



05/24/12

## Technical Report for

**XTO Energy**

**PCU T31-19G**

**W Partially Barred Tank**

**Accutest Job Number: D34583**

**Sampling Date: 05/15/12**

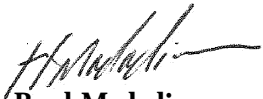
### Report to:

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

**Total number of pages in report: 160**



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: Renea Jackson 303-425-6021**

Certifications: CO, ID, NE, NM, ND (R-027) (PW), UT (NELAP CO00049), TX (T104704511-12-1)

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>8</b>
<b>3.1: D34583-1: PCUT31-19G W PIT TANK .....</b>	<b>9</b>
<b>3.2: D34583-1A: PCUT31-19G W PIT TANK .....</b>	<b>15</b>
<b>Section 4: Misc. Forms .....</b>	<b>17</b>
<b>4.1: Chain of Custody .....</b>	<b>18</b>
<b>Section 5: GC/MS Volatiles - QC Data Summaries .....</b>	<b>20</b>
<b>5.1: Method Blank Summary .....</b>	<b>21</b>
<b>5.2: Blank Spike Summary .....</b>	<b>22</b>
<b>5.3: Matrix Spike/Matrix Spike Duplicate Summary .....</b>	<b>23</b>
<b>Section 6: GC/MS Volatiles - Raw Data .....</b>	<b>24</b>
<b>6.1: Samples .....</b>	<b>25</b>
<b>6.2: Method Blanks .....</b>	<b>35</b>
<b>Section 7: GC/MS Semi-volatiles - QC Data Summaries .....</b>	<b>46</b>
<b>7.1: Method Blank Summary .....</b>	<b>47</b>
<b>7.2: Blank Spike Summary .....</b>	<b>48</b>
<b>7.3: Matrix Spike/Matrix Spike Duplicate Summary .....</b>	<b>49</b>
<b>Section 8: GC/MS Semi-volatiles - Raw Data .....</b>	<b>50</b>
<b>8.1: Samples .....</b>	<b>51</b>
<b>8.2: Method Blanks .....</b>	<b>85</b>
<b>Section 9: GC Volatiles - QC Data Summaries .....</b>	<b>102</b>
<b>9.1: Method Blank Summary .....</b>	<b>103</b>
<b>9.2: Blank Spike Summary .....</b>	<b>104</b>
<b>9.3: Matrix Spike/Matrix Spike Duplicate Summary .....</b>	<b>105</b>
<b>Section 10: GC Volatiles - Raw Data .....</b>	<b>106</b>
<b>10.1: Samples .....</b>	<b>107</b>
<b>10.2: Method Blanks .....</b>	<b>112</b>
<b>Section 11: GC Semi-volatiles - QC Data Summaries .....</b>	<b>117</b>
<b>11.1: Method Blank Summary .....</b>	<b>118</b>
<b>11.2: Blank Spike Summary .....</b>	<b>119</b>
<b>11.3: Matrix Spike/Matrix Spike Duplicate Summary .....</b>	<b>120</b>
<b>Section 12: GC Semi-volatiles - Raw Data .....</b>	<b>121</b>
<b>12.1: Samples .....</b>	<b>122</b>
<b>12.2: Method Blanks .....</b>	<b>125</b>
<b>Section 13: Metals Analysis - QC Data Summaries .....</b>	<b>128</b>
<b>13.1: Prep QC MP7495: Ba,Cd,Cr,Cu,Pb,Ni,Se,Ag,Zn .....</b>	<b>129</b>
<b>13.2: Prep QC MP7496: As .....</b>	<b>139</b>
<b>13.3: Prep QC MP7498: Ca,Mg,Na,Sodium Adsorption Ratio .....</b>	<b>144</b>
<b>13.4: Prep QC MP7501: Hg .....</b>	<b>152</b>
<b>Section 14: General Chemistry - QC Data Summaries .....</b>	<b>156</b>
<b>14.1: Method Blank and Spike Results Summary .....</b>	<b>157</b>

# Table of Contents

Sections:

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

-2-

14.2: Duplicate Results Summary .....	158
14.3: Matrix Spike Results Summary .....	159
14.4: Matrix Spike Duplicate Results Summary .....	160



Sample Summary

XTO Energy

Job No: D34583

PCU T31-19G

Project No: W Partially Barred Tank

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D34583-1	05/15/12	15:30	JD	05/17/12	SO	Soil	PCUT31-19G W PIT TANK
D34583-1A	05/15/12	15:30	JD	05/17/12	SO	Soil	PCUT31-19G W PIT TANK

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



## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** XTO Energy

**Job No** D34583

**Site:** PCU T31-19G

**Report Date** 5/24/2012 1:55:48 PM

On 05/17/2012, 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 D34583 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:** V5V1293

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34545-1MS, D34545-1MSD were used as the QC samples indicated.

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

**Matrix** SO

**Batch ID:** OP5918

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34638-1MS, D34638-1MSD were used as the QC samples indicated.
- D34583-1: Dilution required due to matrix interference; extract was viscous.

### Volatiles by GC By Method SW846 8015B

**Matrix** SO

**Batch ID:** GGB894

- All samples were analyzed within the recommended method holding time.
- Sample(s) D34664-1MS, D34664-1MSD 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:** OP5909

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D34531-2MS, D34531-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Metals By Method SW846 6010C

**Matrix** AQ

**Batch ID:** MP7498

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34544-1AMS, D34544-1AMSD were used as the QC samples for the metals analysis.

**Matrix** SO

**Batch ID:** MP7495

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34534-1MSD, D34534-1SDL, D34534-1MS, D34534-1MSD 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 matrix spike (MS) recovery(s) of Barium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The serial dilution RPD(s) for Lead, Zinc are outside control limits for sample MP7495-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP7495-SD1 for Zinc: Serial dilution indicates possible matrix interference.

## Metals By Method SW846 6020A

**Matrix** SO

**Batch ID:** MP7496

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34534-1MS, D34534-1MSD, D34534-1SDL were used as the QC samples for the metals analysis.

## Metals By Method SW846 7471B

**Matrix** SO

**Batch ID:** MP7501

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34534-1MS, D34534-1MSD were used as the QC samples for the metals analysis.

## Wet Chemistry By Method ASTM D1498-76M

**Matrix** SO

**Batch ID:** GN15042

- Sample(s) D34340-5DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

## Wet Chemistry By Method DEPT.OF AG, BOOK N9

**Matrix** SO

**Batch ID:** GP7258

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method SM19 2540B M

**Matrix** SO

**Batch ID:** GN15015

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

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

**Matrix** SO

**Batch ID:** R12785

- The data for SW846 3060/7196A M meets quality control requirements.
- D34583-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

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

**Matrix** SO

**Batch ID:** GP7264

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34638-1DUP, D34638-1MS, D34638-1MSD were used as the QC samples for the Chromium, Hexavalent analysis.

### Wet Chemistry By Method SW846 9045C

**Matrix** SO

**Batch ID:** GN15040

- The following samples were run outside of holding time for method SW846 9045C: D34583-1

### Wet Chemistry By Method USDA HANDBOOK 60

**Matrix** SO

**Batch ID:** MP7498

- D34583-1A 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 Results

### Report of Analysis



Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	PCUT31-19G W PIT TANK	<b>Date Sampled:</b>	05/15/12
<b>Lab Sample ID:</b>	D34583-1	<b>Date Received:</b>	05/17/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	80.9
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	PCU T31-19G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V21286.D	1	05/17/12	BD	n/a	n/a	V5V1293
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.09 g	5.0 ml	100 ul
Run #2			

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.072	0.028	mg/kg	
108-88-3	Toluene	ND	0.14	0.072	mg/kg	
100-41-4	Ethylbenzene	ND	0.14	0.028	mg/kg	
1330-20-7	Xylene (total)	ND	0.29	0.14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	89%		61-130%
460-00-4	4-Bromofluorobenzene	97%		53-131%
17060-07-0	1,2-Dichloroethane-D4	83%		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

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	PCUT31-19G W PIT TANK	<b>Date Sampled:</b>	05/15/12
<b>Lab Sample ID:</b>	D34583-1	<b>Date Received:</b>	05/17/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	80.9
<b>Method:</b>	SW846 8270C BY SIM SW846 3546		
<b>Project:</b>	PCU T31-19G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G09360.D	1	05/22/12	DC	05/20/12	OP5918	E3G407
Run #2 <sup>a</sup>	3G09357.D	4	05/22/12	DC	05/20/12	OP5918	E3G407

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

## COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.010	0.0053	mg/kg	
120-12-7	Anthracene	ND	0.010	0.0053	mg/kg	
56-55-3	Benzo(a)anthracene	ND <sup>b</sup>	0.041	0.021	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.010	0.0053	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.010	0.0053	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.010	0.0053	mg/kg	
218-01-9	Chrysene	ND <sup>b</sup>	0.041	0.021	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.010	0.0053	mg/kg	
206-44-0	Fluoranthene	ND	0.010	0.0053	mg/kg	
86-73-7	Fluorene	ND	0.010	0.0053	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.010	0.0053	mg/kg	
91-20-3	Naphthalene	ND	0.014	0.013	mg/kg	
129-00-0	Pyrene	ND <sup>b</sup>	0.041	0.021	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	41%	41%	10-145%
321-60-8	2-Fluorobiphenyl	58%	55%	10-130%
1718-51-0	Terphenyl-d14	83%	88%	22-130%

(a) Dilution required due to matrix interference; extract was viscous.

(b) Result is from Run# 2

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>	PCUT31-19G W PIT TANK			<b>Date Sampled:</b>	05/15/12
<b>Lab Sample ID:</b>	D34583-1			<b>Date Received:</b>	05/17/12
<b>Matrix:</b>	SO - Soil			<b>Percent Solids:</b>	80.9
<b>Method:</b>	SW846 8015B				
<b>Project:</b>	PCU T31-19G				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB16052.D	1	05/18/12	SK	n/a	n/a	GGB894
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.1 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	14	7.2	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	81%		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>	PCUT31-19G W PIT TANK			<b>Date Sampled:</b>	05/15/12
<b>Lab Sample ID:</b>	D34583-1			<b>Date Received:</b>	05/17/12
<b>Matrix:</b>	SO - Soil			<b>Percent Solids:</b>	80.9
<b>Method:</b>	SW846-8015B SW846 3546				
<b>Project:</b>	PCU T31-19G				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH004581.D	1	05/23/12	AW	05/18/12	OP5909	GFH253
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	764	16	11	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	85%		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:** PCUT31-19G W PIT TANK**Lab Sample ID:** D34583-1**Matrix:** SO - Soil**Project:** PCU T31-19G**Date Sampled:** 05/15/12**Date Received:** 05/17/12**Percent Solids:** 80.9**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	8.2	0.12	mg/kg	5	05/18/12	05/21/12 GJ	SW846 6020A <sup>3</sup>	SW846 3050B <sup>5</sup>
Barium	1600	1.2	mg/kg	1	05/18/12	05/19/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Cadmium	< 1.2	1.2	mg/kg	1	05/18/12	05/19/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Chromium	16.4	1.2	mg/kg	1	05/18/12	05/19/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Copper	18.6	1.2	mg/kg	1	05/18/12	05/19/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Lead	10.4	5.8	mg/kg	1	05/18/12	05/19/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Mercury	< 0.12	0.12	mg/kg	1	05/21/12	05/21/12 JB	SW846 7471B <sup>2</sup>	SW846 7471B <sup>6</sup>
Nickel	35.6	3.5	mg/kg	1	05/18/12	05/19/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Selenium	< 5.8	5.8	mg/kg	1	05/18/12	05/19/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Silver	< 3.5	3.5	mg/kg	1	05/18/12	05/19/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Zinc	44.2	3.5	mg/kg	1	05/18/12	05/19/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>

(1) Instrument QC Batch: MA2437

(2) Instrument QC Batch: MA2442

(3) Instrument QC Batch: MA2444

(4) Prep QC Batch: MP7495

(5) Prep QC Batch: MP7496

(6) Prep QC Batch: MP7501

RL = Reporting Limit

## Report of Analysis

**Client Sample ID:** PCUT31-19G W PIT TANK**Lab Sample ID:** D34583-1**Matrix:** SO - Soil**Project:** PCU T31-19G**Date Sampled:** 05/15/12**Date Received:** 05/17/12**Percent Solids:** 80.9**General Chemistry**

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	05/22/12	CT	SW846 3060A/7196A
Chromium, Trivalent <sup>a</sup>	16.4	2.2	mg/kg	1	05/22/12	CT	SW846 3060/7196A M
Redox Potential Vs H2	392		mv	1	05/18/12	JD	ASTM D1498-76M
Solids, Percent	80.9		%	1	05/17/12	SWT	SM19 2540B M
Specific Conductivity	356	1.0	umhos/cm	1	05/20/12	JK	DEPT.OF AG, BOOK N9
pH	9.10		su	1	05/18/12 14:50	CT	SW846 9045C

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

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	PCUT31-19G W PIT TANK	<b>Date Sampled:</b>	05/15/12
<b>Lab Sample ID:</b>	D34583-1A	<b>Date Received:</b>	05/17/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	80.9
<b>Project:</b>	PCU T31-19G		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	44.2	2.0	mg/l	1	05/18/12	05/19/12 JM	SW846 6010C <sup>1</sup>	EPA 200.7 <sup>2</sup>
Magnesium	9.79	1.0	mg/l	1	05/18/12	05/19/12 JM	SW846 6010C <sup>1</sup>	EPA 200.7 <sup>2</sup>
Sodium	19.9	2.0	mg/l	1	05/18/12	05/19/12 JM	SW846 6010C <sup>1</sup>	EPA 200.7 <sup>2</sup>

(1) Instrument QC Batch: MA2437  
(2) Prep QC Batch: MP7498

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	PCUT31-19G W PIT TANK	<b>Date Sampled:</b>	05/15/12
<b>Lab Sample ID:</b>	D34583-1A	<b>Date Received:</b>	05/17/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	80.9
<b>Project:</b>	PCU T31-19G		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	0.705		ratio	1	05/19/12 18:19	JM	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 Sample Receipt Summary

Accutest Job Number: D34583

Client: XTO ENERGY

Immediate Client Services Action Required: No

Date / Time Received: 5/17/2012 10:00:00 AM

No. Coolers: 1

Client Service Action Required at Login: No

Project: PCU T31-19G W. PARTRALLY BARRIED TAN

Airbill #'s: Fedex

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 property:	<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

Accutest Laboratories  
V:(303) 425-6021

4036 Youngfield Street  
F: (303) 425-6854

Wheat Ridge, CO  
www.accutest.com

**D34583: Chain of Custody**  
**Page 2 of 2**

## 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:** D34583  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU T31-19G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1293-MB	5V21274.D	1	05/17/12	BD	n/a	n/a	V5V1293

**The QC reported here applies to the following samples:****Method:** SW846 8260B

D34583-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	19	ug/kg	
100-41-4	Ethylbenzene	ND	100	19	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	93% 61-130%
460-00-4	4-Bromofluorobenzene	92% 53-131%
17060-07-0	1,2-Dichloroethane-D4	82% 62-130%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

Blank Spike Summary

Job Number: D34583  
Account: XTOKRWR XTO Energy  
Project: PCU T31-19G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1293-BS	5V21284.D	1	05/17/12	BD	n/a	n/a	V5V1293

The QC reported here applies to the following samples:

Method: SW846 8260B

D34583-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	55.5	111	70-130
100-41-4	Ethylbenzene	50	50.6	101	70-130
108-88-3	Toluene	50	51.3	103	70-130
1330-20-7	Xylene (total)	150	155	103	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	90%	61-130%
460-00-4	4-Bromofluorobenzene	102%	53-131%
17060-07-0	1,2-Dichloroethane-D4	81%	62-130%

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D34583  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU T31-19G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D34545-1MS	5V21278.D	1	05/17/12	BD	n/a	n/a	V5V1293
D34545-1MSD	5V21279.D	1	05/17/12	BD	n/a	n/a	V5V1293
D34545-1	5V21277.D	1	05/17/12	BD	n/a	n/a	V5V1293

The QC reported here applies to the following samples:

Method: SW846 8260B

D34583-1

CAS No.	Compound	D34545-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3250	3260	100	3310	102	2	70-134/30
100-41-4	Ethylbenzene	ND		3250	2900	89	2940	90	1	70-137/30
108-88-3	Toluene	ND		3250	2900	89	2950	91	2	70-130/30
1330-20-7	Xylene (total)	ND		9750	8980	92	9170	94	2	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D34545-1	Limits
2037-26-5	Toluene-D8	80%	81%	95%	61-130%
460-00-4	4-Bromofluorobenzene	96%	100%	101%	53-131%
17060-07-0	1,2-Dichloroethane-D4	71%	74%	84%	62-130%

GC/MS Volatiles

Raw Data





## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5051712.S\  
 Data File : 5V21286.D  
 Acq On : 17 May 2012 6:02 pm  
 Operator : BRETD  
 Sample : D34583-1  
 Misc : MS3924,V5V1293,5.094,,100,5,1  
 ALS Vial : 17 Sample Multiplier: 1

Quant Time: May 18 09:06:20 2012  
 Quant Method : C:\msdchem\1\METHODS\V5AP1284TVH1284.M  
 Quant Title : 8260  
 QLast Update : Thu May 10 12:49:48 2012  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	272883	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.446	114	437340	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.095	117	461017	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.070	152	282467	50.00	ug/l	0.00

## System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.035	102	39635	41.55	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	83.10%
61) Toluene-d8	13.850	98	758267	44.50	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	89.00%
69) 4-Bromofluorobenzene	16.042	95	331265	48.36	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	96.72%

## Target Compounds

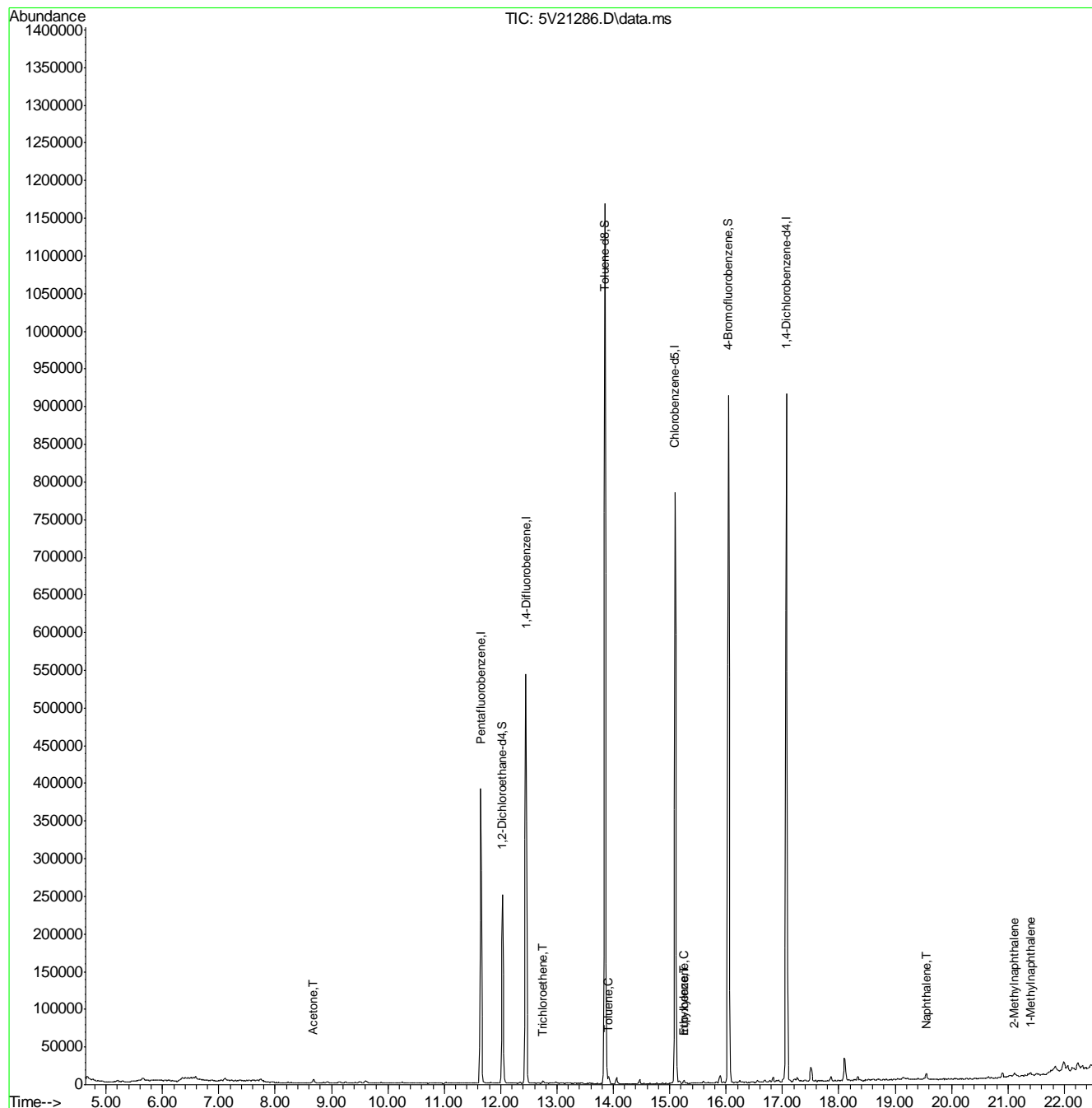
						Qvalue
1) TVH-Gasoline	13.491	TIC	-2387m	Below	Cal	
15) Acetone	8.678	58	2026	3.75	ug/l #	72
48) Trichloroethene	12.754	95	1400	0.33	ug/l #	73
62) Toluene	13.907	92	3520	0.30	ug/l	99
66) Ethylbenzene	15.255	91	3904	0.17	ug/l	77
72) m,p-xylene	15.255	106	1742	0.20	ug/l #	82
91) Naphthalene	19.559	128	3965	0.29	ug/l	100
94) 2-Methylnaphthalene	21.111	142	1960	1.67	ug/l	97
95) 1-Methylnaphthalene	21.397	142	1387	1.39	ug/l	86

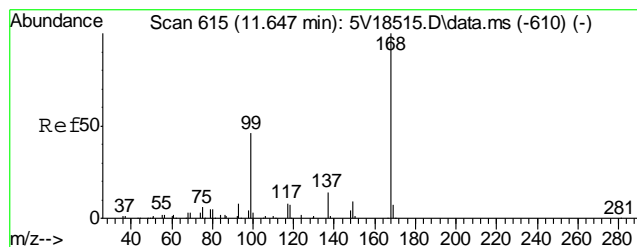
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5051712.S\  
 Data File : 5V21286.D  
 Acq On : 17 May 2012 6:02 pm  
 Operator : BRETD  
 Sample : D34583-1  
 Misc : MS3924,V5V1293,5.094,,100,5,1  
 ALS Vial : 17 Sample Multiplier: 1

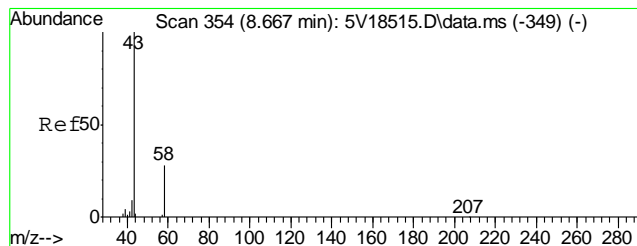
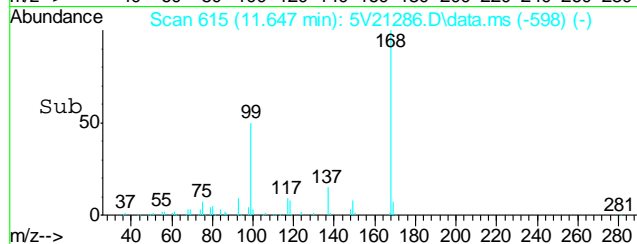
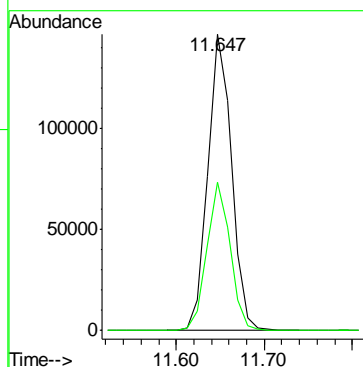
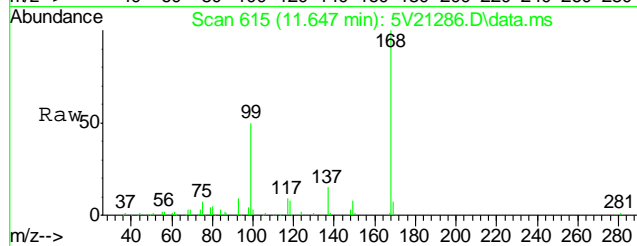
Quant Time: May 18 09:06:20 2012  
 Quant Method : C:\msdchem\1\METHODS\V5AP1284TVH1284.M  
 Quant Title : 8260  
 QLast Update : Thu May 10 12:49:48 2012  
 Response via : Initial Calibration





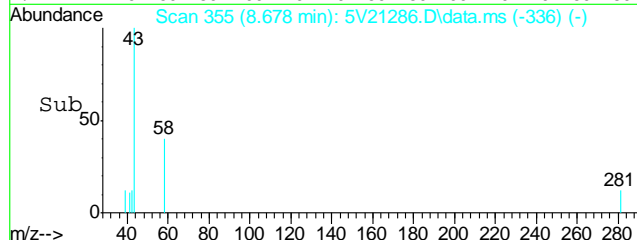
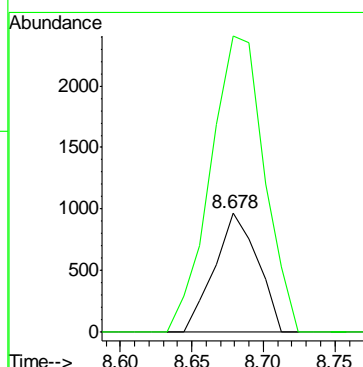
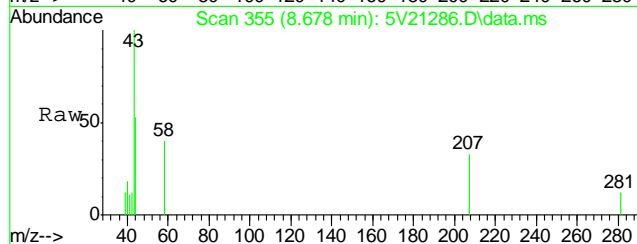
#2  
Pentafluorobenzene  
Concen: 50.00 ug/l  
RT: 11.647 min Scan# 615  
Delta R.T. -0.000 min  
Lab File: 5V21286.D  
Acq: 17 May 2012 6:02 pm

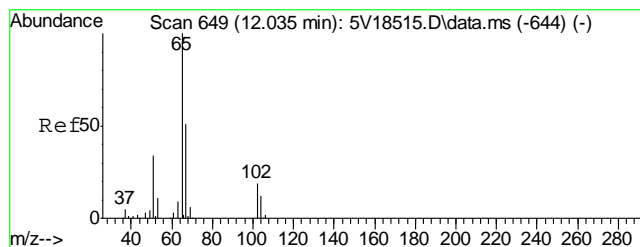
Tgt Ion	Ratio	Lower	Upper
168	100		
99	49.1	37.4	56.2



#15  
Acetone  
Concen: 3.75 ug/l  
RT: 8.678 min Scan# 355  
Delta R.T. 0.011 min  
Lab File: 5V21286.D  
Acq: 17 May 2012 6:02 pm

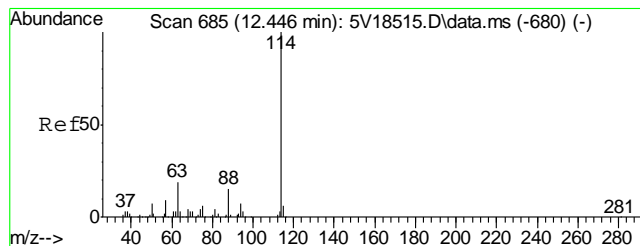
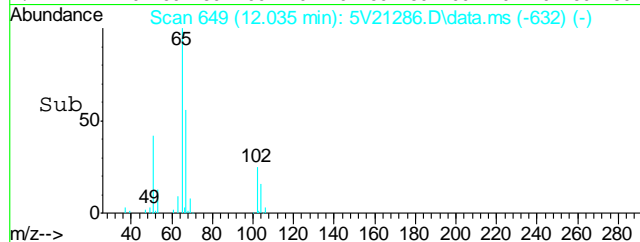
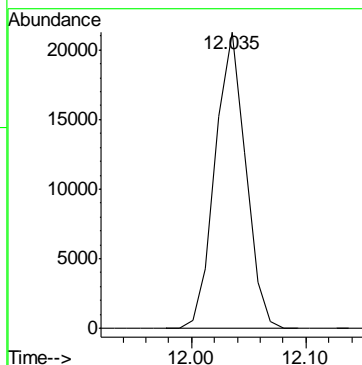
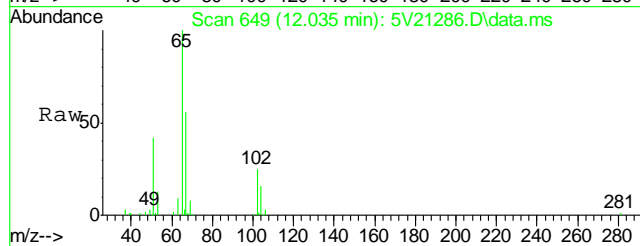
Tgt Ion	Ratio	Lower	Upper
58	100		
43	310.6	353.6	393.6#





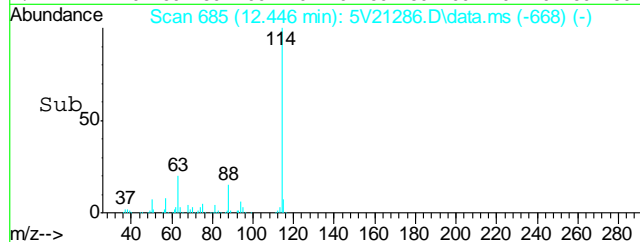
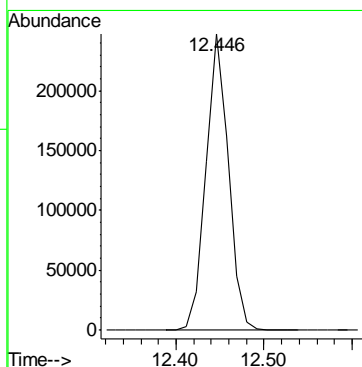
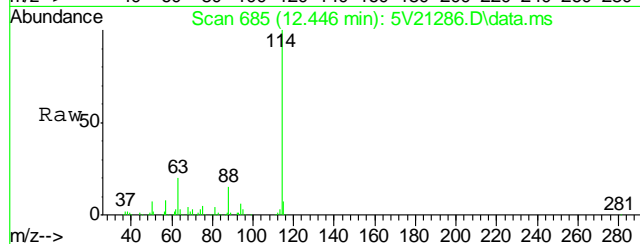
#33  
1,2-Dichloroethane-d4  
Concen: 41.55 ug/l  
RT: 12.035 min Scan# 649  
Delta R.T. -0.000 min  
Lab File: 5V21286.D  
Acq: 17 May 2012 6:02 pm

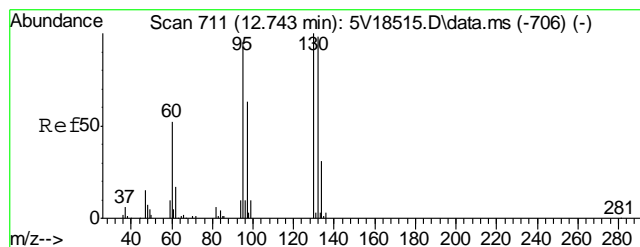
Tgt Ion:102 Resp: 39635



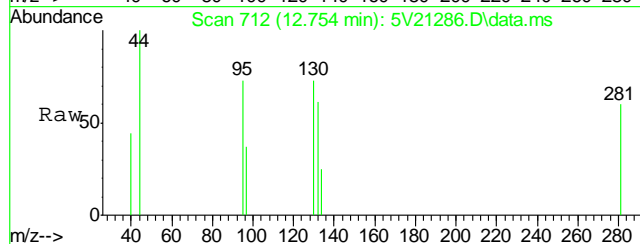
#35  
1,4-Difluorobenzene  
Concen: 50.00 ug/l  
RT: 12.446 min Scan# 685  
Delta R.T. -0.000 min  
Lab File: 5V21286.D  
Acq: 17 May 2012 6:02 pm

Tgt Ion:114 Resp: 437340

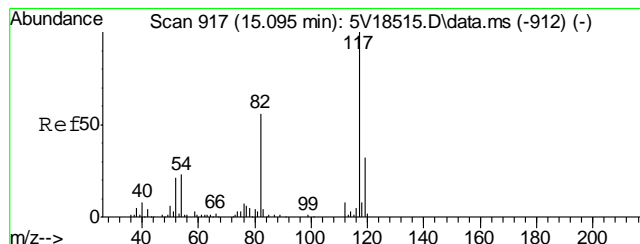
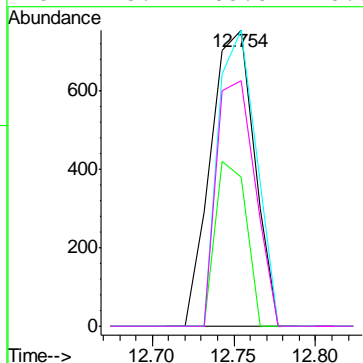
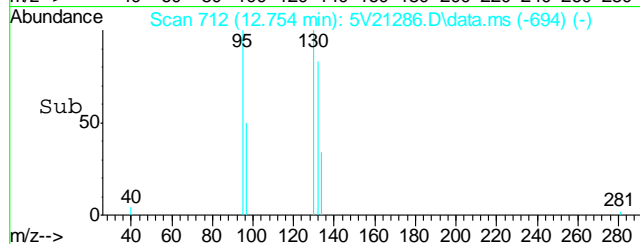




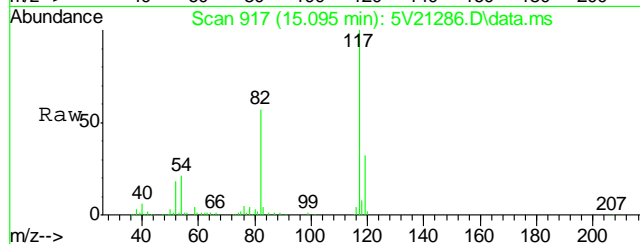
#48  
Trichloroethene  
Concen: 0.33 ug/l  
RT: 12.754 min Scan# 712  
Delta R.T. 0.011 min  
Lab File: 5V21286.D  
Acq: 17 May 2012 6:02 pm



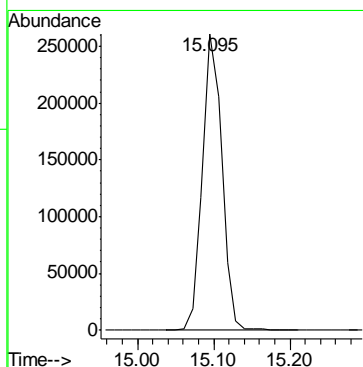
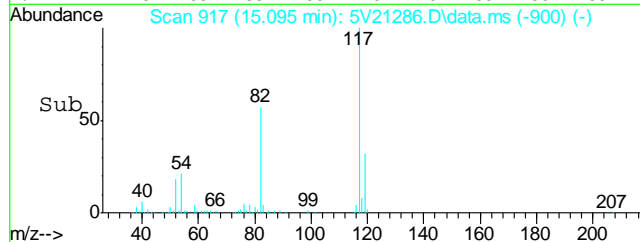
Tgt Ion	Ratio	Lower	Upper
95	100		
97	39.1	47.1	87.1#
130	86.1	85.2	125.2
132	73.2	85.5	125.5#

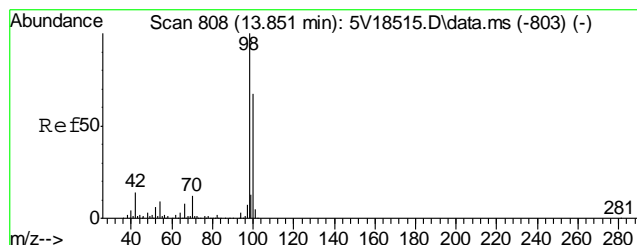


#53  
Chlorobenzene-d5  
Concen: 50.00 ug/l  
RT: 15.095 min Scan# 917  
Delta R.T. -0.000 min  
Lab File: 5V21286.D  
Acq: 17 May 2012 6:02 pm



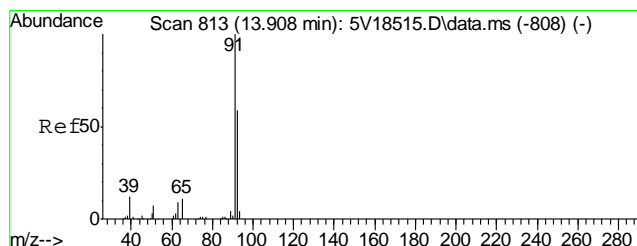
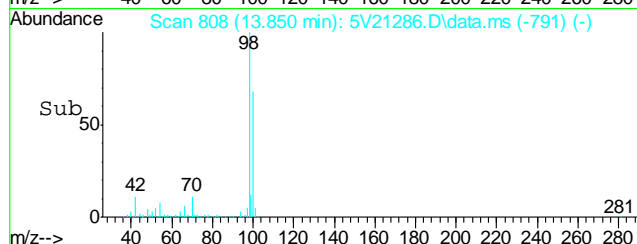
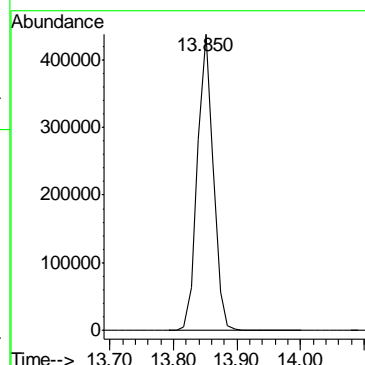
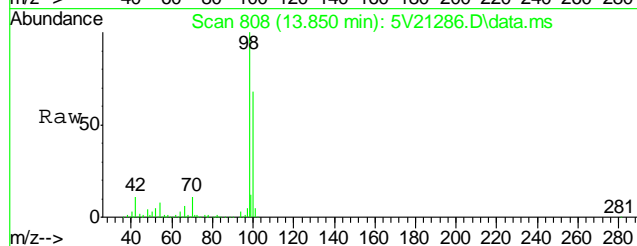
Tgt Ion: 117 Resp: 461017





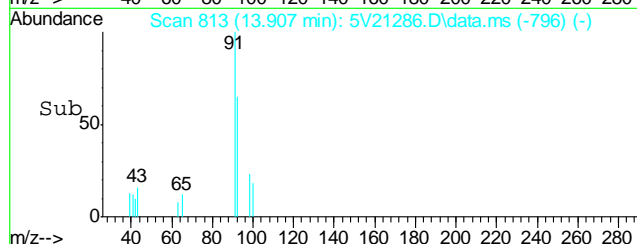
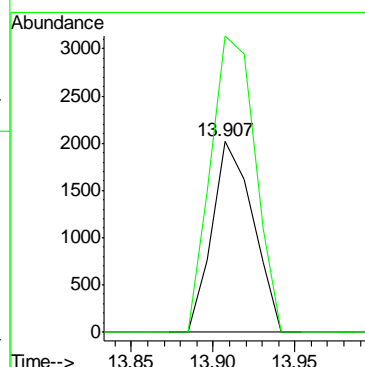
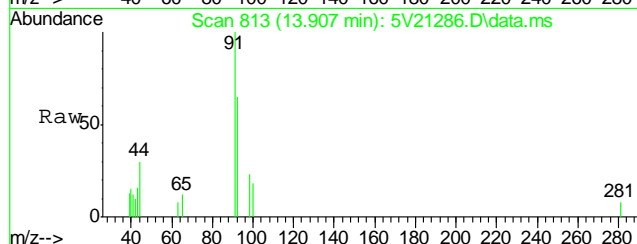
#61  
Toluene-d8  
Concen: 44.50 ug/l  
RT: 13.850 min Scan# 808  
Delta R.T. -0.000 min  
Lab File: 5V21286.D  
Acq: 17 May 2012 6:02 pm

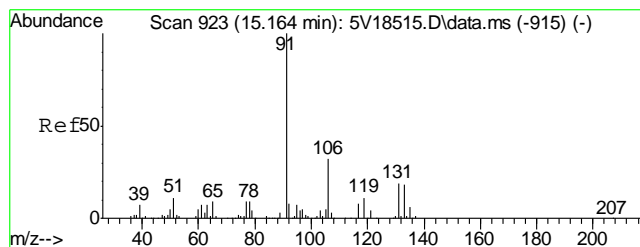
Tgt Ion: 98 Resp: 758267



#62  
Toluene  
Concen: 0.30 ug/l  
RT: 13.907 min Scan# 813  
Delta R.T. -0.000 min  
Lab File: 5V21286.D  
Acq: 17 May 2012 6:02 pm

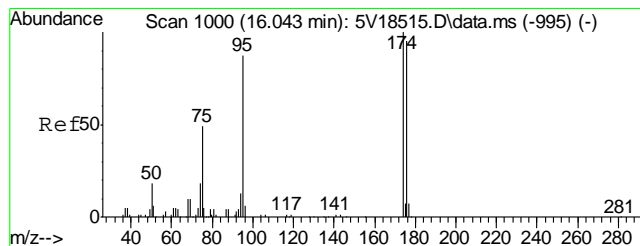
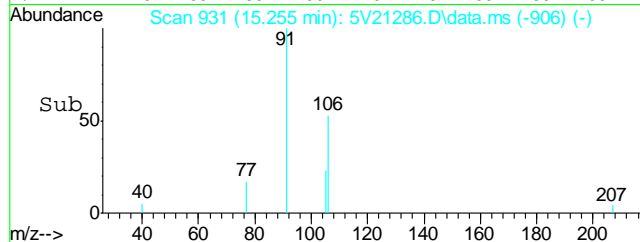
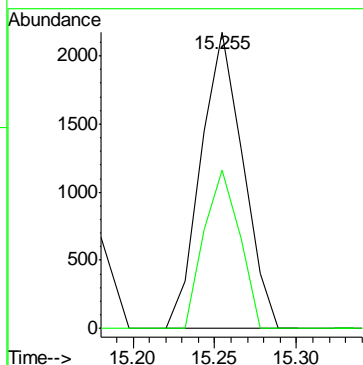
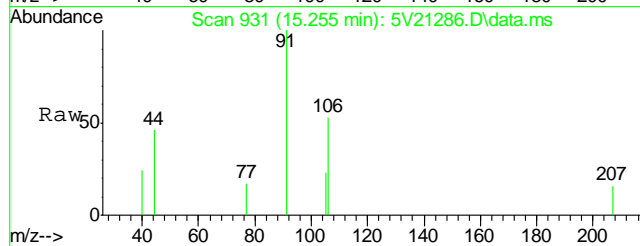
Tgt Ion: 92 Resp: 3520  
Ion Ratio Lower Upper  
92 100  
91 168.5 149.8 189.8





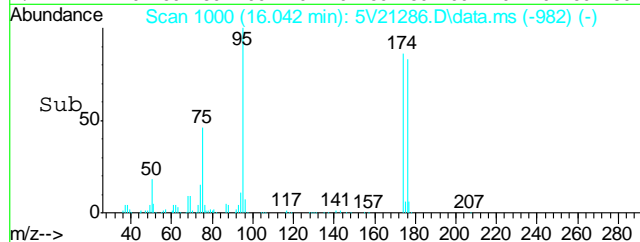
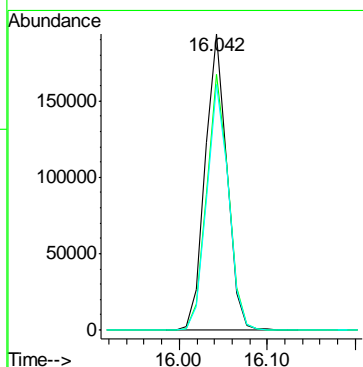
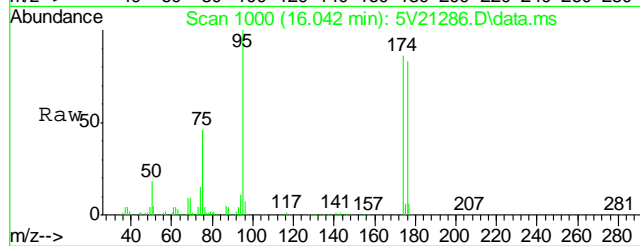
#66  
Ethylbenzene  
Concen: 0.17 ug/l  
RT: 15.255 min Scan# 931  
Delta R.T. 0.091 min  
Lab File: 5V21286.D  
Acq: 17 May 2012 6:02 pm

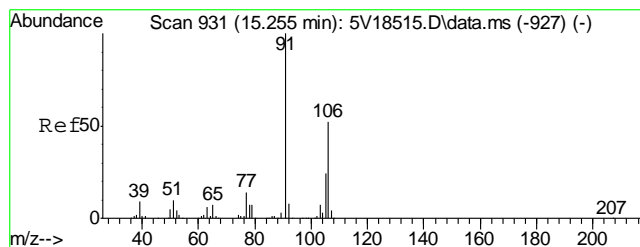
Tgt Ion: 91 Resp: 3904  
Ion Ratio Lower Upper  
91 100  
106 44.6 11.7 51.7



#69  
4-Bromofluorobenzene  
Concen: 48.36 ug/l  
RT: 16.042 min Scan# 1000  
Delta R.T. 0.000 min  
Lab File: 5V21286.D  
Acq: 17 May 2012 6:02 pm

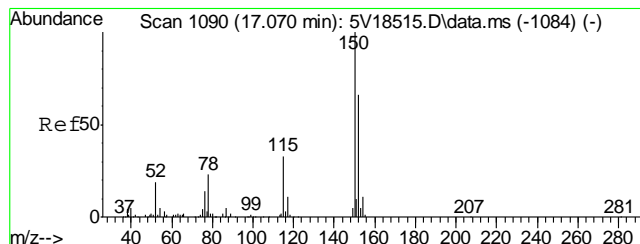
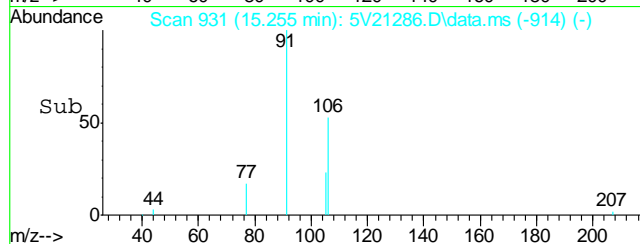
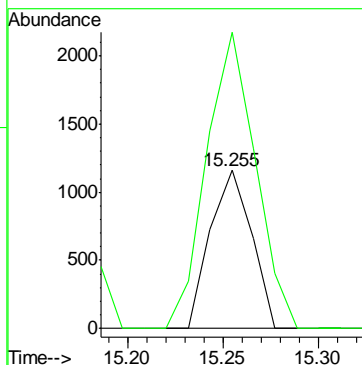
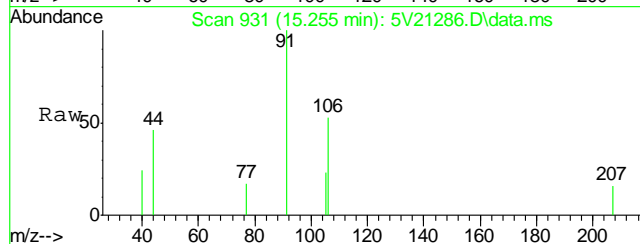
Tgt Ion: 95 Resp: 331265  
Ion Ratio Lower Upper  
95 100  
174 86.2 77.1 117.1  
176 83.1 73.4 113.4





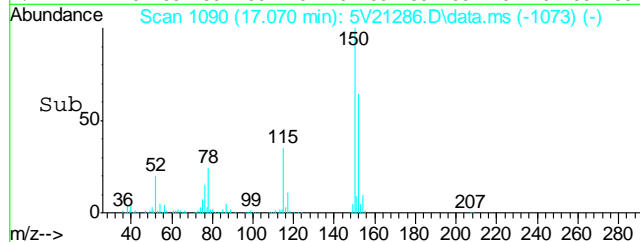
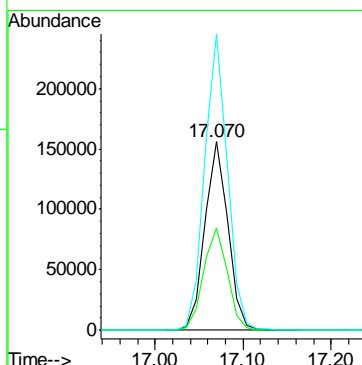
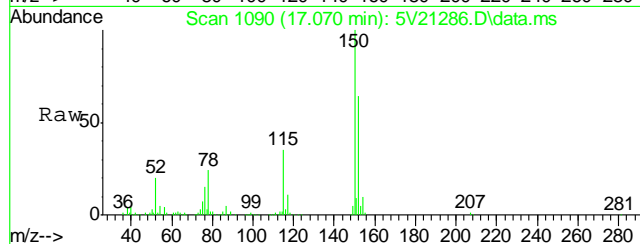
#72  
m,p-xylene  
Concen: 0.20 ug/l  
RT: 15.255 min Scan# 931  
Delta R.T. -0.000 min  
Lab File: 5V21286.D  
Acq: 17 May 2012 6:02 pm

Tgt Ion:106 Resp: 1742  
Ion Ratio Lower Upper  
106 100  
91 224.1 177.1 217.1#

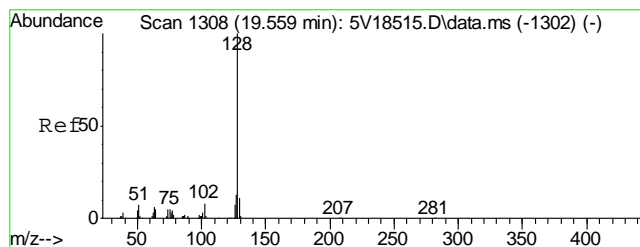


#74  
1,4-Dichlorobenzene-d4  
Concen: 50.00 ug/l  
RT: 17.070 min Scan# 1090  
Delta R.T. -0.000 min  
Lab File: 5V21286.D  
Acq: 17 May 2012 6:02 pm

Tgt Ion:152 Resp: 282467  
Ion Ratio Lower Upper  
152 100  
115 55.9 41.4 62.0  
150 155.7 153.9 230.9

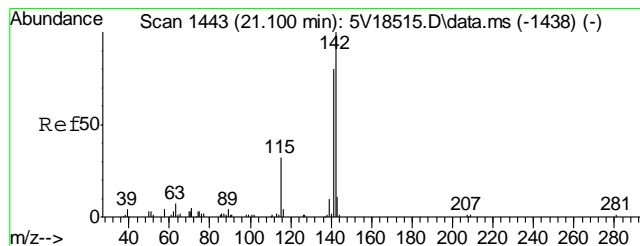
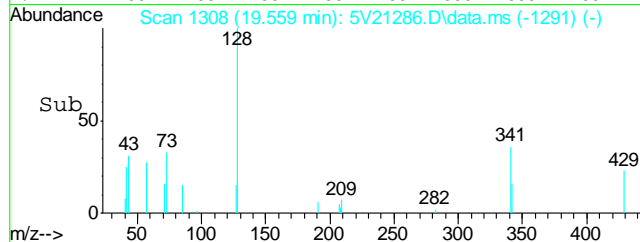
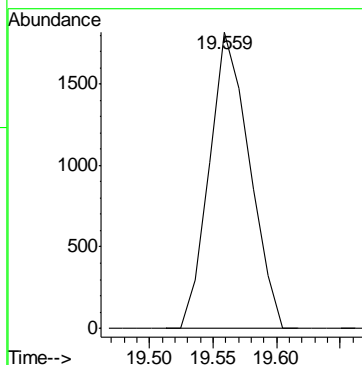
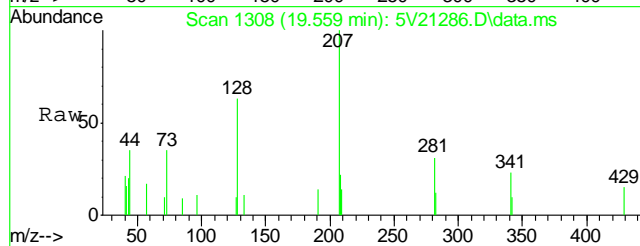






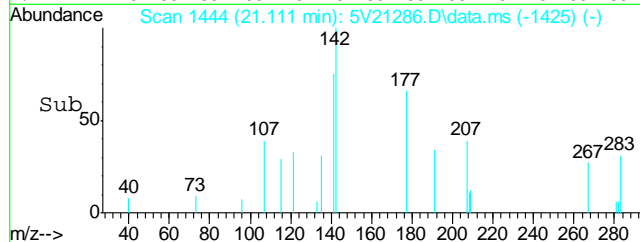
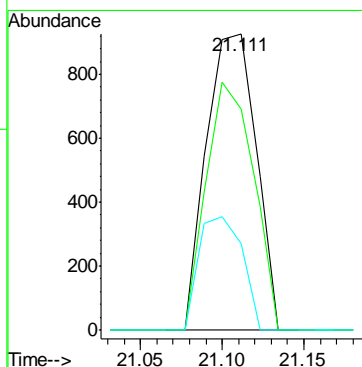
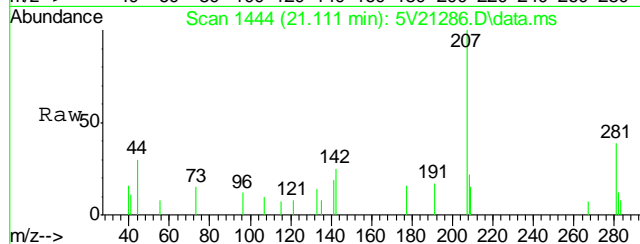
#91  
Naphthalene  
Concen: 0.29 ug/l  
RT: 19.559 min Scan# 1308  
Delta R.T. -0.000 min  
Lab File: 5V21286.D  
Acq: 17 May 2012 6:02 pm

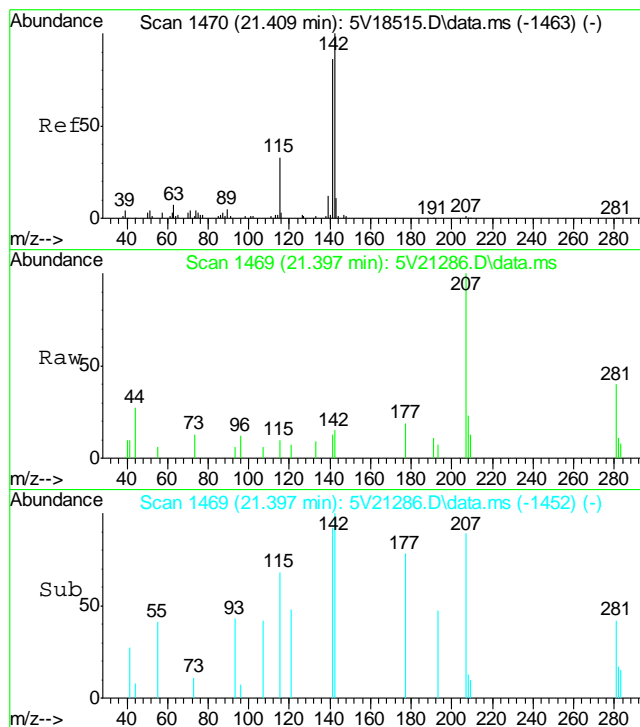
Tgt Ion:128 Resp: 3965



#94  
2-Methylnaphthalene  
Concen: 1.67 ug/l  
RT: 21.111 min Scan# 1444  
Delta R.T. 0.011 min  
Lab File: 5V21286.D  
Acq: 17 May 2012 6:02 pm

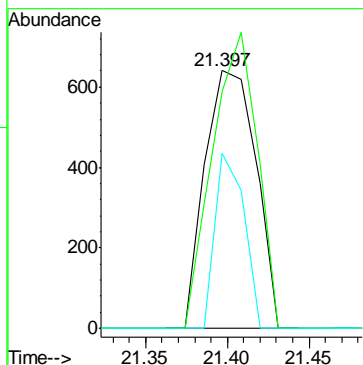
Tgt Ion:142 Resp: 1960  
Ion Ratio Lower Upper  
142 100  
141 79.7 66.2 99.4  
115 33.4 25.9 38.9





#95  
 1-Methylnaphthalene  
 Concen: 1.39 ug/l  
 RT: 21.397 min Scan# 1469  
 Delta R.T. -0.011 min  
 Lab File: 5V21286.D  
 Acq: 17 May 2012 6:02 pm

Tgt Ion:	142	Resp:	1387
Ion Ratio	Lower	Upper	
142	100		
141	100.8	68.9	103.3
115	38.5	27.3	40.9



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5051712.S\  
Data File : 5V21274.D  
Acq On : 17 May 2012 10:52 am  
Operator : BRETD  
Sample : MB  
Misc : MS3924,V5V1293,5.00,,100,5,1  
ALS Vial : 5 Sample Multiplier: 1

Quant Time: May 18 08:27:42 2012  
Quant Method : C:\msdchem\1\METHODS\V5AP1284TVH1284.M  
Quant Title : 8260  
QLast Update : Thu May 10 12:49:48 2012  
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	314817	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.446	114	505786	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.095	117	507896	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.070	152	281030	50.00	ug/l	0.00

## System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.035	102	45324	41.18	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	82.36%
61) Toluene-d8	13.850	98	876351	46.69	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	93.38%
69) 4-Bromofluorobenzene	16.042	95	345558	45.79	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	91.58%

## Target Compounds

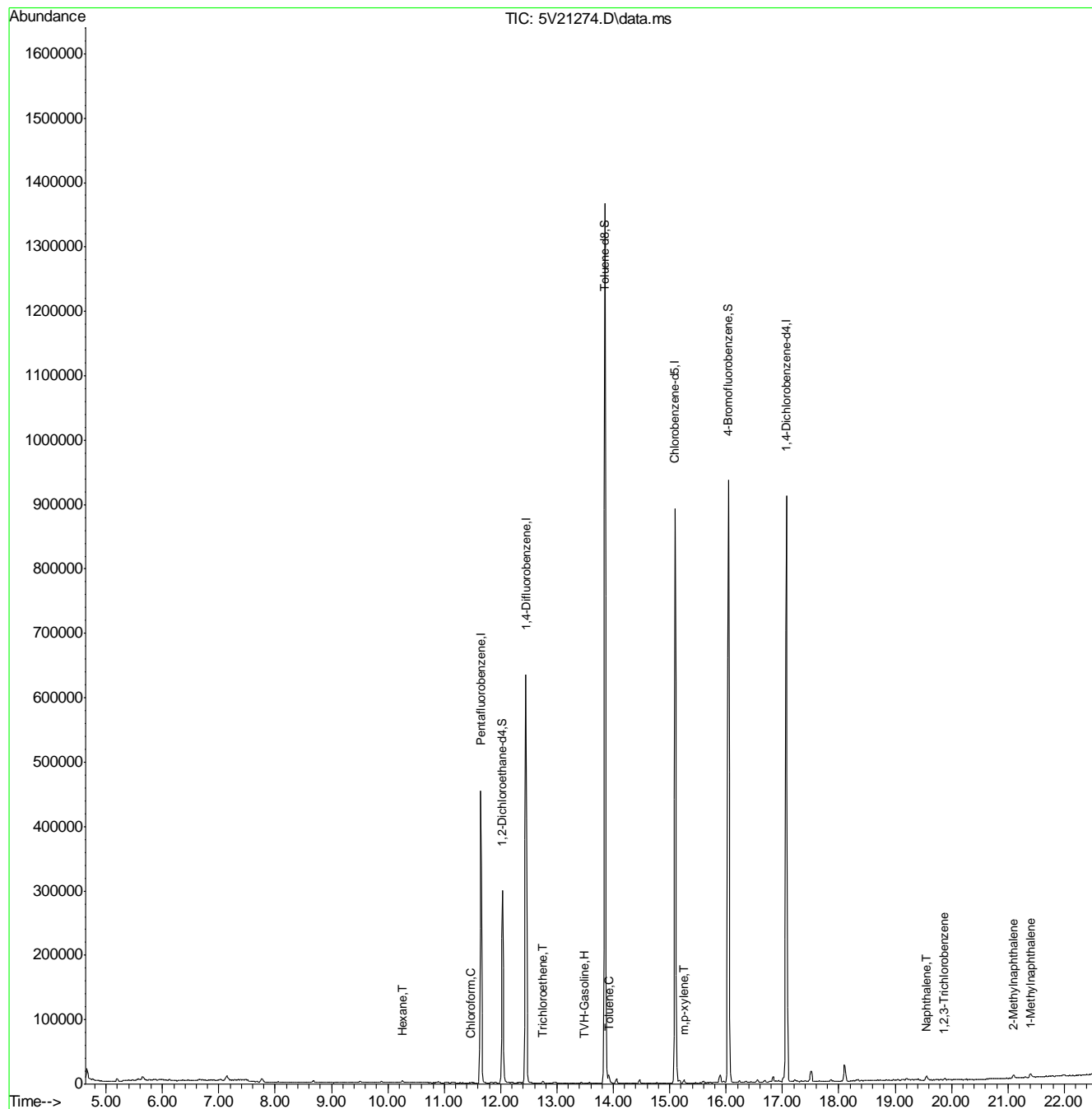
					Qvalue
1) TVH-Gasoline	13.491	TIC	26409m	0.84	ug/l
29) Chloroform	11.476	83	908	0.10	ug/l
41) Hexane	10.254	57	1051	0.10	ug/l
48) Trichloroethene	12.754	95	1384	0.28	ug/l
62) Toluene	13.919	92	4161	0.32	ug/l
72) m,p-xylene	15.255	106	1709	0.18	ug/l
91) Naphthalene	19.559	128	8047	0.59	ug/l
93) 1,2,3-Trichlorobenzene	19.867	180	2147	0.34	ug/l
94) 2-Methylnaphthalene	21.100	142	4914	2.14	ug/l
95) 1-Methylnaphthalene	21.397	142	5224	2.05	ug/l

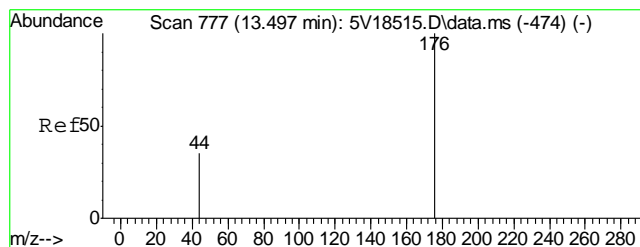
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5051712.S\  
Data File : 5V21274.D  
Acq On : 17 May 2012 10:52 am  
Operator : BRETD  
Sample : MB  
Misc : MS3924,V5V1293,5.00,,100,5,1  
ALS Vial : 5 Sample Multiplier: 1

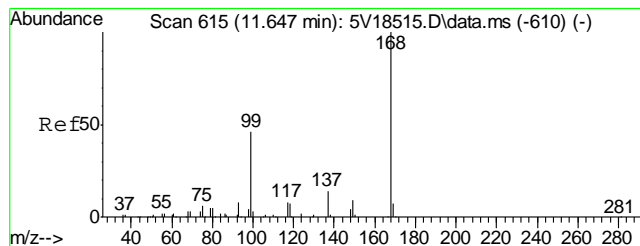
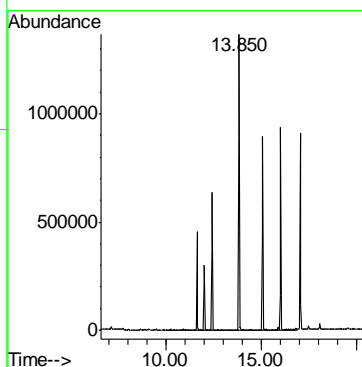
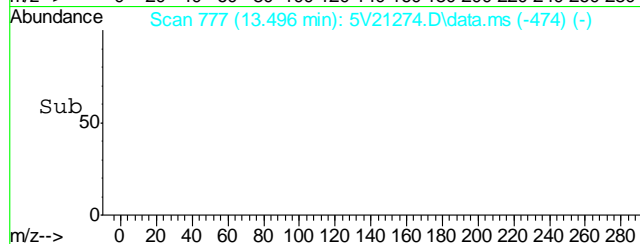
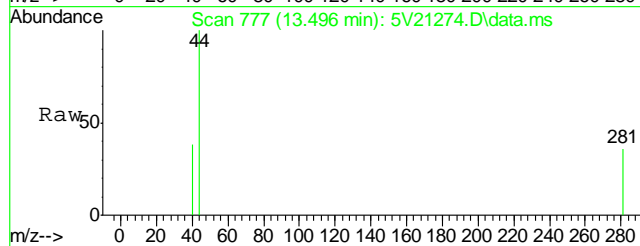
Quant Time: May 18 08:27:42 2012  
Quant Method : C:\msdchem\1\METHODS\V5AP1284TVH1284.M  
Quant Title : 8260  
QLast Update : Thu May 10 12:49:48 2012  
Response via : Initial Calibration





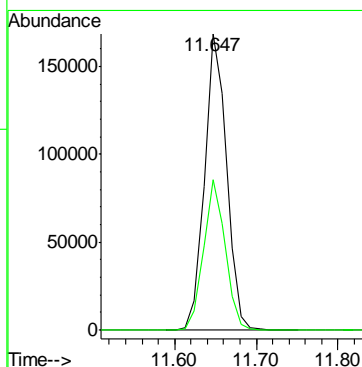
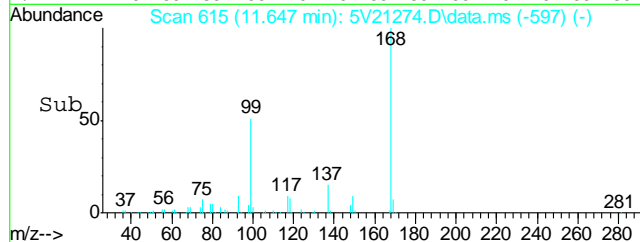
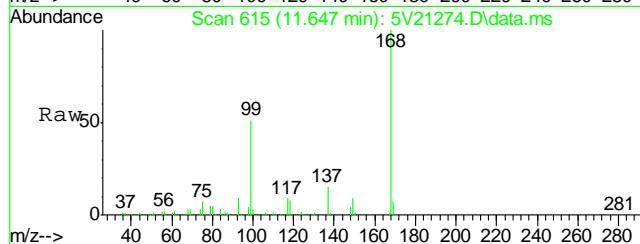
#1  
TVH-Gasoline  
Concen: 0.84 ug/l m  
RT: 13.491 min Scan# 777  
Delta R.T. 0.000 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

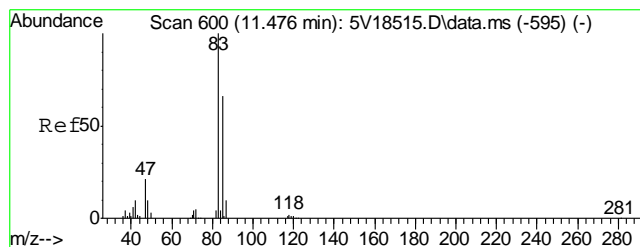
Tgt Ion:TIC Resp: 26409



#2  
Pentafluorobenzene  
Concen: 50.00 ug/l  
RT: 11.647 min Scan# 615  
Delta R.T. -0.000 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

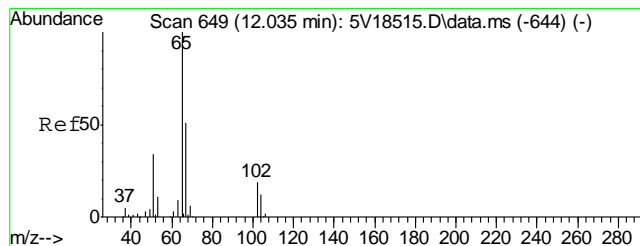
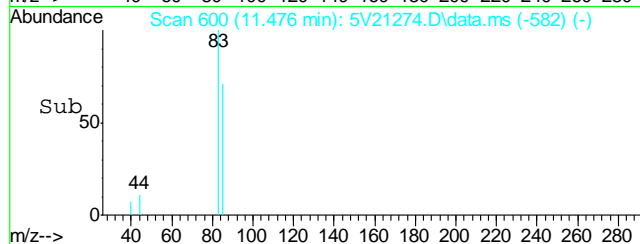
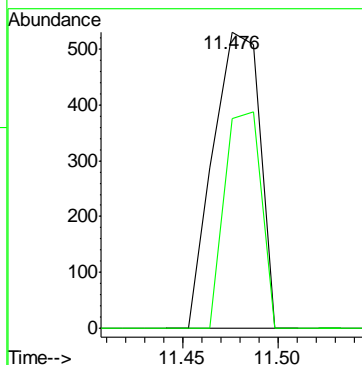
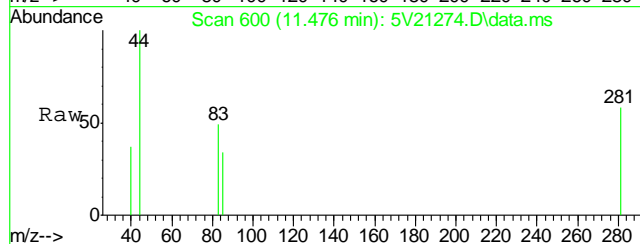
Tgt Ion:168 Resp: 314817  
Ion Ratio Lower Upper  
168 100  
99 49.7 37.4 56.2





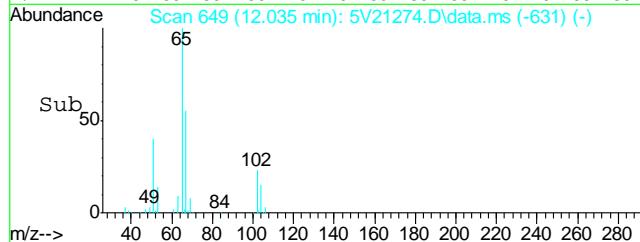
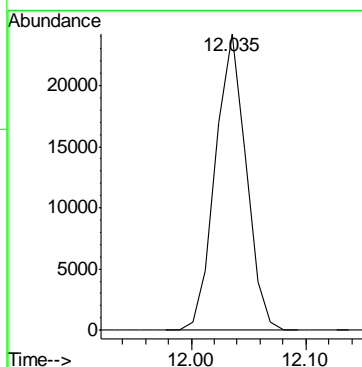
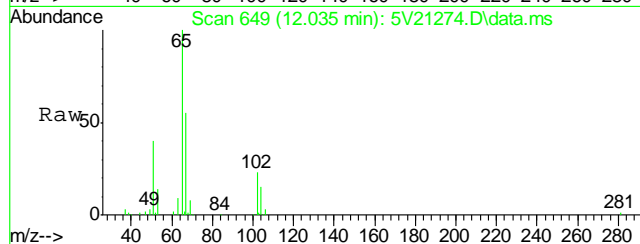
#29  
Chloroform  
Concen: 0.10 ug/l  
RT: 11.476 min Scan# 600  
Delta R.T. -0.000 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

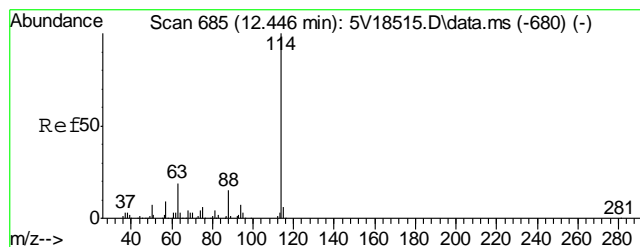
Tgt Ion: 83 Resp: 908  
Ion Ratio Lower Upper  
83 100  
85 57.6 44.9 84.9



#33  
1,2-Dichloroethane-d4  
Concen: 41.18 ug/l  
RT: 12.035 min Scan# 649  
Delta R.T. -0.000 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

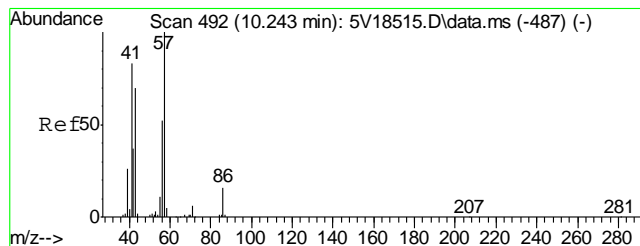
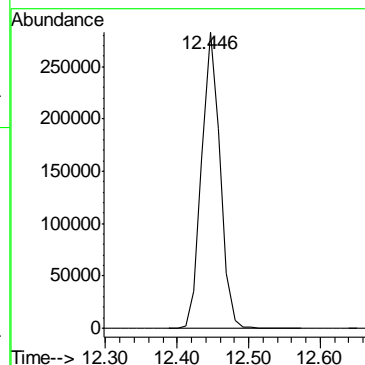
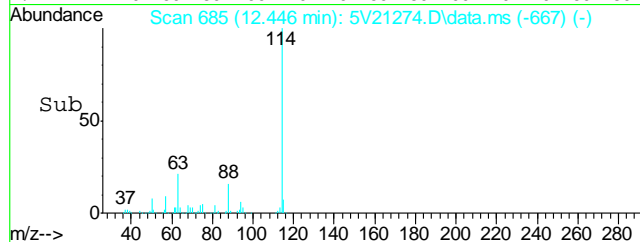
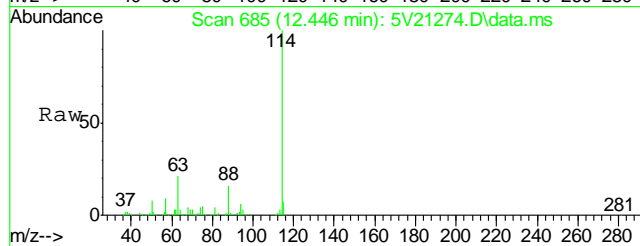
Tgt Ion: 102 Resp: 45324





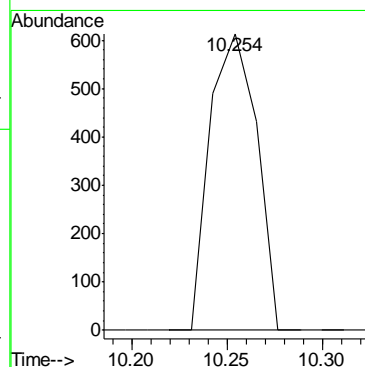
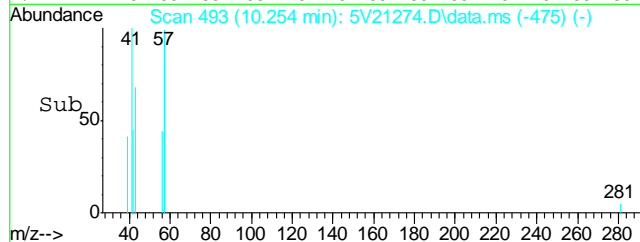
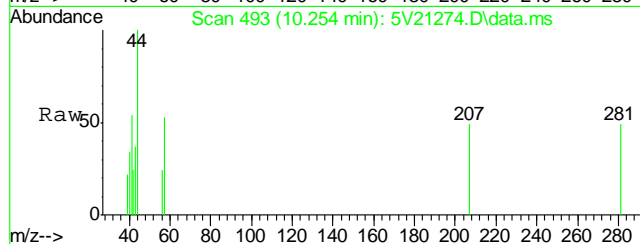
#35  
1,4-Difluorobenzene  
Concen: 50.00 ug/l  
RT: 12.446 min Scan# 685  
Delta R.T. -0.000 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

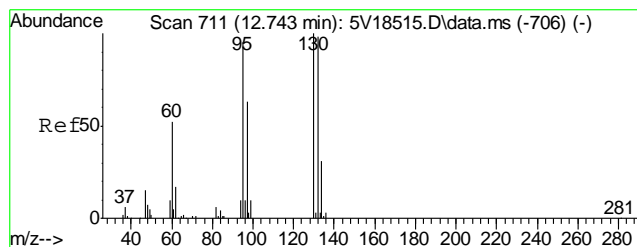
Tgt Ion: 114 Resp: 505786



#41  
Hexane  
Concen: 0.10 ug/l  
RT: 10.254 min Scan# 493  
Delta R.T. -0.000 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

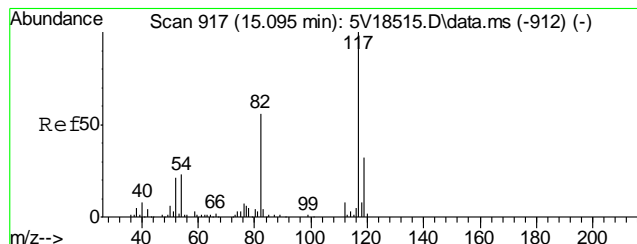
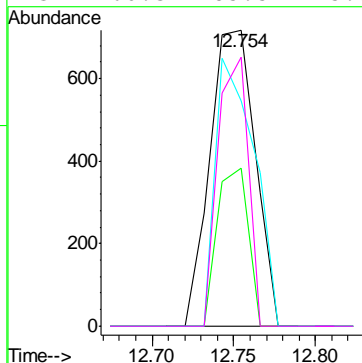
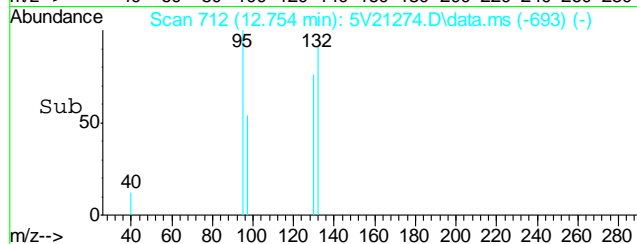
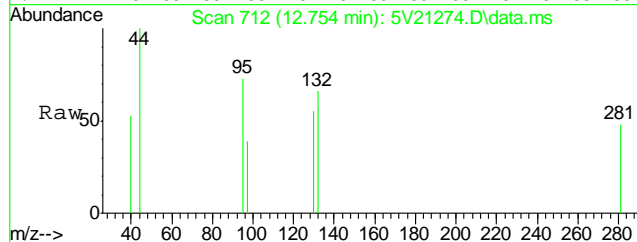
Tgt Ion: 57 Resp: 1051





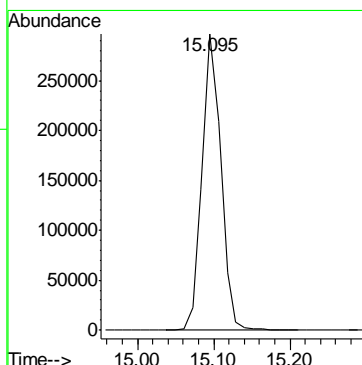
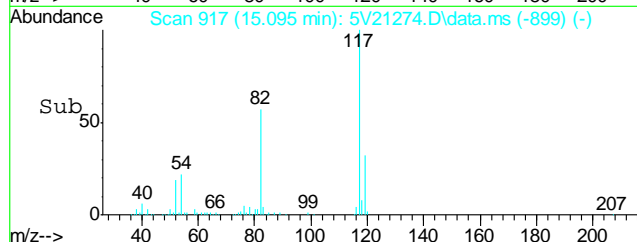
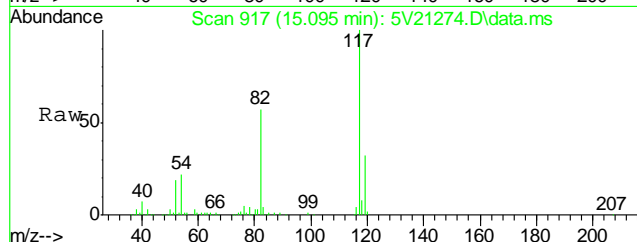
#48  
Trichloroethene  
Concen: 0.28 ug/l  
RT: 12.754 min Scan# 712  
Delta R.T. 0.011 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

Tgt Ion	95	Resp	1384
Ion Ratio	Lower	Upper	
95	100		
97	36.3	47.1	87.1#
130	77.6	85.2	125.2#
132	60.3	85.5	125.5#

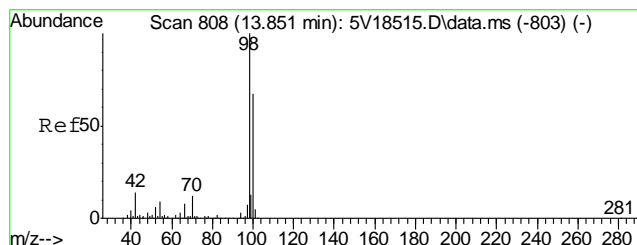


#53  
Chlorobenzene-d5  
Concen: 50.00 ug/l  
RT: 15.095 min Scan# 917  
Delta R.T. -0.000 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

Tgt Ion: 117 Resp: 507896

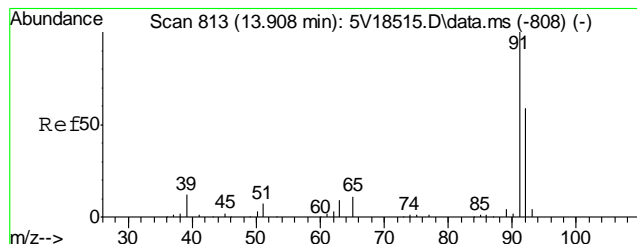
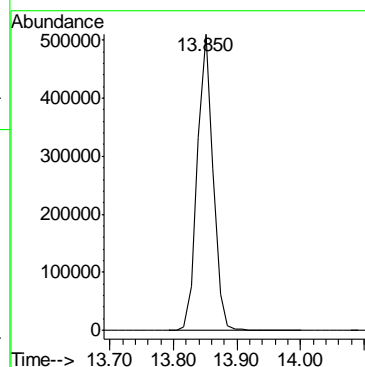
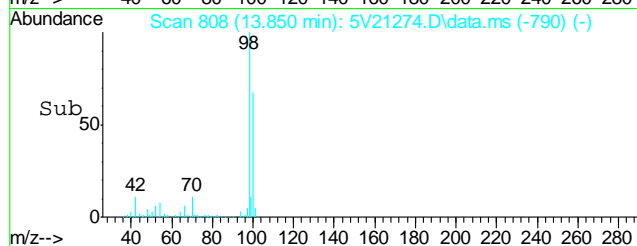
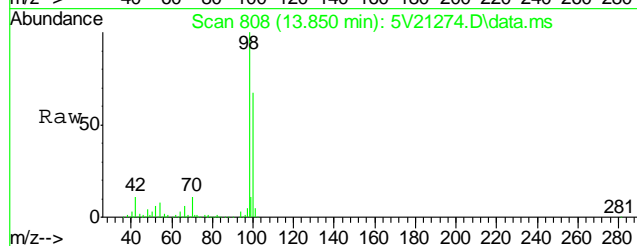






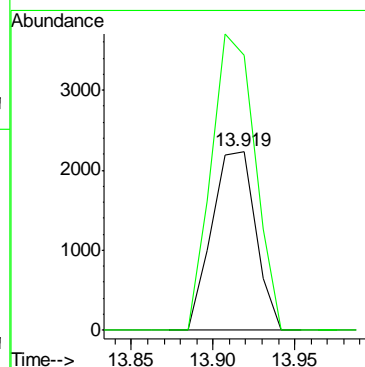
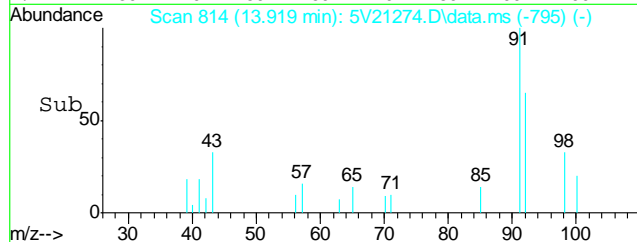
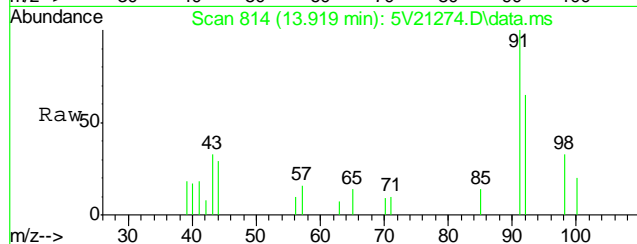
#61  
Toluene-d8  
Concen: 46.69 ug/l  
RT: 13.850 min Scan# 808  
Delta R.T. -0.000 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

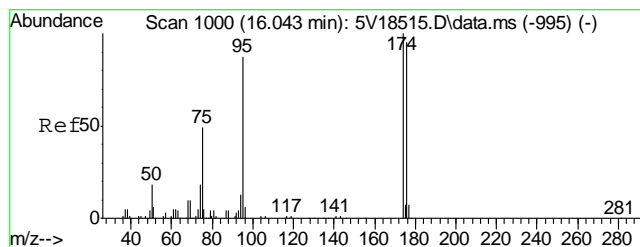
Tgt Ion: 98 Resp: 876351



#62  
Toluene  
Concen: 0.32 ug/l  
RT: 13.919 min Scan# 814  
Delta R.T. 0.011 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

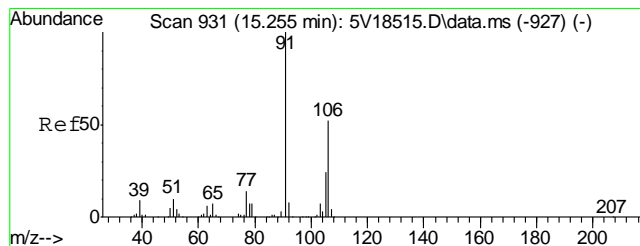
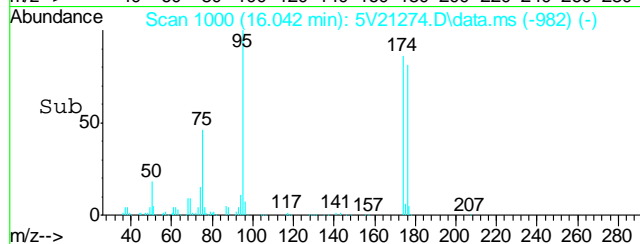
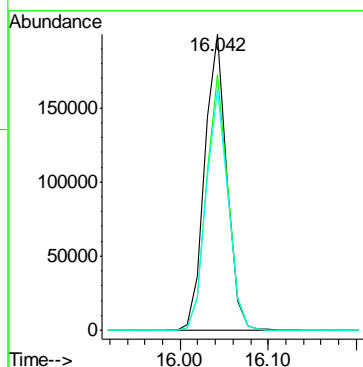
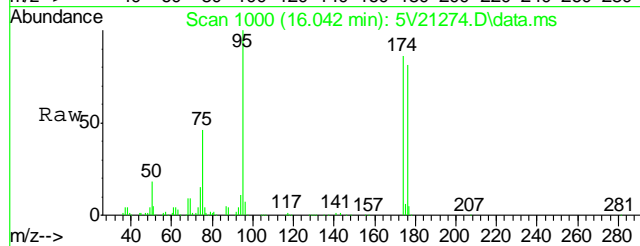
Tgt Ion: 92 Resp: 4161  
Ion Ratio Lower Upper  
92 100  
91 164.9 149.8 189.8





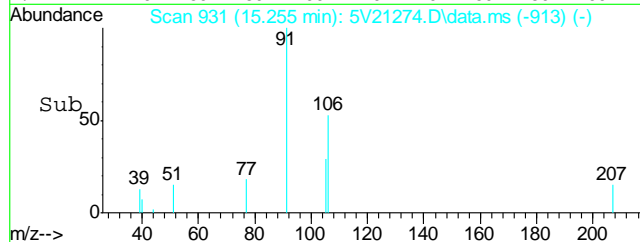
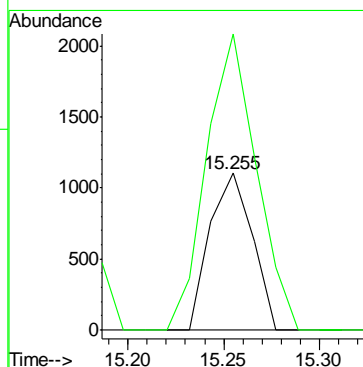
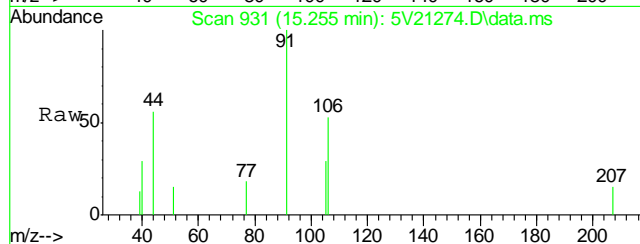
#69  
4-Bromofluorobenzene  
Concen: 45.79 ug/l  
RT: 16.042 min Scan# 1000  
Delta R.T. 0.000 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

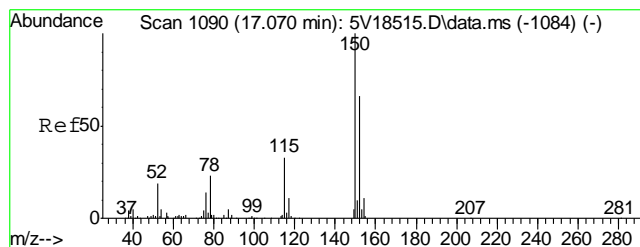
Tgt Ion:	95	Resp:	345558
Ion Ratio	Lower	Upper	
95	100		
174	85.0	77.1	117.1
176	81.2	73.4	113.4



#72  
m,p-xylene  
Concen: 0.18 ug/l  
RT: 15.255 min Scan# 931  
Delta R.T. -0.000 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

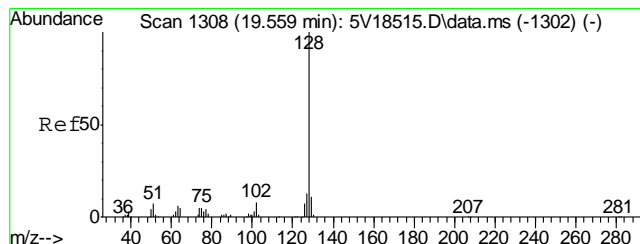
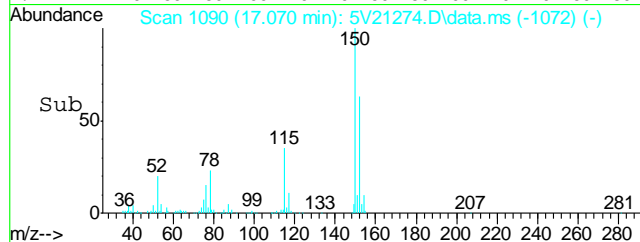
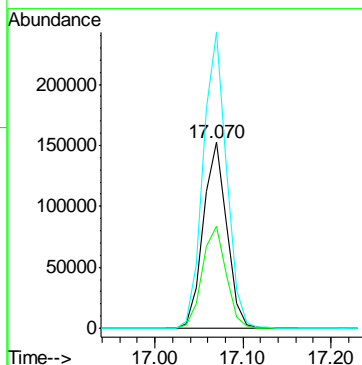
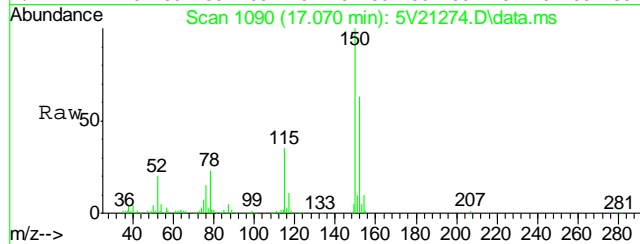
Tgt Ion:	106	Resp:	1709
Ion Ratio	Lower	Upper	
106	100		
91	223.0	177.1	217.1#





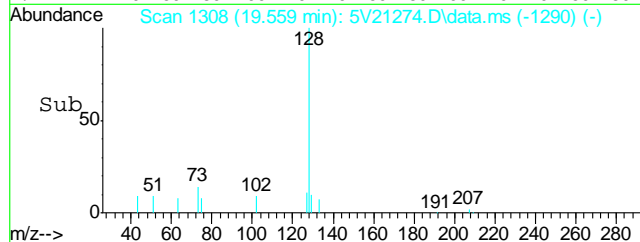
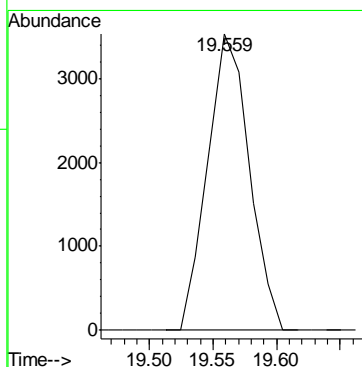
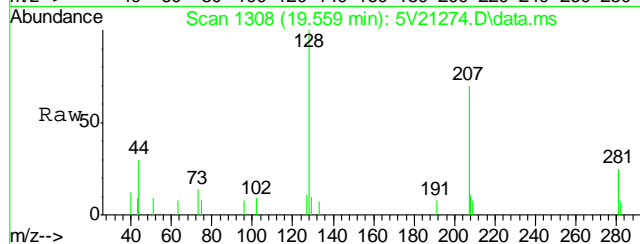
#74  
1,4-Dichlorobenzene-d4  
Concen: 50.00 ug/l  
RT: 17.070 min Scan# 1090  
Delta R.T. -0.000 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

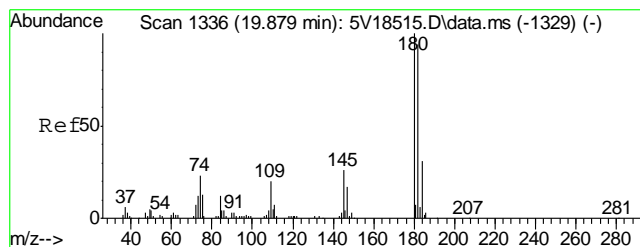
Tgt Ion	152	Resp	281030
Ion Ratio	Lower	Upper	
152	100		
115	55.6	41.4	62.0
150	158.3	153.9	230.9



#91  
Naphthalene  
Concen: 0.59 ug/l  
RT: 19.559 min Scan# 1308  
Delta R.T. -0.000 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

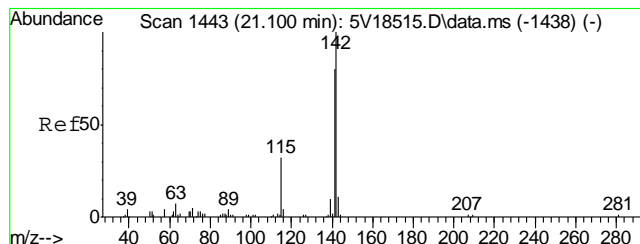
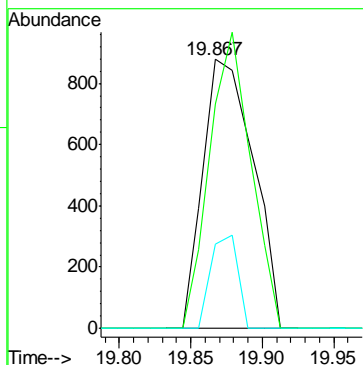
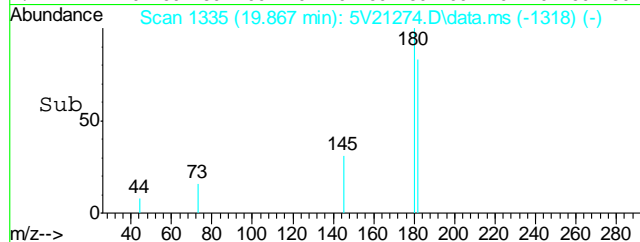
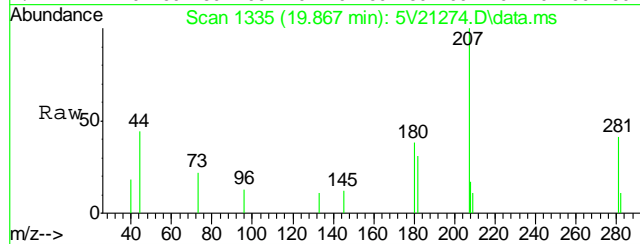
Tgt Ion:128 Resp: 8047





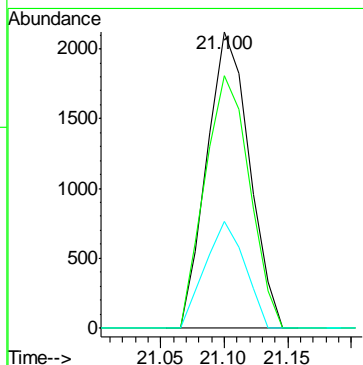
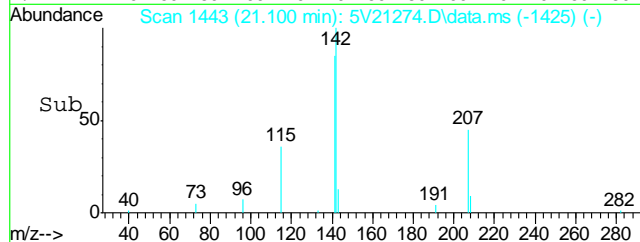
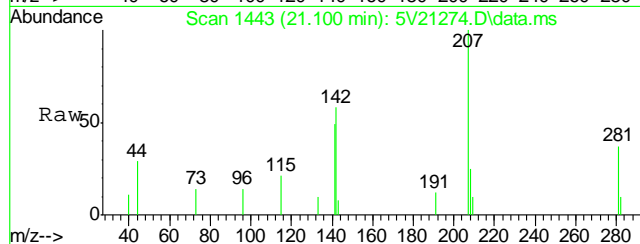
#93  
1,2,3-Trichlorobenzene  
Concen: 0.34 ug/l  
RT: 19.867 min Scan# 1335  
Delta R.T. -0.012 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

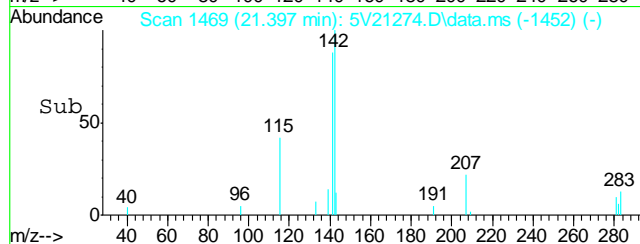
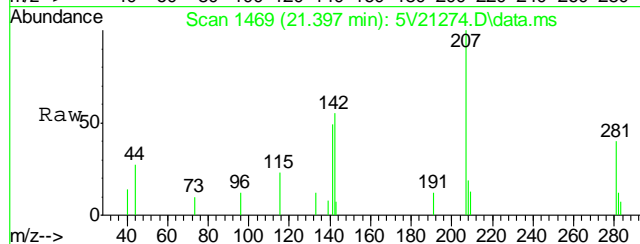
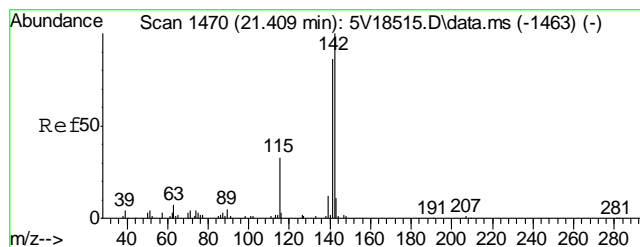
Tgt Ion	Ratio	Lower	Upper
180	100		
182	90.4	76.0	114.0
145	18.5	21.4	32.0



#94  
2-Methylnaphthalene  
Concen: 2.14 ug/l  
RT: 21.100 min Scan# 1443  
Delta R.T. 0.000 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

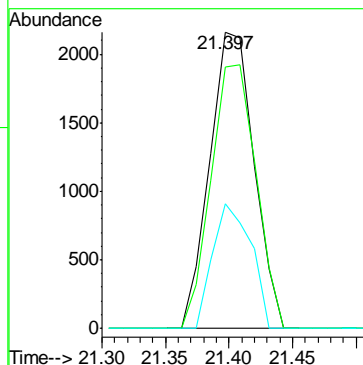
Tgt Ion	Ratio	Lower	Upper
142	100		
141	89.2	66.2	99.4
115	33.8	25.9	38.9





#95  
1-Methylnaphthalene  
Concen: 2.05 ug/l  
RT: 21.397 min Scan# 1469  
Delta R.T. -0.011 min  
Lab File: 5V21274.D  
Acq: 17 May 2012 10:52 am

Tgt Ion	Ratio	Lower	Upper
142	100		
141	90.4	68.9	103.3
115	36.1	27.3	40.9



## 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:** D34583  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU T31-19G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5918-MB	3G09350.D	1	05/22/12	DC	05/20/12	OP5918	E3G407

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

D34583-1

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	8.3	4.3	ug/kg	
120-12-7	Anthracene	ND	8.3	4.3	ug/kg	
56-55-3	Benzo(a)anthracene	ND	8.3	4.3	ug/kg	
50-32-8	Benzo(a)pyrene	ND	8.3	4.3	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	8.3	4.3	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	8.3	4.3	ug/kg	
218-01-9	Chrysene	ND	8.3	4.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	8.3	4.3	ug/kg	
206-44-0	Fluoranthene	ND	8.3	4.3	ug/kg	
86-73-7	Fluorene	ND	8.3	4.3	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	8.3	4.3	ug/kg	
91-20-3	Naphthalene	ND	12	10	ug/kg	
129-00-0	Pyrene	ND	8.3	4.3	ug/kg	

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	81% 10-145%
321-60-8	2-Fluorobiphenyl	89% 10-130%
1718-51-0	Terphenyl-d14	121% 22-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D34583  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU T31-19G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5918-BS	3G09351.D	1	05/22/12	DC	05/20/12	OP5918	E3G407

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D34583-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	73.7	88	34-130
120-12-7	Anthracene	83.3	80.7	97	35-130
56-55-3	Benzo(a)anthracene	83.3	80.0	96	36-130
50-32-8	Benzo(a)pyrene	83.3	79.2	95	36-130
205-99-2	Benzo(b)fluoranthene	83.3	63.9	77	35-130
207-08-9	Benzo(k)fluoranthene	83.3	77.5	93	37-130
218-01-9	Chrysene	83.3	77.6	93	40-130
53-70-3	Dibenzo(a,h)anthracene	83.3	96.8	116	32-130
206-44-0	Fluoranthene	83.3	75.4	90	38-130
86-73-7	Fluorene	83.3	75.3	90	35-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	96.0	115	28-130
91-20-3	Naphthalene	83.3	74.3	89	35-130
129-00-0	Pyrene	83.3	98.2	118	37-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	79%	10-145%
321-60-8	2-Fluorobiphenyl	84%	10-130%
1718-51-0	Terphenyl-d14	112%	22-130%



# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D34583  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU T31-19G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5918-MS	3G09361.D	4	05/22/12	DC	05/20/12	OP5918	E3G407
OP5918-MSD	3G09362.D	4	05/22/12	DC	05/20/12	OP5918	E3G407
D34638-1	3G09353.D	1	05/22/12	DC	05/20/12	OP5918	E3G407
D34638-1	3G09358.D	4	05/22/12	DC	05/20/12	OP5918	E3G407

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D34583-1

CAS No.	Compound	D34638-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		91.1	108	119	112	123	4	10-155/30
120-12-7	Anthracene	ND <sup>a</sup>		91.1	93.6	103	90.8	100	3	10-155/30
56-55-3	Benzo(a)anthracene	30.3 <sup>a</sup>	J	91.1	119	97	122	101	2	10-175/30
50-32-8	Benzo(a)pyrene	ND		91.1	99.9	110	98.3	108	2	10-164/30
205-99-2	Benzo(b)fluoranthene	35.5		91.1	124	97	120	93	3	10-165/30
207-08-9	Benzo(k)fluoranthene	18.4		91.1	69.8	56	84.9	73	20	10-178/30
218-01-9	Chrysene	57.6 <sup>a</sup>		91.1	128	77	132	82	3	10-147/30
53-70-3	Dibenzo(a,h)anthracene	ND		91.1	99.9	110	97.4	107	3	10-144/30
206-44-0	Fluoranthene	34.2 <sup>a</sup>	J	91.1	90.1	61	88.3	59	2	10-207/30
86-73-7	Fluorene	ND		91.1	146	160	148	163	1	10-163/30
193-39-5	Indeno(1,2,3-cd)pyrene	16.0		91.1	101	93	104	97	3	10-180/30
91-20-3	Naphthalene	58.3		91.1	121	69	110	57	10	10-198/30
129-00-0	Pyrene	61.8 <sup>a</sup>		91.1	149	96	156	103	5	10-189/30

CAS No.	Surrogate Recoveries	MS	MSD	D34638-1	D34638-1	Limits
4165-60-0	Nitrobenzene-d5	68%	61%	64%	75%	10-145%
321-60-8	2-Fluorobiphenyl	83%	77%	137%* <sup>b</sup>	85%	10-130%
1718-51-0	Terphenyl-d14	102%	108%	127%	118%	22-130%

(a) Result is from Run #2.

(b) Outside control limits due to matrix interference.

GC/MS Semi-volatiles

Raw Data

∞

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\052112\  
 Data File : 3g09357.D  
 Acq On : 22 May 2012 7:08 am  
 Operator : DONC  
 Sample : D34583-1, 4x  
 Misc : OP5918,E3G407,30.07,,,1,4  
 ALS Vial : 32 Sample Multiplier: 1

Quant Time: May 23 11:33:57 2012  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G406.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Tue May 22 07:59:25 2012  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	6.482	136	531586	4.0000	ug/mL	0.00
6) Acenaphthene-d10	8.886	164	306564	4.0000	ug/mL	0.00
14) Phenanthrene-d10	11.437	188	423429	4.0000	ug/mL	0.00
18) Chrysene-d12	16.494	240	262327	4.0000	ug/mL	0.00
23) Perylene-d12	19.069	264	213652	4.0000	ug/mL	0.00

## System Monitoring Compounds

2) Nitrobenzene-d5	5.772	82	373013	5.1402	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	10.28%#		
7) 2-Fluorobiphenyl	7.870	172	746484	6.8210	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	13.64%#		
20) Terphenyl-d14	14.540	244	537046	10.9693	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	21.94%#		

## Target Compounds

						Qvalue
3) N-Nitrosodimethylamine	0.000	74	0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d	
5) Naphthalene	6.507	128	10411	0.0696	ug/mL	89
8) 2-Methylnaphthalene	7.343	142	21823	0.2388	ug/mL	97
9) 1-Methylnaphthalene	7.480	142	10996	0.1228	ug/mL	90
10) Acenaphthylene	0.000	152	0	N.D.	d	
11) Acenaphthene	0.000	154	0	N.D.	d	
12) Fluorene	0.000	166	0	N.D.	d	
13) Diphenylamine	0.000	169	0	N.D.	d	
15) Phenanthrene	11.477	178	18678	0.1452	ug/mL#	90
16) Anthracene	0.000	178	0	N.D.	d	
17) Fluoranthene	0.000	202	0	N.D.	d	
19) Pyrene	0.000	202	0	N.D.	d	
21) Benzo(a)anthracene	0.000	228	0	N.D.	d	
22) Chrysene	16.527	228	8976	0.1048	ug/mL	75
24) Benzo(b)fluoranthene	0.000	252	0	N.D.	d	
25) Benzo(k)fluoranthene	0.000	252	0	N.D.	d	
26) Benzo(a)pyrene	0.000	252	0	N.D.	d	
27) Indeno(1,2,3-cd)pyrene	0.000	276	0	N.D.	d	
28) Dibenzo(a,h)anthracene	0.000	278	0	N.D.	d	
29) Benzo(g,h,i)perylene	21.193	276	10911	0.2840	ug/mL	89

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

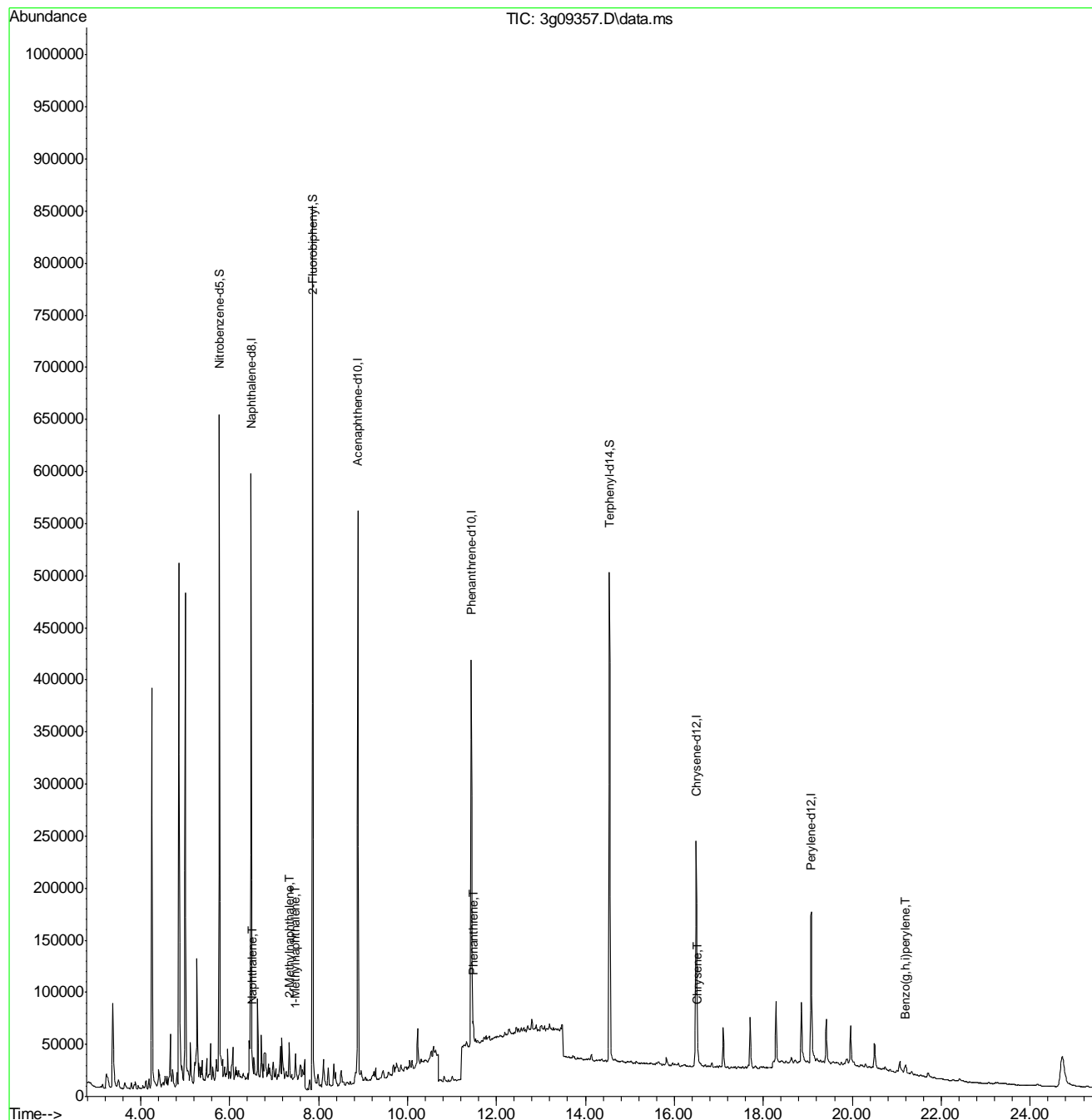
8.1.1

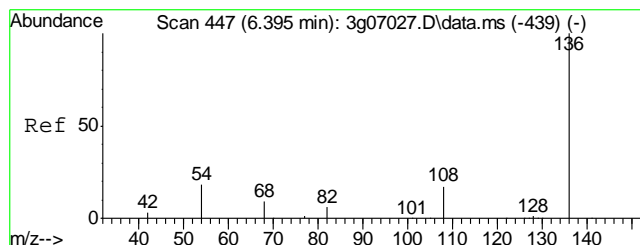
8

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\052112\  
Data File : 3g09357.D  
Acq On : 22 May 2012 7:08 am  
Operator : DONC  
Sample : D34583-1, 4x  
Misc : OP5918,E3G407,30.07,,,1,4  
ALS Vial : 32 Sample Multiplier: 1

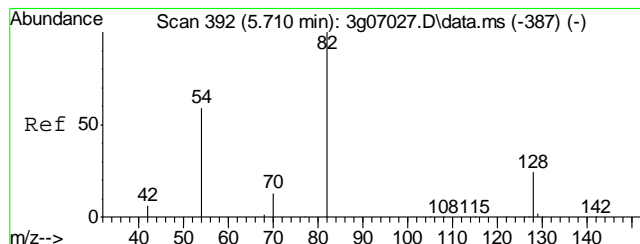
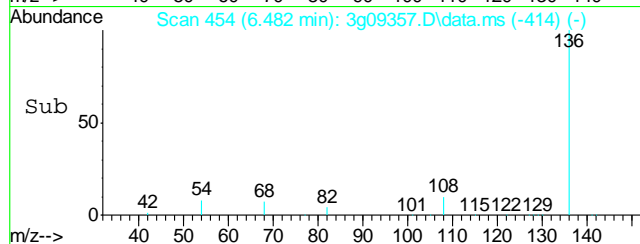
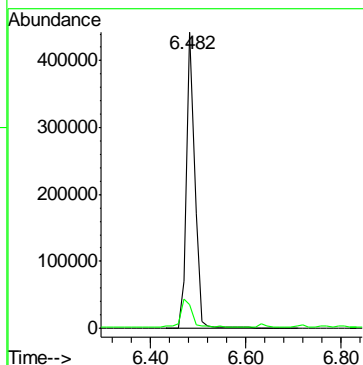
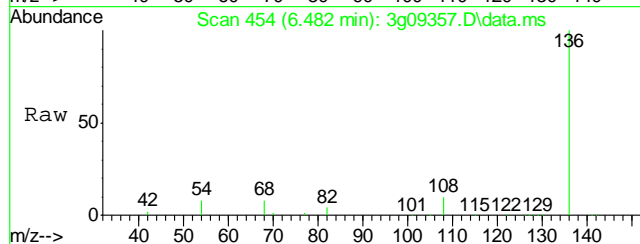
Quant Time: May 23 11:33:57 2012  
Quant Method : C:\msdchem\1\METHODS\SIMPE3G406.M  
Quant Title : PAHSIM BASE  
QLast Update : Tue May 22 07:59:25 2012  
Response via : Initial Calibration





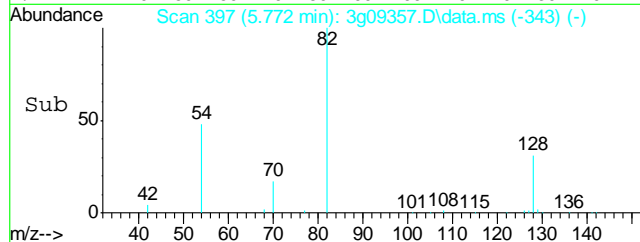
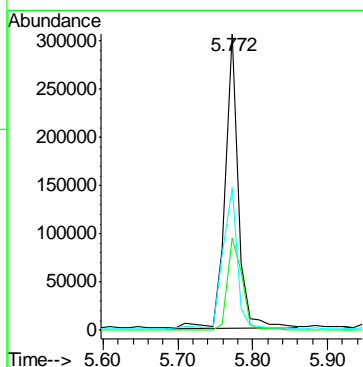
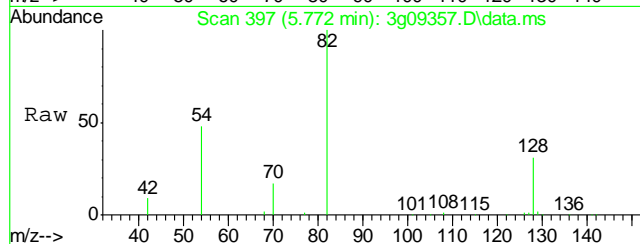
#1  
Naphthalene-d8  
Concen: 4.0000 ug/mL  
RT: 6.482 min Scan# 454  
Delta R.T. 0.000 min  
Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

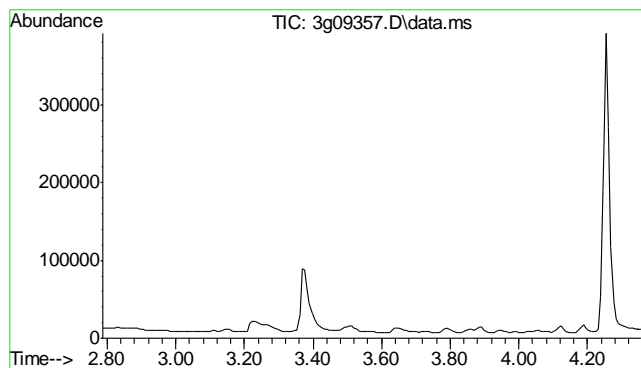
Tgt Ion: 136 Resp: 531586  
Ion Ratio Lower Upper  
136 100  
68 13.1 0.0 31.7



#2  
Nitrobenzene-d5  
Concen: 5.1402 ug/mL  
RT: 5.772 min Scan# 397  
Delta R.T. 0.000 min  
Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

Tgt Ion: 82 Resp: 373013  
Ion Ratio Lower Upper  
82 100  
128 34.4 14.7 54.7  
54 51.0 36.8 76.8

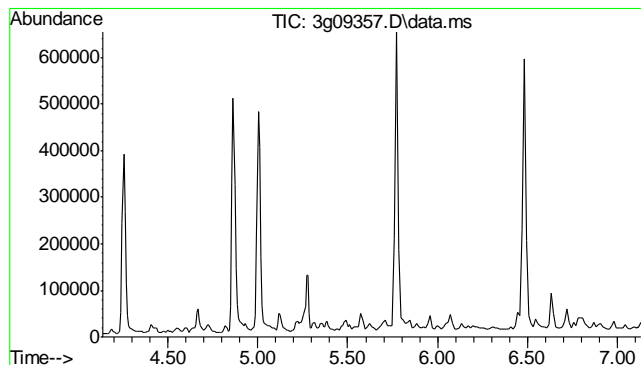
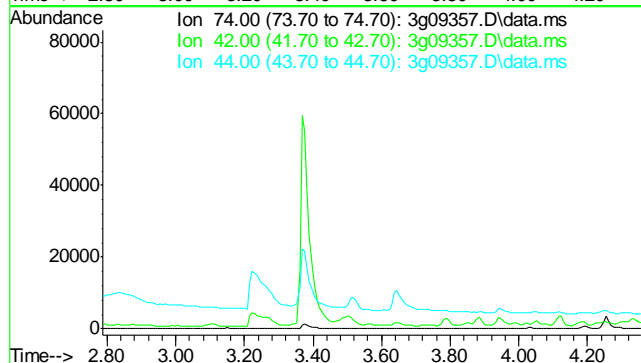




#3  
N-Nitrosodimethylamine  
Concen: N.D. ug/mL  
Expected RT: 2.86 min

Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

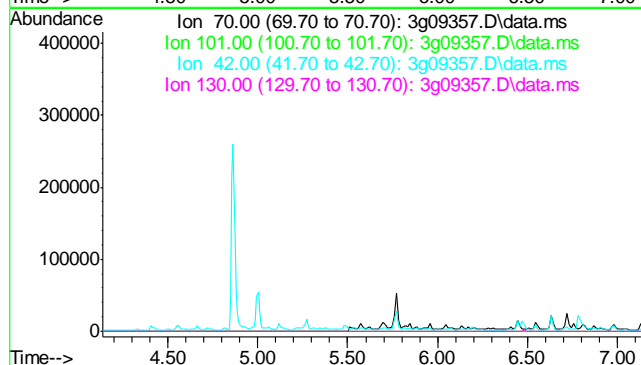
Tgt Ion:	74
Sig	Exp Ratio
74	100
42	68.8
44	7.4

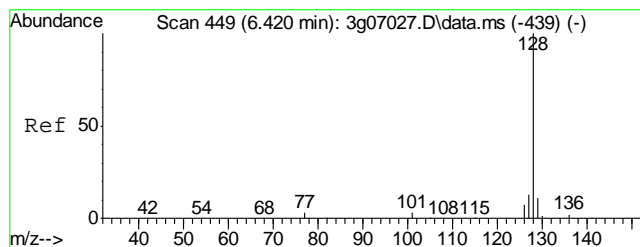


#4  
N-Nitrosodi-propylamine  
Concen: N.D. ug/mL  
Expected RT: 5.63 min

Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

Tgt Ion:	70
Sig	Exp Ratio
70	100
101	10.0
42	61.7
130	18.9





#5

Naphthalene

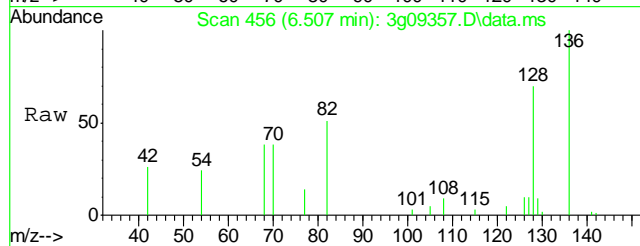
Concen: 0.0696 ug/mL

RT: 6.507 min Scan# 456

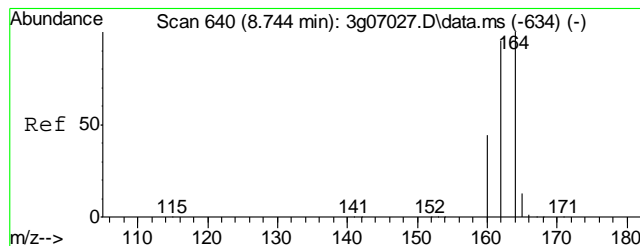
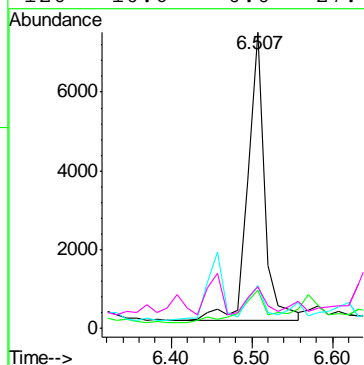
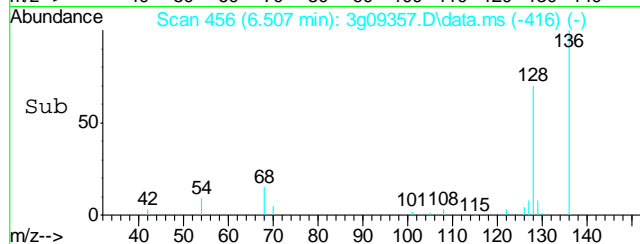
Delta R.T. 0.000 min

Lab File: 3g09357.D

Acq: 22 May 12 7:08 am



Tgt Ion:	128	Resp:	10411
Ion Ratio	Lower	Upper	
128	100		
129	20.6	0.0	30.8
127	12.6	0.0	32.4
126	10.6	0.0	27.7



#6

Acenaphthene-d10

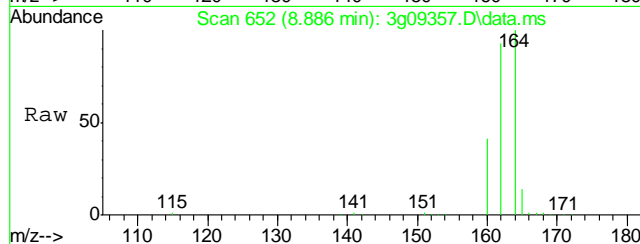
Concen: 4.0000 ug/mL

RT: 8.886 min Scan# 652

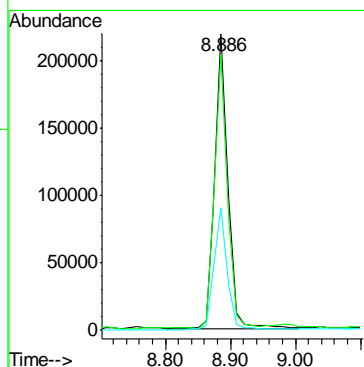
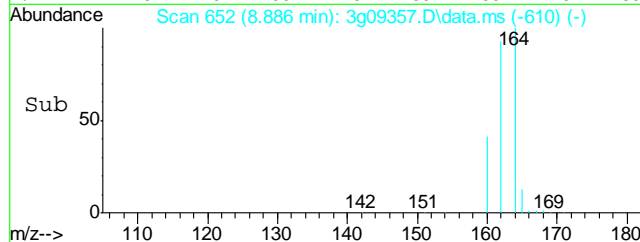
Delta R.T. 0.000 min

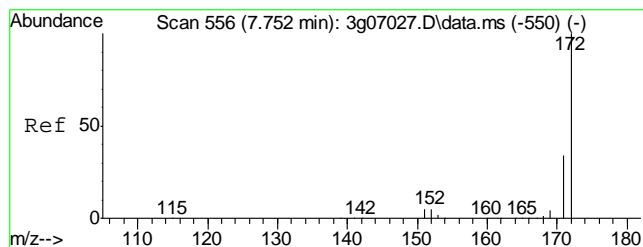
Lab File: 3g09357.D

Acq: 22 May 12 7:08 am



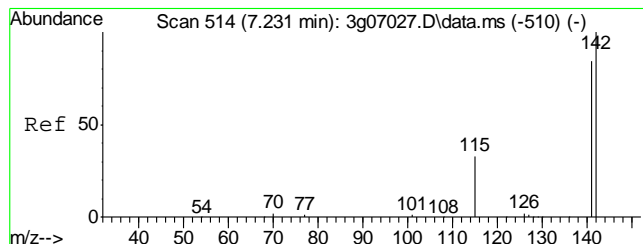
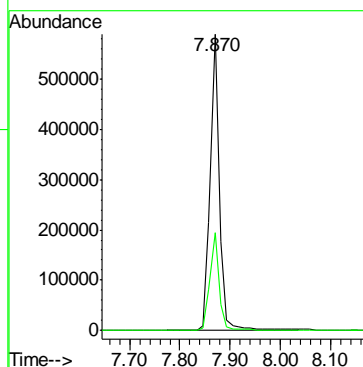
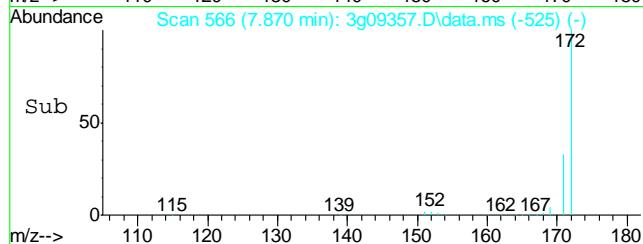
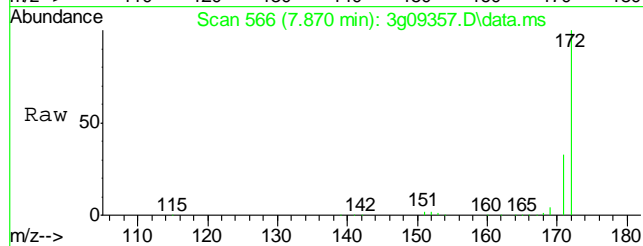
Tgt Ion:	164	Resp:	306564
Ion Ratio	Lower	Upper	
164	100		
162	90.3	73.1	113.1
160	41.6	22.5	62.5





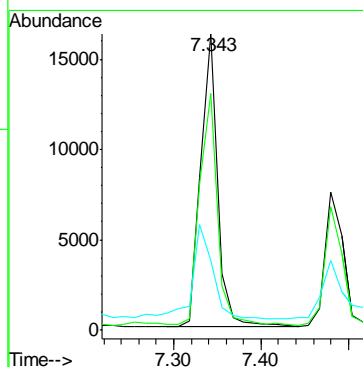
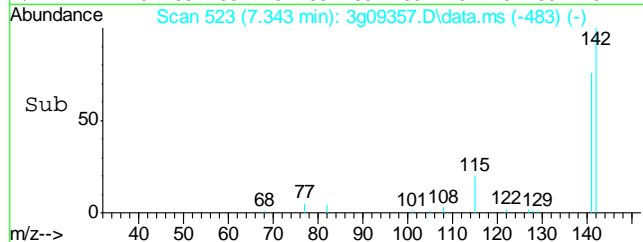
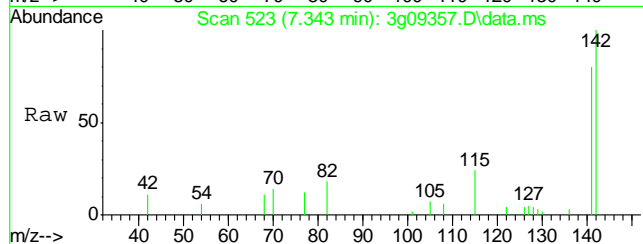
#7  
2-Fluorobiphenyl  
Concen: 6.8210 ug/mL  
RT: 7.870 min Scan# 566  
Delta R.T. 0.001 min  
Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

Tgt Ion: 172 Resp: 746484  
Ion Ratio Lower Upper  
172 100  
171 33.5 13.1 53.1

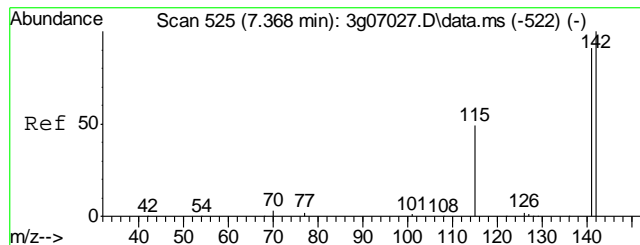


#8  
2-Methylnaphthalene  
Concen: 0.2388 ug/mL  
RT: 7.343 min Scan# 523  
Delta R.T. 0.000 min  
Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

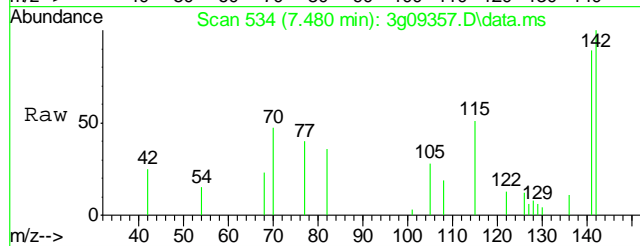
Tgt Ion: 142 Resp: 21823  
Ion Ratio Lower Upper  
142 100  
141 82.9 63.0 103.0  
115 40.5 15.6 55.6



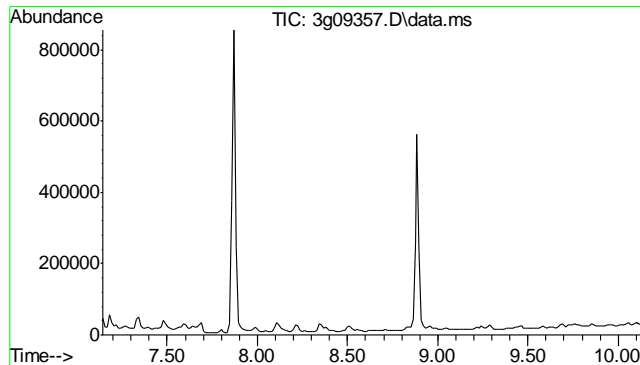
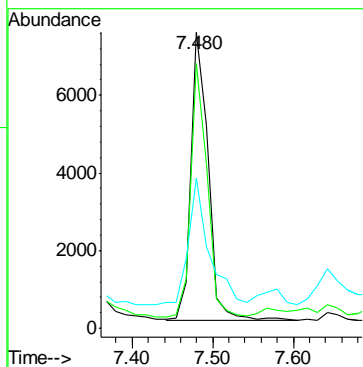
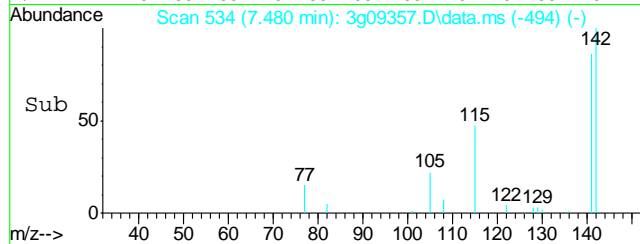




#9  
1-Methylnaphthalene  
Concen: 0.1228 ug/mL  
RT: 7.480 min Scan# 534  
Delta R.T. 0.000 min  
Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

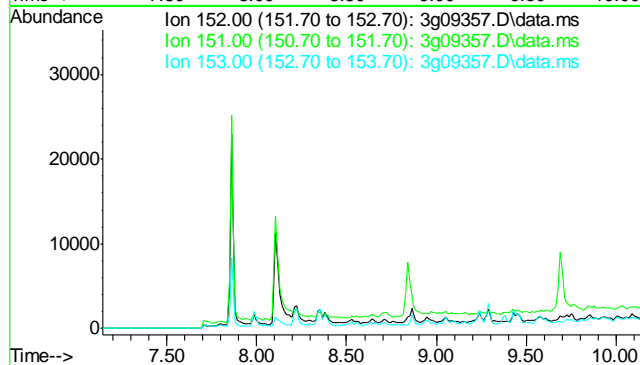


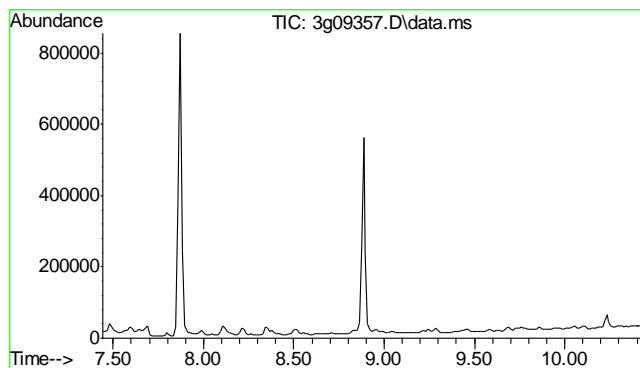
Tgt Ion: 142 Resp: 10996  
Ion Ratio Lower Upper  
142 100  
141 83.9 67.2 107.2  
115 53.0 17.1 57.1



#10  
Acenaphthylene  
Concen: N.D. ug/mL  
Expected RT: 8.64 min  
Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

Tgt Ion: 152  
Sig Exp Ratio  
152 100  
151 19.0  
153 14.1

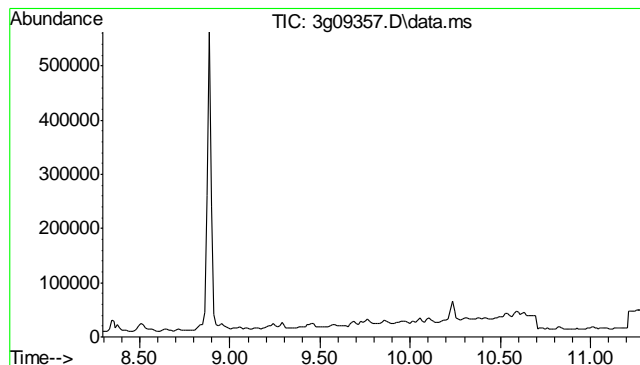
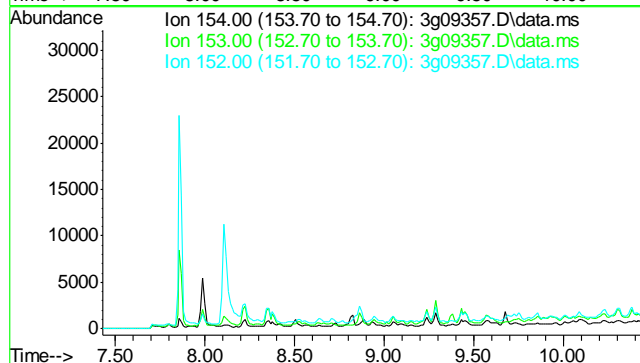




#11  
Acenaphthene  
Concen: N.D. ug/mL  
Expected RT: 8.93 min

Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

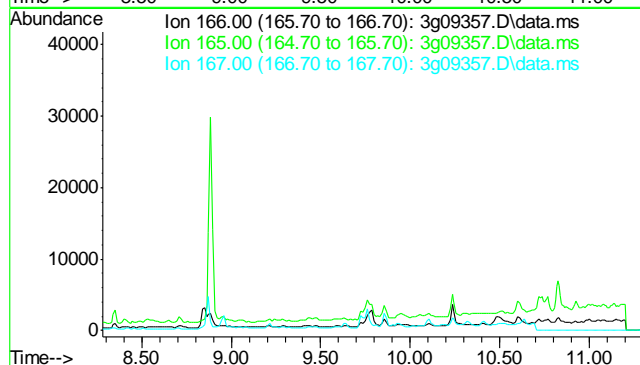
Tgt Ion: 154  
Sig Exp Ratio  
154 100  
153 105.0  
152 46.1

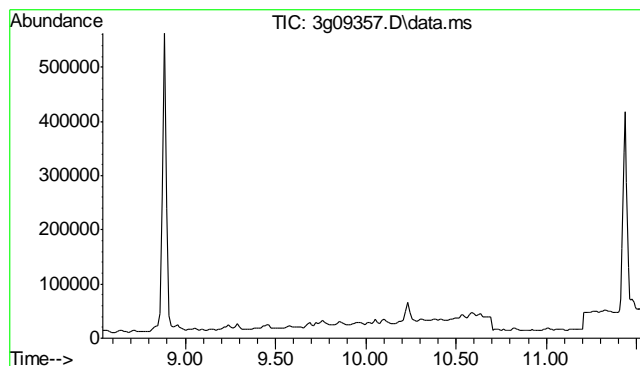


#12  
Fluorene  
Concen: N.D. ug/mL  
Expected RT: 9.78 min

Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

Tgt Ion: 166  
Sig Exp Ratio  
166 100  
165 90.8  
167 13.2

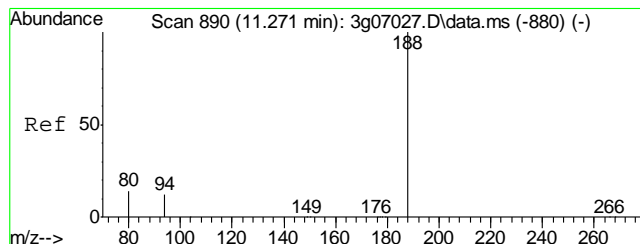
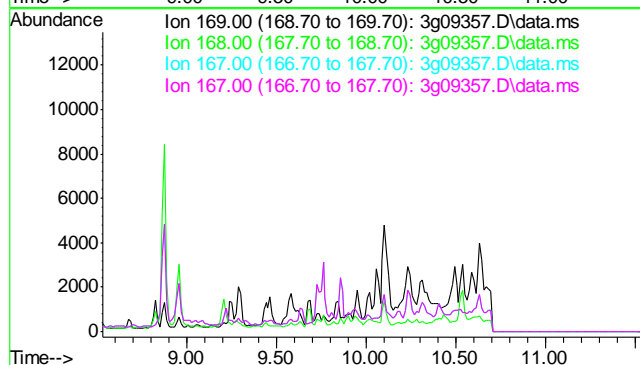




#13  
Diphenylamine  
Concen: N.D. ug/mL  
Expected RT: 10.03 min

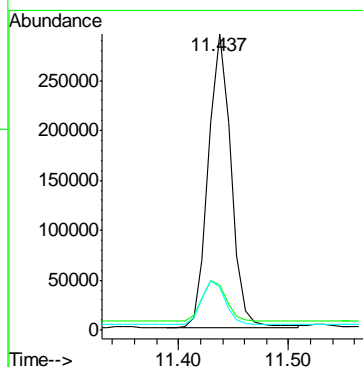
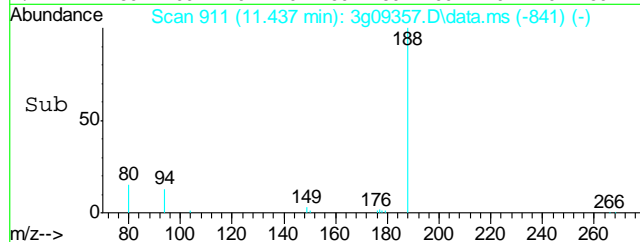
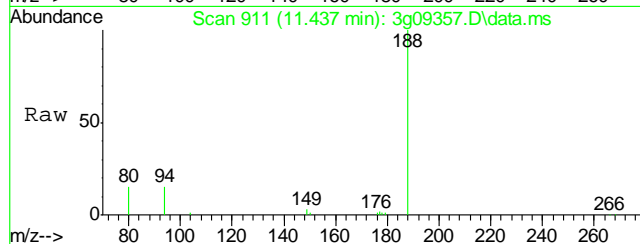
Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

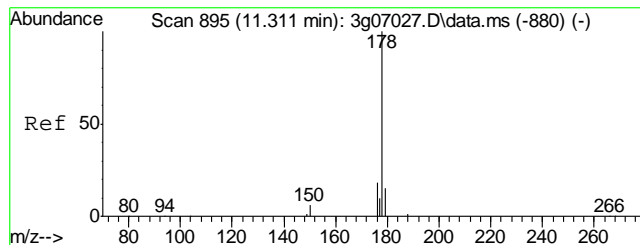
Tgt Ion:	169
Sig	Exp Ratio
169	100
168	61.6
167	33.6
167	33.6



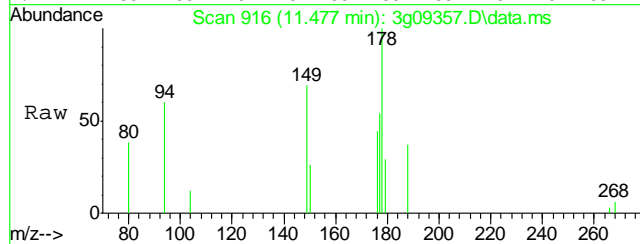
#14  
Phenanthrene-d10  
Concen: 4.0000 ug/mL  
RT: 11.437 min Scan# 911  
Delta R.T. 0.000 min  
Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

Tgt Ion:	188	Resp:	423429
Ion	Ratio	Lower	Upper
188	100		
94	14.9	0.0	36.5
80	15.8	0.0	37.9

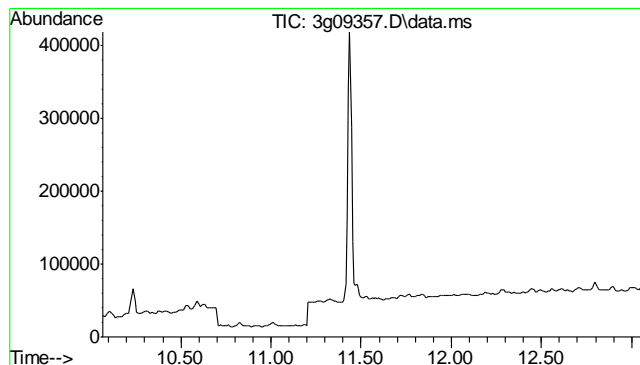
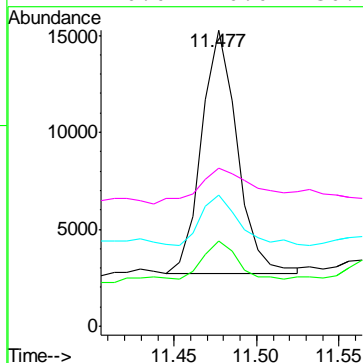
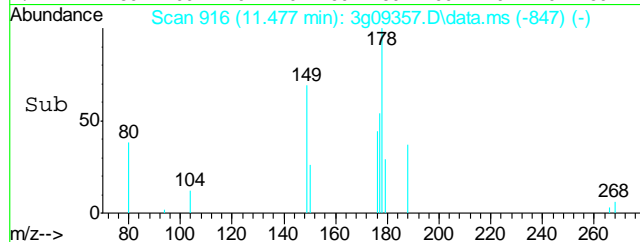




#15  
Phenanthrene  
Concen: 0.1452 ug/mL  
RT: 11.477 min Scan# 916  
Delta R.T. 0.000 min  
Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

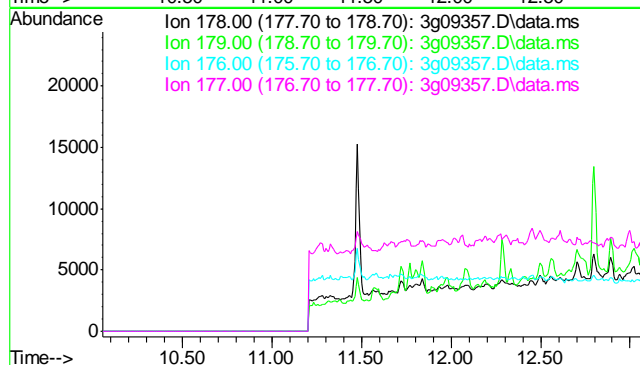


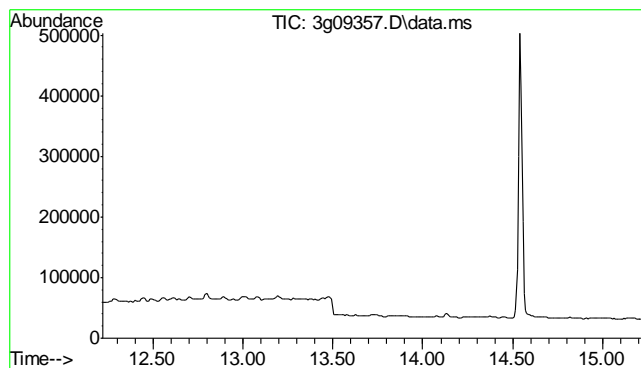
Tgt Ion:	178	Resp:	18678
Ion Ratio	Lower	Upper	
178	100		
179	14.6	0.0	35.1
176	22.2	0.0	38.5
177	0.0	0.0	30.2



#16  
Anthracene  
Concen: N.D. ug/mL  
Expected RT: 11.56 min  
Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

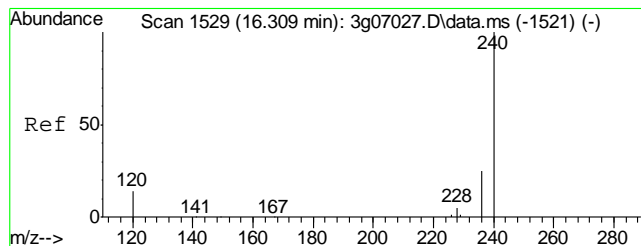
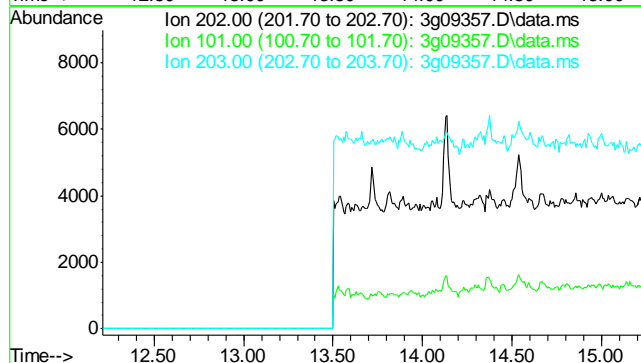
Tgt Ion:	178
Sig	Exp Ratio
178	100
179	15.1
176	17.8
177	8.7





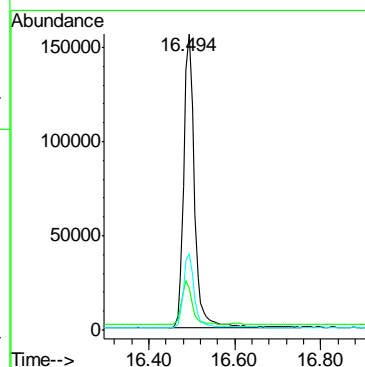
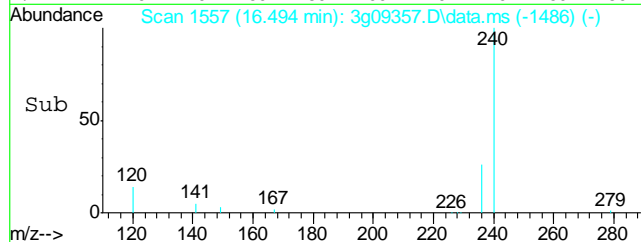
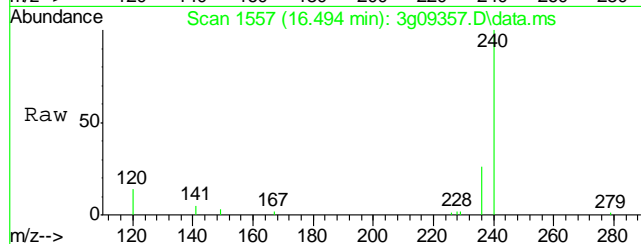
#17  
Fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 13.72 min  
  
Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

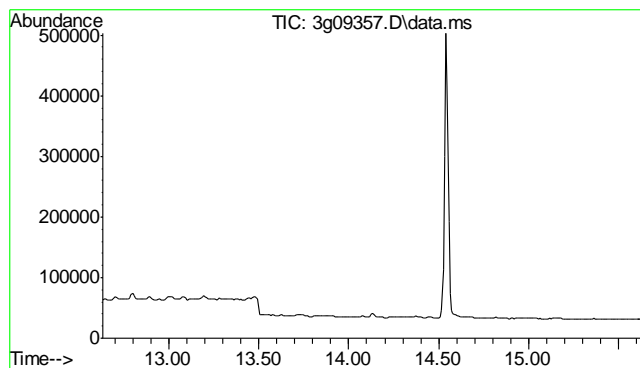
Tgt Ion: 202  
Sig Exp Ratio  
202 100  
101 15.5  
203 17.2



#18  
Chrysene-d12  
Concen: 4.0000 ug/mL  
RT: 16.494 min Scan# 1557  
Delta R.T. 0.007 min  
Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

Tgt Ion: 240 Resp: 262327  
Ion Ratio Lower Upper  
240 100  
120 14.1 0.0 35.5  
236 25.5 4.8 44.8

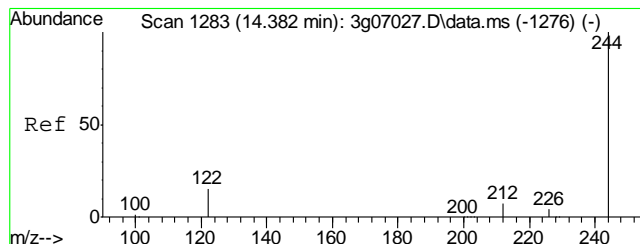
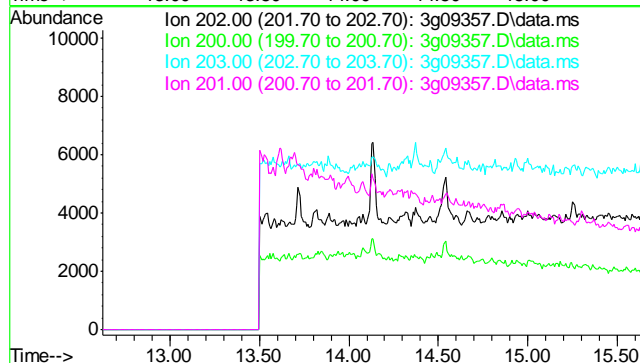




#19  
Pyrene  
Concen: N.D. ug/mL  
Expected RT: 14.13 min

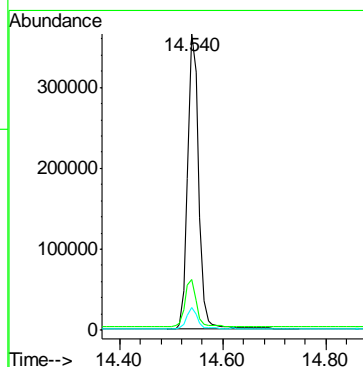
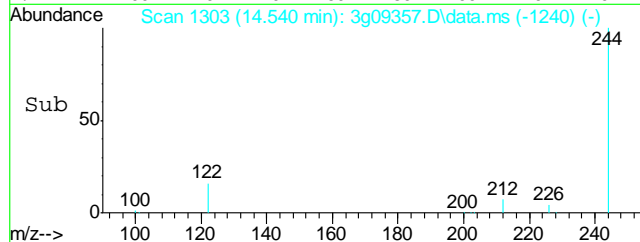
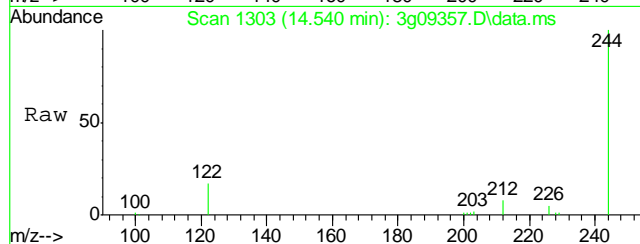
Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

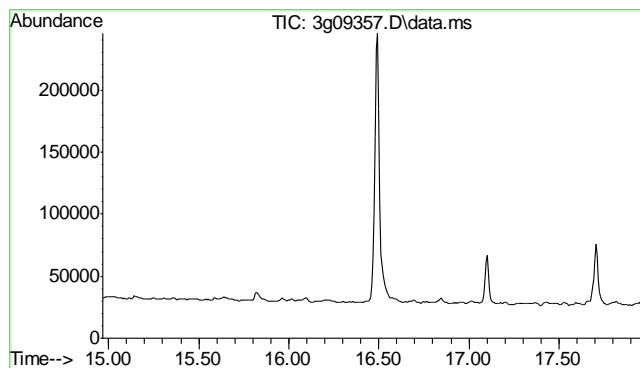
Tgt Ion:	202
Sig	Exp Ratio
202	100
200	20.3
203	17.7
201	16.7



#20  
Terphenyl-d14  
Concen: 10.9693 ug/mL  
RT: 14.540 min Scan# 1303  
Delta R.T. 0.000 min  
Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

Tgt Ion:	244	Resp:	537046
Ion	Ratio	Lower	Upper
244	100		
122	16.1	0.0	36.5
212	6.8	0.0	26.8

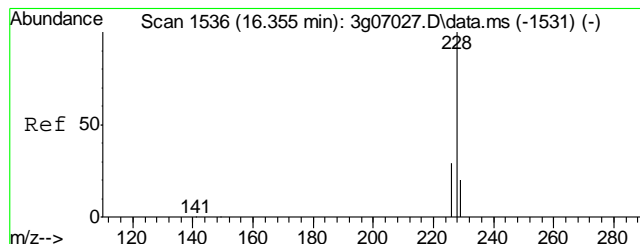
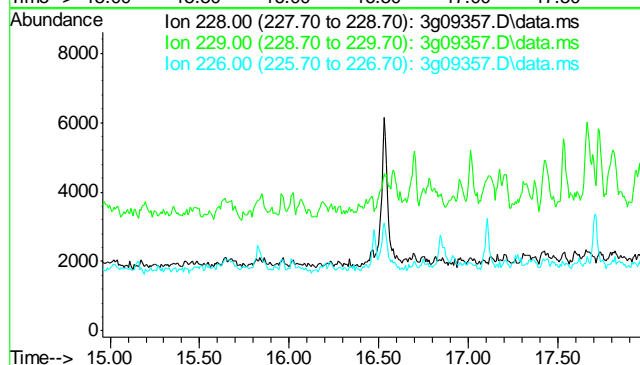




#21  
Benzo(a)anthracene  
Concen: N.D. ug/mL  
Expected RT: 16.46 min

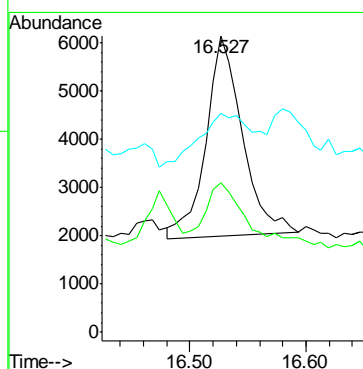
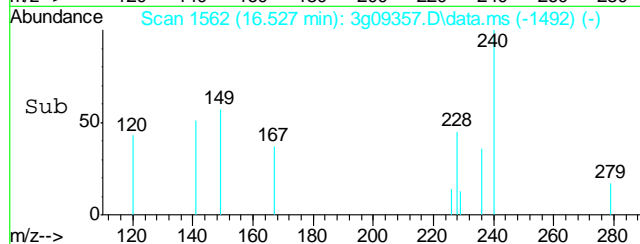
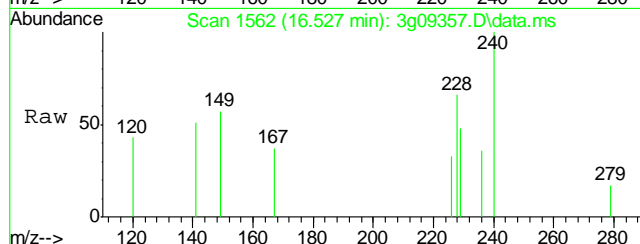
Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

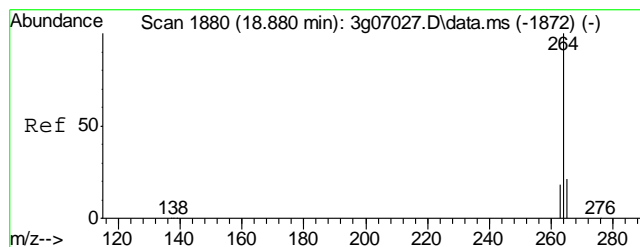
Tgt Ion: 228  
Sig Exp Ratio  
228 100  
229 19.5  
226 26.2



#22  
Chrysene  
Concen: 0.1048 ug/mL  
RT: 16.527 min Scan# 1562  
Delta R.T. -0.007 min  
Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

Tgt Ion: 228 Resp: 8976  
Ion Ratio Lower Upper  
228 100  
226 38.0 8.3 48.3  
229 34.5 0.0 39.2





#23

Perylene-d12

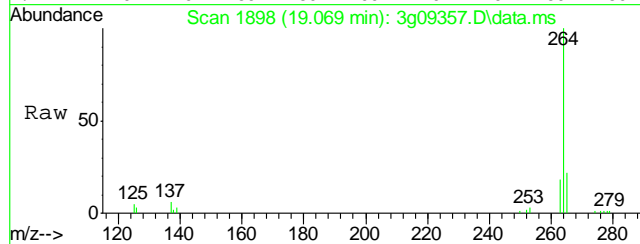
Concen: 4.0000 ug/mL

RT: 19.069 min Scan# 1898

Delta R.T. 0.000 min

Lab File: 3g09357.D

Acq: 22 May 12 7:08 am



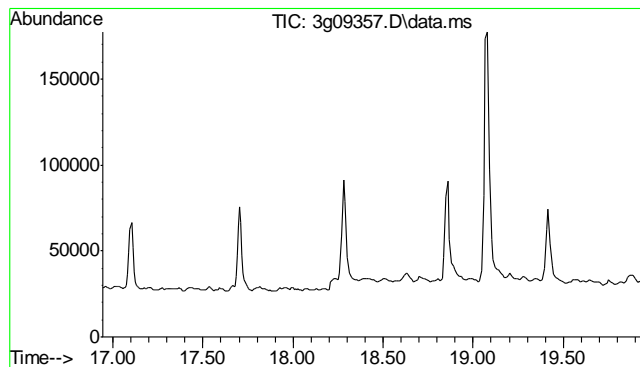
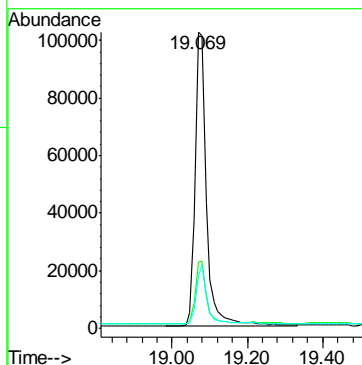
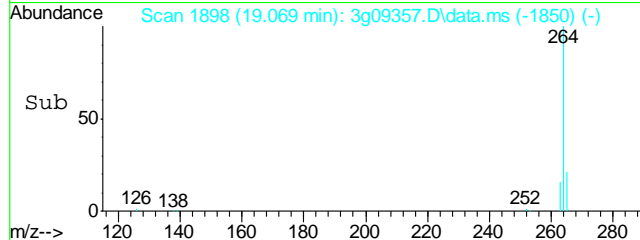
Tgt Ion: 264 Resp: 213652

Ion Ratio Lower Upper

264 100

265 20.7 1.1 41.1

263 19.4 0.0 38.9



#24

Benzo(b)fluoranthene

Concen: N.D. ug/mL

Expected RT: 18.44 min

Lab File: 3g09357.D

Acq: 22 May 12 7:08 am

Tgt Ion: 252

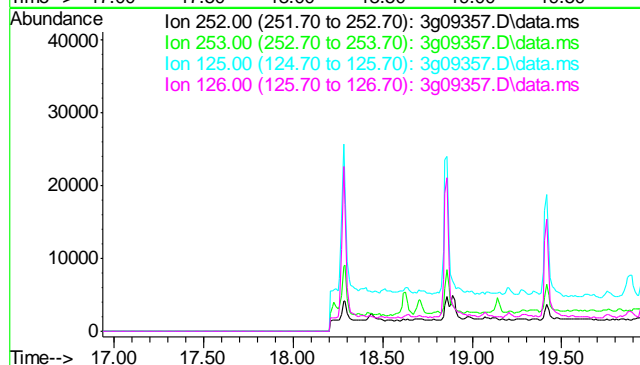
Sig Exp Ratio

252 100

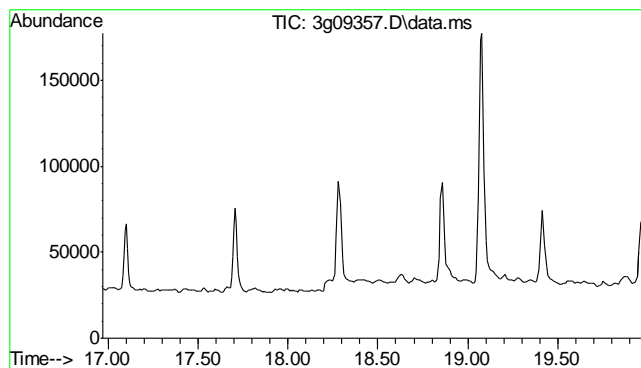
253 26.0

125 12.4

126 17.4



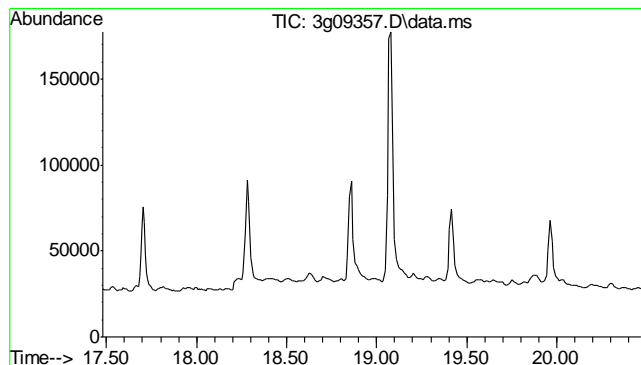
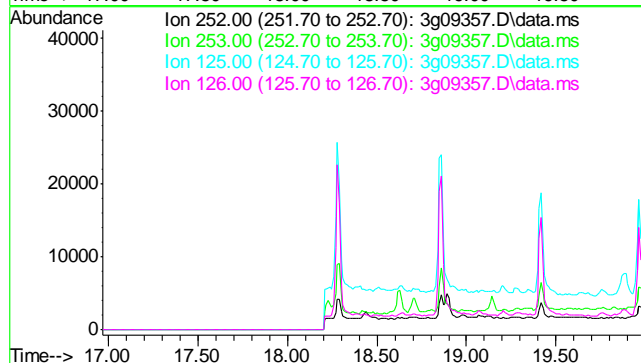




#25  
Benzo(k)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 18.47 min

Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

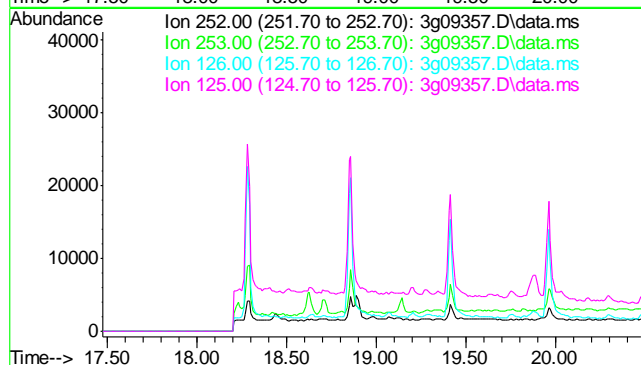
Tgt Ion: 252	
Sig	Exp Ratio
252	100
253	19.0
125	11.0
126	17.1

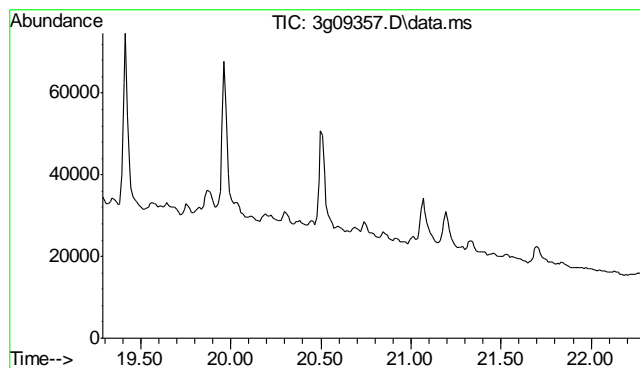


#26  
Benzo(a)pyrene  
Concen: N.D. ug/mL  
Expected RT: 18.97 min

Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

Tgt Ion: 252	
Sig	Exp Ratio
252	100
253	21.6
126	15.7
125	12.5

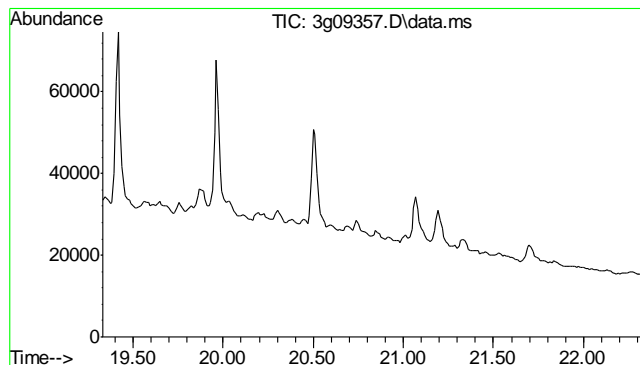
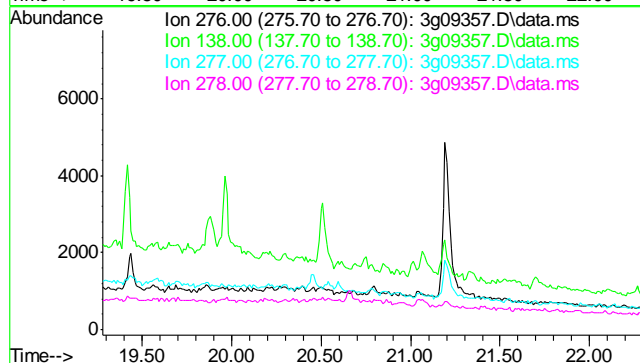




#27  
Indeno(1,2,3-cd)pyrene  
Concen: N.D. ug/mL  
Expected RT: 20.78 min

Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

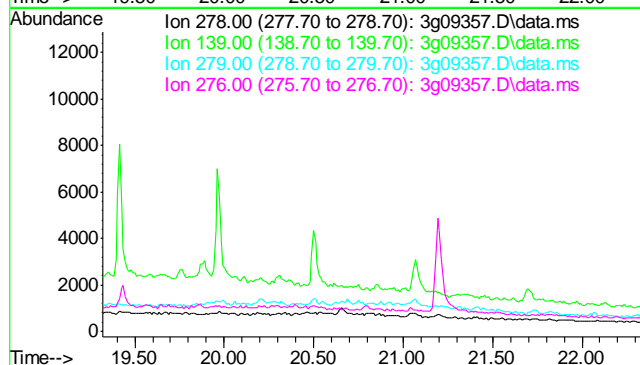
Tgt Ion:	276
Sig	Exp Ratio
276	100
138	12.2
277	24.8
278	77.5

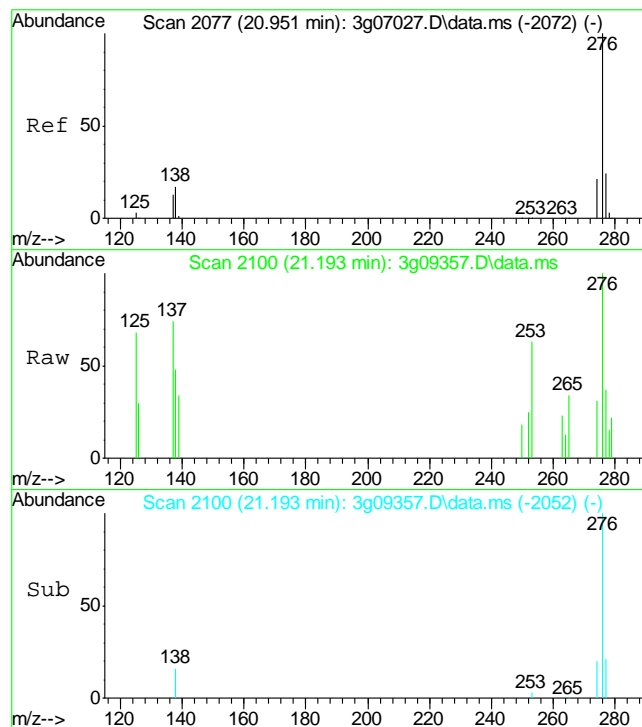


#28  
Dibenz(a,h)anthracene  
Concen: N.D. ug/mL  
Expected RT: 20.82 min

Lab File: 3g09357.D  
Acq: 22 May 12 7:08 am

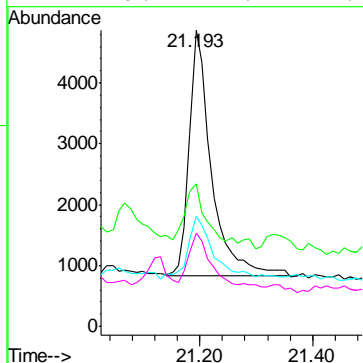
Tgt Ion:	278
Sig	Exp Ratio
278	100
139	19.0
279	23.4
276	129.1





#29  
 Benzo(g,h,i)perylene  
 Concen: 0.2840 ug/mL  
 RT: 21.193 min Scan# 2100  
 Delta R.T. 0.000 min  
 Lab File: 3g09357.D  
 Acq: 22 May 12 7:08 am

Tgt Ion: 276	Resp: 10911
Ion Ratio	Lower Upper
276 100	
138 29.1	3.6 43.6
277 30.9	3.6 43.6
274 19.1	1.4 41.4



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\052112\  
 Data File : 3g09360.D  
 Acq On : 22 May 2012 9:41 am  
 Operator : DONC  
 Sample : D34583-1  
 Misc : OP5918,E3G407,30.07,,,1,1  
 ALS Vial : 35 Sample Multiplier: 1

Quant Time: May 23 11:39:14 2012  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G406.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Tue May 22 07:59:25 2012  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	6.482	136	487879	4.0000	ug/mL	0.00
6) Acenaphthene-d10	8.886	164	257107	4.0000	ug/mL	0.00
14) Phenanthrene-d10	11.445	188	289254	4.0000	ug/mL	0.00
18) Chrysene-d12	16.507	240	184224	4.0000	ug/mL	0.02
23) Perylene-d12	19.090	264	132913	4.0000	ug/mL	0.02

## System Monitoring Compounds

2) Nitrobenzene-d5	5.772	82	1360343	20.4253	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	40.86%		
7) 2-Fluorobiphenyl	7.870	172	2640766	28.7715	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	57.54%		
20) Terphenyl-d14	14.556	244	1423225	41.3940	ug/mL	0.02
Spiked Amount 50.000	Range 25 - 135		Recovery =	82.78%		

## Target Compounds

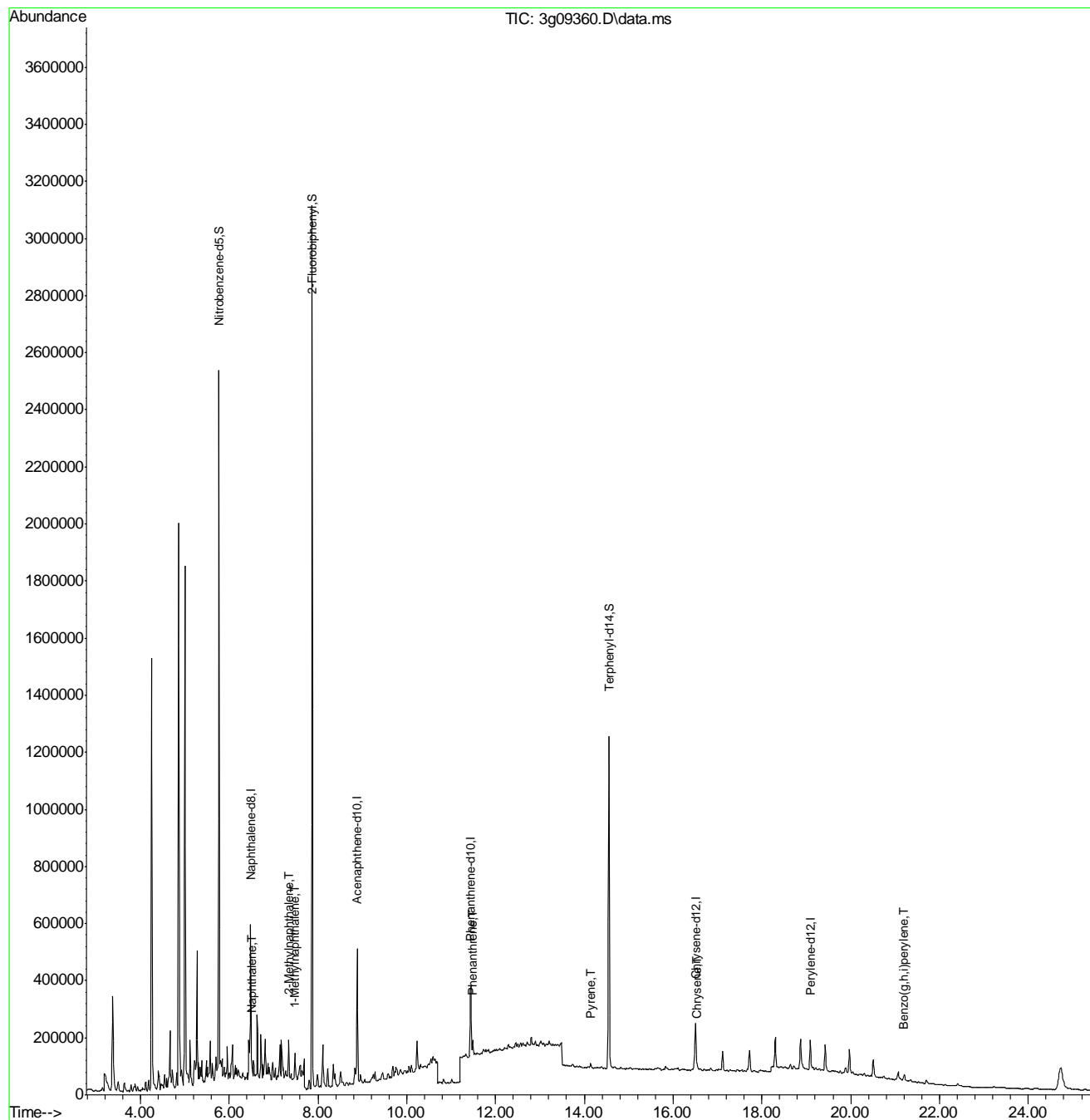
						Qvalue
3) N-Nitrosodimethylamine	0.000	74	0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d	
5) Naphthalene	6.507	128	40474	0.2946	ug/mL	90
8) 2-Methylnaphthalene	7.343	142	83386	1.0879	ug/mL	95
9) 1-Methylnaphthalene	7.480	142	41637	0.5545	ug/mL	90
10) Acenaphthylene	0.000	152	0	N.D.	d	
11) Acenaphthene	0.000	154	0	N.D.	d	
12) Fluorene	0.000	166	0	N.D.	d	
13) Diphenylamine	0.000	169	0	N.D.	d	
15) Phenanthrene	11.485	178	52479	0.5972	ug/mL#	89
16) Anthracene	0.000	178	0	N.D.	d	
17) Fluoranthene	0.000	202	0	N.D.	d	
19) Pyrene	14.144	202	14470	0.2184	ug/mL	76
21) Benzo(a)anthracene	0.000	228	0	N.D.	d	
22) Chrysene	16.540	228	35605	0.5918	ug/mL#	73
24) Benzo(b)fluoranthene	0.000	252	0	N.D.	d	
25) Benzo(k)fluoranthene	0.000	252	0	N.D.	d	
26) Benzo(a)pyrene	0.000	252	0	N.D.	d	
27) Indeno(1,2,3-cd)pyrene	0.000	276	0	N.D.	d	
28) Dibenzo(a,h)anthracene	0.000	278	0	N.D.	d	
29) Benzo(g,h,i)perylene	21.204	276	26785	0.9086	ug/mL	98

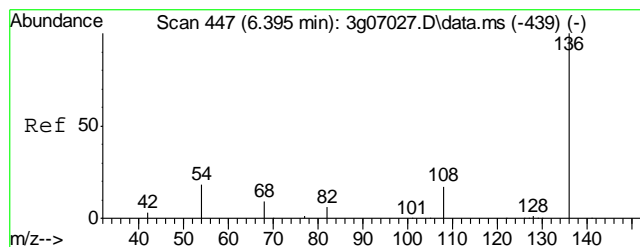
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\052112\  
Data File : 3g09360.D  
Acq On : 22 May 2012 9:41 am  
Operator : DONC  
Sample : D34583-1  
Misc : OP5918,E3G407,30.07,,,1,1  
ALS Vial : 35 Sample Multiplier: 1

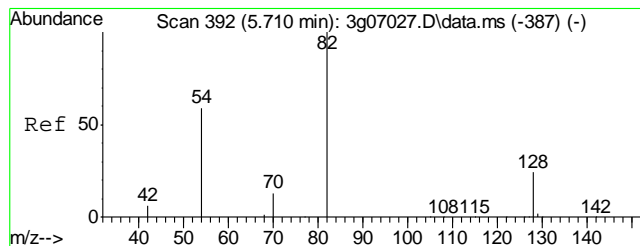
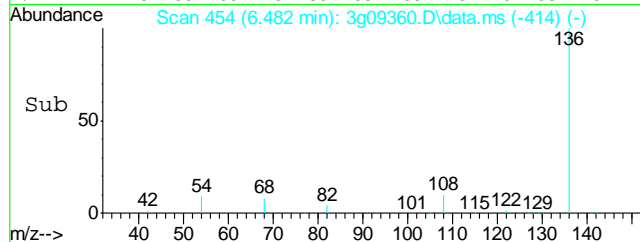
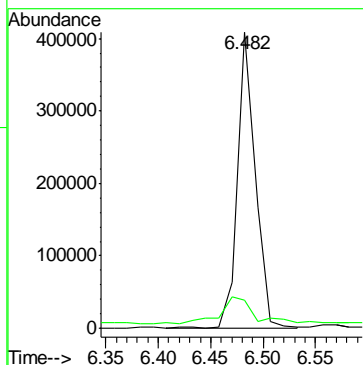
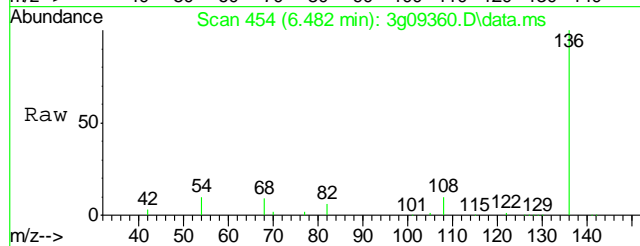
Quant Time: May 23 11:39:14 2012  
Quant Method : C:\msdchem\1\METHODS\SIMPE3G406.M  
Quant Title : PAHSIM BASE  
QLast Update : Tue May 22 07:59:25 2012  
Response via : Initial Calibration





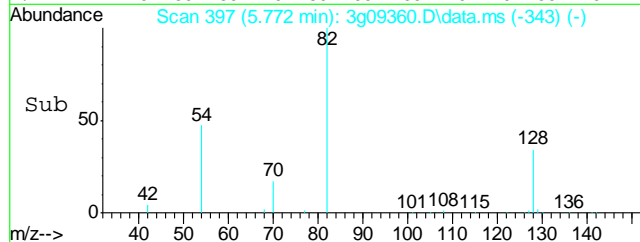
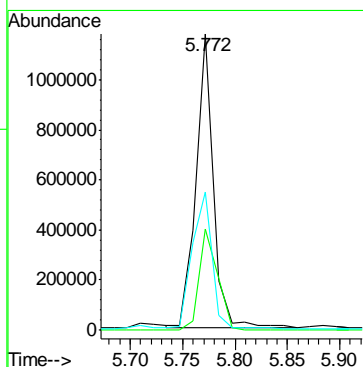
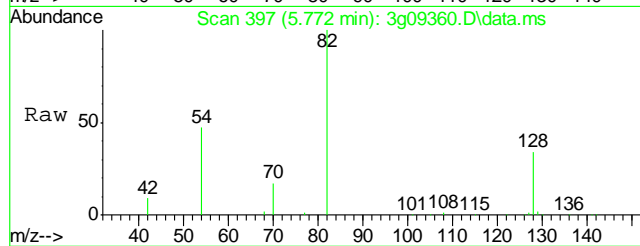
#1  
Naphthalene-d8  
Concen: 4.0000 ug/mL  
RT: 6.482 min Scan# 454  
Delta R.T. 0.000 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

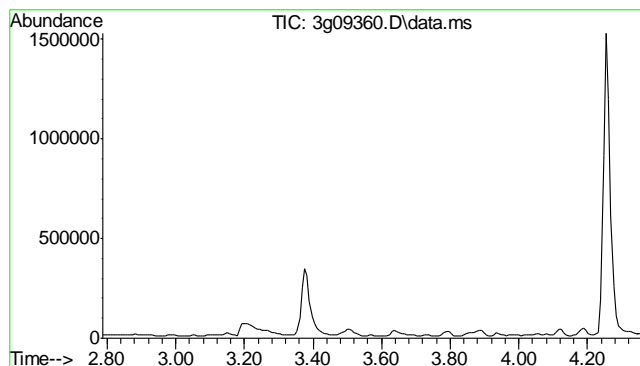
Tgt Ion	Ratio	Lower	Upper
136	100		
68	19.8	0.0	31.7



#2  
Nitrobenzene-d5  
Concen: 20.4253 ug/mL  
RT: 5.772 min Scan# 397  
Delta R.T. 0.000 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

Tgt Ion	Ratio	Lower	Upper
82	100		
128	36.6	14.7	54.7
54	54.2	36.8	76.8

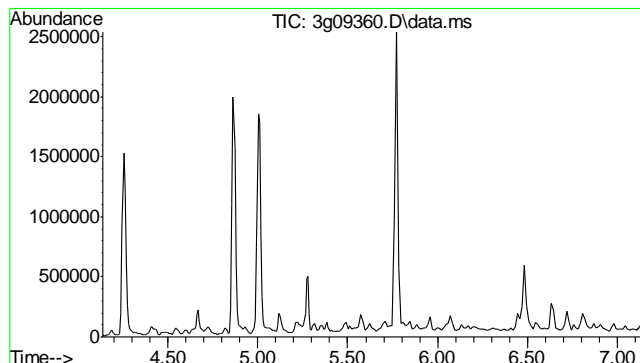
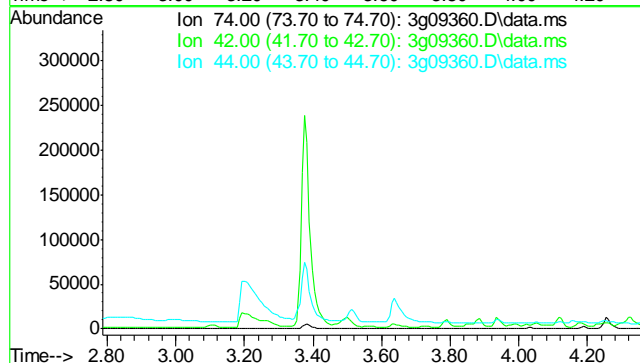




#3  
N-Nitrosodimethylamine  
Concen: N.D. ug/mL  
Expected RT: 2.86 min

Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

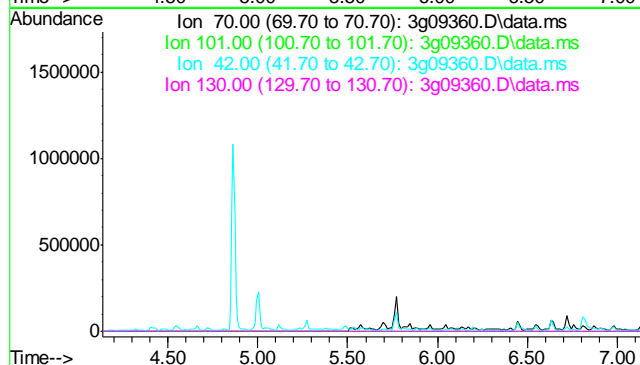
Tgt Ion	Exp Ratio
74	100
42	68.8
44	7.4

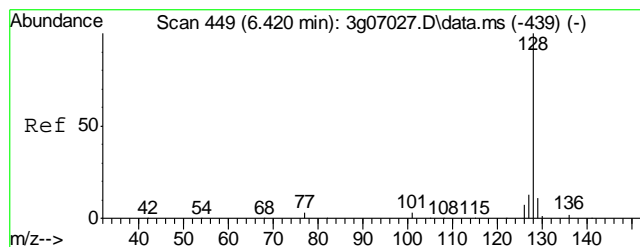


#4  
N-Nitrosodi-propylamine  
Concen: N.D. ug/mL  
Expected RT: 5.63 min

Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

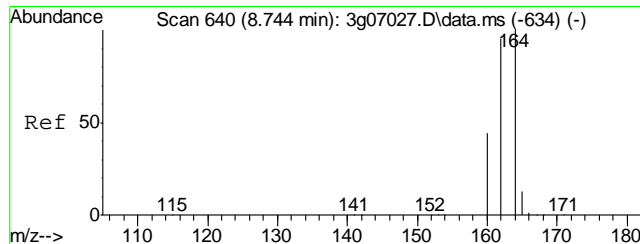
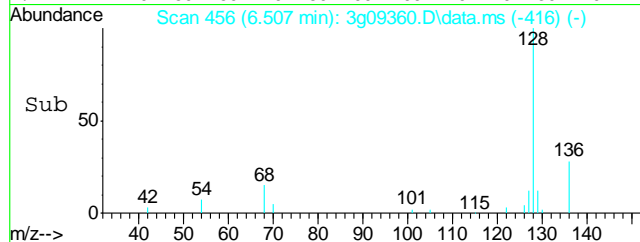
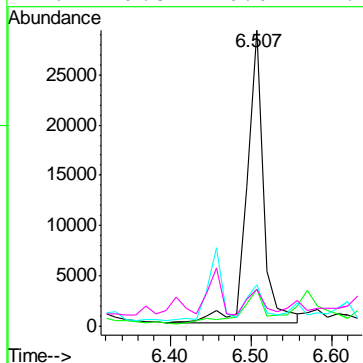
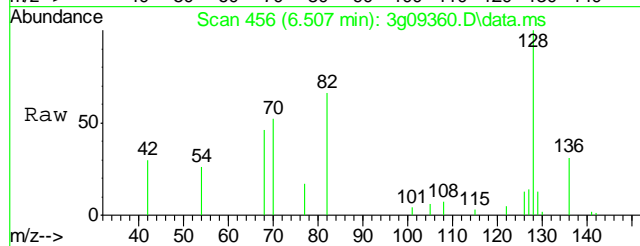
Tgt Ion	Exp Ratio
70	100
101	10.0
42	61.7
130	18.9





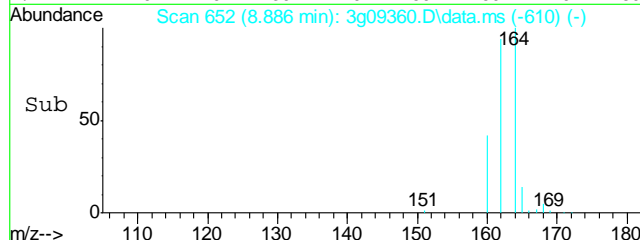
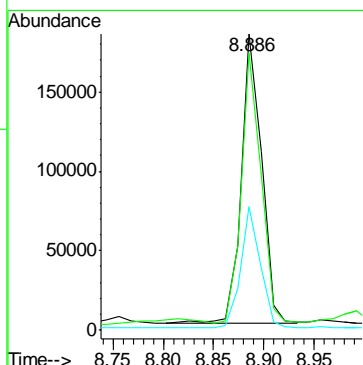
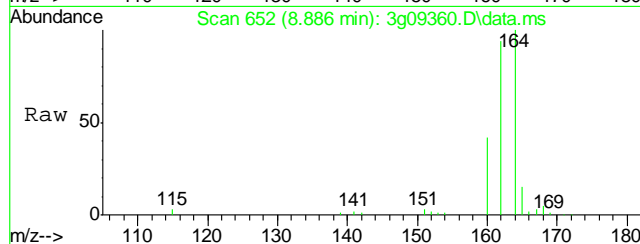
#5  
Naphthalene  
Concen: 0.2946 ug/mL  
RT: 6.507 min Scan# 456  
Delta R.T. 0.000 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

Tgt Ion:	128	Resp:	40474
Ion Ratio	Lower	Upper	
128	100		
129	19.5	0.0	30.8
127	13.1	0.0	32.4
126	9.5	0.0	27.7

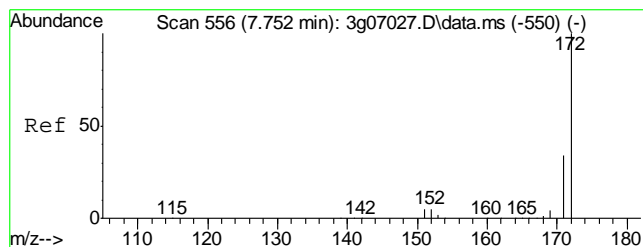


#6  
Acenaphthene-d10  
Concen: 4.0000 ug/mL  
RT: 8.886 min Scan# 652  
Delta R.T. 0.000 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

Tgt Ion:	164	Resp:	257107
Ion Ratio	Lower	Upper	
164	100		
162	91.4	73.1	113.1
160	40.9	22.5	62.5

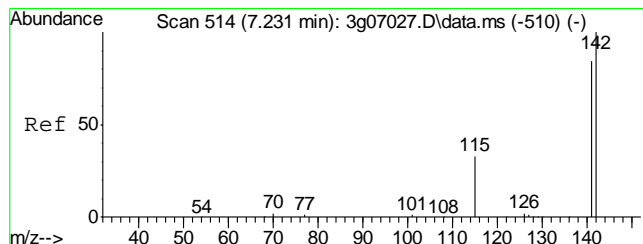
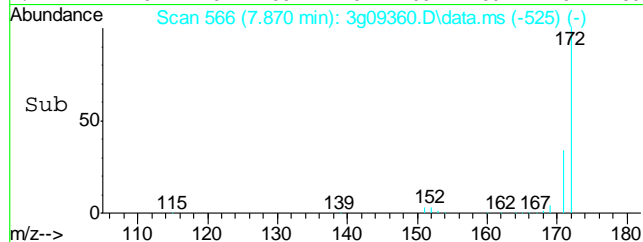
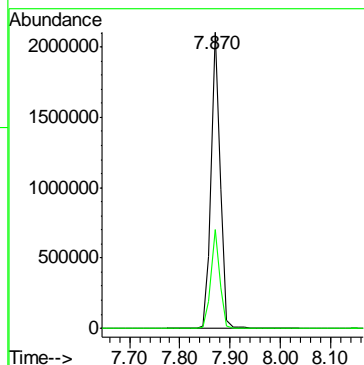
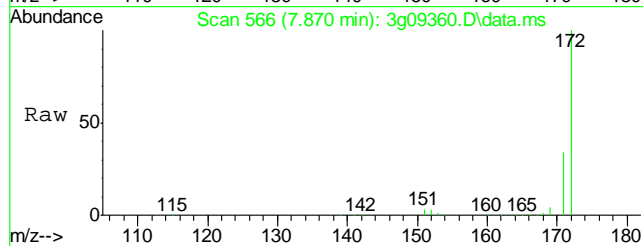






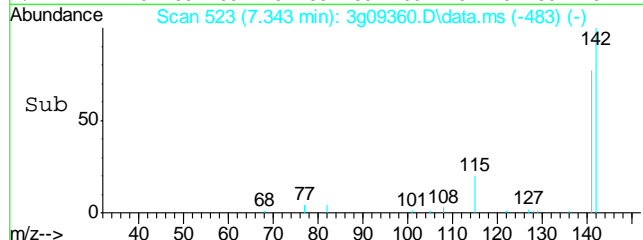
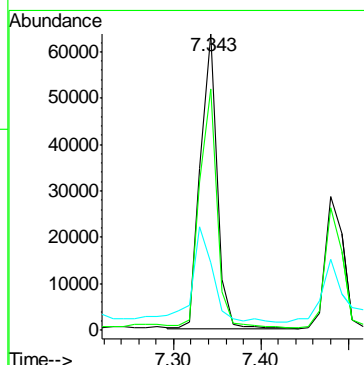
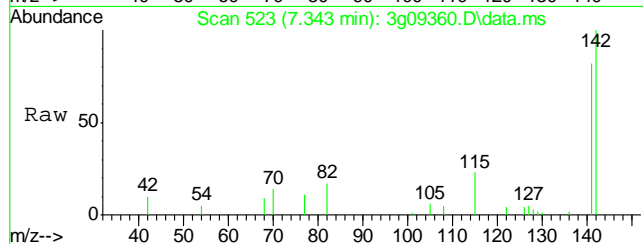
#7  
2-Fluorobiphenyl  
Concen: 28.7715 ug/mL  
RT: 7.870 min Scan# 566  
Delta R.T. 0.001 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

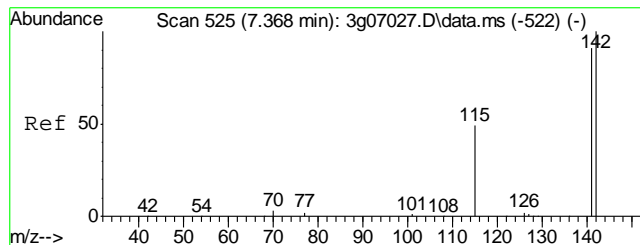
Tgt Ion: 172 Resp: 2640766  
Ion Ratio Lower Upper  
172 100  
171 33.0 13.1 53.1



#8  
2-Methylnaphthalene  
Concen: 1.0879 ug/mL  
RT: 7.343 min Scan# 523  
Delta R.T. 0.000 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

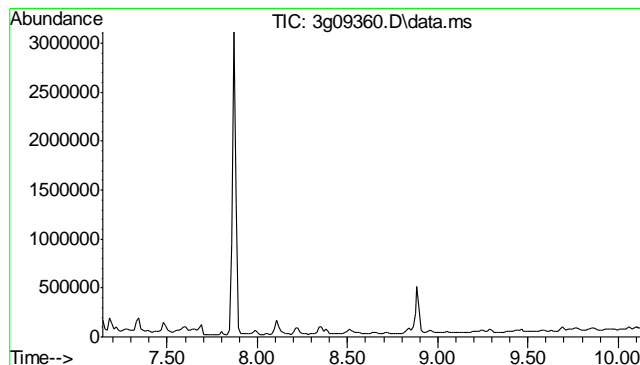
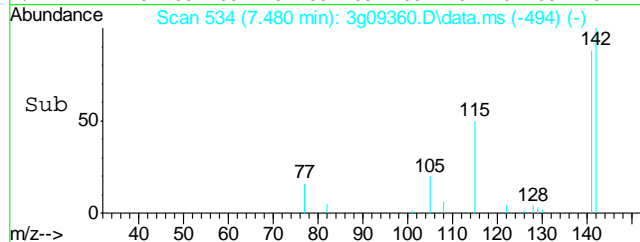
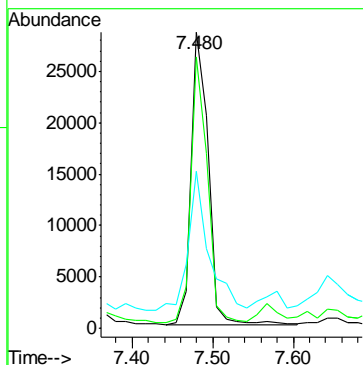
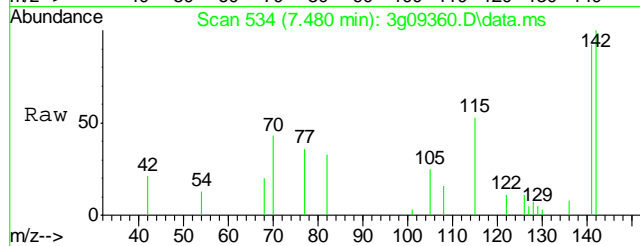
Tgt Ion: 142 Resp: 83386  
Ion Ratio Lower Upper  
142 100  
141 84.7 63.0 103.0  
115 43.0 15.6 55.6





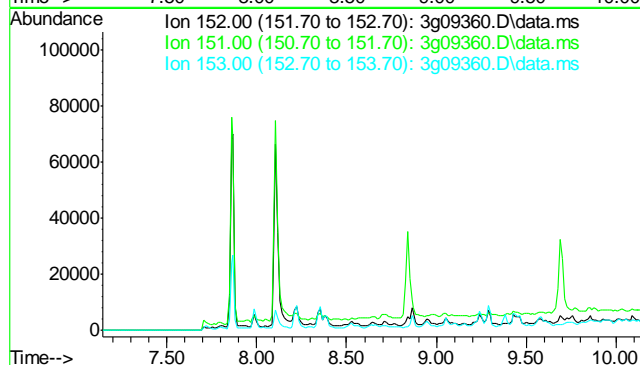
#9  
1-Methylnaphthalene  
Concen: 0.5545 ug/mL  
RT: 7.480 min Scan# 534  
Delta R.T. 0.000 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

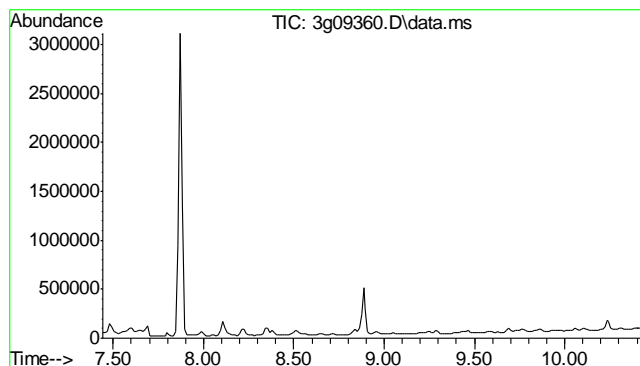
Tgt Ion	Ratio	Lower	Upper
142	100		
141	87.0	67.2	107.2
115	56.6	17.1	57.1



#10  
Acenaphthylene  
Concen: N.D. ug/mL  
Expected RT: 8.64 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

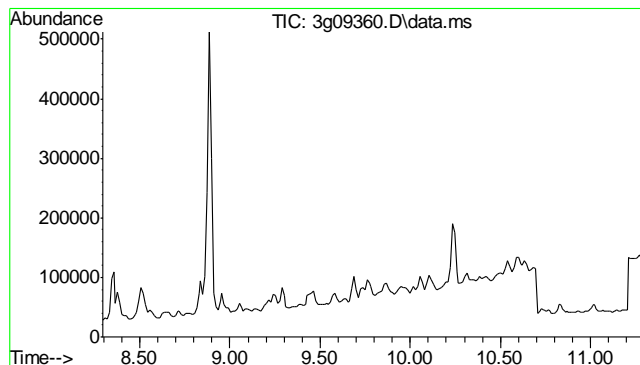
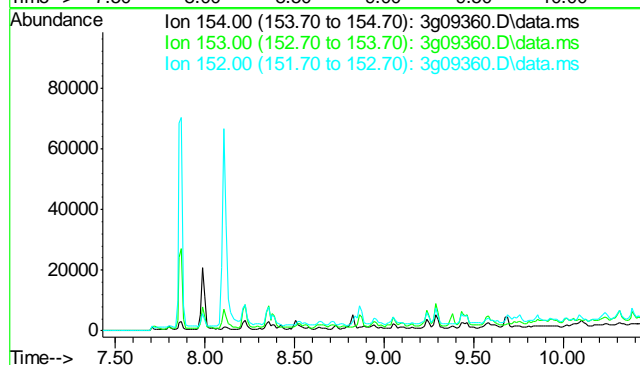
Tgt Ion	Sig	Exp Ratio
152	100	
151	19.0	
153	14.1	





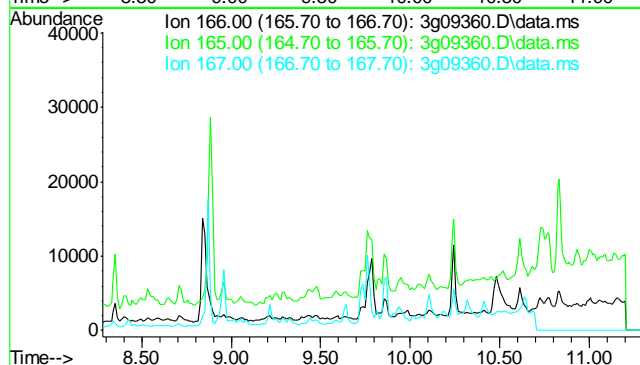
#11  
Acenaphthene  
Concen: N.D. ug/mL  
Expected RT: 8.93 min  
  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

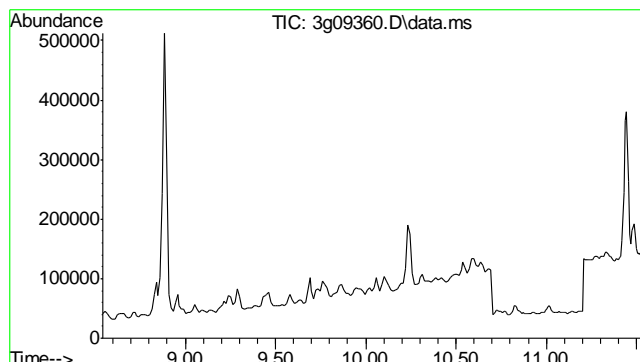
Tgt Ion	Exp Ratio
154	100
153	105.0
152	46.1



#12  
Fluorene  
Concen: N.D. ug/mL  
Expected RT: 9.78 min  
  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

Tgt Ion	Exp Ratio
166	100
165	90.8
167	13.2

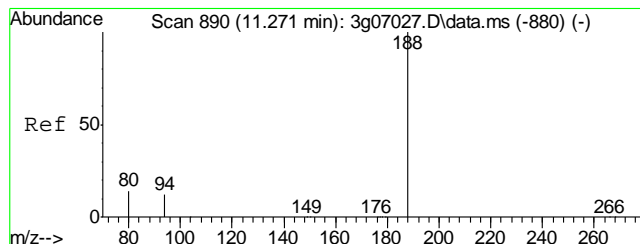
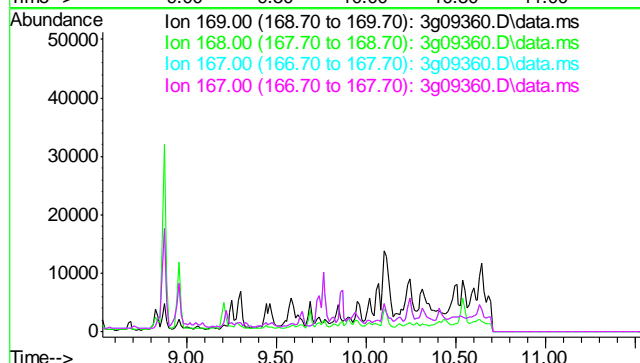




#13  
Diphenylamine  
Concen: N.D. ug/mL  
Expected RT: 10.03 min

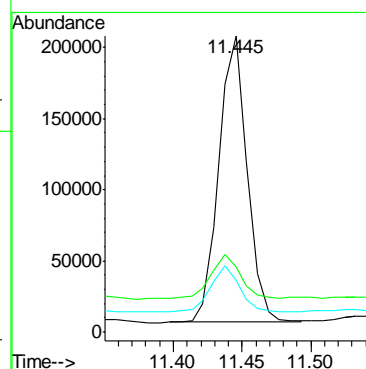
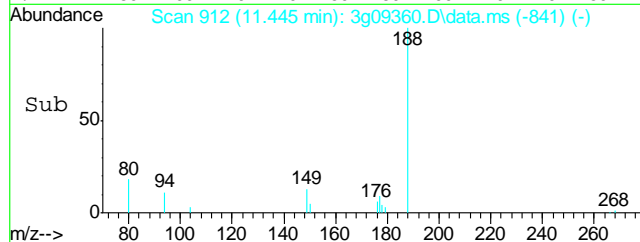
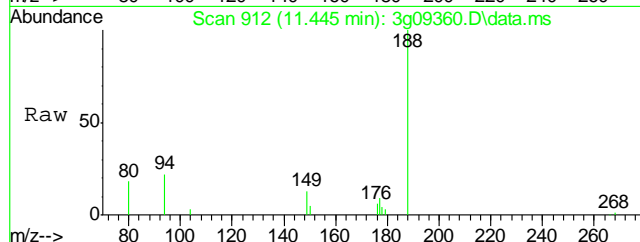
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

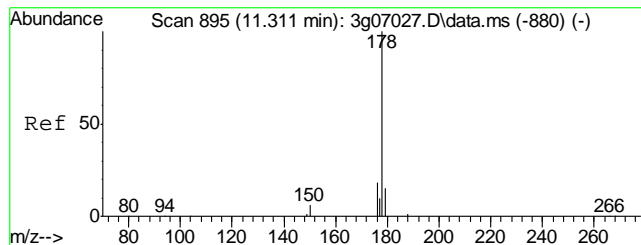
Tgt Ion: 169  
Sig Exp Ratio  
169 100  
168 61.6  
167 33.6  
167 33.6



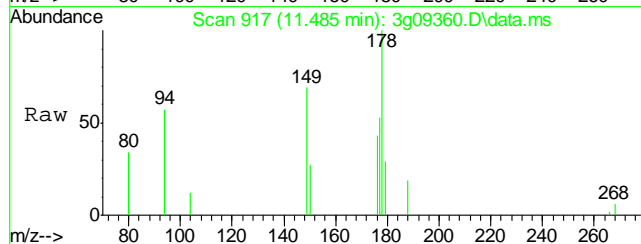
#14  
Phenanthrene-d10  
Concen: 4.0000 ug/mL  
RT: 11.445 min Scan# 912  
Delta R.T. 0.008 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

Tgt Ion: 188 Resp: 289254  
Ion Ratio Lower Upper  
188 100  
94 16.7 0.0 36.5  
80 15.7 0.0 37.9

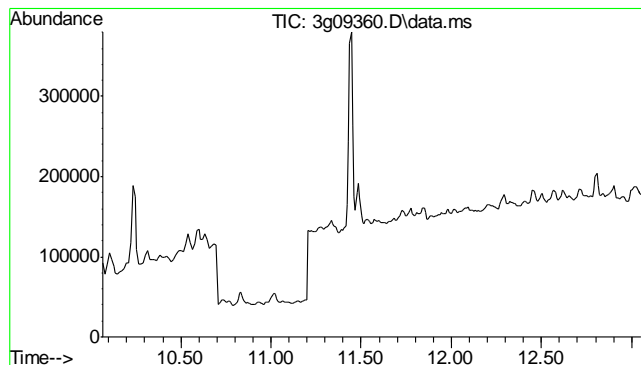
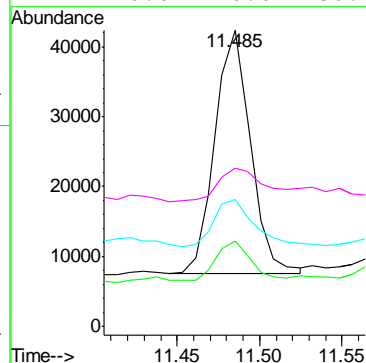
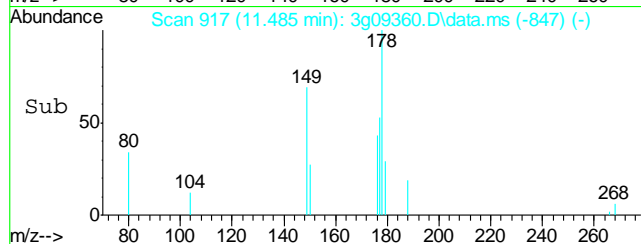




#15  
Phenanthrene  
Concen: 0.5972 ug/mL  
RT: 11.485 min Scan# 917  
Delta R.T. 0.008 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

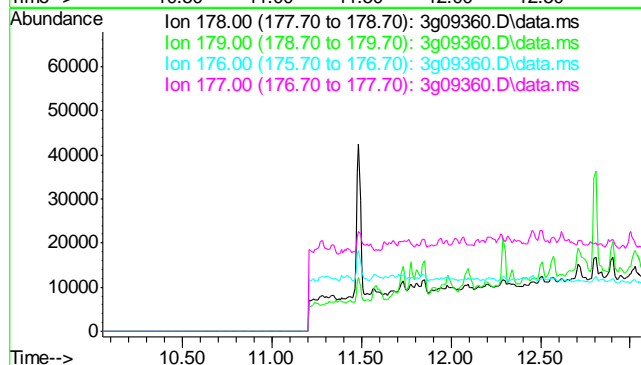


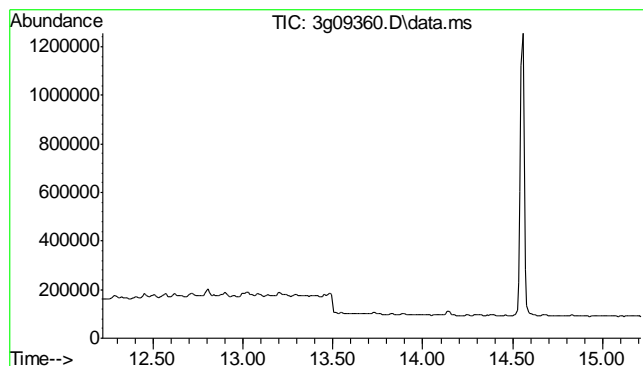
Tgt Ion	Ratio	Lower	Upper
178	100		
179	16.0	0.0	35.1
176	22.9	0.0	38.5
177	0.0	0.0	30.2



#16  
Anthracene  
Concen: N.D. ug/mL  
Expected RT: 11.56 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

Tgt Ion	Sig	Exp Ratio
178	100	
179	15.1	
176	17.8	
177	8.7	

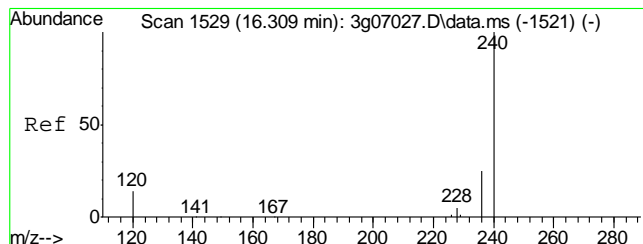
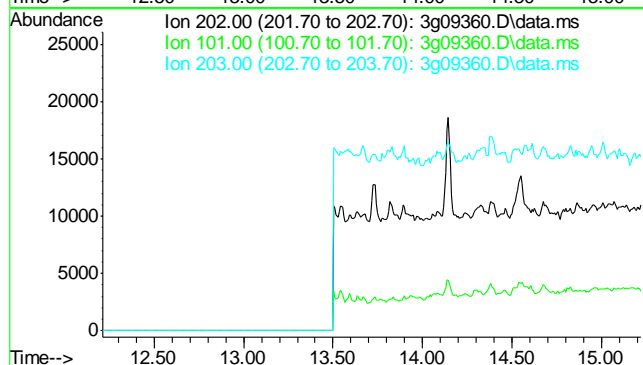




#17  
Fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 13.72 min

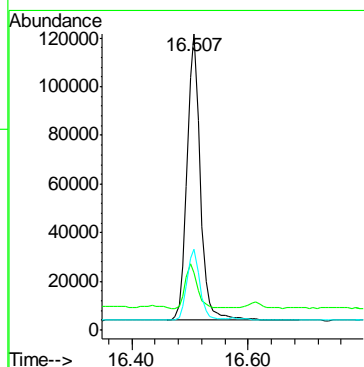
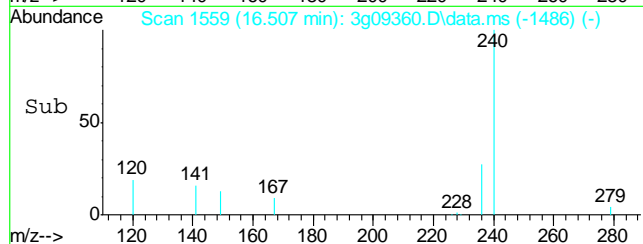
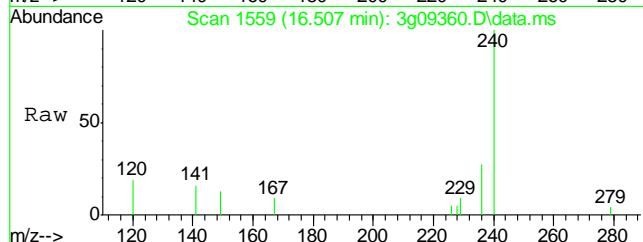
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

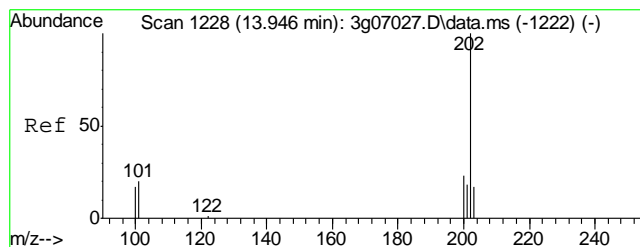
Tgt Ion	Exp Ratio
202	100
101	15.5
203	17.2



#18  
Chrysene-d12  
Concen: 4.0000 ug/mL  
RT: 16.507 min Scan# 1559  
Delta R.T. 0.020 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

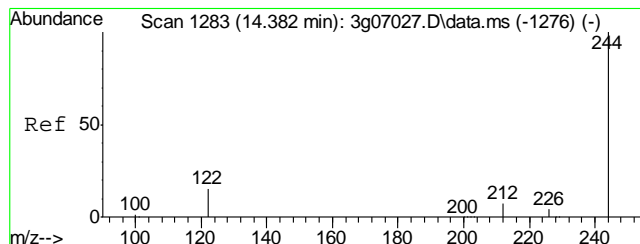
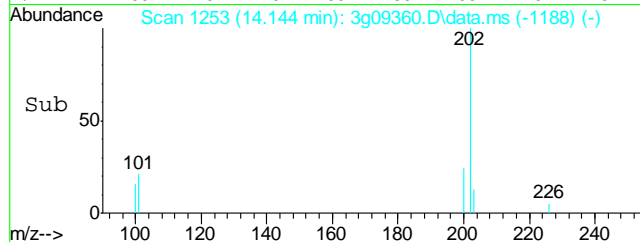
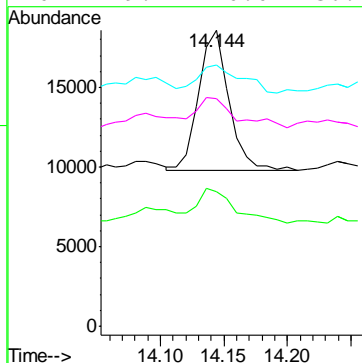
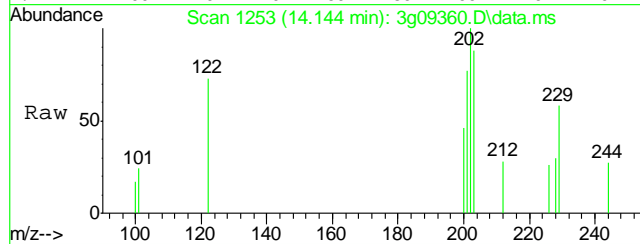
Tgt Ion	Ratio	Lower	Upper
240	100		
120	14.3	0.0	35.5
236	24.1	4.8	44.8





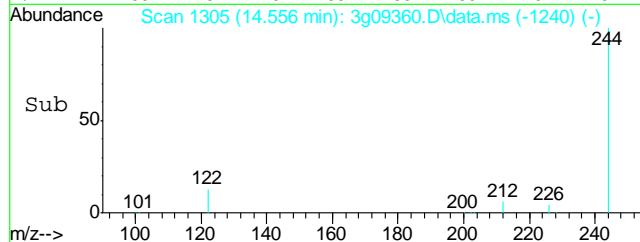
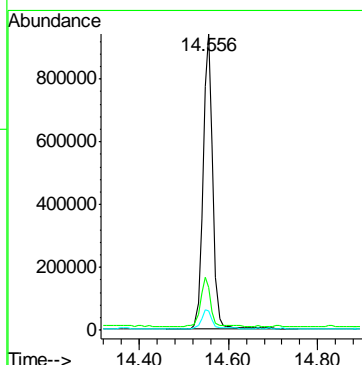
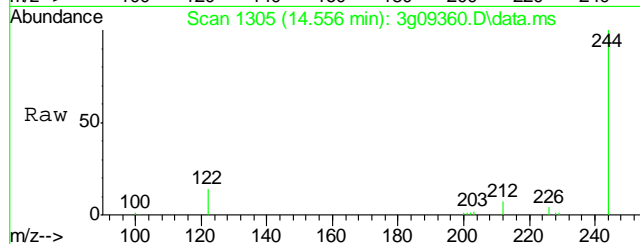
#19  
Pyrene  
Concen: 0.2184 ug/mL  
RT: 14.144 min Scan# 1253  
Delta R.T. 0.016 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

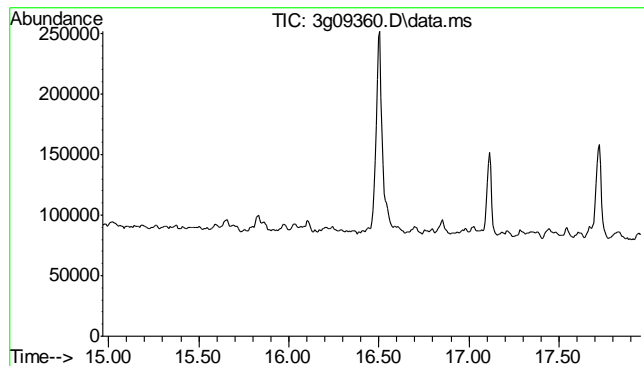
Tgt Ion:	202	Resp:	14470
Ion Ratio	Lower	Upper	
202	100		
200	29.8	0.3	40.3
203	28.1	0.0	37.7
201	29.7	0.0	36.7



#20  
Terphenyl-d14  
Concen: 41.3940 ug/mL  
RT: 14.556 min Scan# 1305  
Delta R.T. 0.016 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

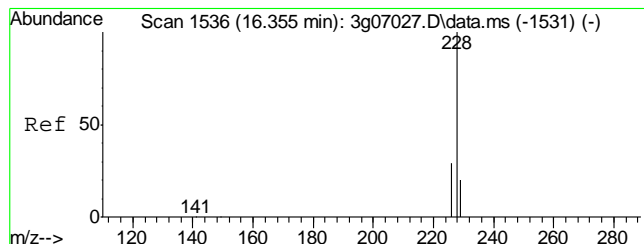
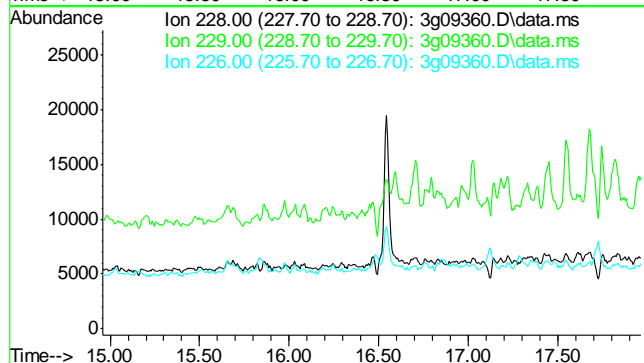
Tgt Ion:	244	Resp:	1423225
Ion Ratio	Lower	Upper	
244	100		
122	16.6	0.0	36.5
212	6.7	0.0	26.8





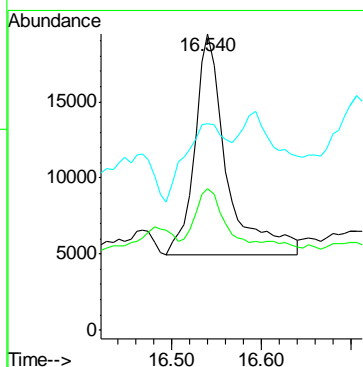
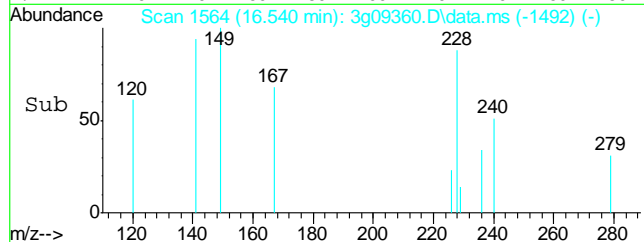
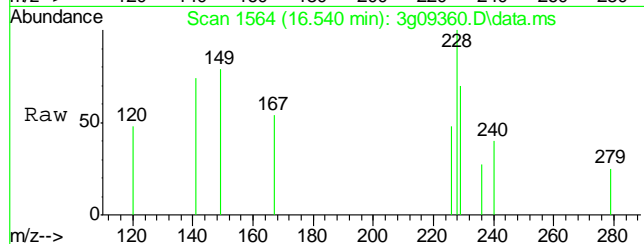
#21  
Benzo(a)anthracene  
Concen: N.D. ug/mL  
Expected RT: 16.46 min  
  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

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

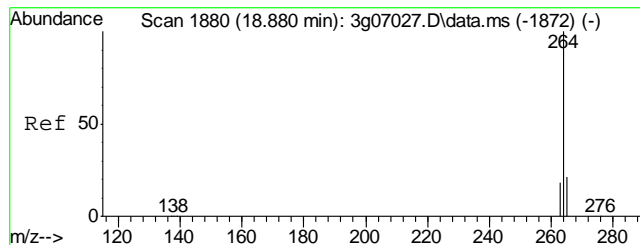


#22  
Chrysene  
Concen: 0.5918 ug/mL  
RT: 16.540 min Scan# 1564  
Delta R.T. 0.007 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

Tgt Ion: 228 Resp: 35605  
Ion Ratio Lower Upper  
228 100  
226 26.9 8.3 48.3  
229 47.1 0.0 39.2#

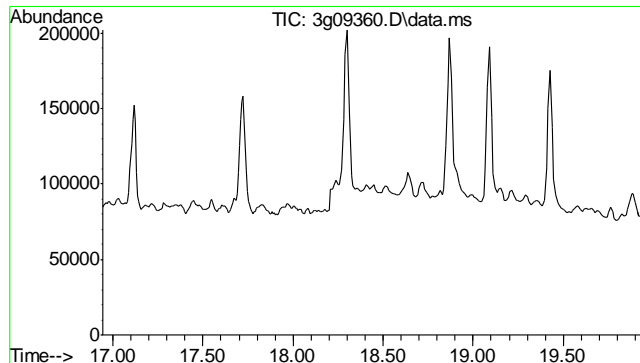
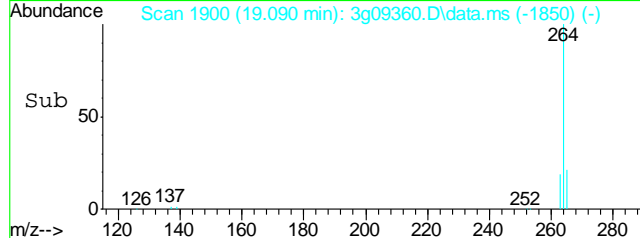
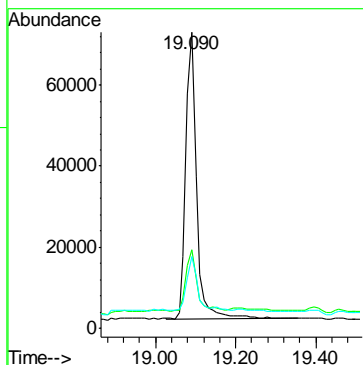
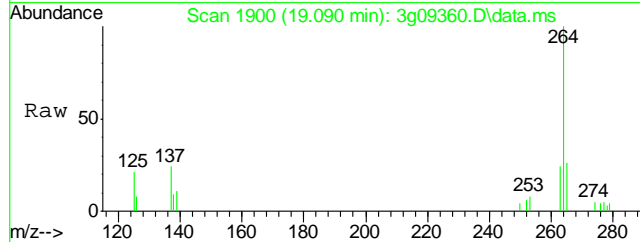






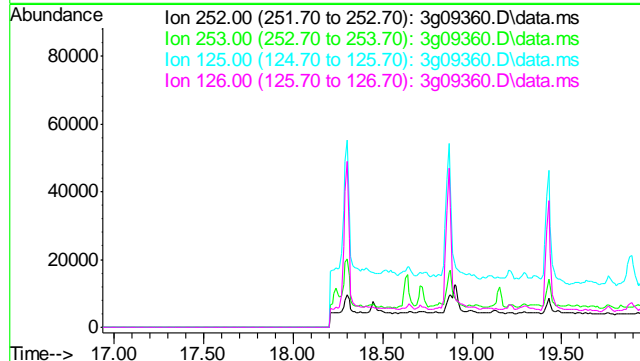
#23  
Perylene-d12  
Concen: 4.0000 ug/mL  
RT: 19.090 min Scan# 1900  
Delta R.T. 0.021 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

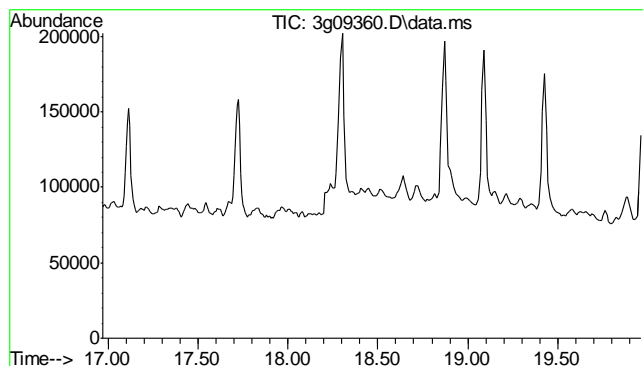
Tgt Ion:	264	Resp:	132913
Ion Ratio	Lower	Upper	
264	100		
265	22.5	1.1	41.1
263	19.8	0.0	38.9



#24  
Benzo(b)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 18.44 min  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

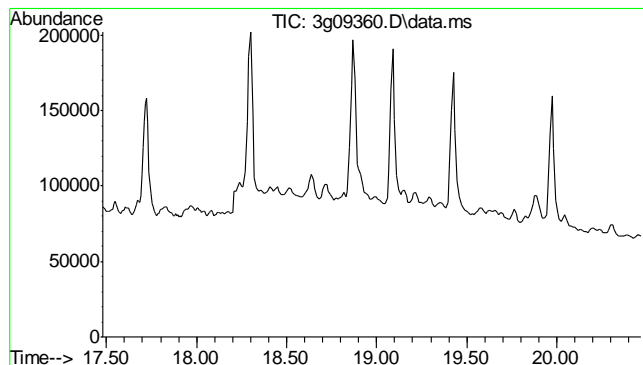
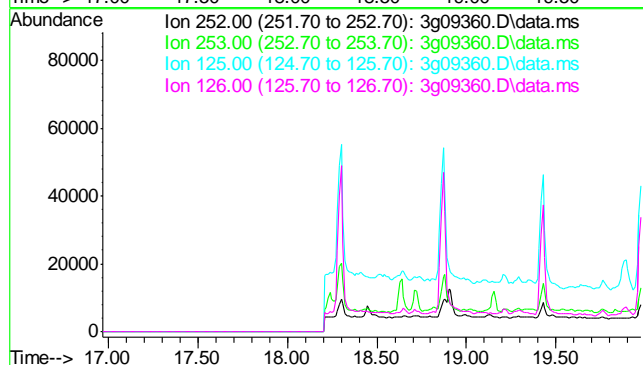
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	26.0
125	12.4
126	17.4





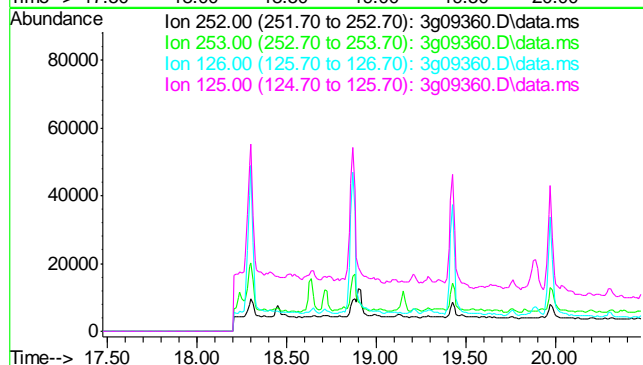
#25  
Benzo(k)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 18.47 min  
  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

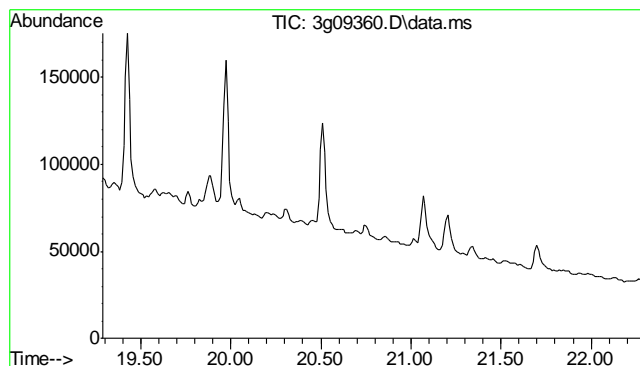
Tgt Ion	Exp Ratio
252	100
253	19.0
125	11.0
126	17.1



#26  
Benzo(a)pyrene  
Concen: N.D. ug/mL  
Expected RT: 18.97 min  
  
Lab File: 3g09360.D  
Acq: 22 May 12 9:41 am

Tgt Ion	Exp Ratio
252	100
253	21.6
126	15.7
125	12.5

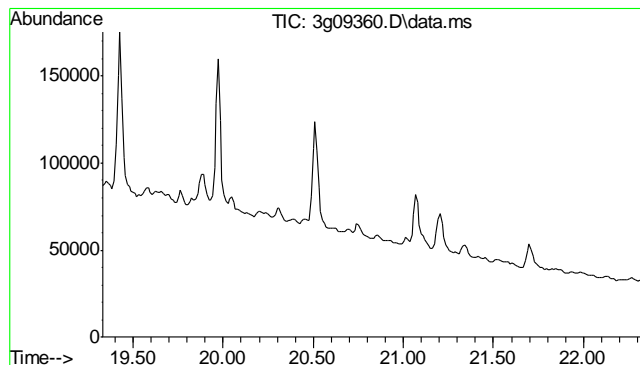
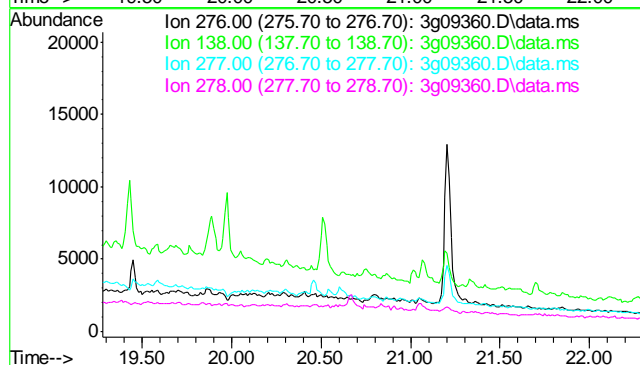




#27  
 Indeno(1,2,3-cd)pyrene  
 Concen: N.D. ug/mL  
 Expected RT: 20.78 min

Lab File: 3g09360.D  
 Acq: 22 May 12 9:41 am

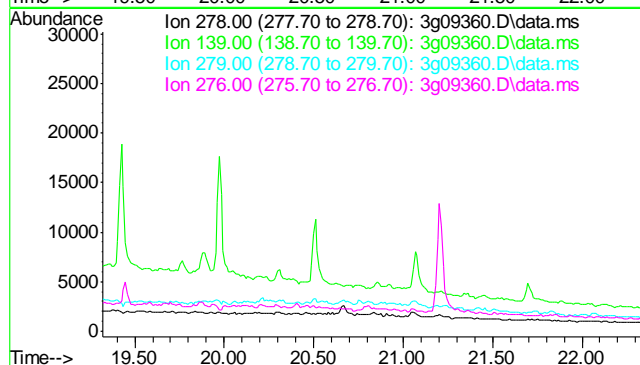
Tgt Ion	Exp Ratio
276	100
138	12.2
277	24.8
278	77.5

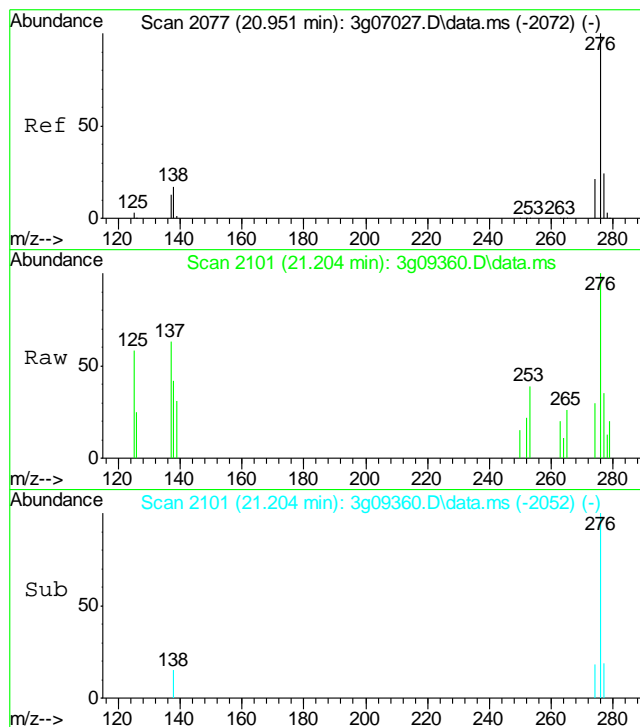


#28  
 Dibenzo(a,h)anthracene  
 Concen: N.D. ug/mL  
 Expected RT: 20.82 min

Lab File: 3g09360.D  
 Acq: 22 May 12 9:41 am

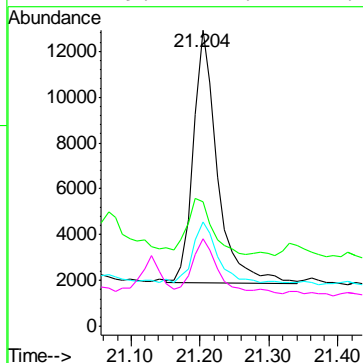
Tgt Ion	Exp Ratio
278	100
139	19.0
279	23.4
276	129.1





#29  
 Benzo(g,h,i)perylene  
 Concen: 0.9086 ug/mL  
 RT: 21.204 min Scan# 2101  
 Delta R.T. 0.011 min  
 Lab File: 3g09360.D  
 Acq: 22 May 12 9:41 am

Tgt Ion:	276	Resp:	26785
Ion Ratio	Lower	Upper	
276	100		
138	22.2	3.6	43.6
277	23.6	3.6	43.6
274	19.4	1.4	41.4



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\052112\  
 Data File : 3g09350.D  
 Acq On : 22 May 2012 2:57 am  
 Operator : DONC  
 Sample : OP5918-MB  
 Misc : OP5918,E3G407,30.00,,,1,1  
 ALS Vial : 25 Sample Multiplier: 1

Quant Time: May 23 12:12:49 2012  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G406.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Tue May 22 07:59:25 2012  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	6.483	136	455271	4.0000	ug/mL	0.00
6) Acenaphthene-d10	8.886	164	276741	4.0000	ug/mL	0.00
14) Phenanthrene-d10	11.430	188	445756	4.0000	ug/mL	0.00
18) Chrysene-d12	16.488	240	323504	4.0000	ug/mL	0.00
23) Perylene-d12	19.069	264	193834	4.0000	ug/mL	0.00

## System Monitoring Compounds

2) Nitrobenzene-d5	5.772	82	2506195	40.3253	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	80.66%		
7) 2-Fluorobiphenyl	7.870	172	4402726	44.5651	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	89.14%		
20) Terphenyl-d14	14.548	244	3652025	60.4873	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	120.98%		

## Target Compounds

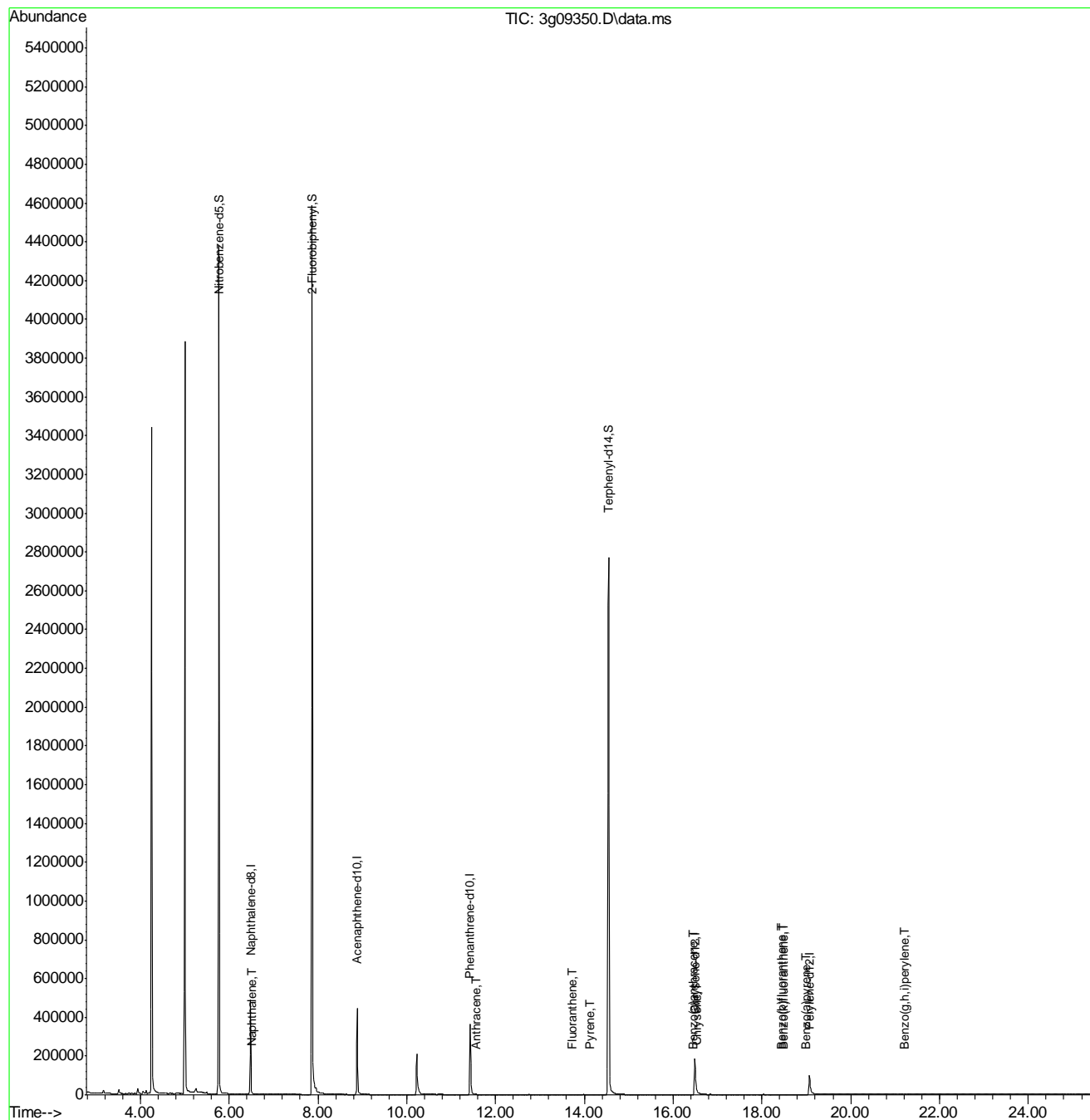
						Qvalue
3) N-Nitrosodimethylamine	0.000	74	0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d	
5) Naphthalene	6.508	128	744	0.0058	ug/mL	75
8) 2-Methylnaphthalene	0.000	142	0	N.D.	d	
9) 1-Methylnaphthalene	0.000	142	0	N.D.	d	
10) Acenaphthylene	0.000	152	0	N.D.	d	
11) Acenaphthene	0.000	154	0	N.D.	d	
12) Fluorene	0.000	166	0	N.D.	d	
13) Diphenylamine	0.000	169	0	N.D.	d	
15) Phenanthrene	0.000	178	0	N.D.	d	
16) Anthracene	11.556	178	810	0.0266	ug/mL	94
17) Fluoranthene	13.717	202	1589	0.0104	ug/mL	98
19) Pyrene	14.129	202	1536	0.0132	ug/mL	97
21) Benzo(a)anthracene	16.461	228	1011	0.0113	ug/mL	72
22) Chrysene	16.534	228	1484	0.0140	ug/mL	90
24) Benzo(b)fluoranthene	18.438	252	562	0.0874	ug/mL#	67
25) Benzo(k)fluoranthene	18.480	252	802	0.0473	ug/mL#	74
26) Benzo(a)pyrene	18.985	252	484	0.0946	ug/mL	82
27) Indeno(1,2,3-cd)pyrene	0.000	276	0	N.D.	d	
28) Dibenz(a,h)anthracene	0.000	278	0	N.D.	d	
29) Benzo(g,h,i)perylene	21.214	276	572	0.0836	ug/mL	75

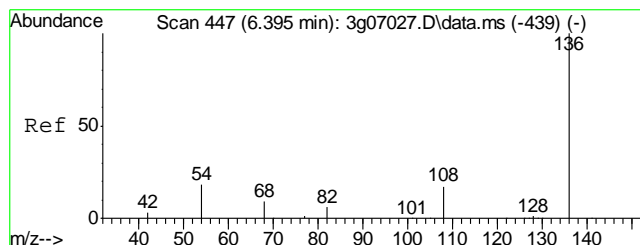
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\052112\  
Data File : 3g09350.D  
Acq On : 22 May 2012 2:57 am  
Operator : DONC  
Sample : OP5918-MB  
Misc : OP5918,E3G407,30.00,,,1,1  
ALS Vial : 25 Sample Multiplier: 1

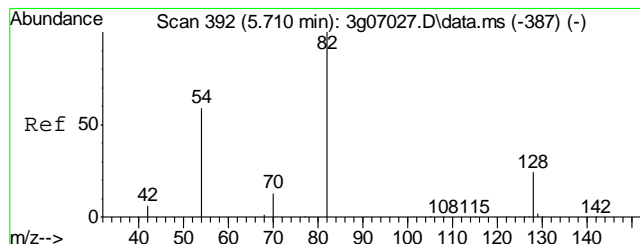
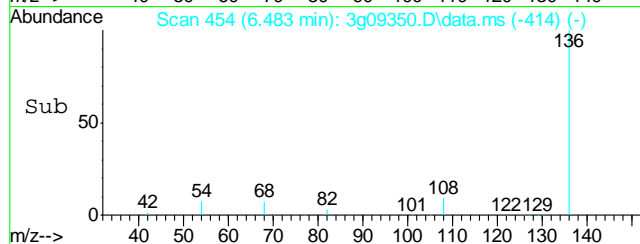
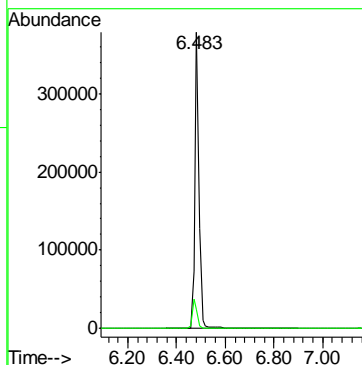
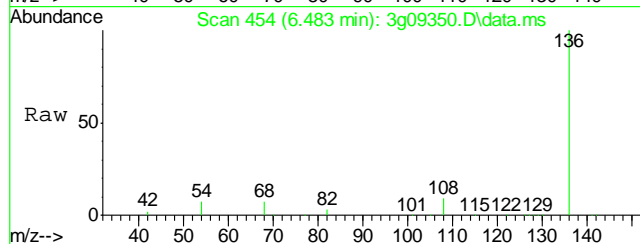
Quant Time: May 23 12:12:49 2012  
Quant Method : C:\msdchem\1\METHODS\SIMPE3G406.M  
Quant Title : PAHSIM BASE  
QLast Update : Tue May 22 07:59:25 2012  
Response via : Initial Calibration





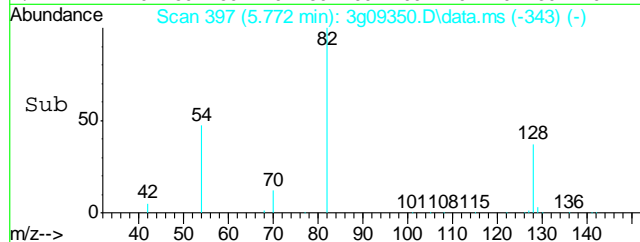
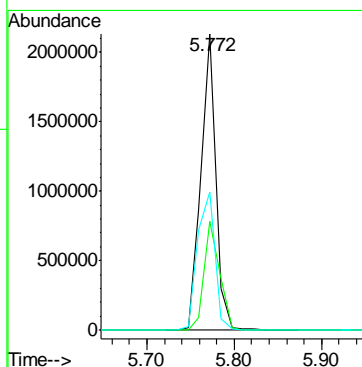
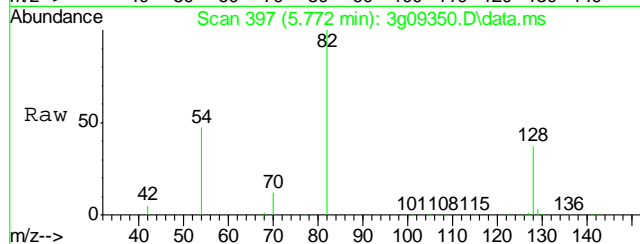
#1  
Naphthalene-d8  
Concen: 4.0000 ug/mL  
RT: 6.483 min Scan# 454  
Delta R.T. 0.000 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

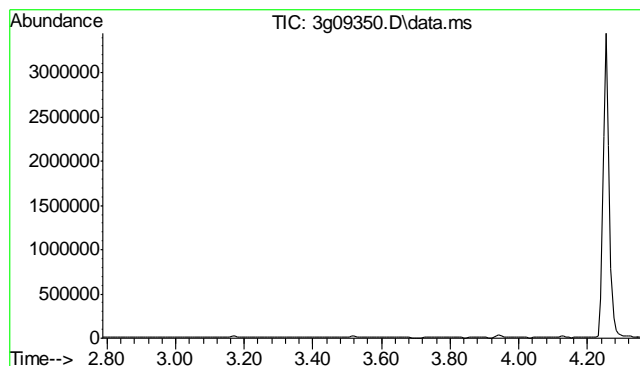
Tgt Ion: 136 Resp: 455271  
Ion Ratio Lower Upper  
136 100  
68 11.4 0.0 31.7



#2  
Nitrobenzene-d5  
Concen: 40.3253 ug/mL  
RT: 5.772 min Scan# 397  
Delta R.T. 0.000 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

Tgt Ion: 82 Resp: 2506195  
Ion Ratio Lower Upper  
82 100  
128 38.1 14.7 54.7  
54 55.1 36.8 76.8

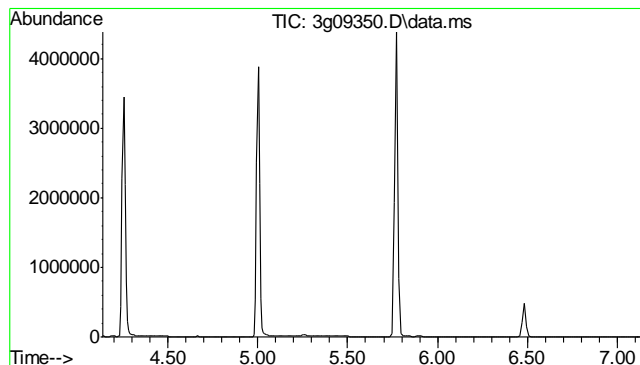
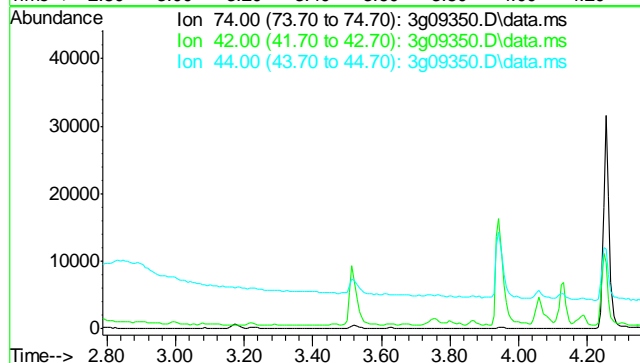




#3  
N-Nitrosodimethylamine  
Concen: N.D. ug/mL  
Expected RT: 2.86 min

Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

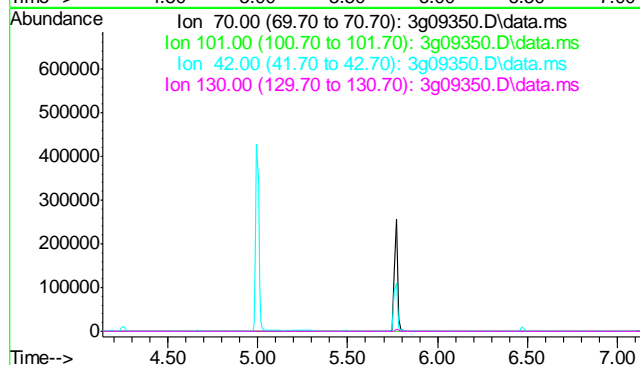
Tgt Ion:	74
Sig	Exp Ratio
74	100
42	68.8
44	7.4



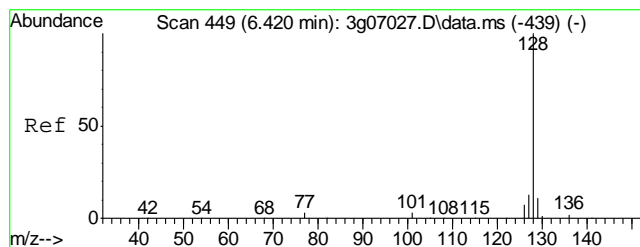
#4  
N-Nitrosodi-propylamine  
Concen: N.D. ug/mL  
Expected RT: 5.63 min

Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

Tgt Ion:	70
Sig	Exp Ratio
70	100
101	10.0
42	61.7
130	18.9

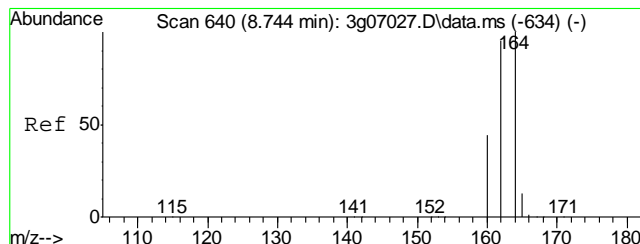
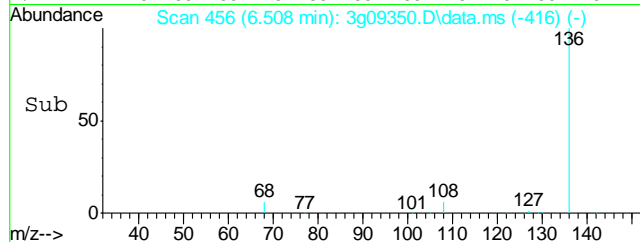
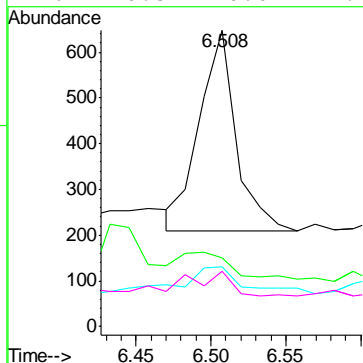
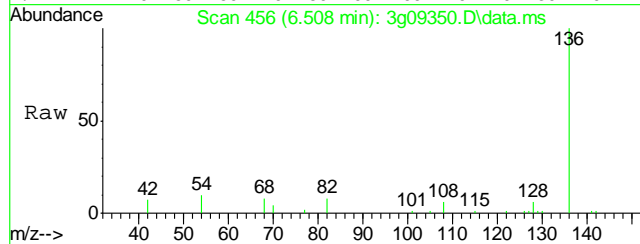






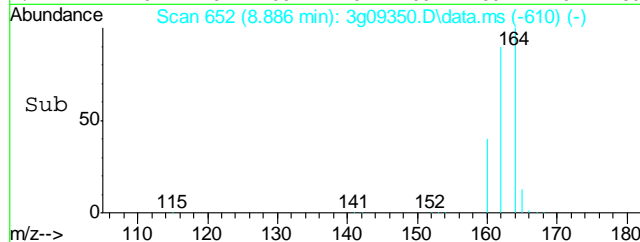
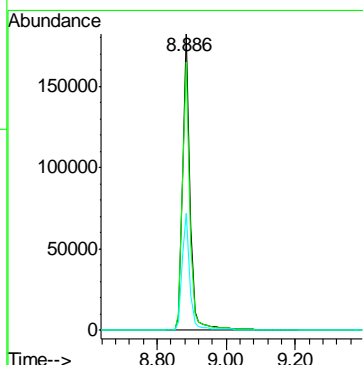
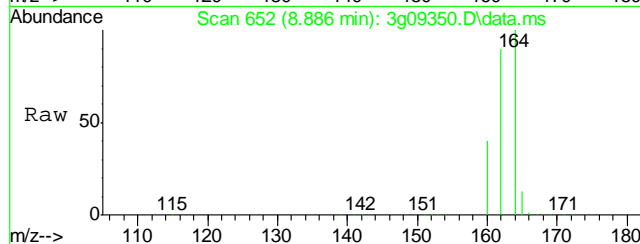
#5  
Naphthalene  
Concen: 0.0058 ug/mL  
RT: 6.508 min Scan# 456  
Delta R.T. 0.000 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

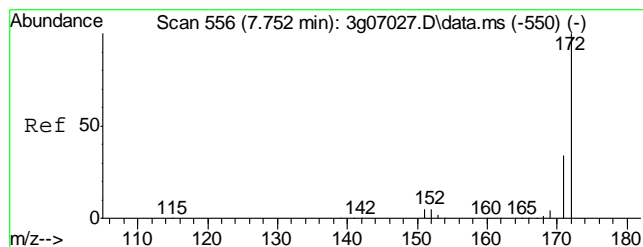
Tgt Ion	Ratio	Lower	Upper
128	100		
129	18.1	0.0	30.8
127	21.9	0.0	32.4
126	20.3	0.0	27.7



#6  
Acenaphthene-d10  
Concen: 4.0000 ug/mL  
RT: 8.886 min Scan# 652  
Delta R.T. 0.000 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

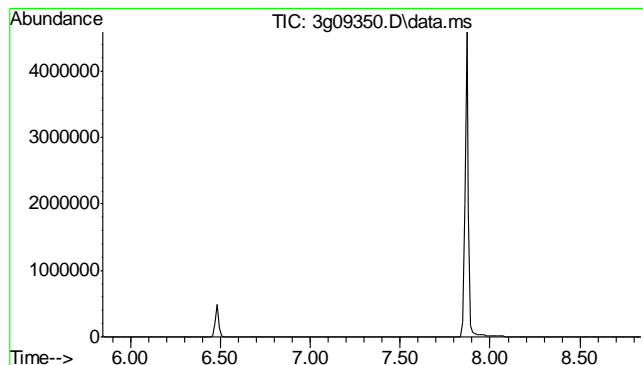
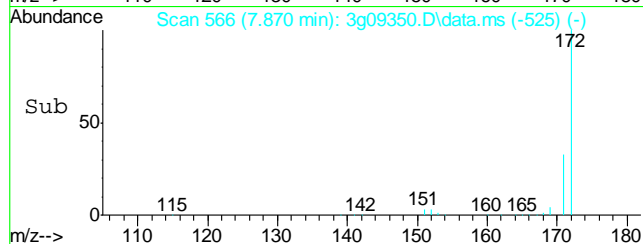
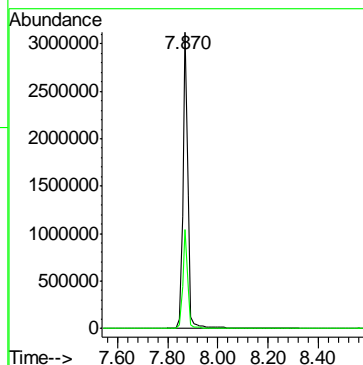
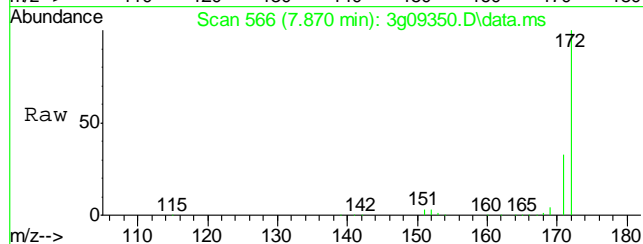
Tgt Ion	Ratio	Lower	Upper
164	100		
162	92.2	73.1	113.1
160	41.1	22.5	62.5





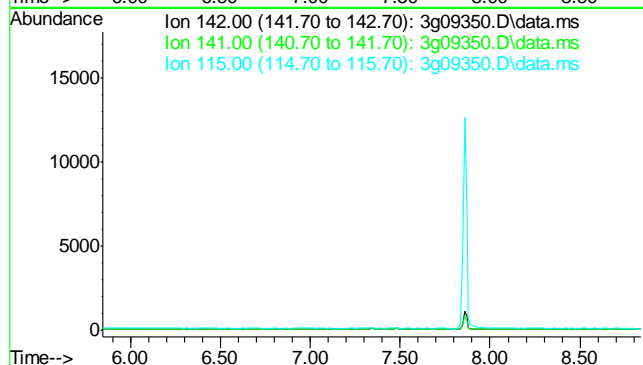
#7  
2-Fluorobiphenyl  
Concen: 44.5651 ug/mL  
RT: 7.870 min Scan# 566  
Delta R.T. 0.001 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

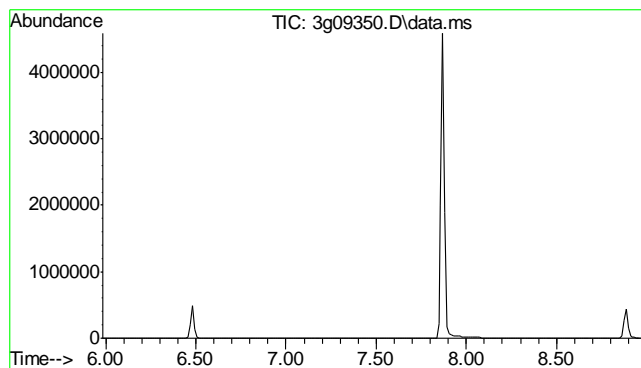
Tgt Ion: 172 Resp: 4402726  
Ion Ratio Lower Upper  
172 100  
171 33.2 13.1 53.1



#8  
2-Methylnaphthalene  
Concen: N.D. ug/mL  
Expected RT: 7.34 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

Tgt Ion: 142  
Sig Exp Ratio  
142 100  
141 83.0  
115 35.6

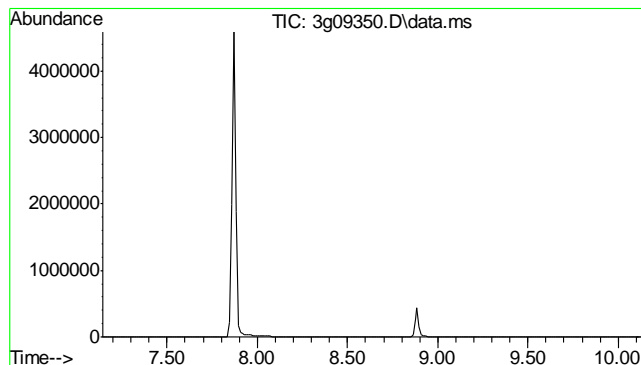
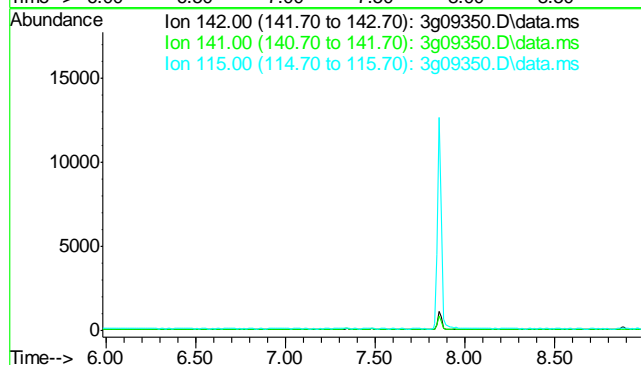




#9  
1-Methylnaphthalene  
Concen: N.D. ug/mL  
Expected RT: 7.48 min

Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

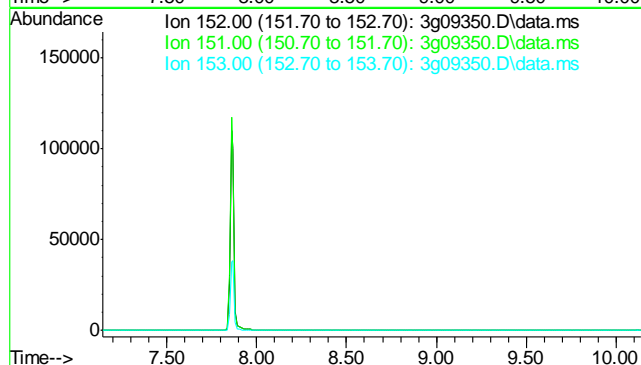
Tgt Ion:	142
Sig	Exp Ratio
142	100
141	87.2
115	37.1

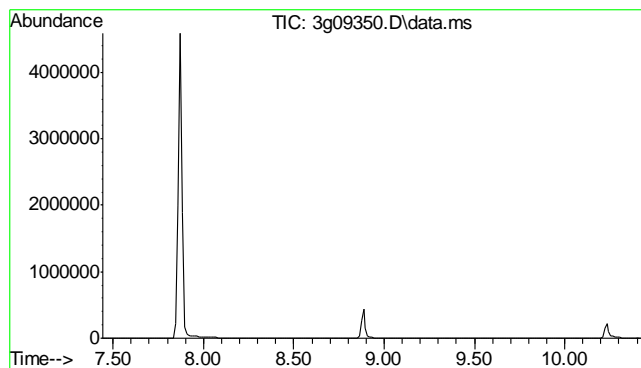


#10  
Acenaphthylene  
Concen: N.D. ug/mL  
Expected RT: 8.64 min

Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

Tgt Ion:	152
Sig	Exp Ratio
152	100
151	19.0
153	14.1

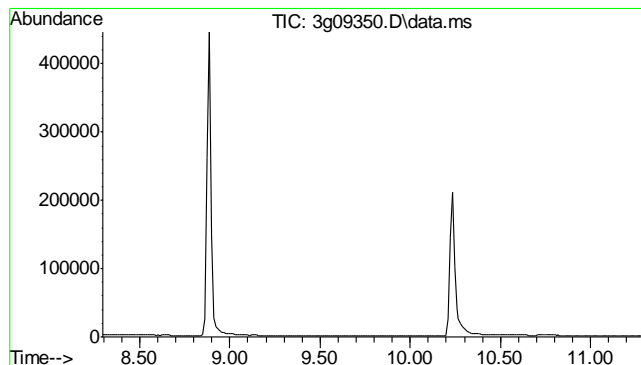
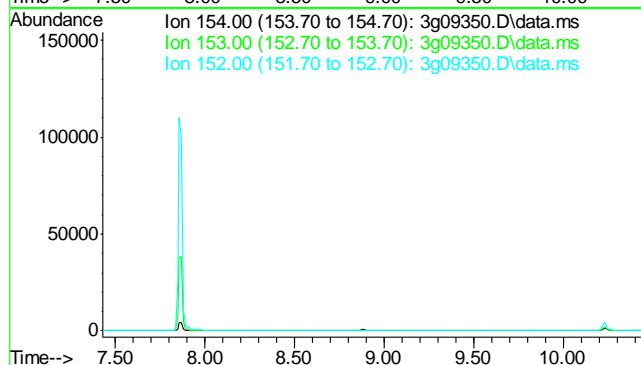




#11  
Acenaphthene  
Concen: N.D. ug/mL  
Expected RT: 8.93 min

Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

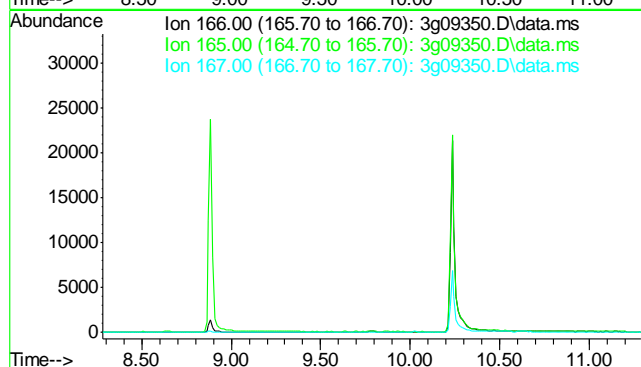
Tgt Ion: 154  
Sig Exp Ratio  
154 100  
153 105.0  
152 46.1

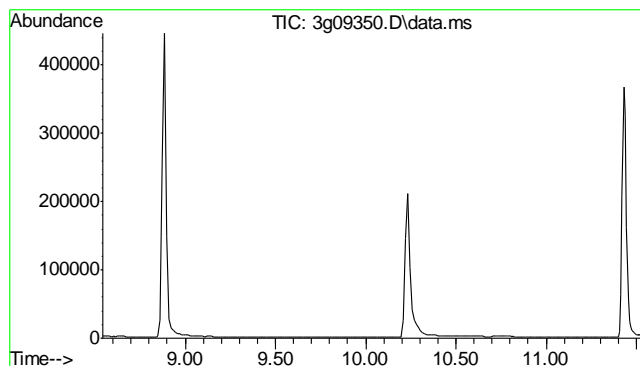


#12  
Fluorene  
Concen: N.D. ug/mL  
Expected RT: 9.78 min

Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

Tgt Ion: 166  
Sig Exp Ratio  
166 100  
165 90.8  
167 13.2

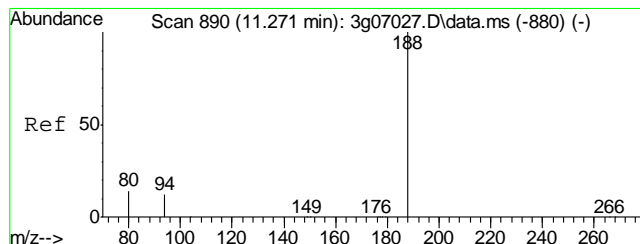
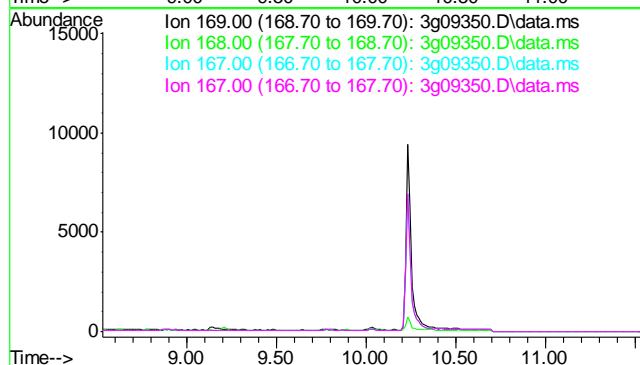




#13  
Diphenylamine  
Concen: N.D. ug/mL  
Expected RT: 10.03 min

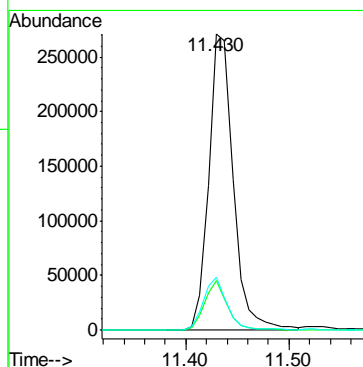
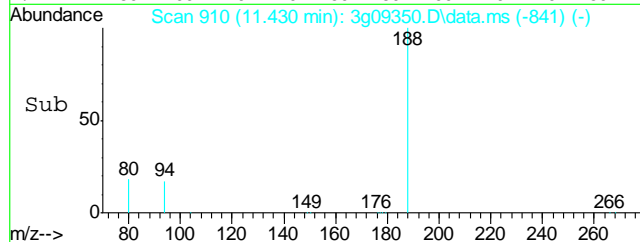
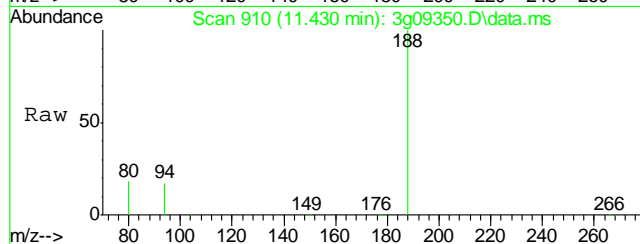
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

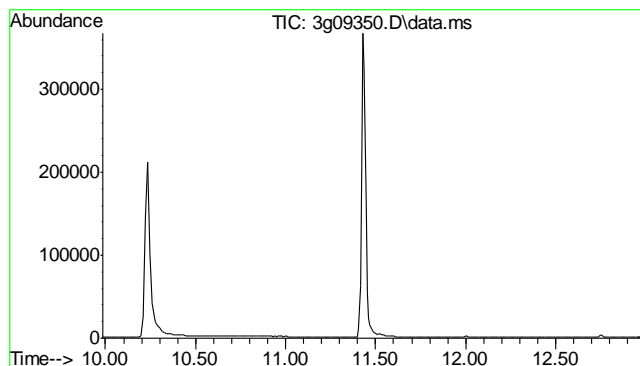
Tgt Ion:	169
Sig	Exp Ratio
169	100
168	61.6
167	33.6
167	33.6



#14  
Phenanthrene-d10  
Concen: 4.0000 ug/mL  
RT: 11.430 min Scan# 910  
Delta R.T. -0.008 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

Tgt Ion:	188	Resp:	445756
Ion	Ratio	Lower	Upper
188	100		
94	15.7	0.0	36.5
80	17.0	0.0	37.9

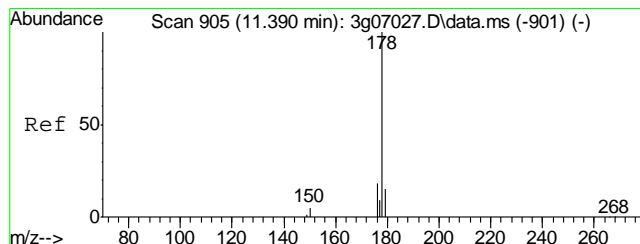
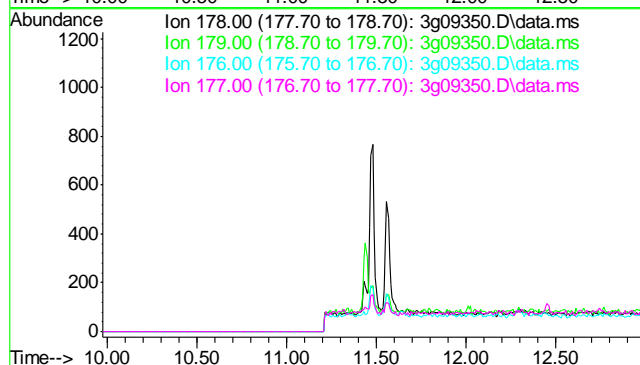




#15  
Phenanthrene  
Concen: N.D. ug/mL  
Expected RT: 11.48 min

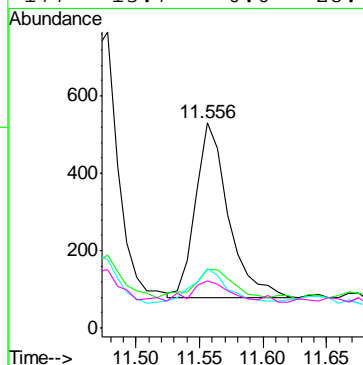
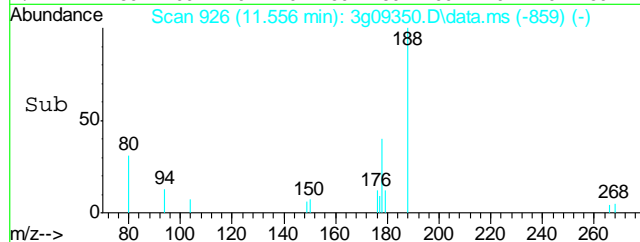
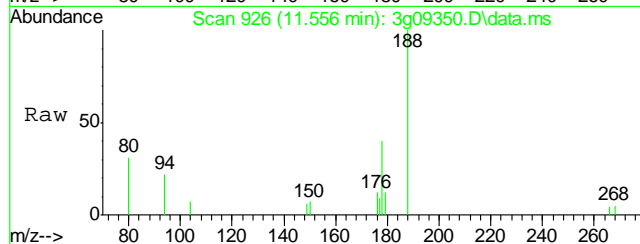
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

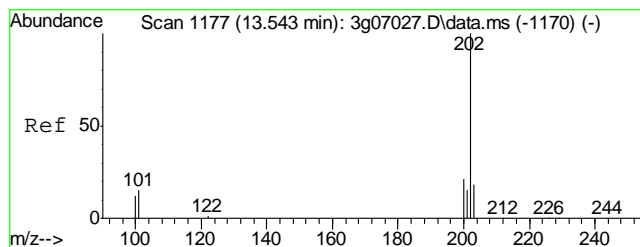
Tgt Ion: 178  
Sig Exp Ratio  
178 100  
179 15.1  
176 18.5  
177 10.2



#16  
Anthracene  
Concen: 0.0266 ug/mL  
RT: 11.556 min Scan# 926  
Delta R.T. 0.000 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

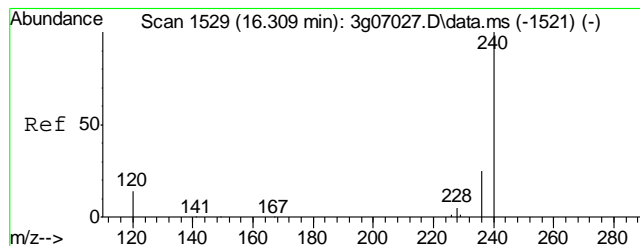
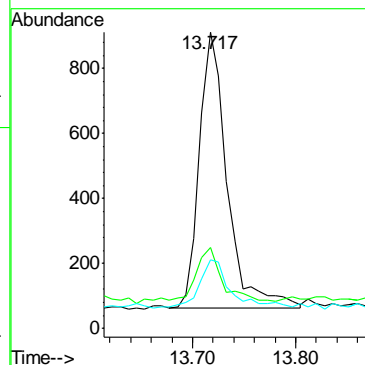
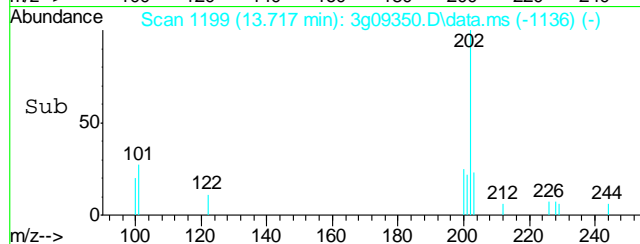
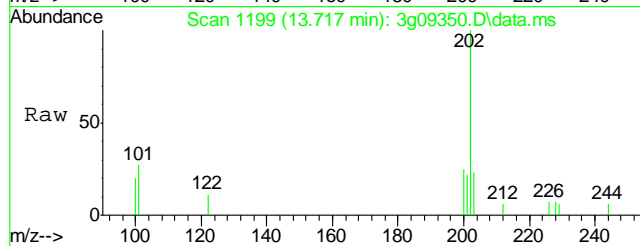
Tgt Ion: 178 Resp: 810  
Ion Ratio Lower Upper  
178 100  
179 16.5 0.0 35.1  
176 19.5 0.0 37.8  
177 13.7 0.0 28.7





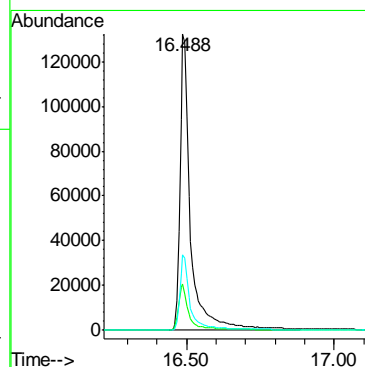
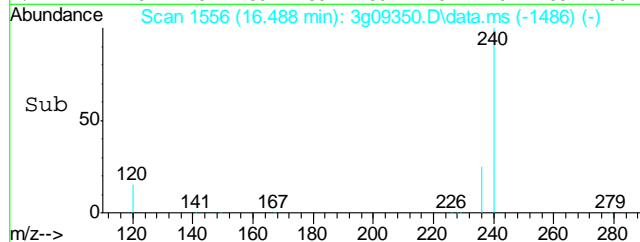
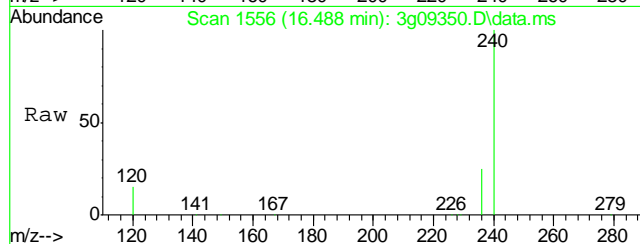
#17  
Fluoranthene  
Concen: 0.0104 ug/mL  
RT: 13.717 min Scan# 1199  
Delta R.T. 0.000 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

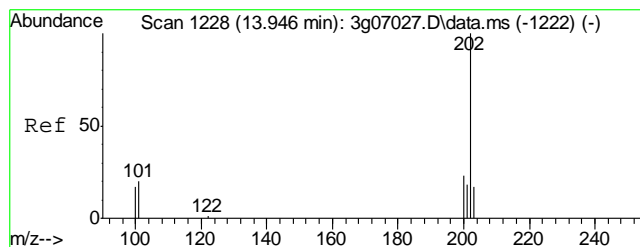
Tgt Ion:	202	Resp:	1589
Ion Ratio	Lower	Upper	
202	100		
101	16.9	0.0	35.5
203	17.1	0.0	37.2



#18  
Chrysene-d12  
Concen: 4.0000 ug/mL  
RT: 16.488 min Scan# 1556  
Delta R.T. 0.000 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

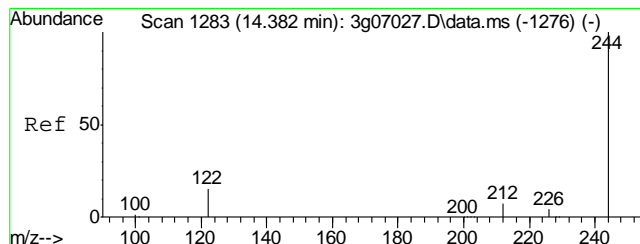
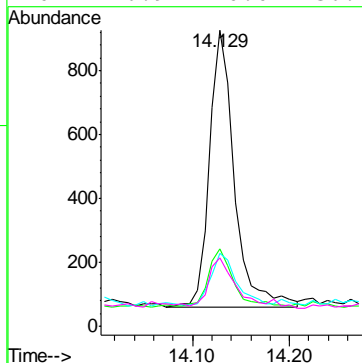
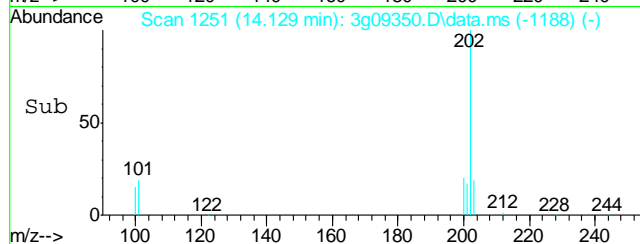
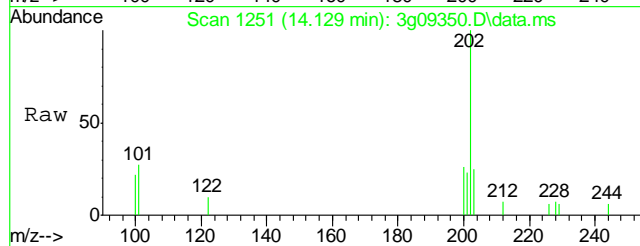
Tgt Ion:	240	Resp:	323504
Ion Ratio	Lower	Upper	
240	100		
120	15.2	0.0	35.5
236	24.9	4.8	44.8





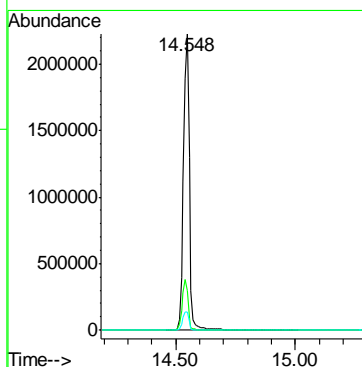
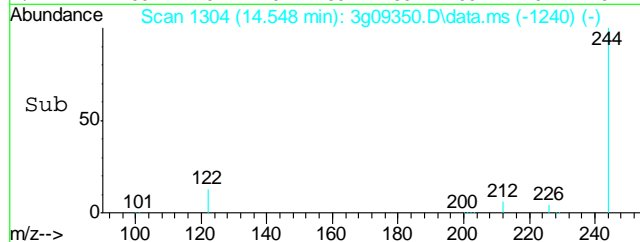
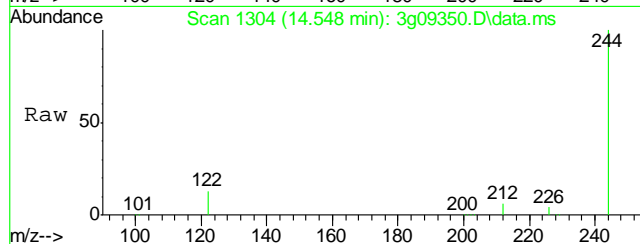
#19  
Pyrene  
Concen: 0.0132 ug/mL  
RT: 14.129 min Scan# 1251  
Delta R.T. 0.001 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

Tgt Ion:	202	Resp:	1536
Ion Ratio	Lower	Upper	
202	100		
200	22.3	0.3	40.3
203	19.1	0.0	37.7
201	16.9	0.0	36.7

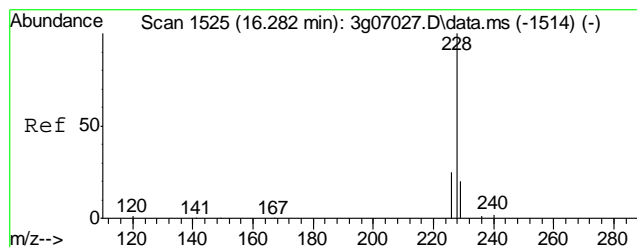


#20  
Terphenyl-d14  
Concen: 60.4873 ug/mL  
RT: 14.548 min Scan# 1304  
Delta R.T. 0.008 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

Tgt Ion:	244	Resp:	3652025
Ion Ratio	Lower	Upper	
244	100		
122	16.8	0.0	36.5
212	6.7	0.0	26.8

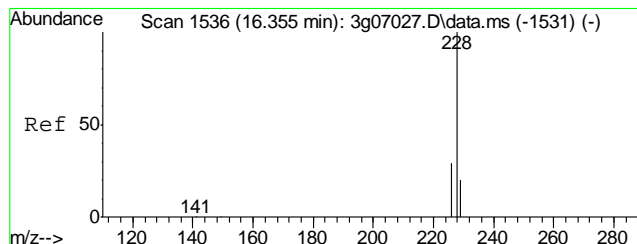
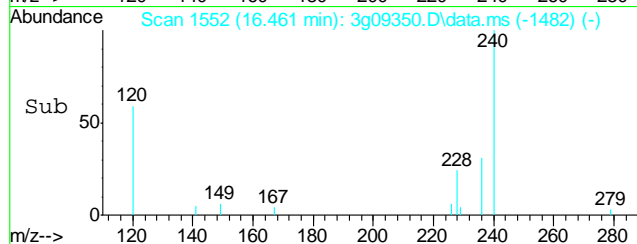
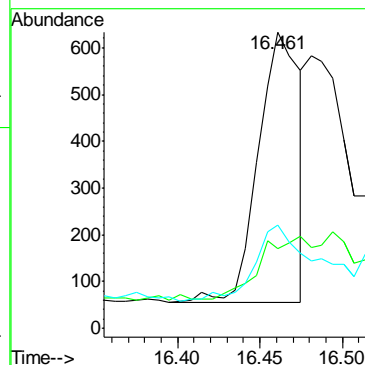
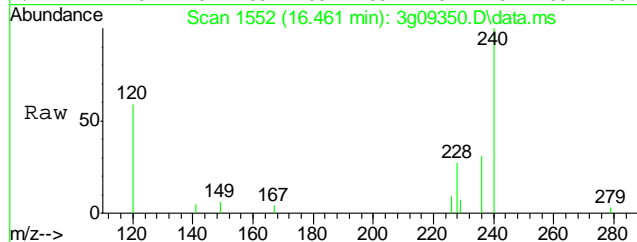






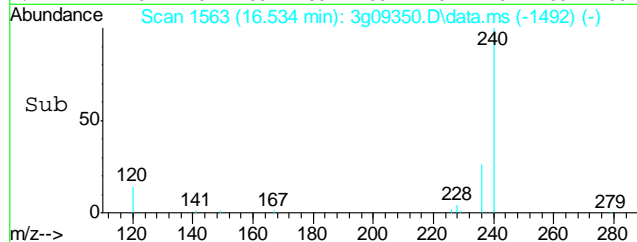
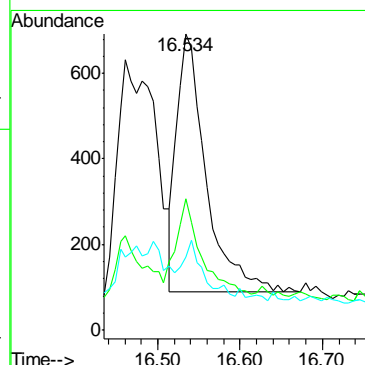
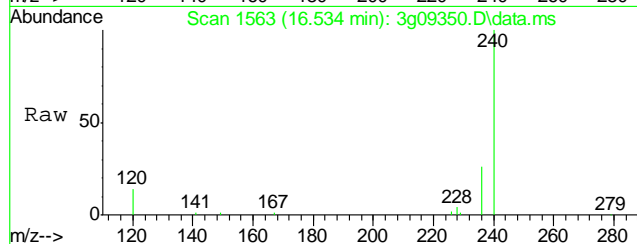
#21  
Benzo(a)anthracene  
Concen: 0.0113 ug/mL  
RT: 16.461 min Scan# 1552  
Delta R.T. 0.001 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

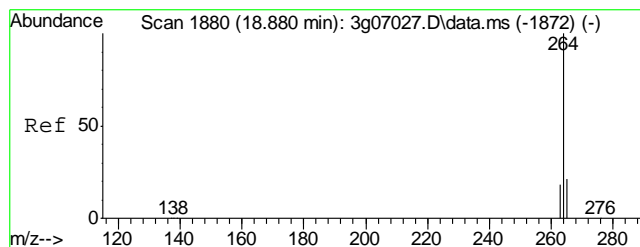
Tgt Ion: 228	Resp: 1011
Ion Ratio	Lower Upper
228	100
229	28.4 0.0 39.5
226	44.0 6.2 46.2



#22  
Chrysene  
Concen: 0.0140 ug/mL  
RT: 16.534 min Scan# 1563  
Delta R.T. 0.000 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

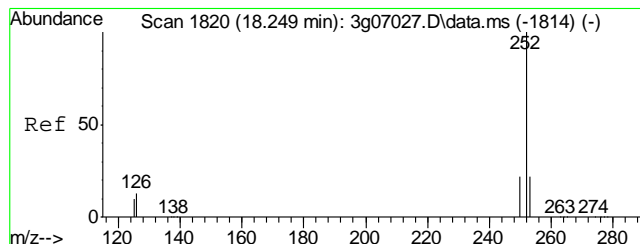
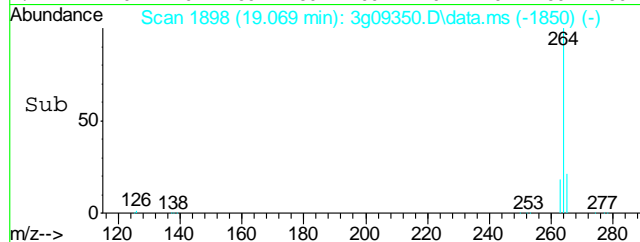
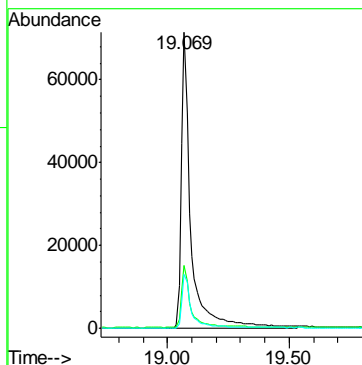
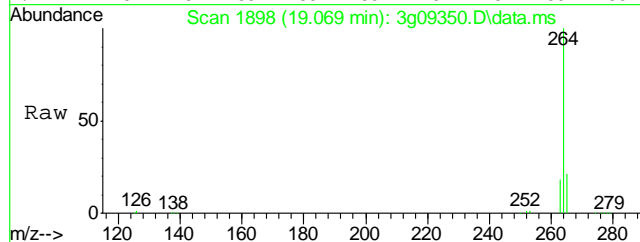
Tgt Ion: 228	Resp: 1484
Ion Ratio	Lower Upper
228	100
226	33.0 8.3 48.3
229	14.1 0.0 39.2





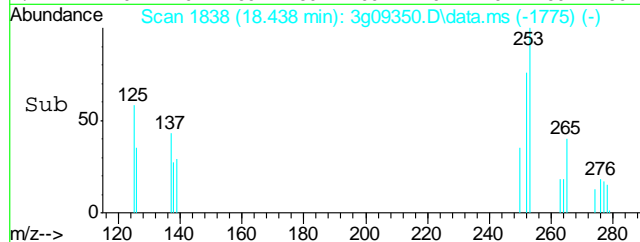
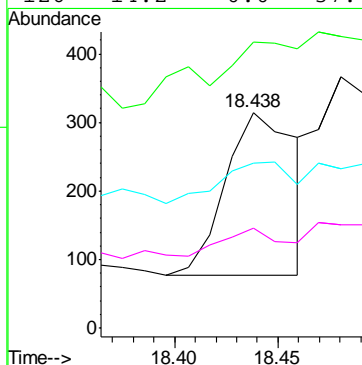
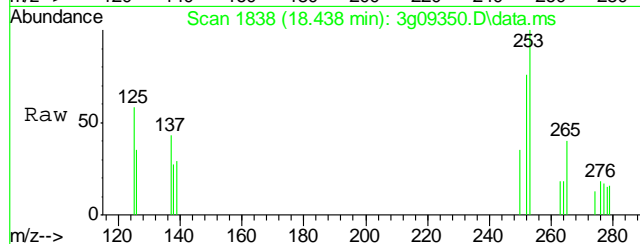
#23  
Perylene-d12  
Concen: 4.0000 ug/mL  
RT: 19.069 min Scan# 1898  
Delta R.T. 0.000 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

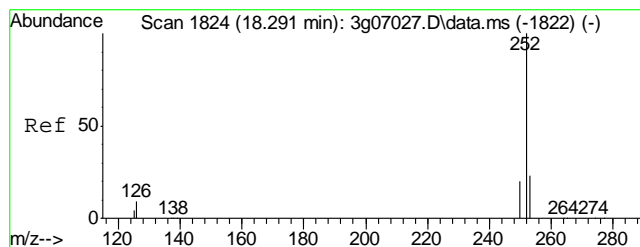
Tgt Ion:	264	Resp:	193834
Ion Ratio	Lower	Upper	
264	100		
265	20.0	1.1	41.1
263	18.3	0.0	38.9



#24  
Benzo(b)fluoranthene  
Concen: 0.0874 ug/mL  
RT: 18.438 min Scan# 1838  
Delta R.T. 0.001 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

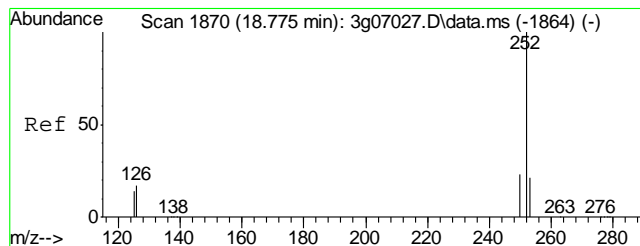
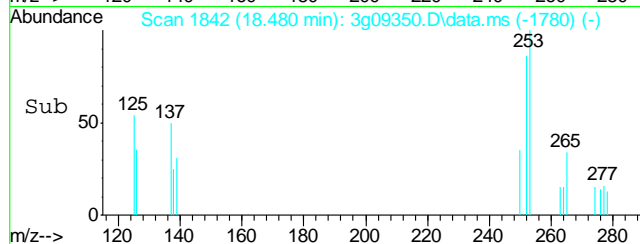
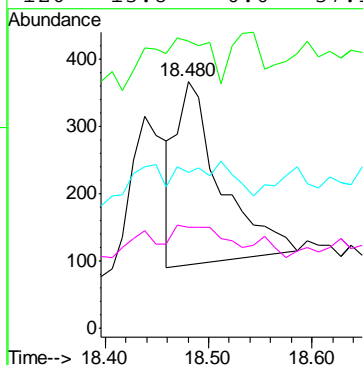
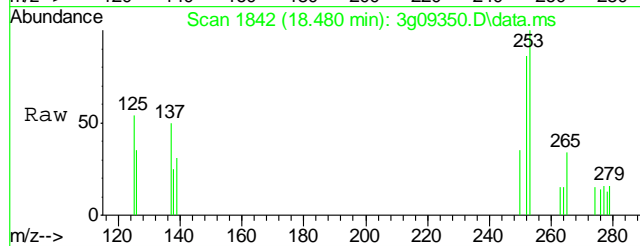
Tgt Ion:	252	Resp:	562
Ion Ratio	Lower	Upper	
252	100		
253	0.0	6.0	46.0#
125	0.0	0.0	32.4
126	14.2	0.0	37.4





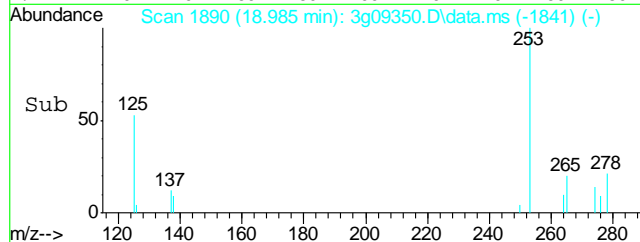
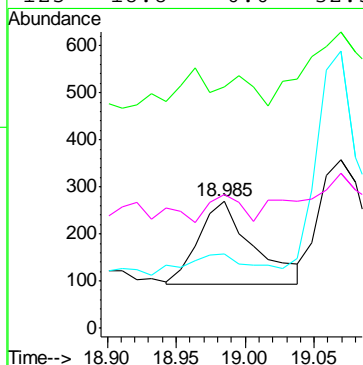
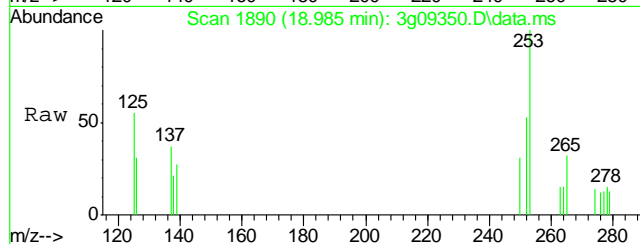
#25  
Benzo(k)fluoranthene  
Concen: 0.0473 ug/mL  
RT: 18.480 min Scan# 1842  
Delta R.T. 0.011 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

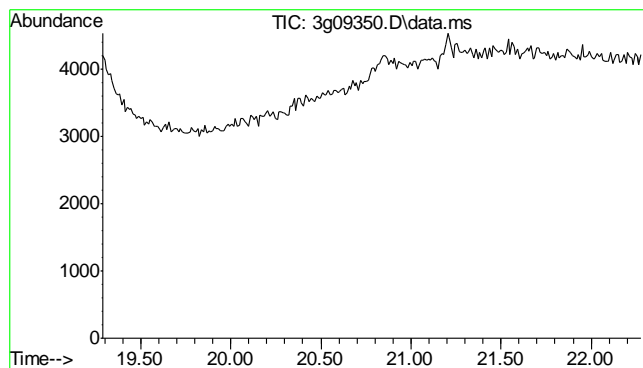
Tgt Ion	Ratio	Lower	Upper
252	100		
253	0.0	0.0	39.0
125	0.0	0.0	31.0
126	13.8	0.0	37.1



#26  
Benzo(a)pyrene  
Concen: 0.0946 ug/mL  
RT: 18.985 min Scan# 1890  
Delta R.T. 0.011 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

Tgt Ion	Ratio	Lower	Upper
252	100		
253	28.7	1.6	41.6
126	25.6	0.0	35.7
125	18.8	0.0	32.5

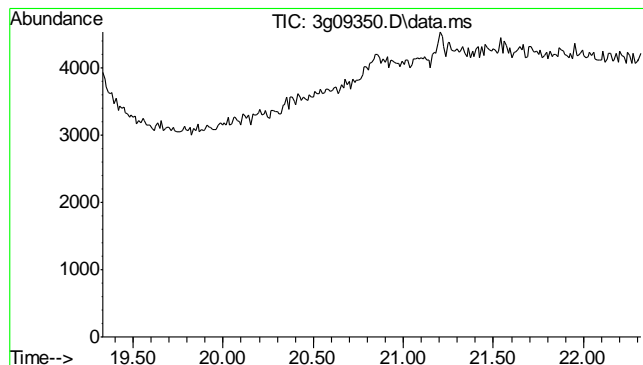
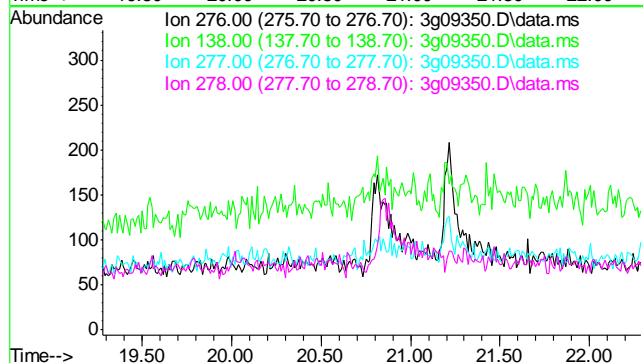




#27  
Indeno(1,2,3-cd)pyrene  
Concen: N.D. ug/mL  
Expected RT: 20.78 min

Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

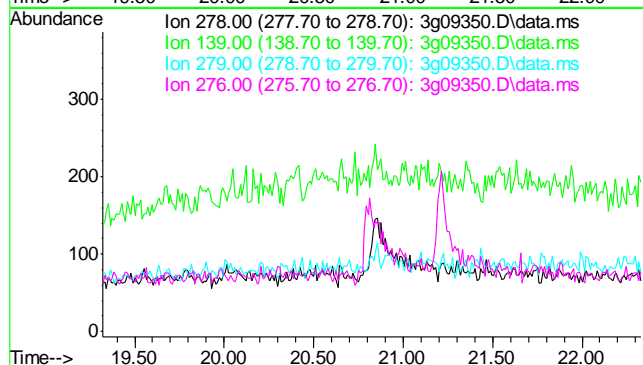
Tgt Ion:	276
Sig	Exp Ratio
276	100
138	12.2
277	24.8
278	77.5

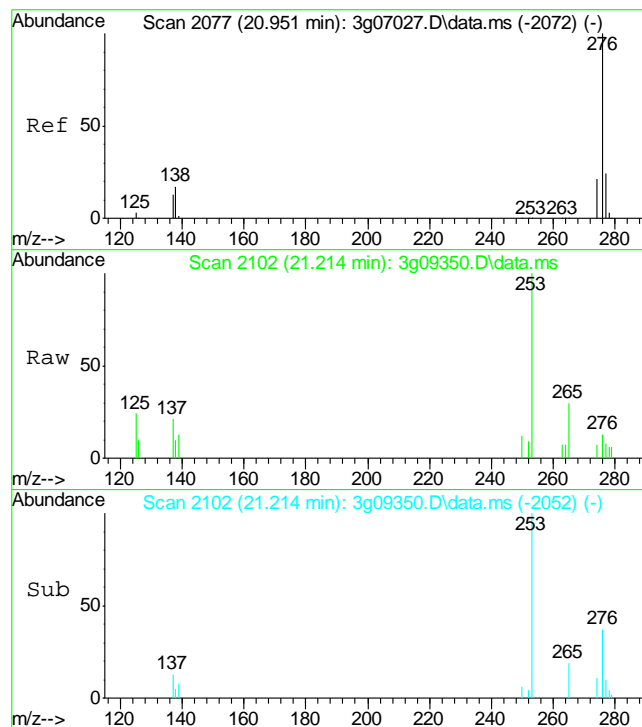


#28  
Dibenz(a,h)anthracene  
Concen: N.D. ug/mL  
Expected RT: 20.82 min

Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

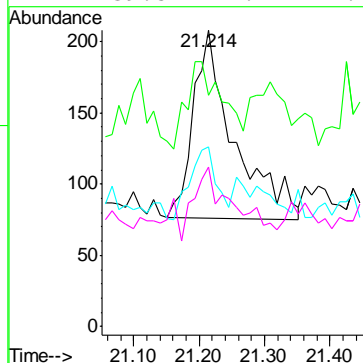
Tgt Ion:	278
Sig	Exp Ratio
278	100
139	19.0
279	23.4
276	129.1





#29  
Benzo(g,h,i)perylene  
Concen: 0.0836 ug/mL  
RT: 21.214 min Scan# 2102  
Delta R.T. 0.021 min  
Lab File: 3g09350.D  
Acq: 22 May 12 2:57 am

Tgt Ion	Ratio	Lower	Upper
276	100		
138	40.6	3.6	43.6
277	25.9	3.6	43.6
274	39.5	1.4	41.4



## GC Volatiles

### QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D34583  
Account: XTOKRWR XTO Energy  
Project: PCU T31-19G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB894-MB	GB16046.D	1	05/18/12	SK	n/a	n/a	GGB894

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

D34583-1

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	90% 60-140%

9.1.1  
9

Blank Spike Summary

Job Number: D34583  
Account: XTOKRWR XTO Energy  
Project: PCU T31-19G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB894-BS	GB16047.D	1	05/18/12	SK	n/a	n/a	GGB894

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

D34583-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	127	115	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	99%	60-140%



Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D34583  
Account: XTOKRWR XTO Energy  
Project: PCU T31-19G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D34664-1MS	GB16049.D	1	05/18/12	SK	n/a	n/a	GGB894
D34664-1MSD	GB16050.D	1	05/18/12	SK	n/a	n/a	GGB894
D34664-1	GB16048.D	1	05/18/12	SK	n/a	n/a	GGB894

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

D34583-1

CAS No.	Compound	D34664-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		144	167	116	166	115	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D34664-1	Limits
120-82-1	1,2,4-Trichlorobenzene	101%	100%	93%	60-140%

9.3.1  
6

GC Volatiles

Raw Data

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\051812\GB16052.D\FID1A.CH Vial: 8  
 Signal #2 : Y:\1\DATA\051812\GB16052.D\FID2B.CH  
 Acq On : 18 May 2012 9:18 pm Operator: StephK  
 Sample : D34583-1, 50X Inst : GC/MS Ins  
 Misc : GC2848,GGB894,5.094,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: May 21 08:23:45 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Mon May 21 08:23:01 2012  
 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

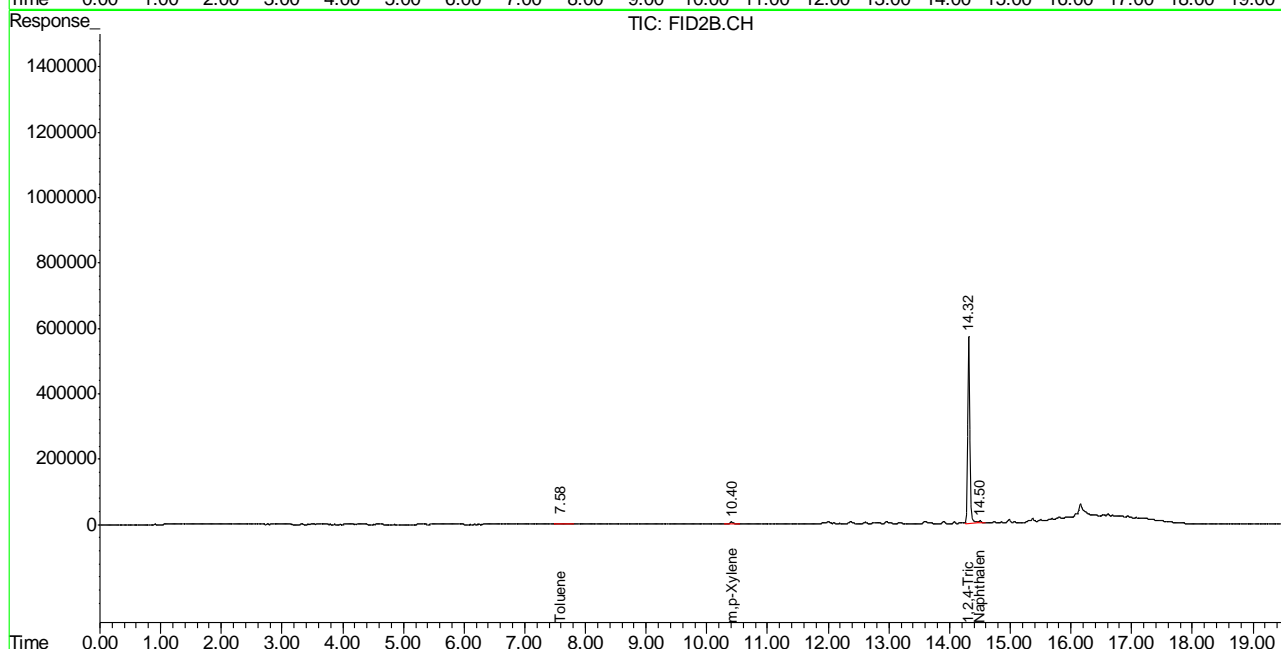
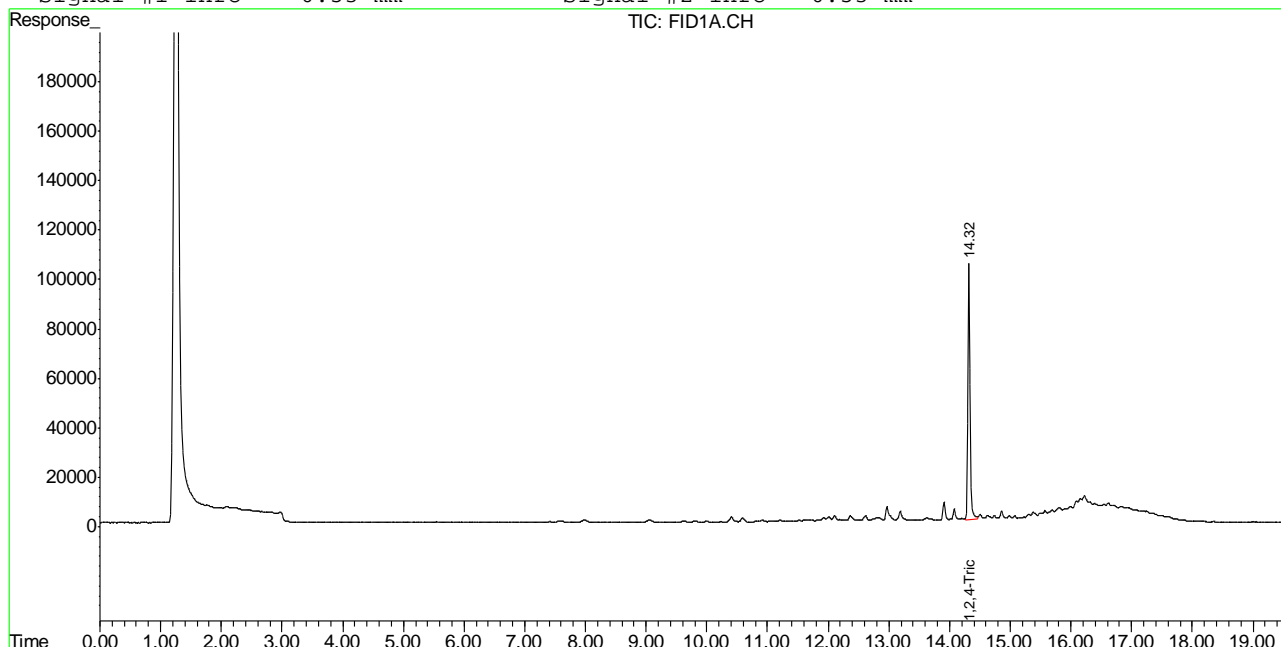
	Compound	R.T.	Response	Conc	Units
-----					
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.32	2551696	81.435	%
10) S	1,2,4-Trichlorobenzene (P)	14.32	13725900	84.453	%
Target Compounds					
1) H	TVH-Gasoline	7.23	5801168	<MDL	mg/L
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T	Benzene	0.00	0	N.D.	ug/L d
6) T	Toluene	7.58	144846	0.366	ug/L
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	10.40	313112	0.484	ug/L
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.50	288655	1.463	ug/L

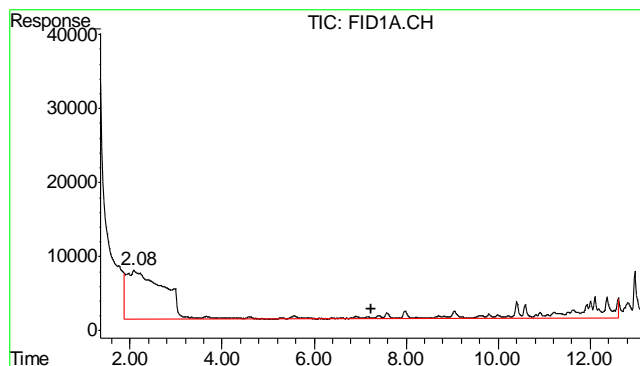
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\051812\GB16052.D\FID1A.CH Vial: 8  
 Signal #2 : Y:\1\DATA\051812\GB16052.D\FID2B.CH  
 Acq On : 18 May 2012 9:18 pm Operator: StephK  
 Sample : D34583-1, 50X Inst : GC/MS Ins  
 Misc : GC2848,GGB894,5.094,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: May 21 7:37 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Mon May 21 08:23:01 2012  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TVB4.M

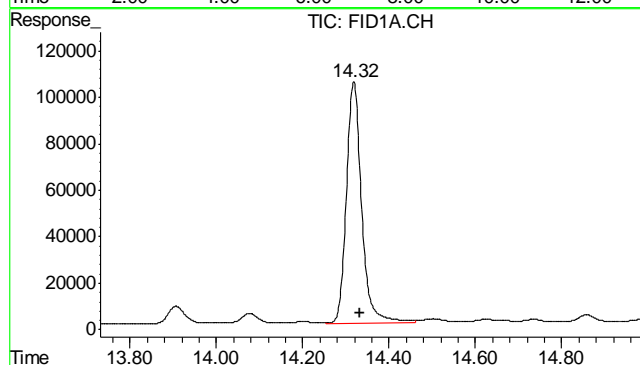
Volume Inj. :  
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





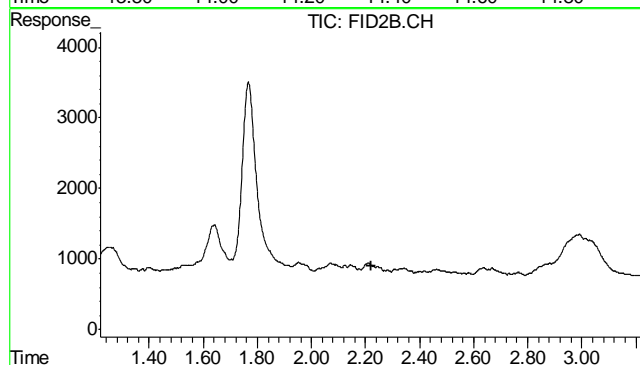
#1 TVH-Gasoline

R.T.: 7.230 min  
Delta R.T.: 0.000 min  
Response: 5801168  
Conc: N.D.



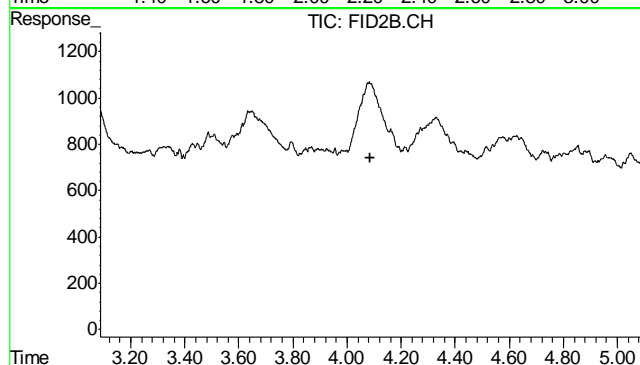
#2 1,2,4-Trichlorobenzene

R.T.: 14.318 min  
Delta R.T.: -0.015 min  
Response: 2551696  
Conc: 81.44 %



#4 Methyl-t-butyl-ether

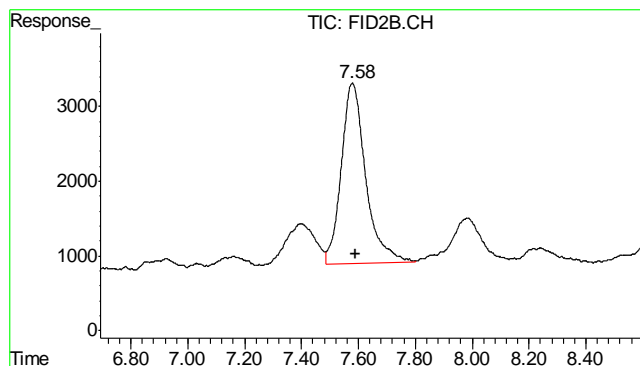
R.T.: 0.000 min  
Exp R.T.: 2.220 min  
Response: 0  
Conc: N.D.



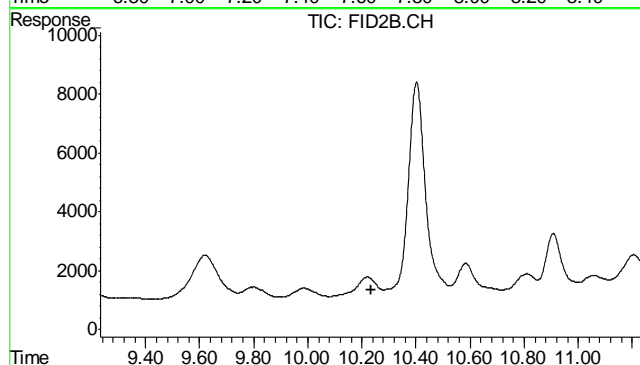
#5 Benzene

R.T.: 0.000 min  
Exp R.T.: 4.088 min  
Response: 0  
Conc: N.D.

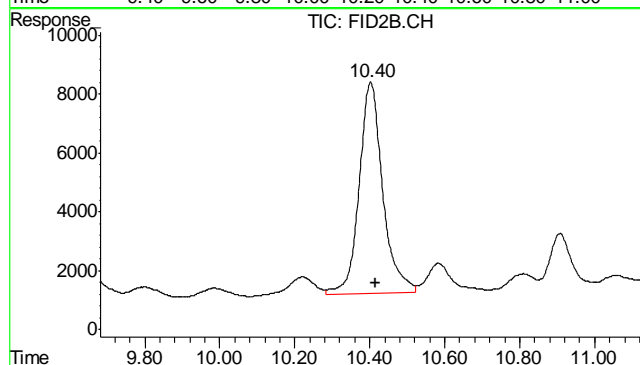
10.1.1  
10



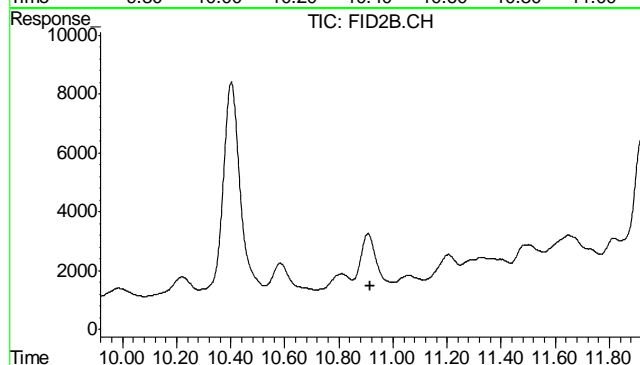
#6 Toluene  
R.T.: 7.579 min  
Delta R.T.: -0.013 min  
Response: 144846  
Conc: 0.37 ug/L



#7 Ethylbenzene  
R.T.: 0.000 min  
Exp R.T.: 10.233 min  
Response: 0  
Conc: N.D.

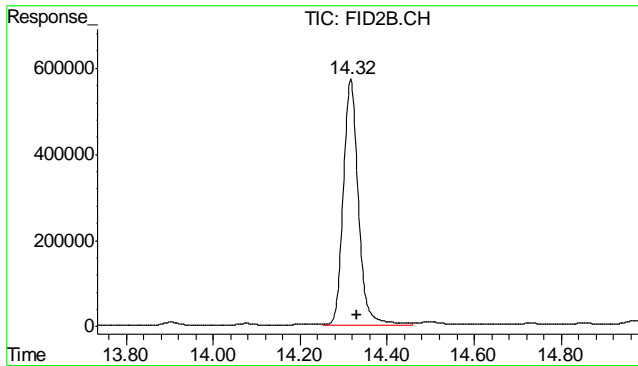


#8 m,p-Xylene  
R.T.: 10.402 min  
Delta R.T.: -0.014 min  
Response: 313112  
Conc: 0.48 ug/L



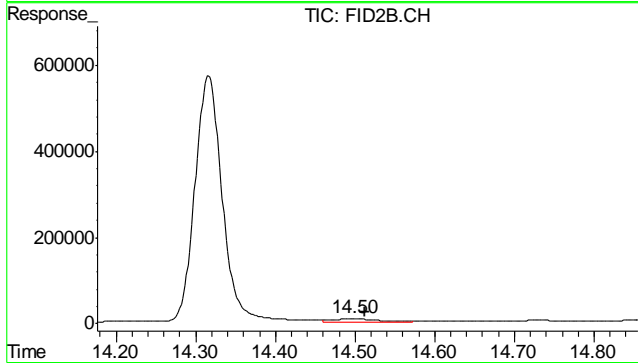
#9 o-Xylene  
R.T.: 0.000 min  
Exp R.T.: 10.917 min  
Response: 0  
Conc: N.D.

10.1.1  
10



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

R.T.: 14.316 min  
Delta R.T.: -0.015 min  
Response: 13725900  
Conc: 84.45 %



#11 Naphthalene

R.T.: 14.497 min  
Delta R.T.: -0.015 min  
Response: 288655  
Conc: 1.46 ug/L

## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\051812\GB16046.D\FID1A.CH Vial: 2  
 Signal #2 : Y:\1\DATA\051812\GB16046.D\FID2B.CH  
 Acq On : 18 May 2012 5:47 pm Operator: StephK  
 Sample : MB Inst : GC/MS Ins  
 Misc : GC2848,GGB894,5.000,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: May 21 08:23:21 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Mon May 21 08:23:01 2012  
 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	14.32	2812754	89.767	%
10) S	1,2,4-Trichlorobenzene (P)	14.32	15061670	92.672	%
Target Compounds					
1) H	TVH-Gasoline	7.23	4149318	<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	7.58	130423	0.329	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	14.50	240836	1.221	ug/L

-----  
 (f)=RT Delta > 1/2 Window (m)=manual int.  
 GB16046.D TB868GB868SOIL.M Mon May 21 08:40:16 2012 GC

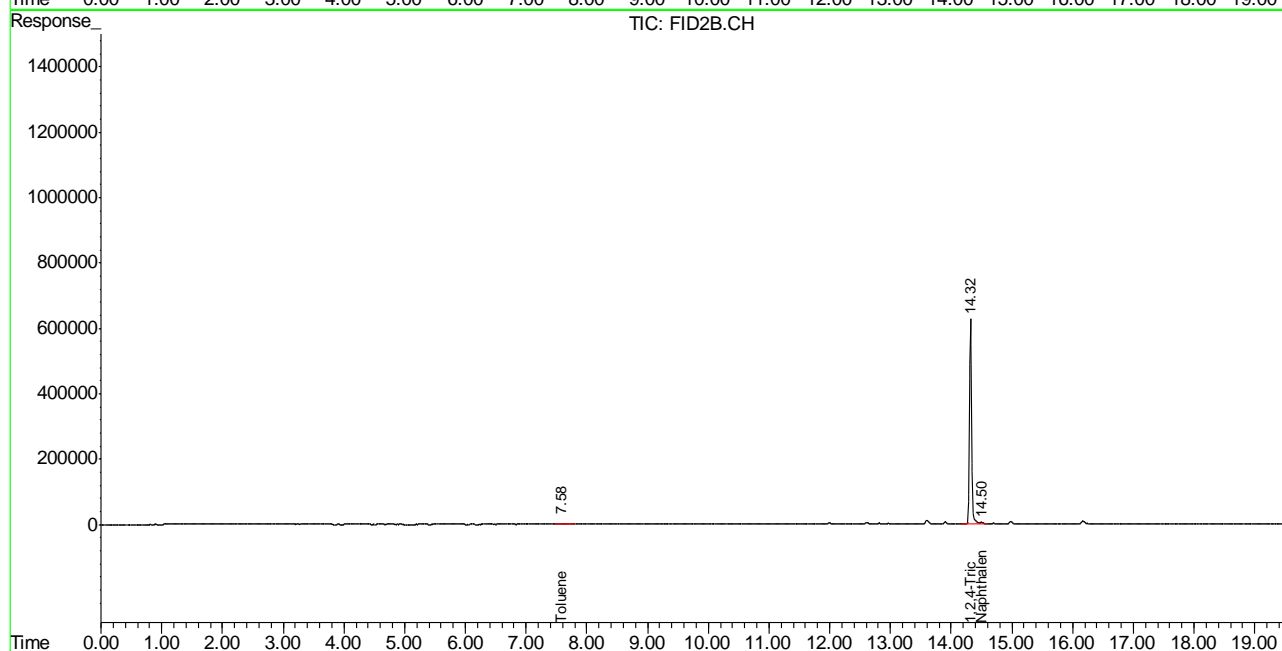
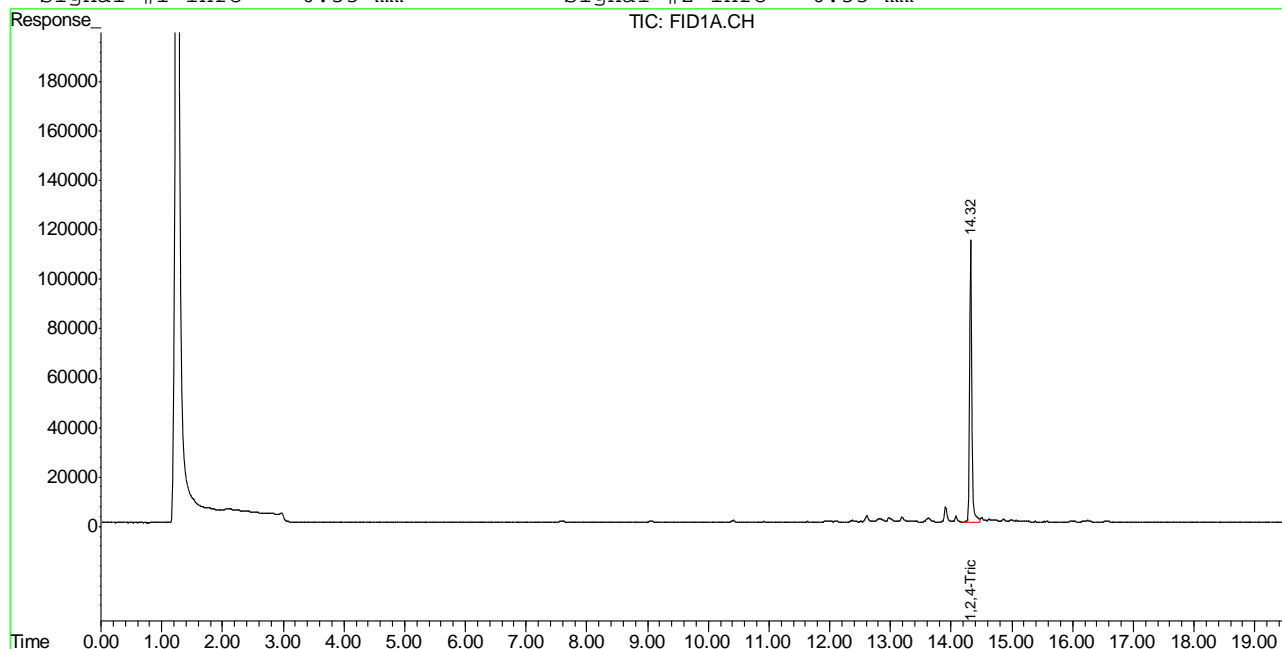


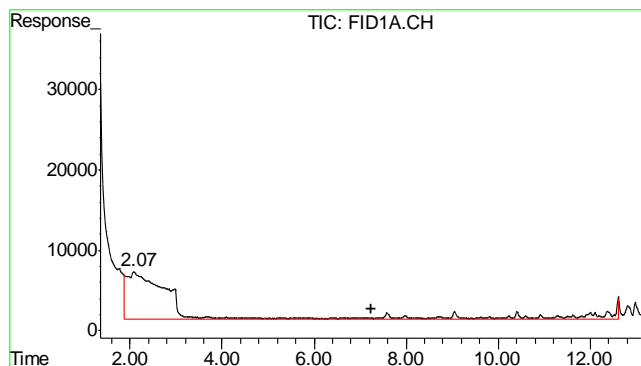
## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\051812\GB16046.D\FID1A.CH Vial: 2  
Signal #2 : Y:\1\DATA\051812\GB16046.D\FID2B.CH  
Acq On : 18 May 2012 5:47 pm Operator: StephK  
Sample : MB Inst : GC/MS Ins  
Misc : GC2848,GGB894,5.000,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: May 21 7:34 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Mon May 21 08:23:01 2012  
Response via : Multiple Level Calibration  
DataAcq Meth : TVB4.M

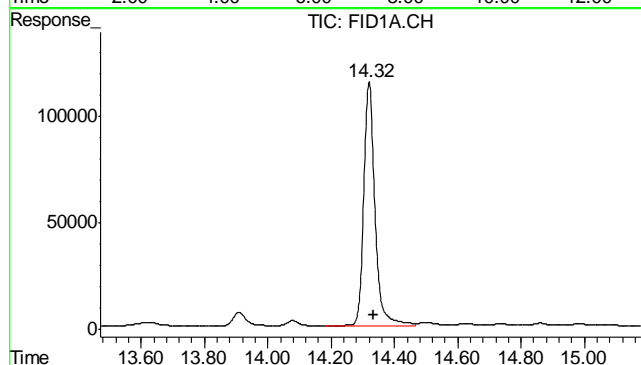
Volume Inj. :  
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





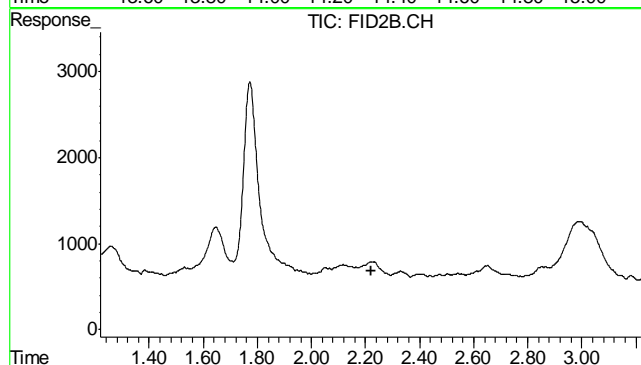
#1 TVH-Gasoline

R.T.: 7.230 min  
Delta R.T.: 0.000 min  
Response: 4149318  
Conc: N.D.



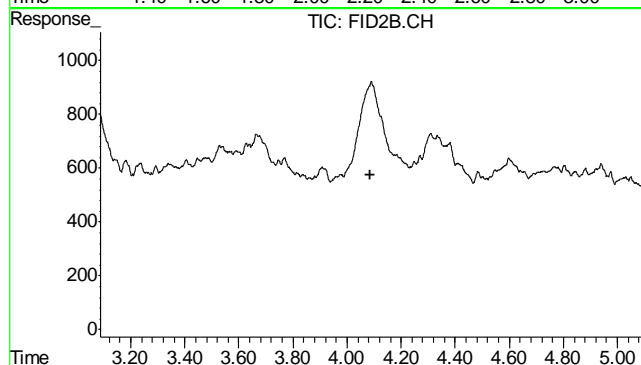
#2 1,2,4-Trichlorobenzene

R.T.: 14.320 min  
Delta R.T.: -0.013 min  
Response: 2812754  
Conc: 89.77 %



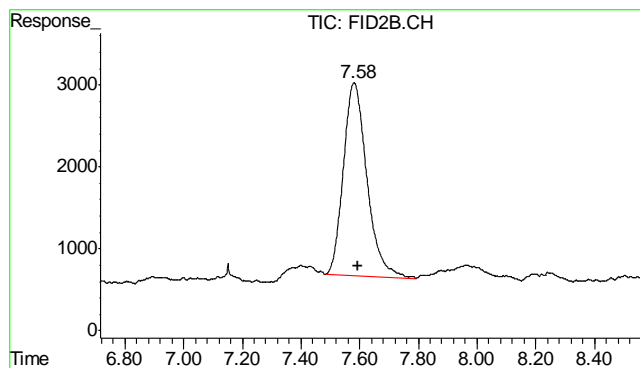
#4 Methyl-t-butyl-ether

R.T.: 0.000 min  
Exp R.T.: 2.220 min  
Response: 0  
Conc: N.D.



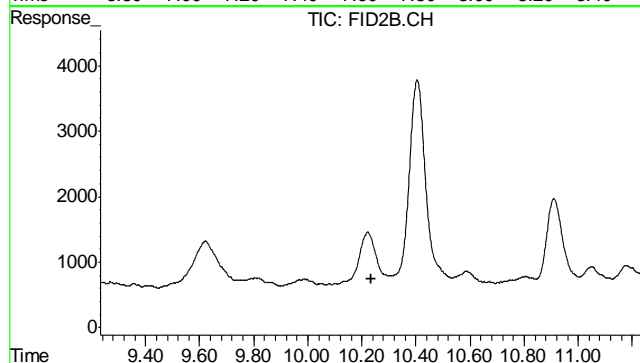
#5 Benzene

R.T.: 0.000 min  
Exp R.T.: 4.088 min  
Response: 0  
Conc: N.D.



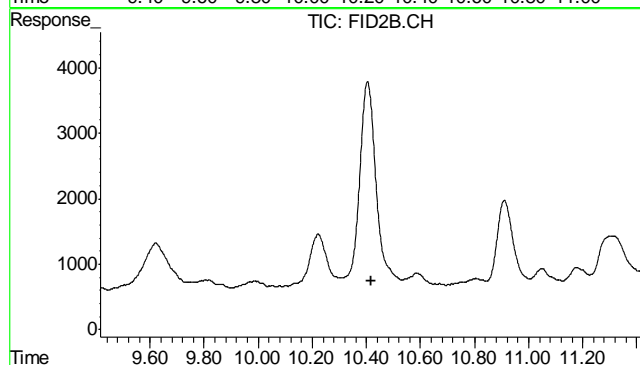
#6 Toluene

R.T.: 7.581 min  
Delta R.T.: -0.011 min  
Response: 130423  
Conc: 0.33 ug/L



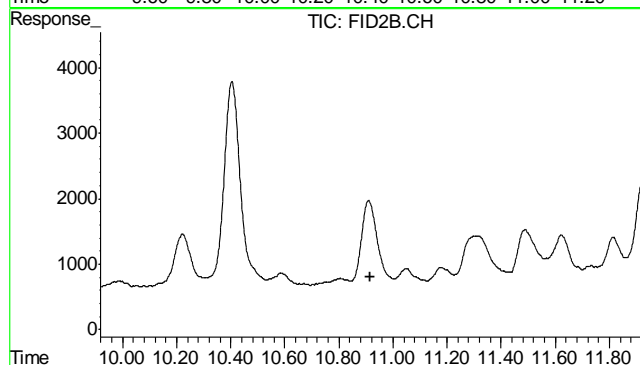
#7 Ethylbenzene

R.T.: 0.000 min  
Exp R.T.: 10.233 min  
Response: 0  
Conc: N.D.



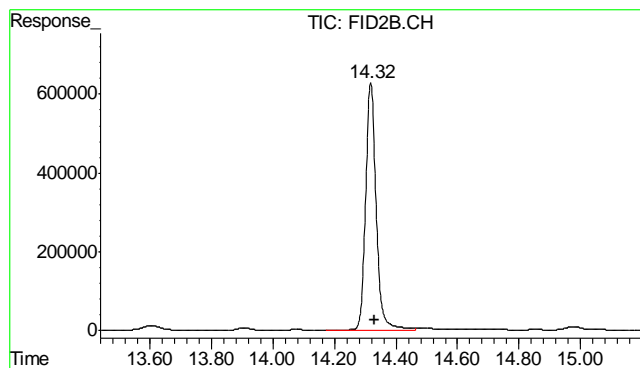
#8 m,p-Xylene

R.T.: 0.000 min  
Exp R.T.: 10.416 min  
Response: 0  
Conc: N.D.



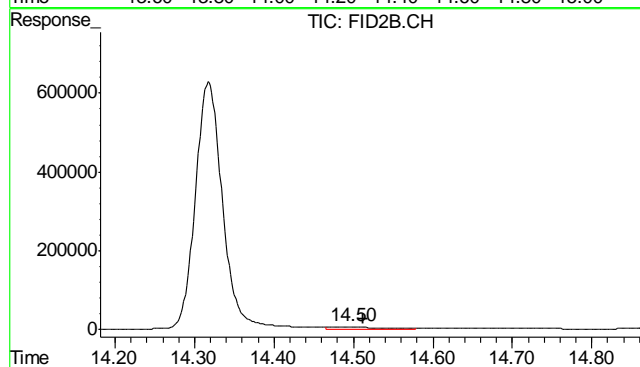
#9 o-Xylene

R.T.: 0.000 min  
Exp R.T.: 10.917 min  
Response: 0  
Conc: N.D.



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

R.T.: 14.318 min  
Delta R.T.: -0.013 min  
Response: 15061670  
Conc: 92.67 %



#11 Naphthalene

R.T.: 14.498 min  
Delta R.T.: -0.015 min  
Response: 240836  
Conc: 1.22 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

Job Number: D34583  
Account: XTOKRWR XTO Energy  
Project: PCU T31-19G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5909-MB	FH004377.D	1	05/20/12	AW	05/18/12	OP5909	GFH243

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

D34583-1

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	93% 43-136%

11.1.1  
11

Blank Spike Summary

Job Number: D34583  
Account: XTOKRWR XTO Energy  
Project: PCU T31-19G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5909-BS	FH004379.D	1	05/20/12	AW	05/18/12	OP5909	GFH243

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

D34583-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	587	88	58-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	122%	43-136%

11.2.1  
11

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D34583  
Account: XTOKRWR XTO Energy  
Project: PCU T31-19G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5909-MS	FH004381.D	1	05/20/12	AW	05/18/12	OP5909	GFH243
OP5909-MSD	FH004383.D	1	05/20/12	AW	05/18/12	OP5909	GFH243
D34531-2	FH004385.D	1	05/20/12	AW	05/18/12	OP5909	GFH243

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

D34583-1

CAS No.	Compound	D34531-2 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	552	758	1090	108	1070	105	2	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D34531-2	Limits
84-15-1	o-Terphenyl	98%	91%	92%	43-136%

11.3.1  
11



GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH052312.SEC\  
 Data File : FH004581.D  
 Signal(s) : FID2B.ch  
 Acq On : 23 May 2012 9:26 pm  
 Operator : alexwl  
 Sample : D34583-1  
 Misc : OP5909,GFH253,30.00,,,2,1  
 ALS Vial : 63 Sample Multiplier: 1

Integration File: events.e  
 Quant Time: May 24 09:03:01 2012  
 Quant Method : C:\msdchem\1\METHODS\DRO-GFH222R.M  
 Quant Title : DRO-ORO REAR  
 QLast Update : Fri May 11 15:44:51 2012  
 Response via : Initial Calibration  
 Integrator: ChemStation

Volume Inj. :  
 Signal Phase :  
 Signal Info :

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
2) s o-Terphenyl	12.257	844057506	854.207 ug/ml
Target Compounds			
1) H TPH-DRO (C10-C28)	9.674	10602800503	9274.452 ug/ml
-----			

(f)=RT Delta > 1/2 Window

(m)=manual int.

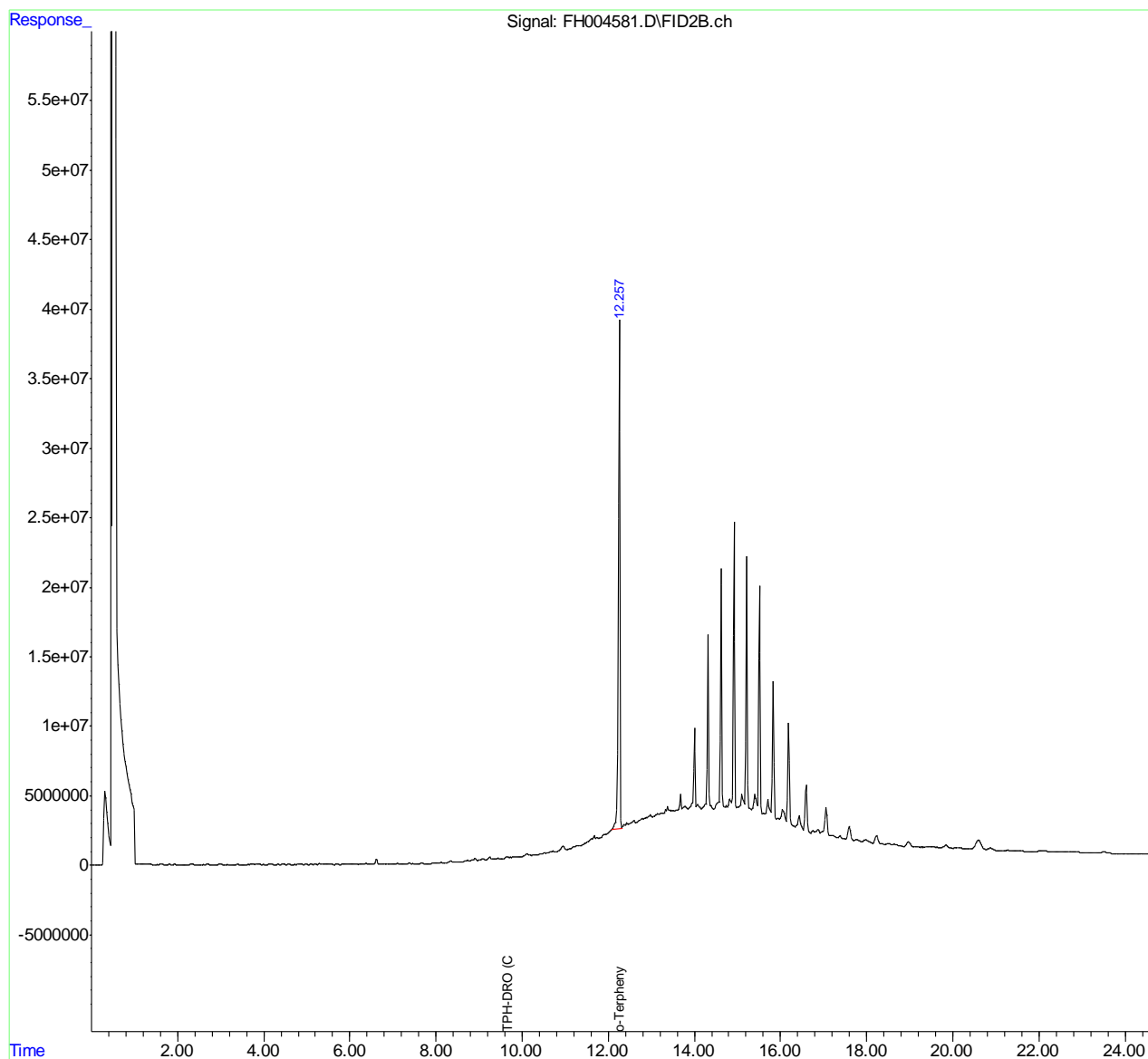
12.1.1  
12

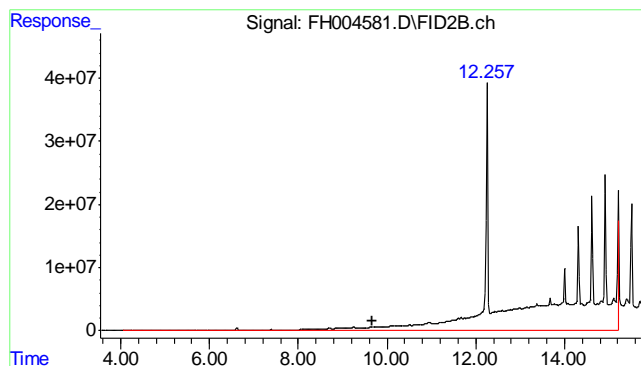
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH052312.SEC\  
Data File : FH004581.D  
Signal(s) : FID2B.ch  
Acq On : 23 May 2012 9:26 pm  
Operator : alexwl  
Sample : D34583-1  
Misc : OP5909,GFH253,30.00,,,2,1  
ALS Vial : 63 Sample Multiplier: 1

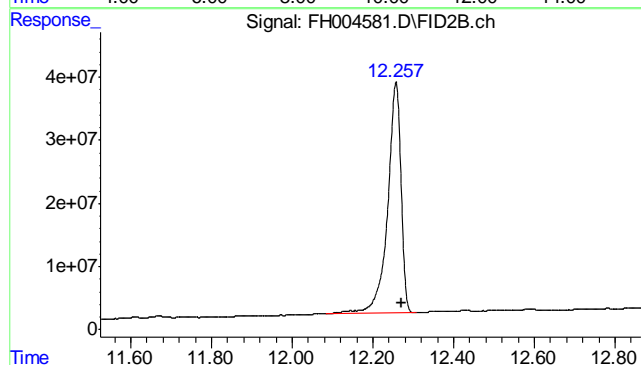
Integration File: events.e  
Quant Time: May 24 09:03:01 2012  
Quant Method : C:\msdchem\1\METHODS\DRO-GFH222R.M  
Quant Title : DRO-ORO REAR  
QLast Update : Fri May 11 15:44:51 2012  
Response via : Initial Calibration  
Integrator: ChemStation

Volume Inj. :  
Signal Phase :  
Signal Info :





#1 TPH-DRO (C10-C28)  
 R.T.: 9.674 min  
 Delta R.T.: 0.000 min  
 Response: 10602800503  
 Conc: 9274.45 ug/ml m



#2 o-Terphenyl  
 R.T.: 12.257 min  
 Delta R.T.: -0.013 min  
 Response: 844057506  
 Conc: 854.21 ug/ml

12.1.1  
 12

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH052012.SEC\  
Data File : FH004377.D  
Signal(s) : FID2B.ch  
Acq On : 20 May 2012 12:26 pm  
Operator : alexwl  
Sample : OP5909-MB  
Misc : OP5909,GFH243,30.00,,,2,1  
ALS Vial : 53 Sample Multiplier: 1

Integration File: events.e  
Quant Time: May 21 13:46:36 2012  
Quant Method : C:\msdchem\1\METHODS\DRO-GFH222R.M  
Quant Title : DRO-ORO REAR  
QLast Update : Fri May 11 15:44:51 2012  
Response via : Initial Calibration  
Integrator: ChemStation

Volume Inj. :  
Signal Phase :  
Signal Info :

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
2) s o-Terphenyl	12.284	919026494	933.166 ug/ml
Target Compounds			
1) H TPH-DRO (C10-C28)	9.674	45511886	39.810 ug/ml
-----			

(f)=RT Delta > 1/2 Window

(m)=manual int.

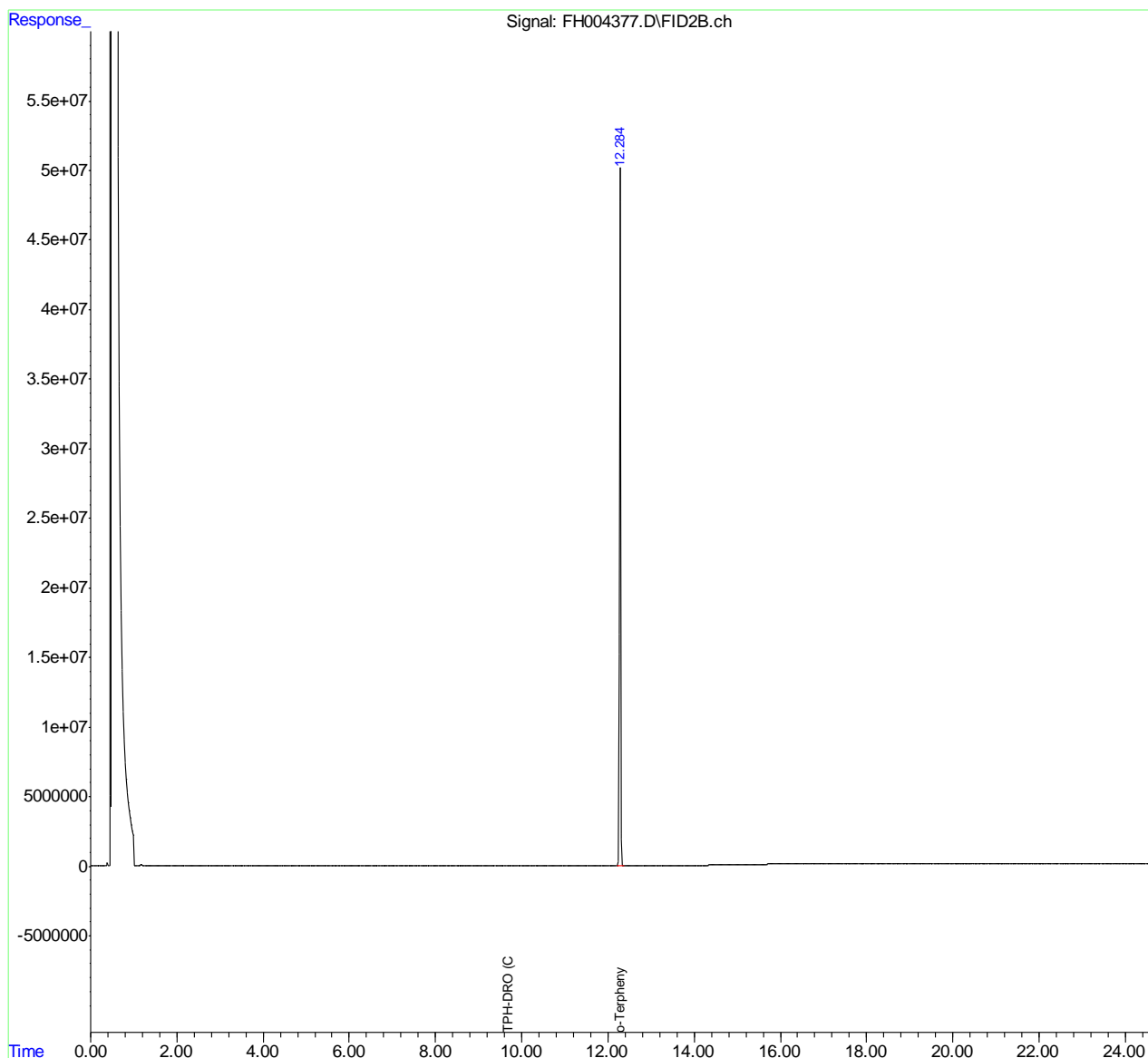
12.2.1  
12

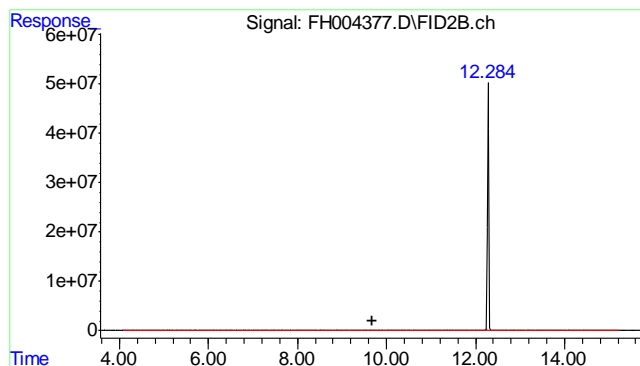
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH052012.SEC\  
Data File : FH004377.D  
Signal(s) : FID2B.ch  
Acq On : 20 May 2012 12:26 pm  
Operator : alexwl  
Sample : OP5909-MB  
Misc : OP5909,GFH243,30.00,,,2,1  
ALS Vial : 53 Sample Multiplier: 1

Integration File: events.e  
Quant Time: May 21 13:46:36 2012  
Quant Method : C:\msdchem\1\METHODS\DRO-GFH222R.M  
Quant Title : DRO-ORO REAR  
QLast Update : Fri May 11 15:44:51 2012  
Response via : Initial Calibration  
Integrator: ChemStation

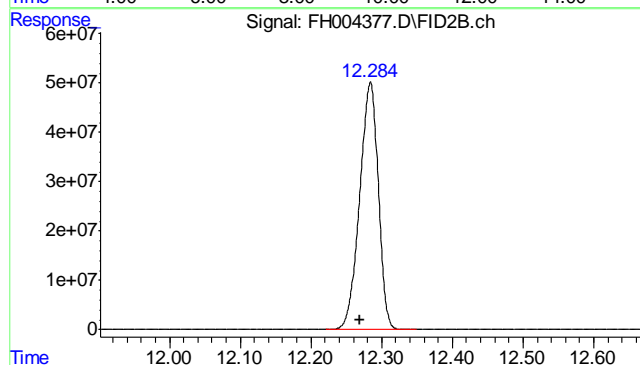
Volume Inj. :  
Signal Phase :  
Signal Info :





#1 TPH-DRO (C10-C28)

R.T.: 9.674 min  
Delta R.T.: 0.000 min  
Response: 45511886  
Conc: 39.81 ug/ml m



#2 o-Terphenyl

R.T.: 12.284 min  
Delta R.T.: 0.014 min  
Response: 919026494  
Conc: 933.17 ug/ml

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: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7495  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 05/18/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.96	.57		
Antimony	3.0	.17	.12		
Arsenic	2.5	.44	.56		
Barium	1.0	.01	.11	0.030	<1.0
Beryllium	1.0	.13	.15		
Boron	5.0	.1	.06		
Cadmium	1.0	.06	.036	-0.010	<1.0
Calcium	40	.54	9		
Chromium	1.0	.03	.03	-0.010	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	0.050	<1.0
Iron	7.0	.12	.87		
Lead	5.0	.19	.24	-0.020	<5.0
Lithium	0.20	.05	.054		
Magnesium	20	.65	.98		
Manganese	0.50	.12	.022		
Molybdenum	1.0	.21	.08		
Nickel	3.0	.05	.026	-0.060	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	-0.29	<5.0
Silicon	5.0	.29	.37		
Silver	3.0	.04	.06	-0.51	<3.0
Sodium	40	.59	1.9		
Strontium	5.0	.004	.017		
Thallium	1.0	.29	.53		
Tin	5.0	1.2	2		
Titanium	1.0	.01	.038		
Uranium	5.0	.22	.26		
Vanadium	1.0	.02	.036		
Zinc	3.0	.05	.37	-0.020	<3.0

Associated samples MP7495: D34583-1

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7495  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7495  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 05/18/12

Metal	D34534-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	9010	13600	388	1184.2(a	75-125
Beryllium					
Boron					
Cadmium	0.0	90.1	96.9	93.0	75-125
Calcium					
Chromium	25.9	120	96.9	97.1	75-125
Cobalt					
Copper	43.9	139	96.9	98.1	75-125
Iron					
Lead	14.4	189	194	90.1	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	19.7	108	96.9	91.1	75-125
Phosphorus					
Potassium					
Selenium	0.0	183	194	94.4	75-125
Silicon					
Silver	0.0	39.9	38.8	102.9	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium	anr				
Vanadium					
Zinc	76.4	150	96.9	76.0	75-125

Associated samples MP7495: D34583-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7495  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested  
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7495  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 05/18/12

Metal	D34534-1 Original	MSD	Spikelot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	9010	12700	388	952.0(a)	6.8	20
Beryllium						
Boron						
Cadmium	0.0	89.4	96.9	92.3	0.8	20
Calcium						
Chromium	25.9	117	96.9	94.0	2.5	20
Cobalt						
Copper	43.9	138	96.9	97.1	0.7	20
Iron						
Lead	14.4	188	194	89.6	0.5	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	19.7	108	96.9	91.1	0.0	20
Phosphorus						
Potassium						
Selenium	0.0	182	194	93.9	0.5	20
Silicon						
Silver	0.0	39.7	38.8	102.4	0.5	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium	anr					
Vanadium						
Zinc	76.4	149	96.9	74.9N(b)	0.7	20

Associated samples MP7495: D34583-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7495  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested  
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.  
(b) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D34583  
 Account: XTOKRWR - XTO Energy  
 Project: PCU T31-19G

QC Batch ID: MP7495  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: mg/kg

Prep Date: 05/18/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	190	200	95.0	80-120
Beryllium				
Boron				
Cadmium	48.1	50	96.2	80-120
Calcium				
Chromium	50.5	50	101.0	80-120
Cobalt				
Copper	49.4	50	98.8	80-120
Iron				
Lead	95.2	100	95.2	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	48.2	50	96.4	80-120
Phosphorus				
Potassium				
Selenium	94.1	100	94.1	80-120
Silicon				
Silver	20.9	20	104.5	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium	anr			
Vanadium				
Zinc	47.9	50	95.8	80-120

Associated samples MP7495: D34583-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7495  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

13.1.3

13



SERIAL DILUTION RESULTS SUMMARY

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7495  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date: 05/18/12

Metal	D34534-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	46400	48000	1.2	0-10
Beryllium				
Boron				
Cadmium	0.00	0.00	NC	0-10
Calcium				
Chromium	136	142	3.8	0-10
Cobalt				
Copper	231	222	4.0	0-10
Iron				
Lead	75.6	65.5	13.4 (a)	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	104	111	6.8	0-10
Phosphorus				
Potassium				
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium	anr			
Vanadium				
Zinc	402	450	11.9*(b)	0-10

Associated samples MP7495: D34583-1

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

13.1.4  
13

SERIAL DILUTION RESULTS SUMMARY

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7495  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date:

Metal

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

13.1.4  
13

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7496  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 05/18/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.042	.06	0.00090	<0.10
Barium	1.0	.0065	.037		
Beryllium	0.10	.016	.09		
Boron	20	1.2	1.2		
Cadmium	0.050	.014	.021		
Calcium	200	7.9	8		
Chromium	1.0	.033	.19		
Cobalt	0.10	.0012	.015		
Copper	1.0	.017	.065		
Iron	20	.8	5		
Lead	0.25	.0011	.024		
Magnesium	50	.44	.85		
Manganese	0.50	.0043	.02		
Molybdenum	0.50	.018	.018		
Nickel	1.0	.0049	.011		
Phosphorus	30	1.4	3.6		
Potassium	100	9.8	10		
Selenium	0.20	.029	.14		
Silver	0.050	.0009	.0065		
Sodium	250	1.5	2.3		
Strontium	10	.036	.036		
Thallium	0.10	.00095	.0095		
Thorium	0.25	.009	.025		
Tin	5.0	.023	.34		
Titanium	1.0	.044	.1		
Uranium	0.25	.00085	.001		
Vanadium	2.0	.12	.21		
Zinc	5.0	.033	.35		

Associated samples MP7496: D34583-1

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: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7496  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 05/18/12

Metal	D34534-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	5.1	191	194	95.9	75-125
Barium					
Beryllium					
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper	anr				
Iron	anr				
Lead	anr				
Magnesium					
Manganese	anr				
Molybdenum	anr				
Nickel	anr				
Phosphorus					
Potassium					
Selenium	anr				
Silver	anr				
Sodium					
Strontium					
Thallium					
Thorium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	anr				

Associated samples MP7496: D34583-1

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: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7496  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 05/18/12

Metal	D34534-1 Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	5.1	197	194	99.0	3.1	20
Barium						
Beryllium						
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper	anr					
Iron	anr					
Lead	anr					
Magnesium						
Manganese	anr					
Molybdenum	anr					
Nickel	anr					
Phosphorus						
Potassium						
Selenium	anr					
Silver	anr					
Sodium						
Strontium						
Thallium						
Thorium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	anr					

Associated samples MP7496: D34583-1

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: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7496  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 05/18/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	93.7	100	93.7	80-120
Barium				
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron	anr			
Lead	anr			
Magnesium				
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium				
Thorium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP7496: D34583-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D34583  
 Account: XTOKRWR - XTO Energy  
 Project: PCU T31-19G

QC Batch ID: MP7496  
 Matrix Type: SOLID

Methods: SW846 6020A  
 Units: ug/l

Prep Date: 05/18/12

Metal		D34534-1 Original SDL 5:25 %DIF		QC Limits	
Aluminum					
Antimony					
Arsenic	26.8	26.7	0.7	0-10	
Barium					
Beryllium					
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper	anr				
Iron	anr				
Lead	anr				
Magnesium					
Manganese	anr				
Molybdenum	anr				
Nickel	anr				
Phosphorus					
Potassium					
Selenium	anr				
Silver	anr				
Sodium					
Strontium					
Thallium					
Thorium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	anr				

Associated samples MP7496: D34583-1

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: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7498  
Matrix Type: AQUEOUS

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

Prep Date: 05/18/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	48	110		
Antimony	150	8.5	16		
Arsenic	130	22	38		
Barium	50	.5	2.5		
Beryllium	50	6.5	16		
Boron	250	5	13		
Cadmium	50	3	3		
Calcium	2000	27	37	-1.0	<2000
Chromium	50	1.5	2		
Cobalt	25	2	2		
Copper	50	6	15		
Iron	350	6	95		
Lead	250	9.5	15		
Lithium	10	2.5	3.3		
Magnesium	1000	33	55	38.5	<1000
Manganese	25	6	9		
Molybdenum	50	11	11		
Nickel	150	2.5	2.7		
Phosphorus	500	70	300		
Potassium	5000	310	310		
Selenium	250	24	29		
Silicon	250	15	11		
Silver	150	2	3.3		
Sodium	2000	30	490	-29	<2000
Strontium	25	.2	7.5		
Thallium	50	15	15		
Tin	250	60	120		
Titanium	50	.5	6		
Uranium	250	11	11		
Vanadium	50	1	2		
Zinc	150	2.5	7.5		

Associated samples MP7498: D34583-1A

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



BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7498  
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

13.3.1

13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7498  
Matrix Type: AQUEOUS

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

Prep Date: 05/18/12

Metal	D34544-1A Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	233000	369000	125000	108.8	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	35000	165000	125000	104.0	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	230000	361000	125000	104.8	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP7498: D34583-1A

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

13.3.2  
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7498  
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7498  
Matrix Type: AQUEOUS

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

Prep Date: 05/18/12

Metal	D34544-1A Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	233000	366000	125000	106.4	0.8	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	35000	165000	125000	104.0	0.0	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	230000	356000	125000	100.8	1.4	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP7498: D34583-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7498  
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

13.3.2  
13

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7498  
Matrix Type: AQUEOUS

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

Prep Date: 05/18/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	131000	125000	104.8	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	128000	125000	102.4	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	133000	125000	106.4	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP7498: D34583-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7498  
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

QC Batch ID: MP7501  
Matrix Type: SOLID

Methods: SW846 7471B  
Units: mg/kg

Prep Date: 05/21/12

Metal	RL	IDL	MDL	MB	
				raw	final

Mercury	0.10	.0011	.0009	-0.000040	<0.10
---------	------	-------	-------	-----------	-------

Associated samples MP7501: D34583-1

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: D34583  
 Account: XTOKRWR - XTO Energy  
 Project: PCU T31-19G

QC Batch ID: MP7501  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 05/21/12

Metal	D34534-1		SpikeLot		QC
	Original	MS	HGWSR1	% Rec	Limits
Mercury	0.046	0.77	0.791	91.5	75-125

Associated samples MP7501: D34583-1

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: D34583  
 Account: XTOKRWR - XTO Energy  
 Project: PCU T31-19G

QC Batch ID: MP7501  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 05/21/12

Metal	D34534-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.046	0.74	0.76	91.3	4.0	

Associated samples MP7501: D34583-1

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: D34583  
 Account: XTOKRWR - XTO Energy  
 Project: PCU T31-19G

QC Batch ID: MP7501  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 05/21/12

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.37	0.4	92.5	80-120

Associated samples MP7501: D34583-1

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits  
 (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: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP7264/GN15089	1.0	0.0	mg/kg	261	255	97.7	80-120%
Specific Conductivity	GP7258/GN15044	1.0	<1.0	umhos/cm	10009	9890	98.8	90-110%
pH	GN15040			su	8.00	7.98	99.8	99.3-100.7%

Associated Samples:  
Batch GN15040: D34583-1  
Batch GP7258: D34583-1  
Batch GP7264: D34583-1  
(\*) Outside of QC limits

14.1  
14

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP7264/GN15089	D34638-1	mg/kg	0.0	0.0	8.1	0-20%
Redox Potential Vs H2	GN15042	D34340-5	mv	310	309	0.3	0-20%
Redox Potential Vs H2	GN15042	D34340-5	mv	310	309	0.3	0-20%

Associated Samples:  
Batch GN15042: D34583-1  
Batch GP7264: D34583-1  
(\*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP7264/GN15089	D34638-1	mg/kg	0.0	40	35.7	89.4	75-125%

Associated Samples:  
Batch GP7264: D34583-1  
(\*) Outside of QC limits  
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D34583  
Account: XTOKRWR - XTO Energy  
Project: PCU T31-19G

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP7264/GN15089	D34638-1	mg/kg	0.0	40	34.9	2.5	

Associated Samples:  
Batch GP7264: D34583-1  
(\*) Outside of QC limits  
(N) Matrix Spike Rec. outside of QC limits

14.4  
14