  
Batch GN12915: D30325-1  
(\*) Outside of QC limits

14.2  
14

## Misc. Forms

### Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

---

Includes the following where applicable:

- Chain of Custody



# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D30325

Client: AMS

Immediate Client Services Action Required: No

Date / Time Received: 12/16/2011

Delivery Method:

Client Service Action Required at Login: No

Project:

No. Coolers: 1

Airbill #'s:

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:			Infrared gun
3. Cooler media:			Ice (bag)

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:			Intact

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

## General Chemistry

### QC Data Summaries

(Accutest Labs of New England, Inc.)

---

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries



METHOD BLANK AND SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D30325  
Account: ALMS - Accutest Mountain States  
Project: KRWCCOL: XOM PCU T35X-2G

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP13932/GN37265	0.40	0.0	mg/kg	40	42.0	105.0	80-120%
Chromium, Hexavalent	GP13932/GN37265			mg/kg	1290	1340	103.9	80-120%

Associated Samples:  
Batch GP13932: D30325-1  
(\*) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D30325  
Account: ALMS - Accutest Mountain States  
Project: KRWCCOL: XOM PCU T35X-2G

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP13932/GN37265	D30414-3	mg/kg	0.23	0.26	12.2	0-20%

Associated Samples:  
Batch GP13932: D30325-1  
(\*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D30325  
Account: ALMS - Accutest Mountain States  
Project: KRWCCOL: XOM PCU T35X-2G

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP13932/GN37265	D30414-3	mg/kg	0.23	46.2	46.9	101.0	75-125%
Chromium, Hexavalent	GP13932/GN37265	D30414-3	mg/kg	0.23	1150	1320	115.0	75-125%

Associated Samples:  
Batch GP13932: D30325-1  
(\*) Outside of QC limits  
(N) Matrix Spike Rec. outside of QC limits