



06/19/12

## Technical Report for

**XTO Energy**

**FRU 297-8B**

**1106-06**

**Accutest Job Number: D35489**

**Sampling Date: 06/12/12**


### Report to:

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**Total number of pages in report: 143**



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)

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Test results relate only to samples analyzed.

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Sample Summary

XTO Energy

Job No: D35489

FRU 297-8B

Project No: 1106-06

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D35489-1	06/12/12	10:00	CB	06/14/12	SO Soil	FW SUBLINER
D35489-1A	06/12/12	10:00	CB	06/14/12	SO Soil	FW SUBLINER

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



## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** XTO Energy

**Job No** D35489

**Site:** FRU 297-8B

**Report Date** 6/19/2012 4:52:54 PM

On 06/14/2012, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4.0 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D35489 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:** V5V1342

- All samples were analyzed within the recommended method holding time.
- Sample(s) D35429-2MS, D35429-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

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

**Matrix** SO

**Batch ID:** OP6068

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D35488-1MS, D35488-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### Volatiles by GC By Method SW846 8015B

**Matrix** SO

**Batch ID:** GGB907

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D35344-1MS, D35344-1MSD were used as the QC samples indicated.

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

**Matrix** SO

**Batch ID:** OP6067

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D35488-1MS, D35488-1MSD 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:** MP7679

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D35488-1AMS, D35488-1AMSD were used as the QC samples for the metals analysis.

**Matrix** SO

**Batch ID:** MP7677

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D35489-1MS, D35489-1MSD, D35489-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Cadmium, Silver, Barium, Copper, Lead, Nickel, Zinc are outside control limits for sample MP7677-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP7677-SD1 for Barium: Serial dilution indicates possible matrix interference.
- MP7677-SD1 for Copper: Serial dilution indicates possible matrix interference.
- MP7677-SD1 for Lead: Serial dilution indicates possible matrix interference.
- MP7677-SD1 for Nickel: Serial dilution indicates possible matrix interference.
- MP7677-SD1 for Zinc: Serial dilution indicates possible matrix interference.

## Metals By Method SW846 6020A

**Matrix** SO

**Batch ID:** MP7676

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D35489-1MS, D35489-1MSD, D35489-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Arsenic are outside control limits for sample MP7676-SD1. Probable cause due to sample homogeneity.
- MP7676-SD1 for Arsenic: Serial dilution indicates possible matrix interference.

## Metals By Method SW846 7471B

**Matrix** SO

**Batch ID:** MP7695

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D35291-1MS, D35291-1MSD were used as the QC samples for the metals analysis.

## Wet Chemistry By Method ASTM D1498-76M

**Matrix** SO

**Batch ID:** GN15450

- Sample(s) D35488-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

## Wet Chemistry By Method SM19 2540B M

**Matrix** SO

**Batch ID:** GN15421

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

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

**Matrix** SO

**Batch ID:** R13176

- The data for SW846 3060/7196A M meets quality control requirements.
- D35489-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

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

**Matrix** SO

**Batch ID:** GP7514

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D35548-3DUP, D35548-3MS, D35548-3MSD were used as the QC samples for the Chromium, Hexavalent analysis.

### Wet Chemistry By Method SW846 9045D

**Matrix** SO

**Batch ID:** GN15437

- The following samples were run outside of holding time for method SW846 9045D: D35489-1

### Wet Chemistry By Method USDA HANDBOOK 60

**Matrix** SO

**Batch ID:** MP7679

- D35489-1A 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

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## Report of Analysis

Page 1 of 1

Client Sample ID:	FW SUBLINER	Date Sampled:	06/12/12
Lab Sample ID:	D35489-1	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	89.7
Method:	SW846 8260B		
Project:	FRU 297-8B		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V21930.D	1	06/15/12	BD	n/a	n/a	V5V1342
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.07 g	5.0 ml	100 ul
Run #2			

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.061	0.023	mg/kg	
108-88-3	Toluene	ND	0.12	0.061	mg/kg	
100-41-4	Ethylbenzene	ND	0.12	0.023	mg/kg	
1330-20-7	Xylene (total)	ND	0.24	0.12	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	90%		61-130%
460-00-4	4-Bromofluorobenzene	90%		53-131%
17060-07-0	1,2-Dichloroethane-D4	105%		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

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## Report of Analysis

Page 1 of 1

Client Sample ID:	FW SUBLINER	Date Sampled:	06/12/12
Lab Sample ID:	D35489-1	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	89.7
Method:	SW846 8270C BY SIM SW846 3546		
Project:	FRU 297-8B		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G09682.D	1	06/15/12	DC	06/15/12	OP6068	E3G427
Run #2							

Run #	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

## COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0093	0.0048	mg/kg	
120-12-7	Anthracene	ND	0.0093	0.0048	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0093	0.0048	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0093	0.0048	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0093	0.0048	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0093	0.0048	mg/kg	
218-01-9	Chrysene	ND	0.0093	0.0048	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0093	0.0048	mg/kg	
206-44-0	Fluoranthene	ND	0.0093	0.0048	mg/kg	
86-73-7	Fluorene	ND	0.0093	0.0048	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0093	0.0048	mg/kg	
91-20-3	Naphthalene	ND	0.013	0.012	mg/kg	
129-00-0	Pyrene	ND	0.0093	0.0048	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	53%		10-145%
321-60-8	2-Fluorobiphenyl	59%		10-130%
1718-51-0	Terphenyl-d14	76%		22-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

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## Report of Analysis

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Client Sample ID:	FW SUBLINER	Date Sampled:	06/12/12
Lab Sample ID:	D35489-1	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	89.7
Method:	SW846 8015B		
Project:	FRU 297-8B		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB16345.D	1	06/14/12	SK	n/a	n/a	GGB907
Run #2							

Run #	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	12	6.1	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	88%		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

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## Report of Analysis

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Client Sample ID:	FW SUBLINER			Date Sampled:	06/12/12
Lab Sample ID:	D35489-1			Date Received:	06/14/12
Matrix:	SO - Soil			Percent Solids:	89.7
Method:	SW846-8015B SW846 3546				
Project:	FRU 297-8B				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD14364.D	1	06/18/12	AV	06/15/12	OP6067	GFD753
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	7.4	4.8	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	84%		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: FW SUBLINER  
 Lab Sample ID: D35489-1  
 Matrix: SO - Soil  
 Project: FRU 297-8B

Date Sampled: 06/12/12  
 Date Received: 06/14/12  
 Percent Solids: 89.7

## Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	6.6	0.11	mg/kg	5	06/15/12	06/18/12 JB	SW846 6020A <sup>2</sup>	SW846 3050B <sup>4</sup>
Barium	159	1.1	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Cadmium	< 1.1	1.1	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Chromium	41.1	1.1	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Copper	7.2	1.1	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Lead	10.9	5.7	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Mercury	< 0.11	0.11	mg/kg	1	06/18/12	06/19/12 JM	SW846 7471B <sup>3</sup>	SW846 7471B <sup>6</sup>
Nickel	14.6	3.4	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Selenium	< 5.7	5.7	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Silver	< 3.4	3.4	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Zinc	39.5	3.4	mg/kg	1	06/15/12	06/15/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>

- (1) Instrument QC Batch: MA2518  
 (2) Instrument QC Batch: MA2519  
 (3) Instrument QC Batch: MA2526  
 (4) Prep QC Batch: MP7676  
 (5) Prep QC Batch: MP7677  
 (6) Prep QC Batch: MP7695

RL = Reporting Limit

## Report of Analysis

Client Sample ID: FW SUBLINER

Lab Sample ID: D35489-1

Matrix: SO - Soil

Project: FRU 297-8B

Date Sampled: 06/12/12

Date Received: 06/14/12

Percent Solids: 89.7

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	06/19/12	CJ	SW846 3060A/7196A
Chromium, Trivalent <sup>a</sup>	41.1	2.1	mg/kg	1	06/19/12	CJ	SW846 3060/7196A M
Redox Potential Vs H2	116		mv	1	06/15/12	JK	ASTM D1498-76M
Solids, Percent	89.7		%	1	06/14/12	SWT	SM19 2540B M
Specific Conductivity	492	1.0	umhos/cm	1	06/15/12	JD	DEPT.OF AG, BOOK N9
pH	9.97		su	1	06/15/12 08:00	JK	SW846 9045D

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

RL = Reporting Limit

## Report of Analysis

Client Sample ID: FW SUBLINER  
Lab Sample ID: D35489-1A  
Matrix: SO - Soil  
Project: FRU 297-8B

Date Sampled: 06/12/12  
Date Received: 06/14/12  
Percent Solids: 89.7

## SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	9.34	2.0	mg/l	1	06/15/12	06/15/12 JM	SW846 6010C <sup>1</sup>	EPA 200.7 <sup>2</sup>
Magnesium	3.35	1.0	mg/l	1	06/15/12	06/15/12 JM	SW846 6010C <sup>1</sup>	EPA 200.7 <sup>2</sup>
Sodium	114	2.0	mg/l	1	06/15/12	06/15/12 JM	SW846 6010C <sup>1</sup>	EPA 200.7 <sup>2</sup>

(1) Instrument QC Batch: MA2516

(2) Prep QC Batch: MP7679

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RL = Reporting Limit

Report of Analysis

Client Sample ID:	FW SUBLINER	Date Sampled:	06/12/12
Lab Sample ID:	D35489-1A	Date Received:	06/14/12
Matrix:	SO - Soil	Percent Solids:	89.7
Project:	FRU 297-8B		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	8.14		ratio	1	06/15/12 12:26	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

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**Includes the following where applicable:**

- Chain of Custody



## CHAIN OF CUSTODY

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4036 Youngfield Street, Wheat Ridge, CO 80033  
TEL: 303-425-6021 FAX: 303-425-6854  
www.accutest.com

FED-EX Tracking #	Order Control #
Accutest Quote #	Accutest Job #

D35489

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)												Matrix Codes					
Company Name <b>KRW Consulting</b>		Project Name <b>XTO FRU 297-8B</b>														<div>DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WIP - Wipe FB-Field Blank ED-Equipment Blank RB-Rinse Blank TB-Trip Blank</div>					
Street Address <b>8000 West 14th Street, Suite 200</b>		Street																			
City <b>Lakewood, CO 80214</b>		City State																			
Project Contact <b>Dwayne Knudson</b>		Project # <b>1106-06</b>																			
Phone # <b>970-488-1098</b>		Client Purchase Order #		Street Address <b>21459 CR 5</b>																	
Sampler(s) Name(s) <b>Craig Burger</b>		Project Manager <b>Joe Hess</b>		City <b>Rifle, CO 81650</b>																	
970-488-1098		Attention: <b>Jessica Dooling</b>																			
Turnaround Time (Business days)		Data Deliverable Information		Comments / Special Instructions																	
<input type="checkbox"/> Std. 10 Business Days <input checked="" type="checkbox"/> Std. 6 Business Days (By contract only) <input type="checkbox"/> 3 Day Emergency <input type="checkbox"/> 2 Day Emergency <input type="checkbox"/> 1 Day Emergency <input type="checkbox"/> Emergency & Rush T/A data available VIA Lablink		Approved By (Accutest PM) / Date: _____ _____ _____		<input type="checkbox"/> Commercial "A" (Level 1) <input checked="" type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> COMMBN <input type="checkbox"/> COMMBN+  Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial BN = Results/QC/Narrative (+ = chromatograms)		<input type="checkbox"/> State Forms Required <input type="checkbox"/> Send Forms to State <input type="checkbox"/> Report by Fax <input checked="" type="checkbox"/> Report by PDF ONLY <input type="checkbox"/> EDD Format		Please email to: <b>KRW Piceance Team</b>													
Sample Custody must be documented below each time samples change possession, including courier delivery.		Relinquished by: 1 <i>[Signature]</i>		Received By: 1 <i>[Signature]</i>		Relinquished By: 2		Received By: 2 <i>[Signature]</i>		Date Time: 6/13/12 13:20											
Relinquished by: 3		Received By: 3		Relinquished By: 4		Received By: 4		Date Time: 6/14/12 12:00													
Relinquished by: 5		Received By: 5		Custody Seal #		<input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact		Preserved where applicable <input checked="" type="checkbox"/>		On Ice <input checked="" type="checkbox"/>		Cooler Temp. 4.0									

D35489: Chain of Custody

Page 1 of 2

## Accutest Laboratories Sample Receipt Summary

**Accutest Job Number:** D35489

**Client:** KRW

**Immediate Client Services Action Required:** No

**Date / Time Received:** 6/14/2012 12:30:00 PM

**No. Coolers:** 1

**Client Service Action Required at Login:** No

**Project:** XTO

**Airbill #'s:** CO

**Cooler Security**
**Y or N**
**Y or N**

- |  |  |
|--|--|
| 1. Custody Seals Present: <input checked="" type="checkbox"/> <input type="checkbox"/> | 3. COC Present: <input checked="" type="checkbox"/> <input type="checkbox"/>       |
| 2. Custody Seals Intact: <input checked="" type="checkbox"/> <input type="checkbox"/>  | 4. Smpl Dates/Time OK <input checked="" type="checkbox"/> <input type="checkbox"/> |

**Cooler Temperature**
**Y or N**

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

**Quality Control Preservation**
**Y or N**
**N/A**

- |   |  |
|---|--|
| 1. Trip Blank present / cooler: <input type="checkbox"/> <input type="checkbox"/>                             |  |
| 2. Trip Blank listed on COC: <input type="checkbox"/> <input type="checkbox"/>                                |  |
| 3. Samples preserved properly: <input checked="" type="checkbox"/> <input type="checkbox"/>                   |  |
| 4. VOCs headspace free: <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> |  |

**Sample Integrity - Documentation**
**Y or N**

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

**Sample Integrity - Condition**
**Y or N**

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

**Sample Integrity - Instructions**
**Y or N N/A**

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

Comments

 Accutest Laboratories  
 V: (303) 425-6021

 4036 Youngfield Street  
 F: (303) 425-6854

 Wheat Ridge, CO  
 www.accutest.com

## GC/MS Volatiles

5

## QC Data Summaries

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**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:** D35489  
**Account:** XTOKRWR XTO Energy  
**Project:** FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1342-MB	5V21920.D	1	06/15/12	BD	n/a	n/a	V5V1342

The QC reported here applies to the following samples:

Method: SW846 8260B

D35489-1

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	90% 61-130%
460-00-4	4-Bromofluorobenzene	82% 53-131%
17060-07-0	1,2-Dichloroethane-D4	110% 62-130%

## Blank Spike Summary

Page 1 of 1

Job Number: D35489  
Account: XTOKRWR XTO Energy  
Project: FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1342-BS	5V21922.D	1	06/15/12	BD	n/a	n/a	V5V1342

The QC reported here applies to the following samples:

Method: SW846 8260B

D35489-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	44.5	89	70-130
100-41-4	Ethylbenzene	50	36.9	74	70-130
108-88-3	Toluene	50	38.7	77	70-130
1330-20-7	Xylene (total)	150	112	75	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	87%	61-130%
460-00-4	4-Bromofluorobenzene	91%	53-131%
17060-07-0	1,2-Dichloroethane-D4	98%	62-130%

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D35489  
Account: XTOKRWR XTO Energy  
Project: FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D35429-2MS	5V21928.D	1	06/15/12	BD	n/a	n/a	V5V1342
D35429-2MSD	5V21929.D	1	06/15/12	BD	n/a	n/a	V5V1342
D35429-2	5V21927.D	1	06/15/12	BD	n/a	n/a	V5V1342

The QC reported here applies to the following samples:

Method: SW846 8260B

D35489-1

CAS No.	Compound	D35429-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		4220	3910	93	4090	97	5	70-134/30
100-41-4	Ethylbenzene	ND		4220	3730	88	4020	95	7	70-137/30
108-88-3	Toluene	ND		4220	3480	82	3710	88	6	70-130/30
1330-20-7	Xylene (total)	ND		12700	11700	92	12600	100	7	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D35429-2	Limits
2037-26-5	Toluene-D8	84%	89%	85%	61-130%
460-00-4	4-Bromofluorobenzene	98%	105%	86%	53-131%
17060-07-0	1,2-Dichloroethane-D4	94%	99%	102%	62-130%

## GC/MS Volatiles

## Raw Data



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5061412.S\  
 Data File : 5V21930.D  
 Acq On : 15 Jun 2012 6:21 am  
 Operator : BRETD  
 Sample : D35489-1  
 Misc : MS4108,V5V1342,5.069,,100,5,1  
 ALS Vial : 37 Sample Multiplier: 1

Quant Time: Jun 15 11:58:10 2012  
 Quant Method : C:\msdchem\1\METHODS\V5AP1304TVH1304.M  
 Quant Title : 8260  
 QLast Update : Thu May 24 07:55:17 2012  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	170678	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.446	114	270611	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.095	117	342442	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.070	152	237316	50.00	ug/l	0.00

## System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.035	102	27497	52.67	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	105.34%
61) Toluene-d8	13.850	98	522774	45.17	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	90.34%
69) 4-Bromofluorobenzene	16.042	95	214336	45.21	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	90.42%

## Target Compounds

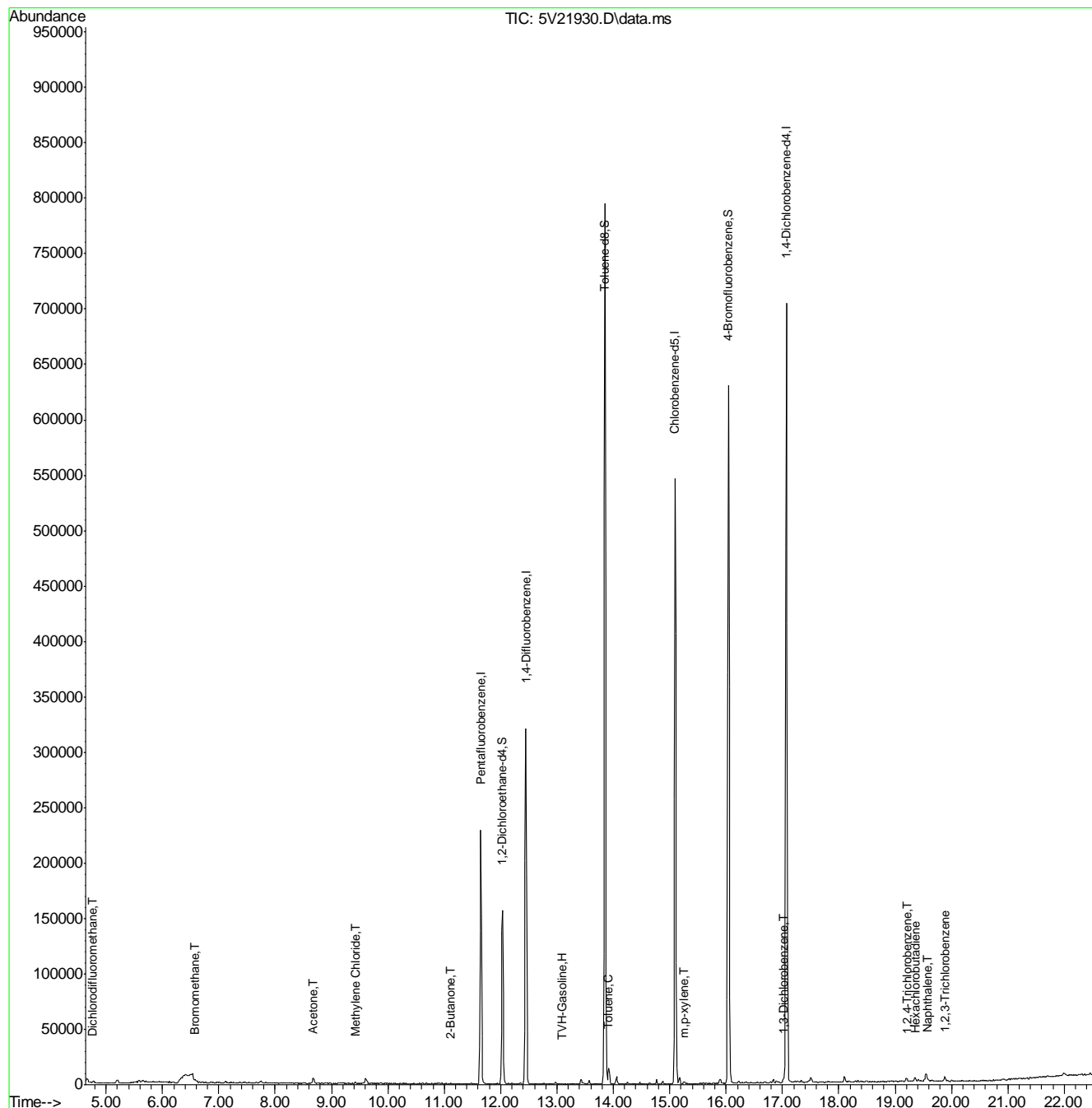
					Qvalue
1) TVH-Gasoline	13.102	TIC	22844m	2.54	ug/l
3) Dichlorodifluoromethane	4.762	85	1509	0.93	ug/l # 63
6) Bromomethane	6.578	94	2686	1.09	ug/l # 59
15) Acetone	8.678	58	2752	8.56	ug/l # 58
17) Methylene Chloride	9.421	84	974	0.34	ug/l # 77
25) 2-Butanone	11.110	72	171	1.43	ug/l # 1
62) Toluene	13.907	92	2085	0.23	ug/l 100
72) m,p-xylene	15.255	106	852	0.13	ug/l # 80
84) 1,3-Dichlorobenzene	17.024	146	999	0.10	ug/l # 1
90) 1,2,4-Trichlorobenzene	19.205	180	2213	0.36	ug/l # 90
91) Naphthalene	19.570	128	5477	1.04	ug/l 100
92) Hexachlorobutadiene	19.353	225	1756	0.38	ug/l # 87
93) 1,2,3-Trichlorobenzene	19.878	180	2818	0.49	ug/l # 95

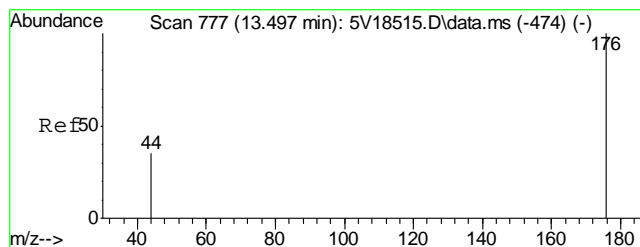
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5061412.S\  
Data File : 5V21930.D  
Acq On : 15 Jun 2012 6:21 am  
Operator : BRETD  
Sample : D35489-1  
Misc : MS4108,V5V1342,5.069,,100,5,1  
ALS Vial : 37 Sample Multiplier: 1

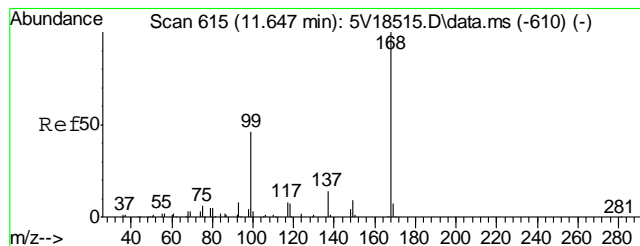
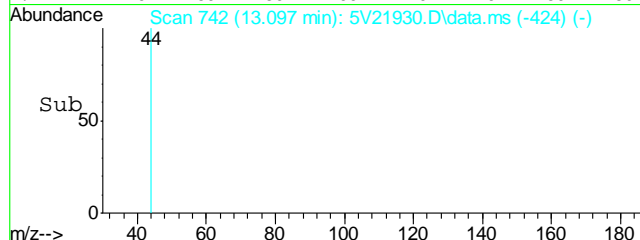
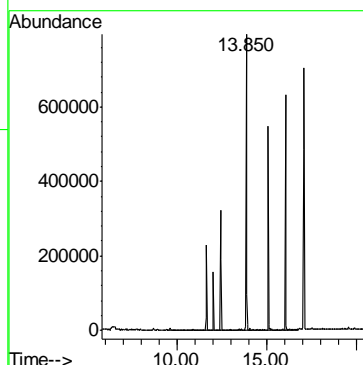
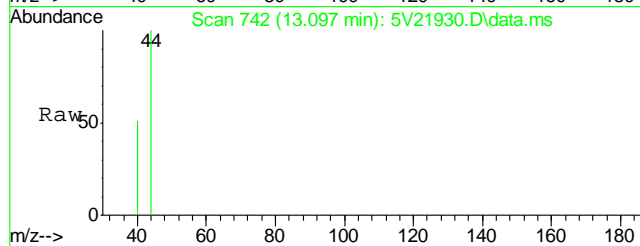
Quant Time: Jun 15 11:58:10 2012  
Quant Method : C:\msdchem\1\METHODS\V5AP1304TVH1304.M  
Quant Title : 8260  
QLast Update : Thu May 24 07:55:17 2012  
Response via : Initial Calibration





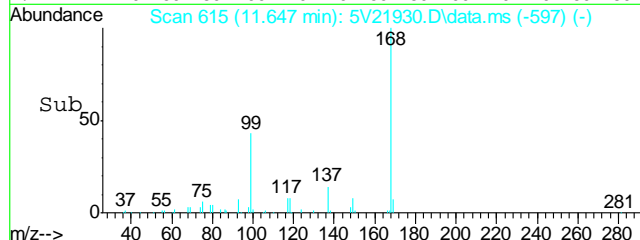
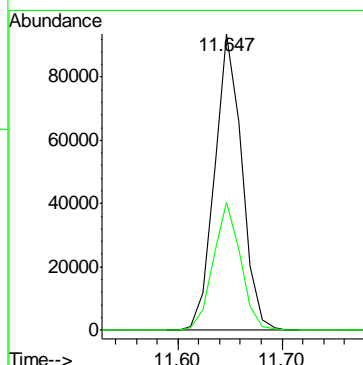
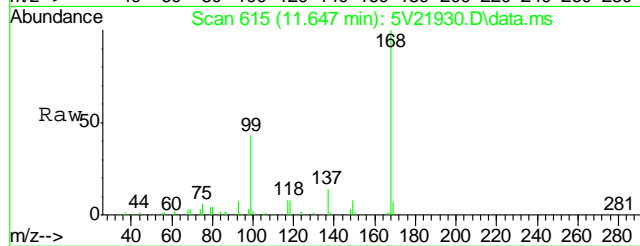
#1  
TVH-Gasoline  
Concen: 2.54 ug/l m  
RT: 13.102 min Scan# 742  
Delta R.T. 0.000 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

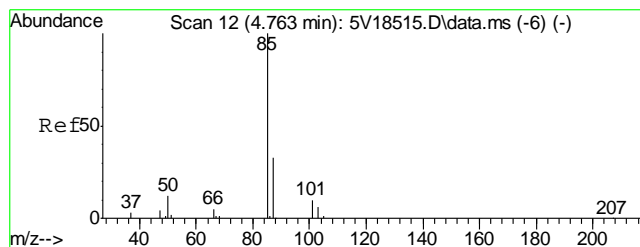
Tgt Ion:TIC Resp: 22844



#2  
Pentafluorobenzene  
Concen: 50.00 ug/l  
RT: 11.647 min Scan# 615  
Delta R.T. -0.000 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

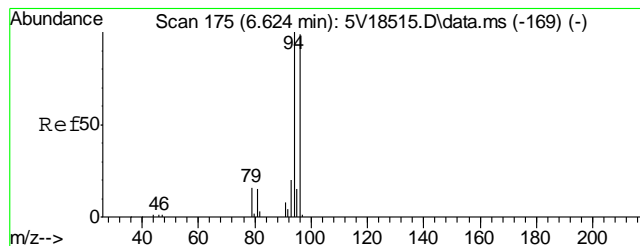
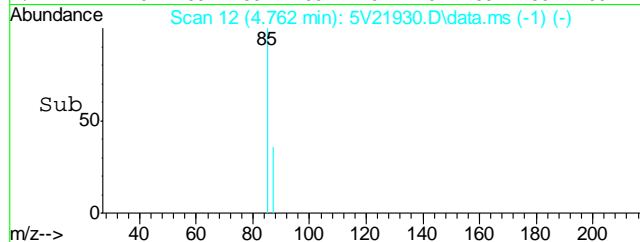
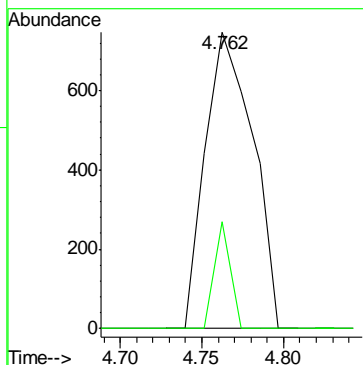
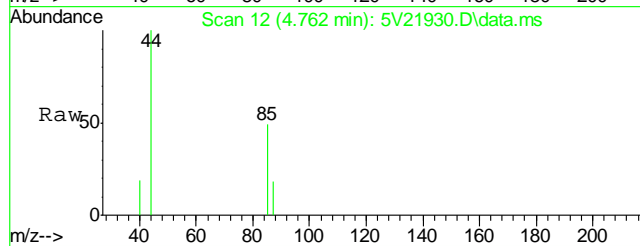
Tgt Ion:168 Resp: 170678  
Ion Ratio Lower Upper  
168 100  
99 43.0 37.4 56.2





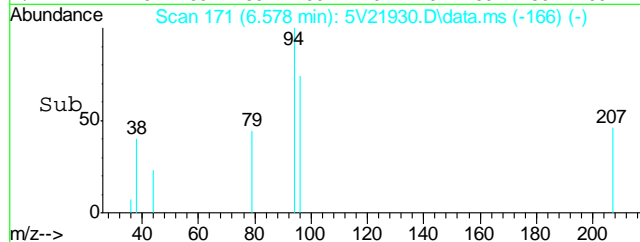
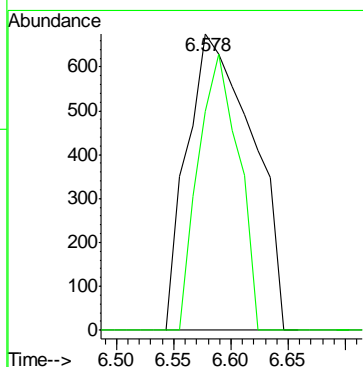
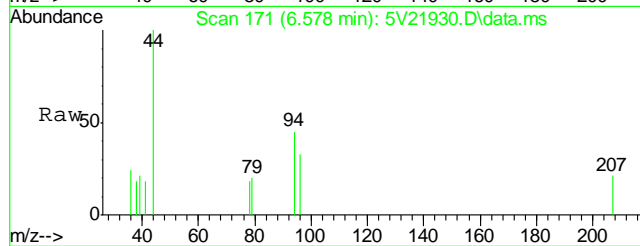
#3  
Dichlorodifluoromethane  
Concen: 0.93 ug/l  
RT: 4.762 min Scan# 12  
Delta R.T. 0.000 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

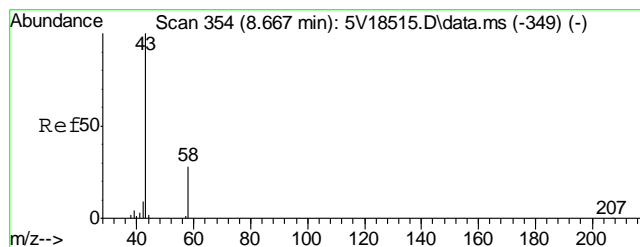
Tgt Ion: 85 Resp: 1509  
Ion Ratio Lower Upper  
85 100  
87 12.2 12.9 52.9#



#6  
Bromomethane  
Concen: 1.09 ug/l  
RT: 6.578 min Scan# 171  
Delta R.T. -0.045 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

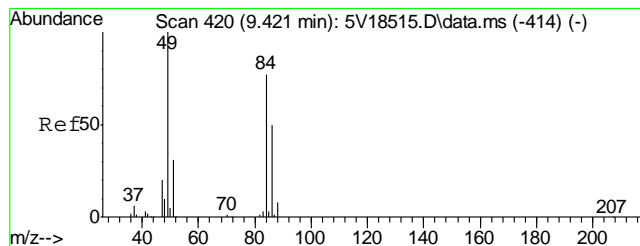
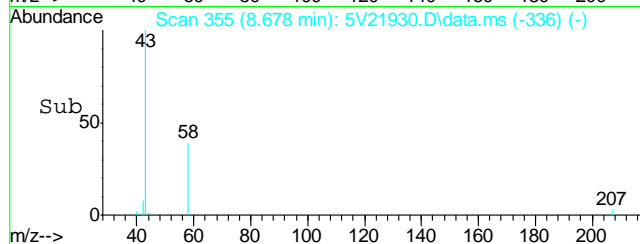
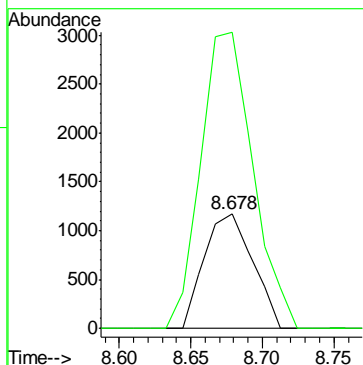
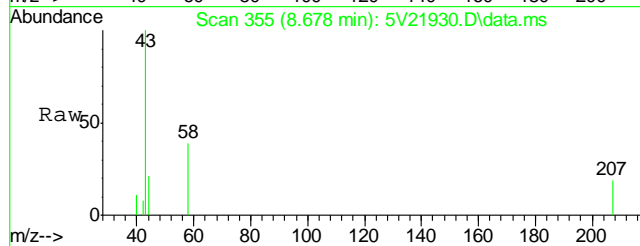
Tgt Ion: 94 Resp: 2686  
Ion Ratio Lower Upper  
94 100  
96 57.2 78.0 118.0#





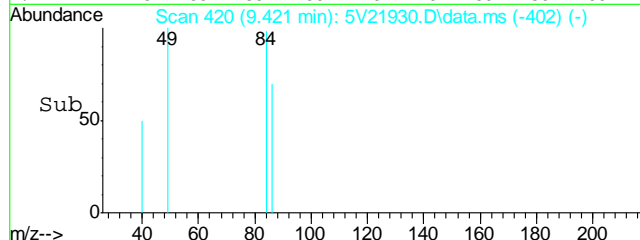
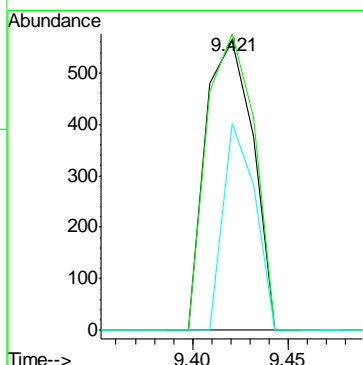
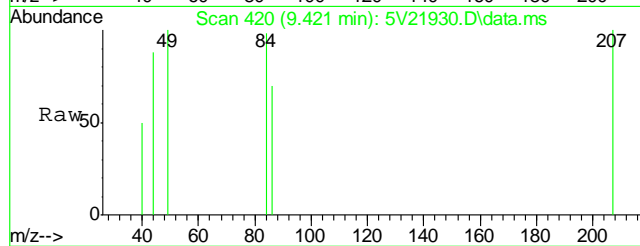
#15  
Acetone  
Concen: 8.56 ug/l  
RT: 8.678 min Scan# 355  
Delta R.T. 0.011 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

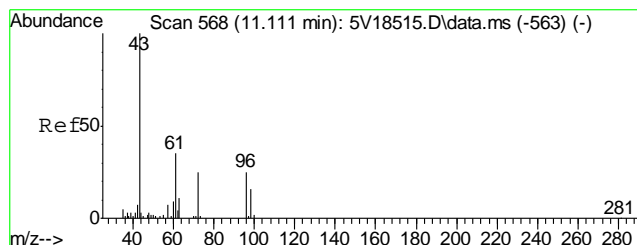
Tgt Ion: 58 Resp: 2752  
Ion Ratio Lower Upper  
58 100  
43 278.3 353.6 393.6#



#17  
Methylene Chloride  
Concen: 0.34 ug/l  
RT: 9.421 min Scan# 420  
Delta R.T. -0.000 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

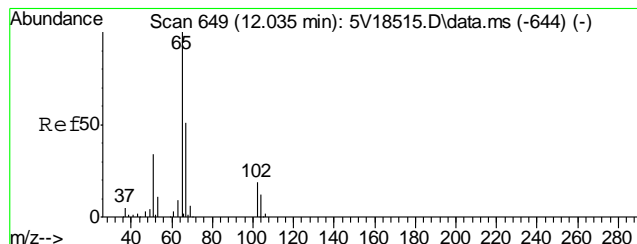
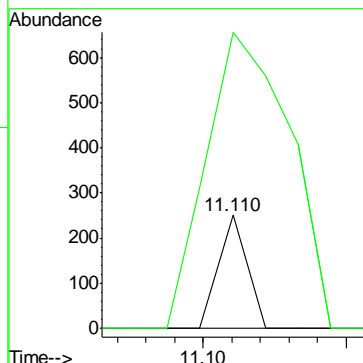
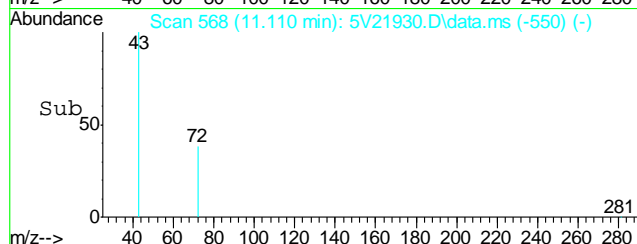
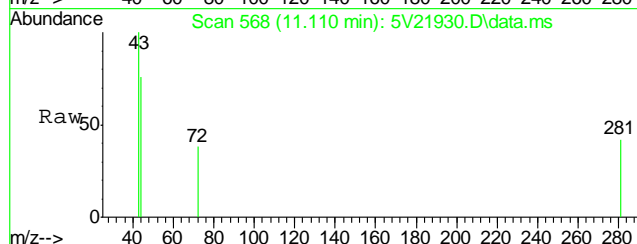
Tgt Ion: 84 Resp: 974  
Ion Ratio Lower Upper  
84 100  
49 102.3 110.4 150.4#  
86 48.2 44.0 84.0





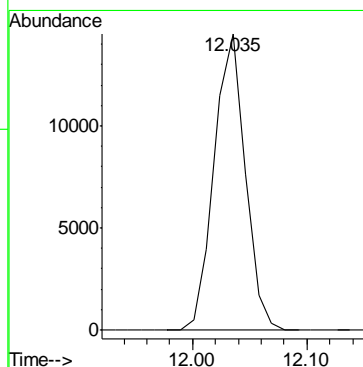
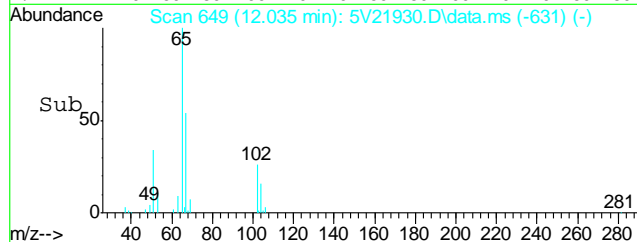
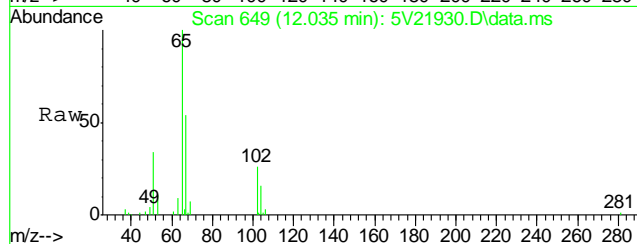
#25  
2-Butanone  
Concen: 1.43 ug/l  
RT: 11.110 min Scan# 568  
Delta R.T. 0.000 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

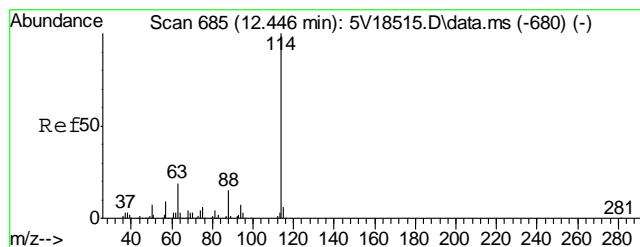
Tgt Ion: 72 Resp: 171  
Ion Ratio Lower Upper  
72 100  
43 773.7 308.8 463.2#



#33  
1,2-Dichloroethane-d4  
Concen: 52.67 ug/l  
RT: 12.035 min Scan# 649  
Delta R.T. 0.000 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

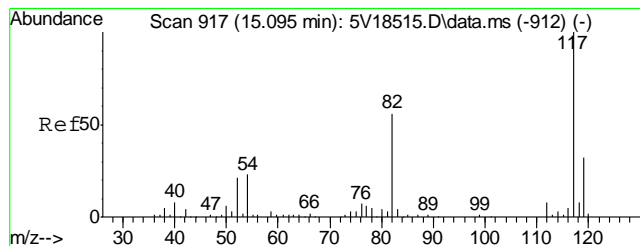
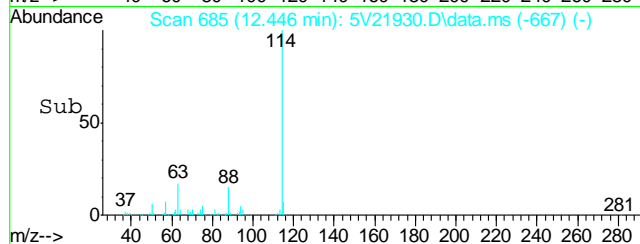
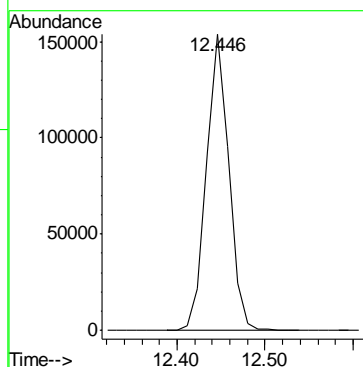
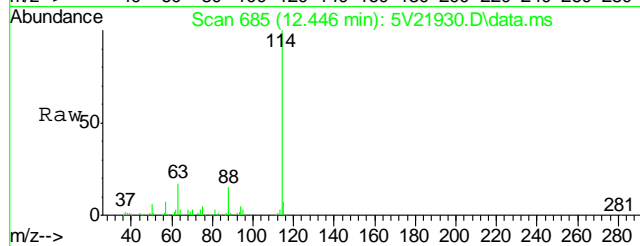
Tgt Ion: 102 Resp: 27497





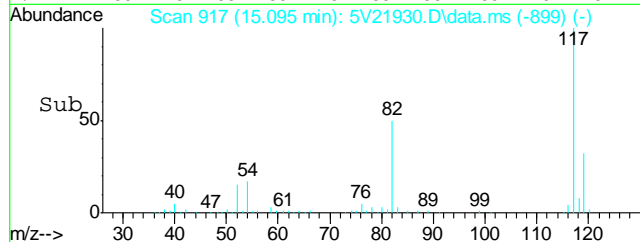
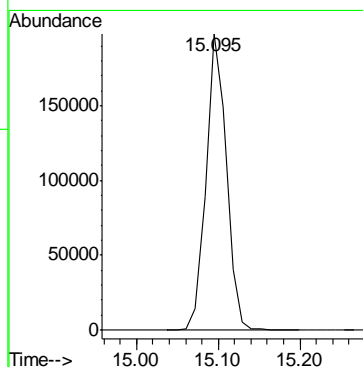
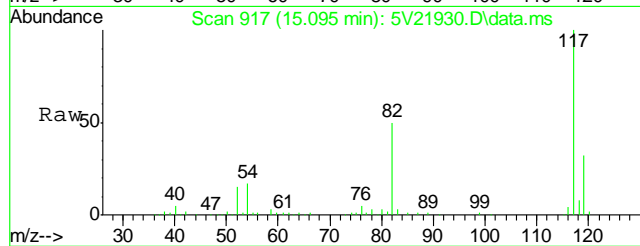
#35  
1,4-Difluorobenzene  
Concen: 50.00 ug/l  
RT: 12.446 min Scan# 685  
Delta R.T. -0.000 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

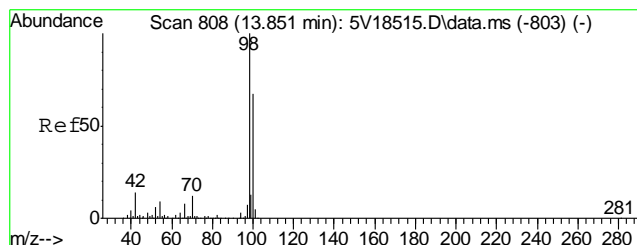
Tgt Ion:114 Resp: 270611



#53  
Chlorobenzene-d5  
Concen: 50.00 ug/l  
RT: 15.095 min Scan# 917  
Delta R.T. -0.000 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

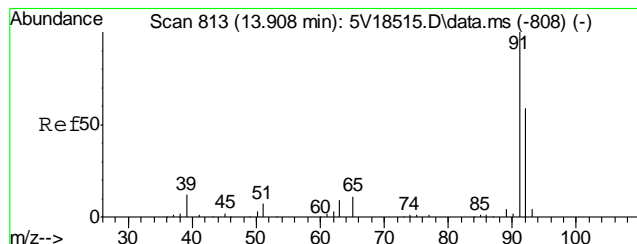
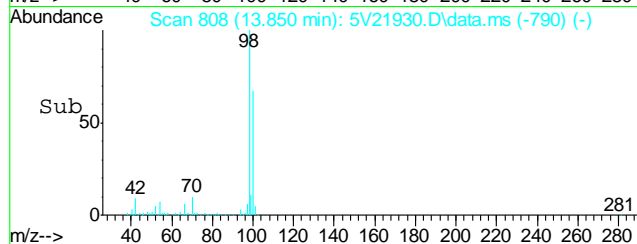
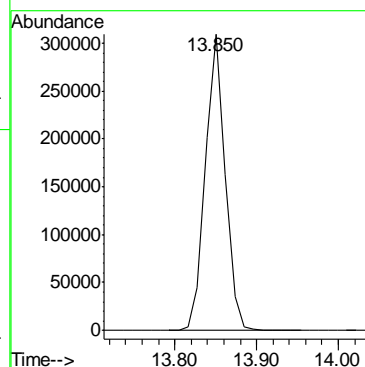
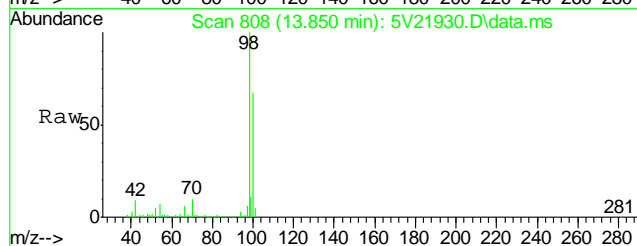
Tgt Ion:117 Resp: 342442





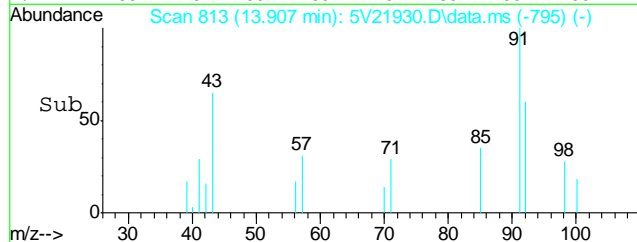
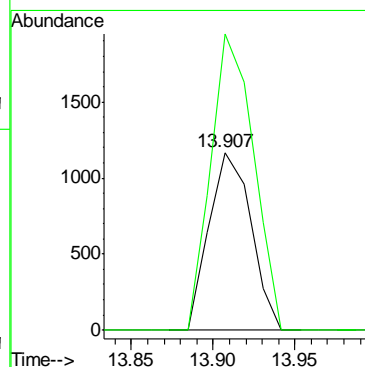
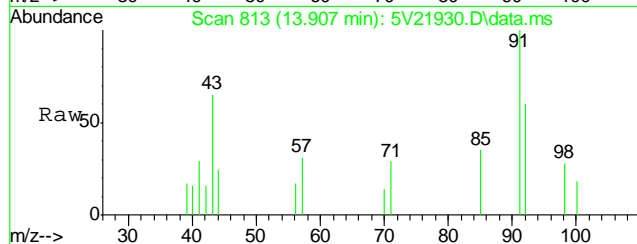
#61  
Toluene-d8  
Concen: 45.17 ug/l  
RT: 13.850 min Scan# 808  
Delta R.T. -0.000 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

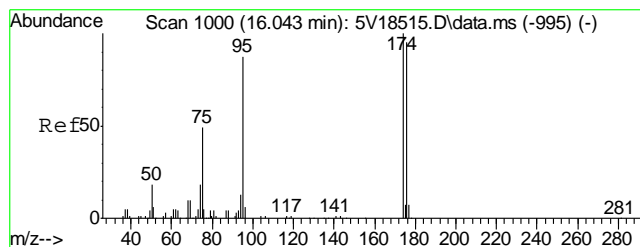
Tgt Ion: 98 Resp: 522774



#62  
Toluene  
Concen: 0.23 ug/l  
RT: 13.907 min Scan# 813  
Delta R.T. -0.000 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

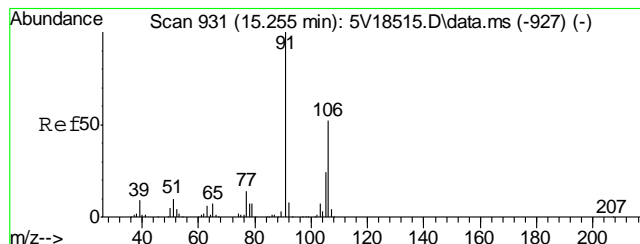
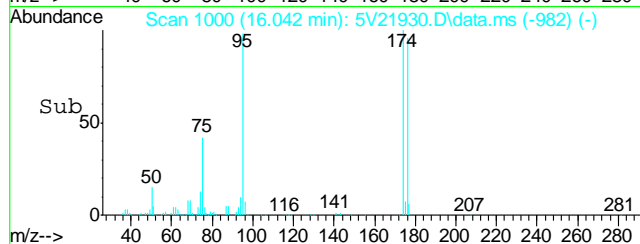
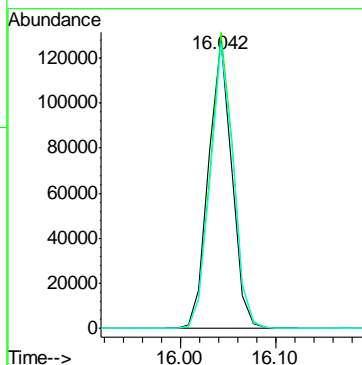
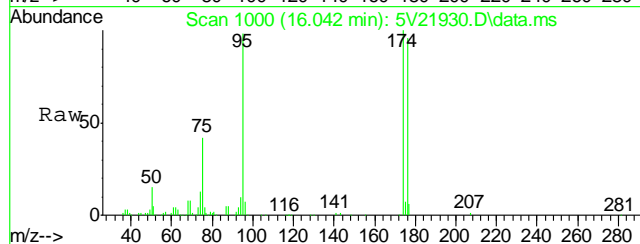
Tgt Ion: 92 Resp: 2085  
Ion Ratio Lower Upper  
92 100  
91 169.7 149.8 189.8





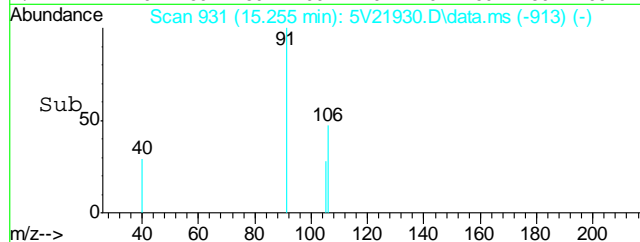
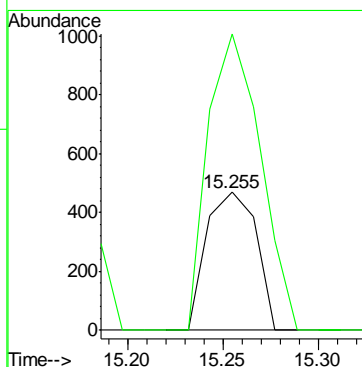
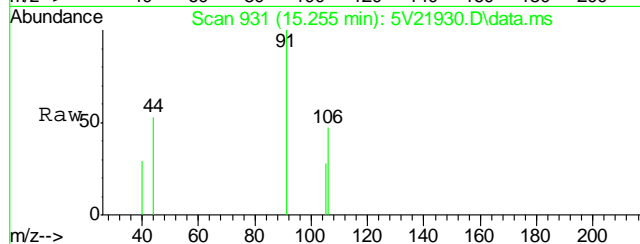
#69  
4-Bromofluorobenzene  
Concen: 45.21 ug/l  
RT: 16.042 min Scan# 1000  
Delta R.T. -0.000 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

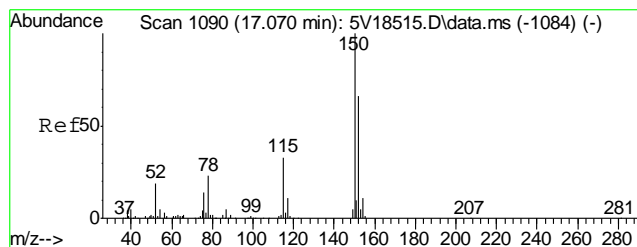
Tgt Ion	Resp	Lower	Upper
95	100		
174	102.2	77.1	117.1
176	98.2	73.4	113.4



#72  
m,p-xylene  
Concen: 0.13 ug/l  
RT: 15.255 min Scan# 931  
Delta R.T. -0.000 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

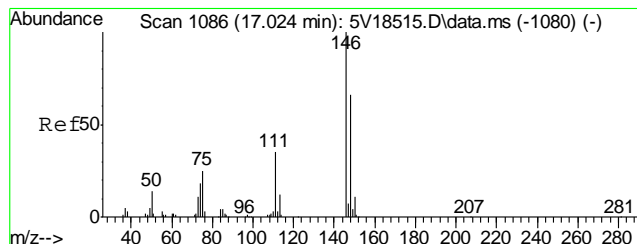
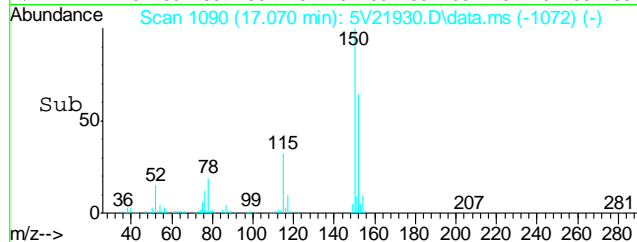
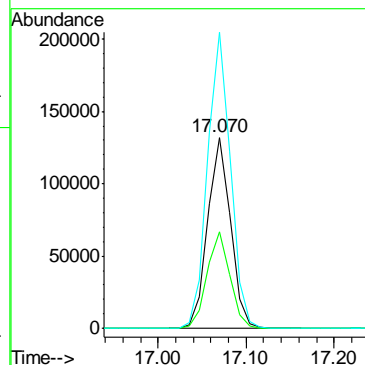
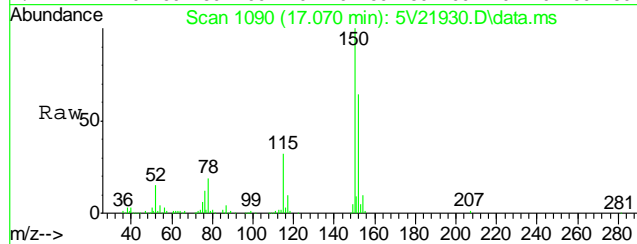
Tgt Ion	Resp	Lower	Upper
106	100		
91	227.0	177.1	217.1#





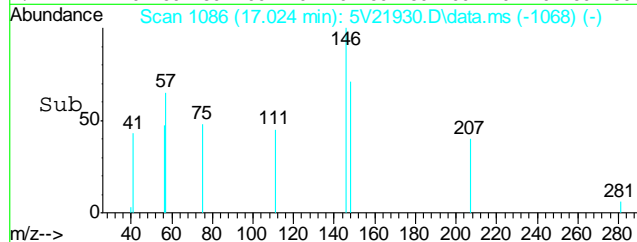
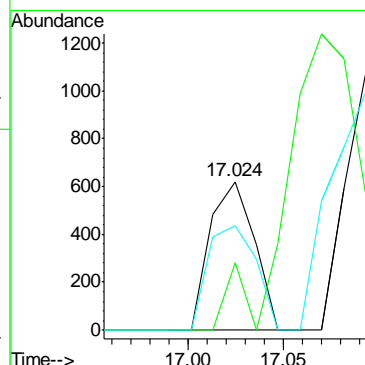
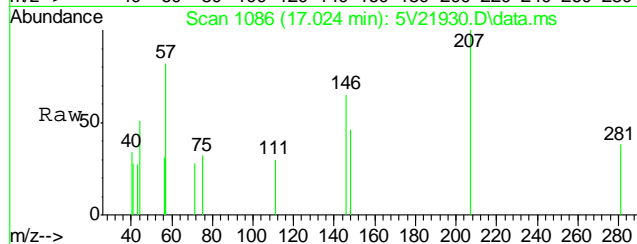
#74  
 1,4-Dichlorobenzene-d4  
 Concen: 50.00 ug/l  
 RT: 17.070 min Scan# 1090  
 Delta R.T. -0.000 min  
 Lab File: 5V21930.D  
 Acq: 15 Jun 2012 6:21 am

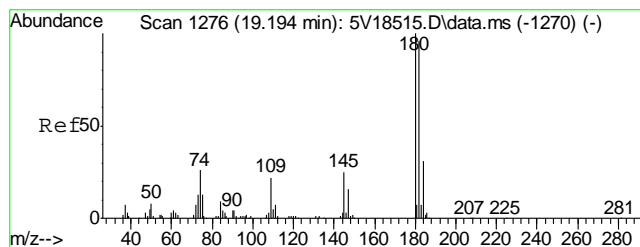
Tgt Ion	Ratio	Lower	Upper
152	100		
115	50.2	41.4	62.0
150	155.8	153.9	230.9



#84  
 1,3-Dichlorobenzene  
 Concen: 0.10 ug/l  
 RT: 17.024 min Scan# 1086  
 Delta R.T. -0.000 min  
 Lab File: 5V21930.D  
 Acq: 15 Jun 2012 6:21 am

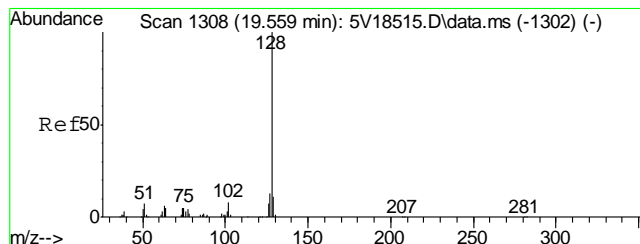
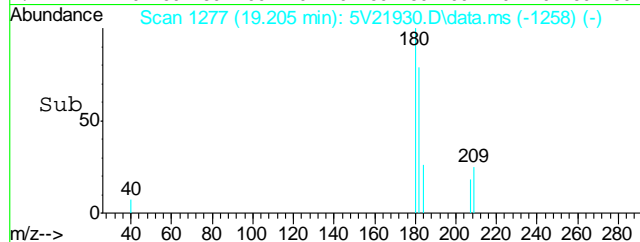
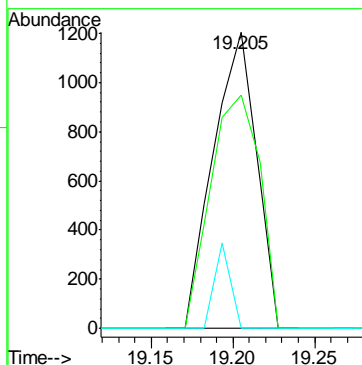
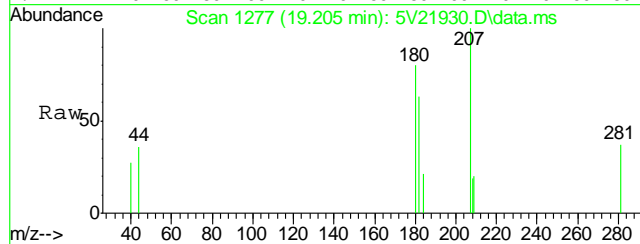
Tgt Ion	Ratio	Lower	Upper
146	100		
111	274.7	29.7	44.5#
148	77.0	52.7	79.1





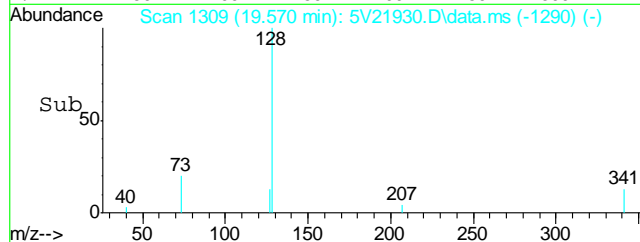
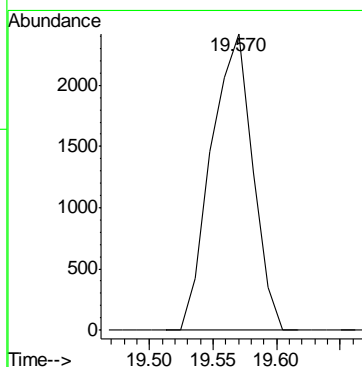
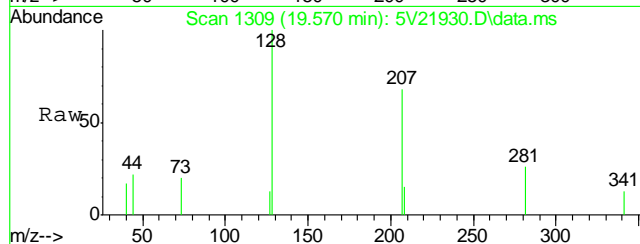
#90  
1,2,4-Trichlorobenzene  
Concen: 0.36 ug/l  
RT: 19.205 min Scan# 1277  
Delta R.T. 0.011 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

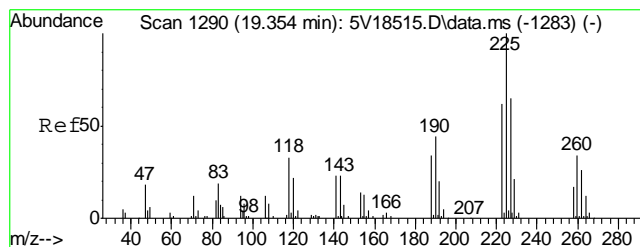
Tgt Ion	Ratio	Lower	Upper
180	100		
182	90.1	76.2	114.4
145	10.8	20.1	30.1#



#91  
Naphthalene  
Concen: 1.04 ug/l  
RT: 19.570 min Scan# 1309  
Delta R.T. 0.012 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

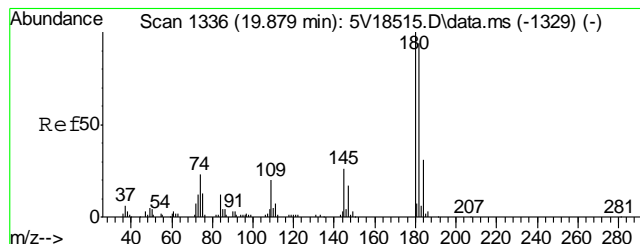
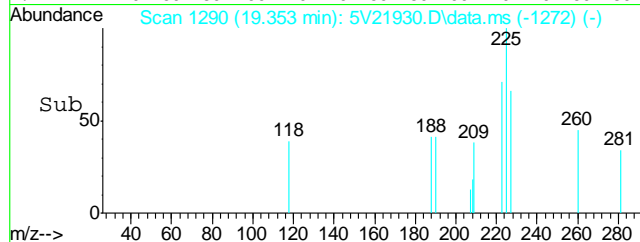
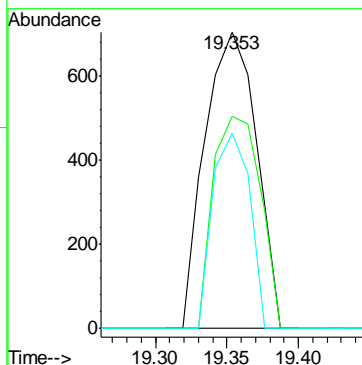
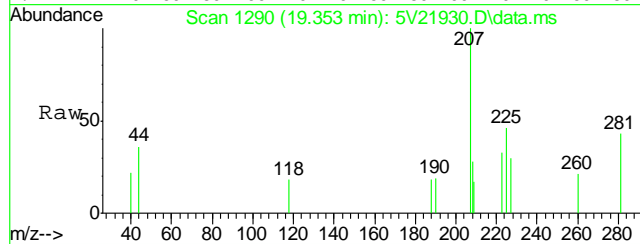
Tgt Ion:128 Resp: 5477





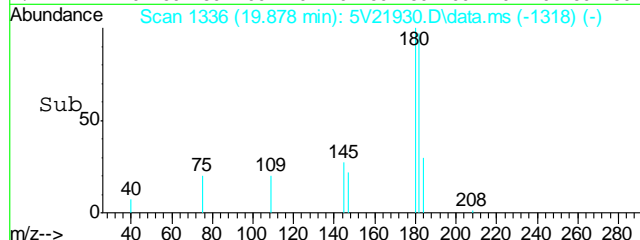
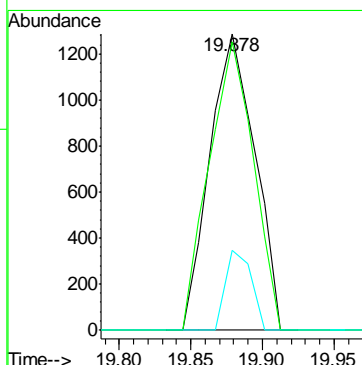
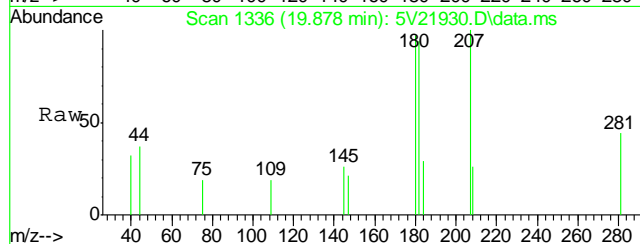
#92  
Hexachlorobutadiene  
Concen: 0.38 ug/l  
RT: 19.353 min Scan# 1290  
Delta R.T. -0.000 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

Tgt Ion	Ratio	Lower	Upper
225	100		
223	65.8	49.5	74.3
227	47.5	51.1	76.7#



#93  
1,2,3-Trichlorobenzene  
Concen: 0.49 ug/l  
RT: 19.878 min Scan# 1336  
Delta R.T. -0.000 min  
Lab File: 5V21930.D  
Acq: 15 Jun 2012 6:21 am

Tgt Ion	Ratio	Lower	Upper
180	100		
182	95.4	76.0	114.0
145	15.5	21.4	32.0#



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5061412.S\  
 Data File : 5V21920.D  
 Acq On : 15 Jun 2012 1:06 am  
 Operator : BRETD  
 Sample : MB  
 Misc : MS4108,V5V1342,5.00,,100,5,1  
 ALS Vial : 27 Sample Multiplier: 1

Quant Time: Jun 15 11:36:08 2012  
 Quant Method : C:\msdchem\1\METHODS\V5AP1304TVH1304.M  
 Quant Title : 8260  
 QLast Update : Thu May 24 07:55:17 2012  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	163414	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.446	114	265148	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.095	117	334674	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.070	152	213993	50.00	ug/l	0.00

## System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.035	102	27466	55.06	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	110.12%
61) Toluene-d8	13.851	98	510178	45.10	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	90.20%
69) 4-Bromofluorobenzene	16.043	95	190288	41.07	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	82.14%

## Target Compounds

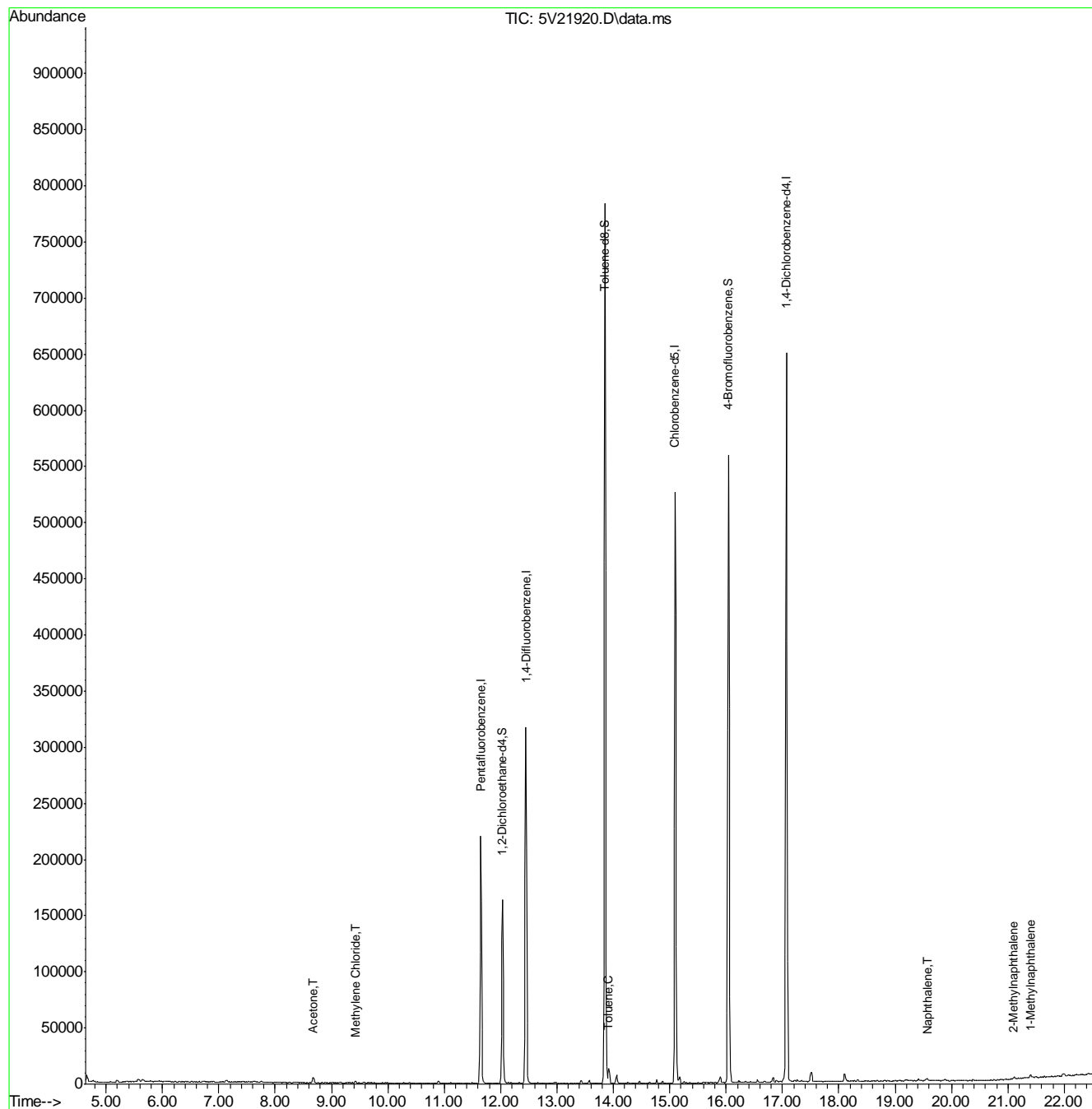
					Qvalue
1) TVH-Gasoline	13.102	TIC	-13469m	0.73	ug/l
15) Acetone	8.679	58	2478	7.93	ug/l # 75
17) Methylene Chloride	9.421	84	1005	0.37	ug/l # 84
62) Toluene	13.908	92	2067	0.24	ug/l 91
91) Naphthalene	19.570	128	3802	0.93	ug/l 100
94) 2-Methylnaphthalene	21.100	142	1632	1.71	ug/l # 77
95) 1-Methylnaphthalene	21.409	142	2026	1.65	ug/l # 84

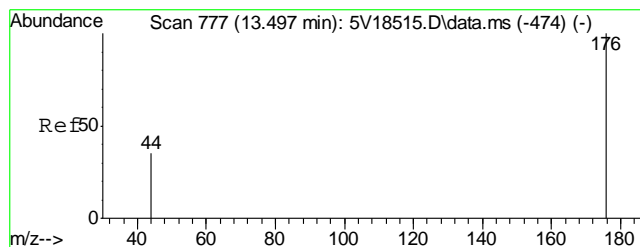
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5061412.S\  
Data File : 5V21920.D  
Acq On : 15 Jun 2012 1:06 am  
Operator : BRETD  
Sample : MB  
Misc : MS4108,V5V1342,5.00,,100,5,1  
ALS Vial : 27 Sample Multiplier: 1

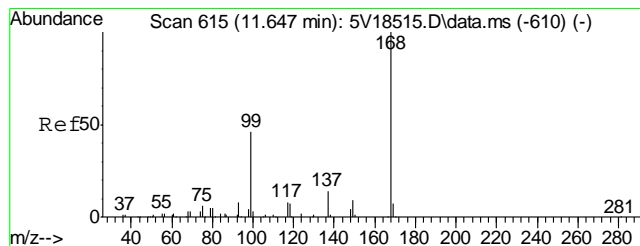
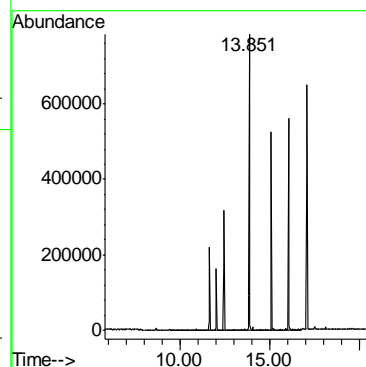
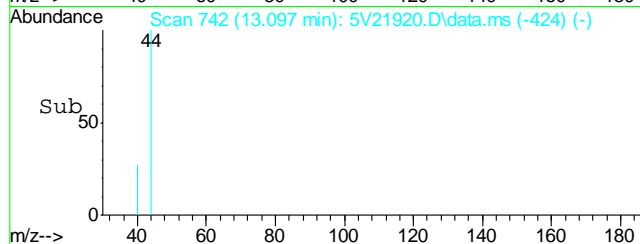
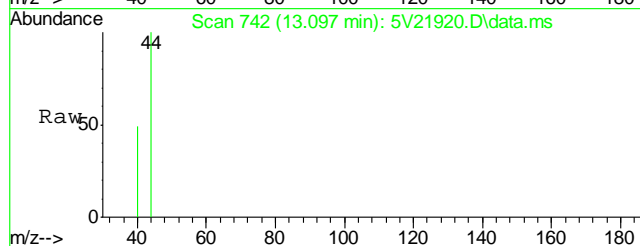
Quant Time: Jun 15 11:36:08 2012  
Quant Method : C:\msdchem\1\METHODS\V5AP1304TVH1304.M  
Quant Title : 8260  
QLast Update : Thu May 24 07:55:17 2012  
Response via : Initial Calibration





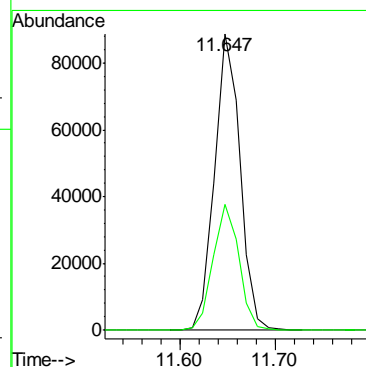
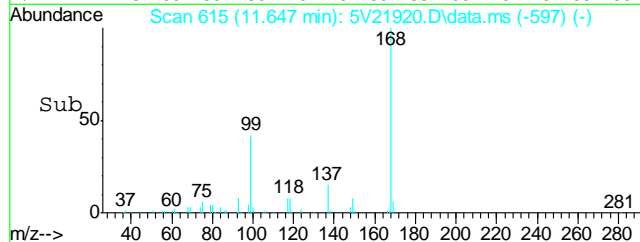
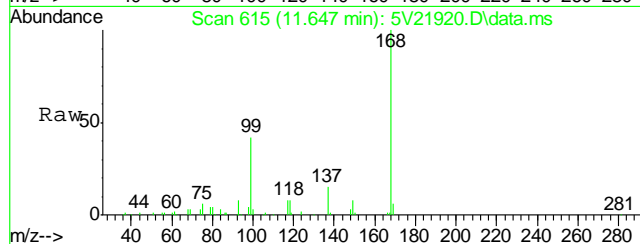
#1  
TVH-Gasoline  
Concen: 0.73 ug/l m  
RT: 13.102 min Scan# 742  
Delta R.T. 0.000 min  
Lab File: 5V21920.D  
Acq: 15 Jun 2012 1:06 am

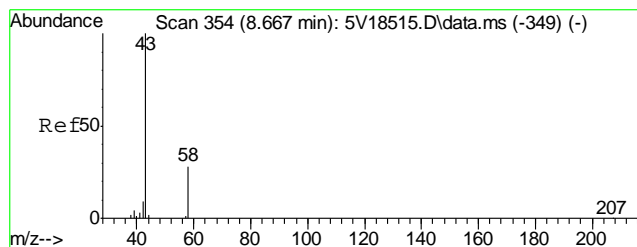
Tgt Ion:TIC Resp: -13469



#2  
Pentafluorobenzene  
Concen: 50.00 ug/l  
RT: 11.647 min Scan# 615  
Delta R.T. -0.000 min  
Lab File: 5V21920.D  
Acq: 15 Jun 2012 1:06 am

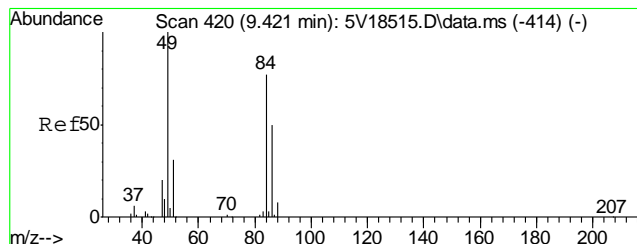
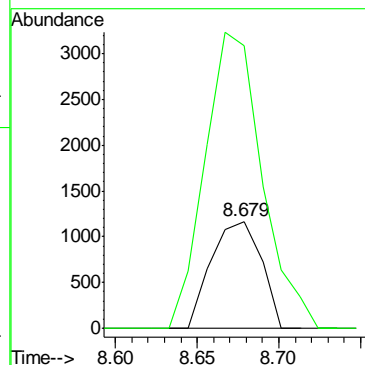
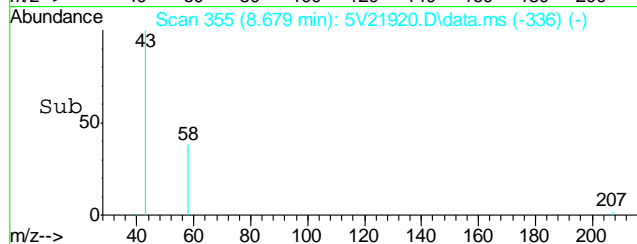
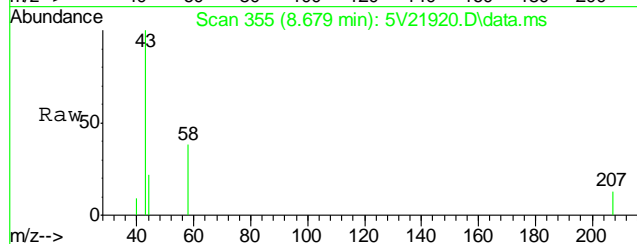
Tgt Ion:168 Resp: 163414  
Ion Ratio Lower Upper  
168 100  
99 43.0 37.4 56.2





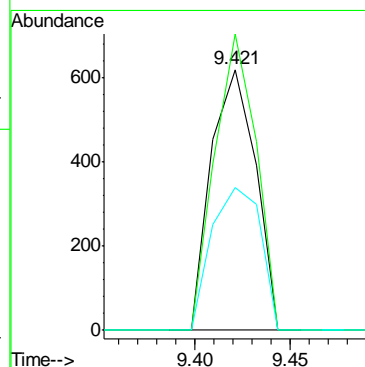
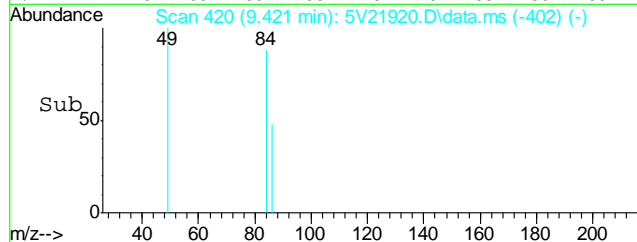
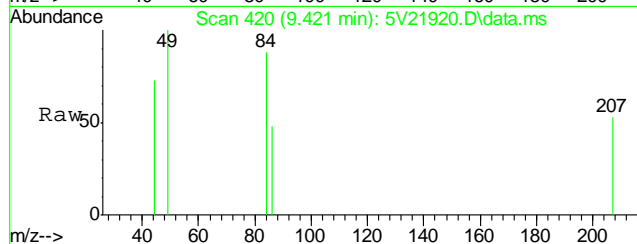
#15  
Acetone  
Concen: 7.93 ug/l  
RT: 8.679 min Scan# 355  
Delta R.T. 0.012 min  
Lab File: 5V21920.D  
Acq: 15 Jun 2012 1:06 am

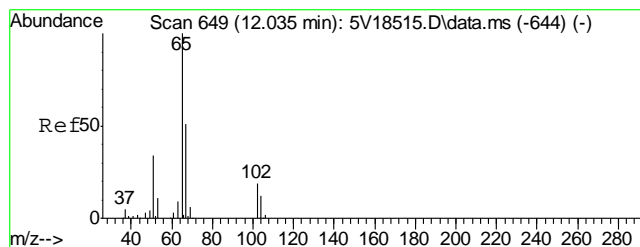
Tgt Ion: 58 Resp: 2478  
Ion Ratio Lower Upper  
58 100  
43 317.8 353.6 393.6#



#17  
Methylene Chloride  
Concen: 0.37 ug/l  
RT: 9.421 min Scan# 420  
Delta R.T. -0.000 min  
Lab File: 5V21920.D  
Acq: 15 Jun 2012 1:06 am

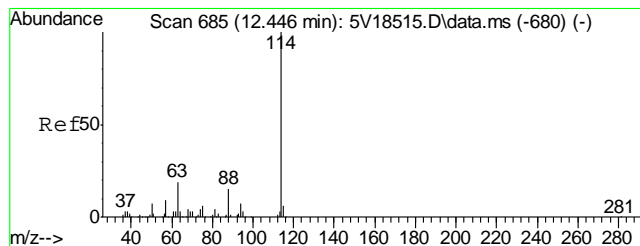
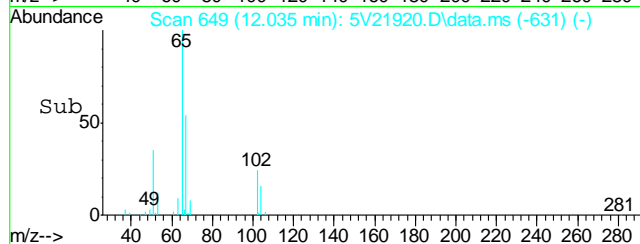
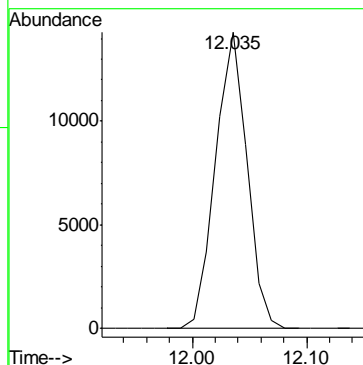
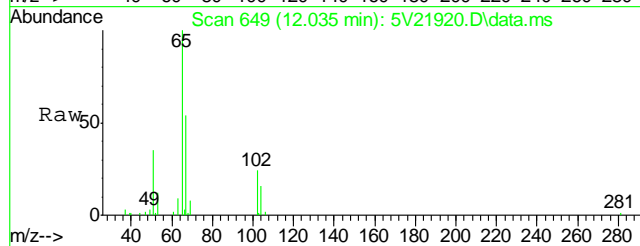
Tgt Ion: 84 Resp: 1005  
Ion Ratio Lower Upper  
84 100  
49 105.7 110.4 150.4#  
86 60.7 44.0 84.0





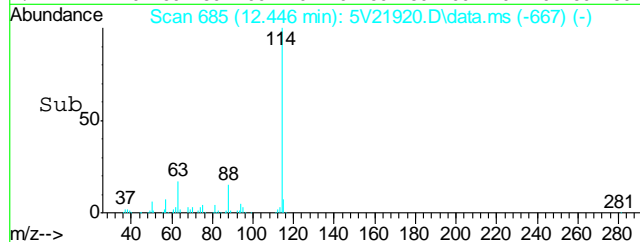
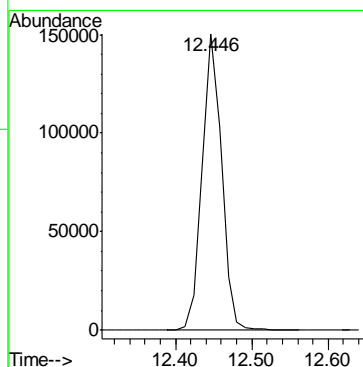
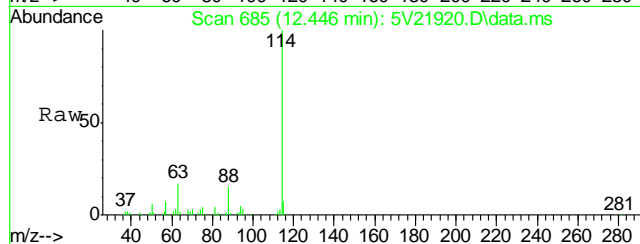
#33  
1,2-Dichloroethane-d4  
Concen: 55.06 ug/l  
RT: 12.035 min Scan# 649  
Delta R.T. 0.000 min  
Lab File: 5V21920.D  
Acq: 15 Jun 2012 1:06 am

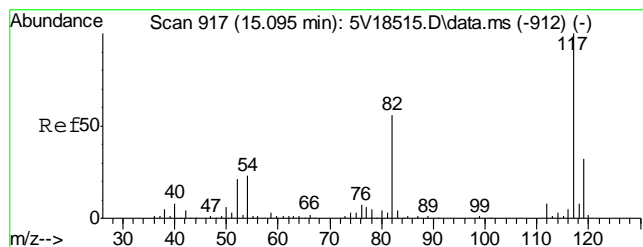
Tgt Ion:102 Resp: 27466



#35  
1,4-Difluorobenzene  
Concen: 50.00 ug/l  
RT: 12.446 min Scan# 685  
Delta R.T. -0.000 min  
Lab File: 5V21920.D  
Acq: 15 Jun 2012 1:06 am

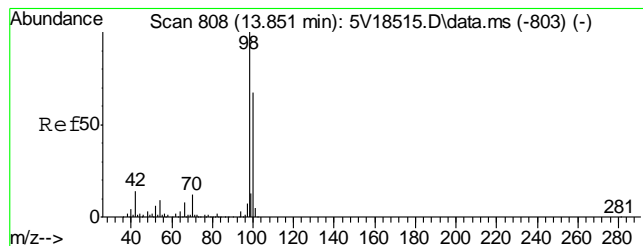
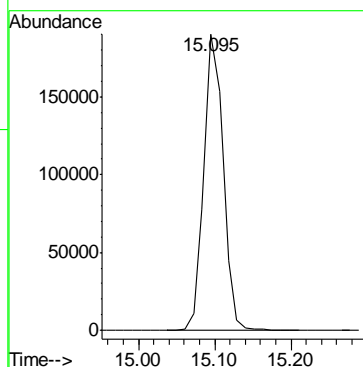
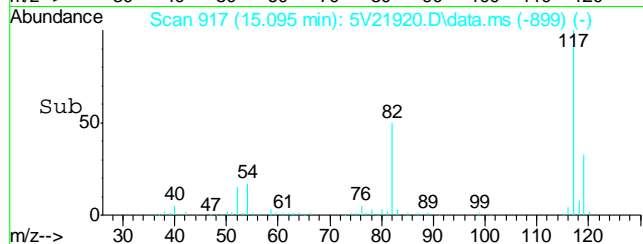
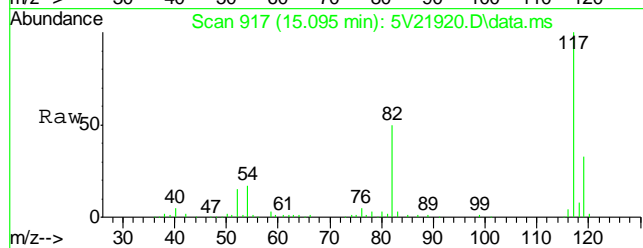
Tgt Ion:114 Resp: 265148





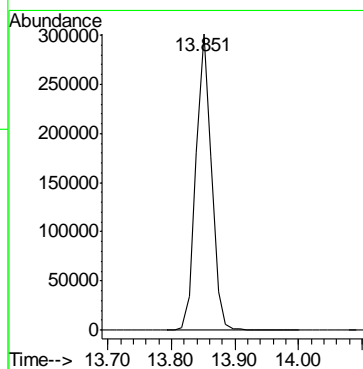
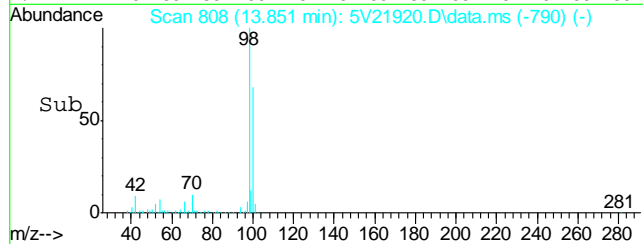
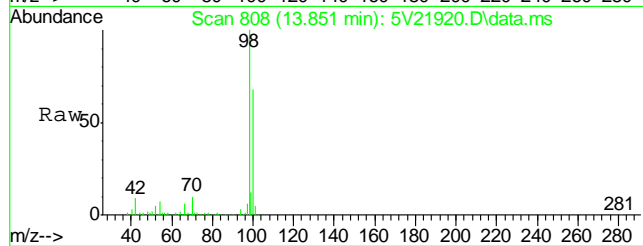
#53  
Chlorobenzene-d5  
Concen: 50.00 ug/l  
RT: 15.095 min Scan# 917  
Delta R.T. -0.000 min  
Lab File: 5V21920.D  
Acq: 15 Jun 2012 1:06 am

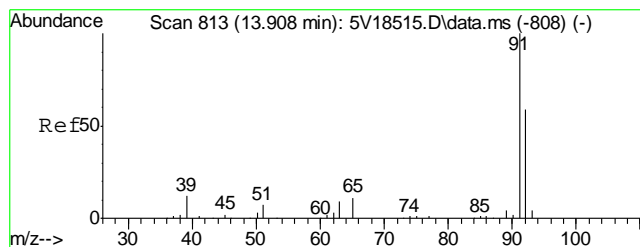
Tgt Ion: 117 Resp: 334674



#61  
Toluene-d8  
Concen: 45.10 ug/l  
RT: 13.851 min Scan# 808  
Delta R.T. -0.000 min  
Lab File: 5V21920.D  
Acq: 15 Jun 2012 1:06 am

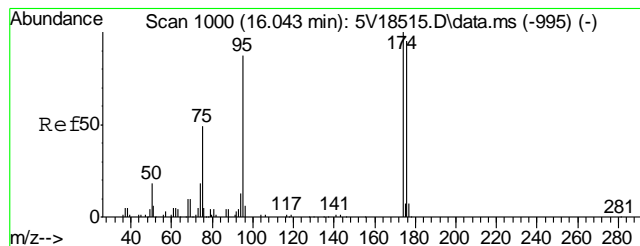
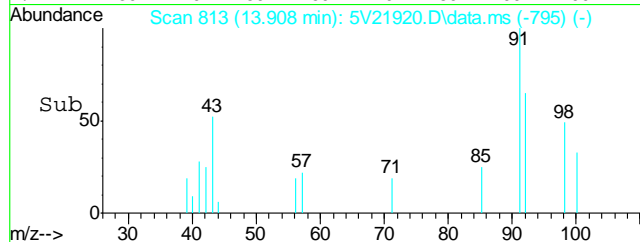
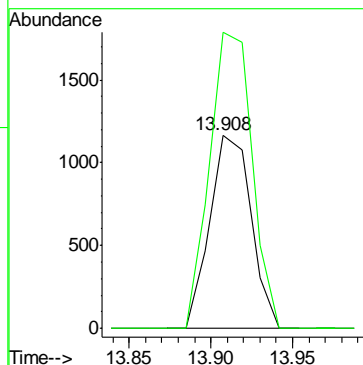
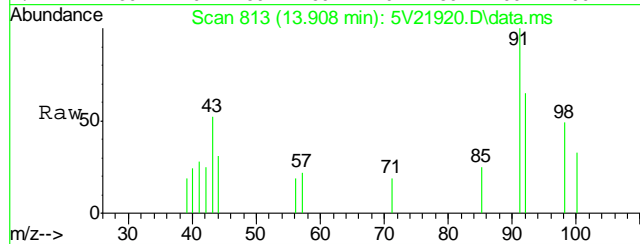
Tgt Ion: 98 Resp: 510178





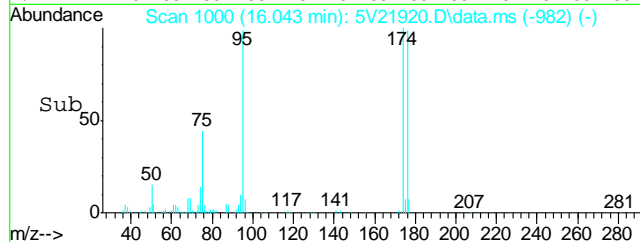
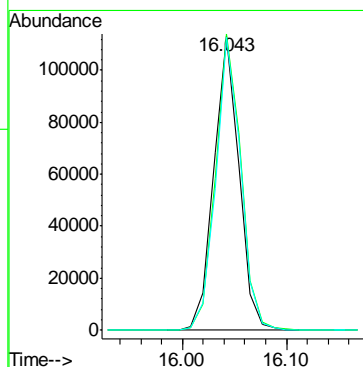
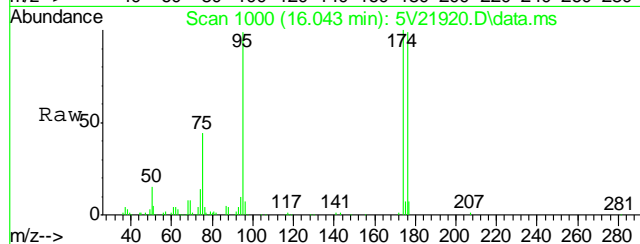
#62  
Toluene  
Concen: 0.24 ug/l  
RT: 13.908 min Scan# 813  
Delta R.T. -0.000 min  
Lab File: 5V21920.D  
Acq: 15 Jun 2012 1:06 am

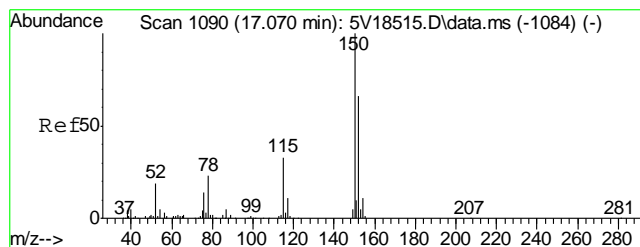
Tgt Ion	Ratio	Lower	Upper
92	100		
91	157.9	149.8	189.8



#69  
4-Bromofluorobenzene  
Concen: 41.07 ug/l  
RT: 16.043 min Scan# 1000  
Delta R.T. -0.000 min  
Lab File: 5V21920.D  
Acq: 15 Jun 2012 1:06 am

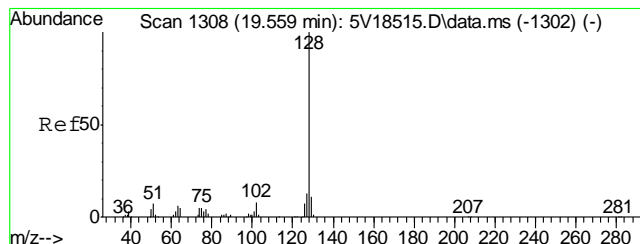
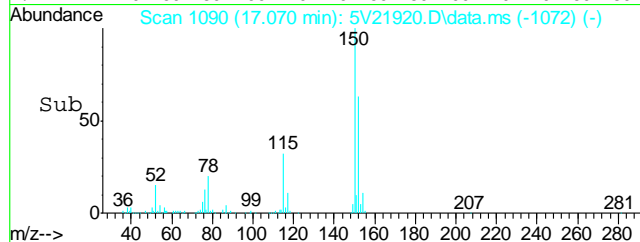
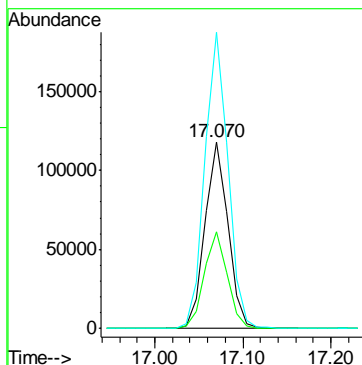
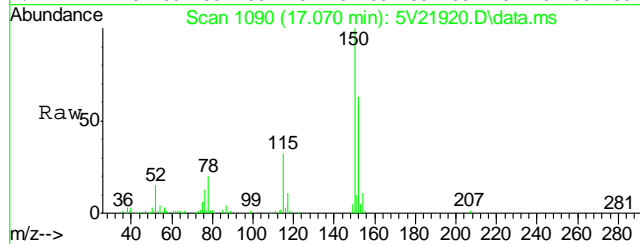
Tgt Ion	Ratio	Lower	Upper
95	100		
174	101.6	77.1	117.1
176	98.9	73.4	113.4





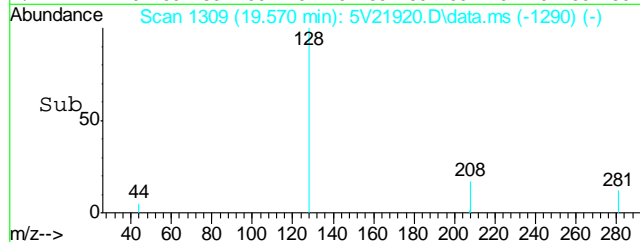
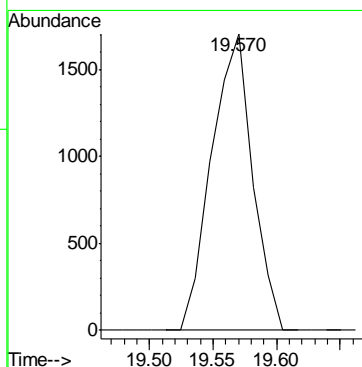
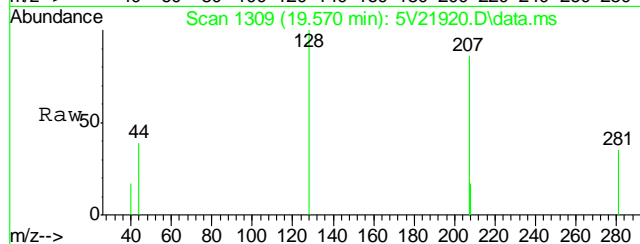
#74  
1,4-Dichlorobenzene-d4  
Concen: 50.00 ug/l  
RT: 17.070 min Scan# 1090  
Delta R.T. -0.000 min  
Lab File: 5V21920.D  
Acq: 15 Jun 2012 1:06 am

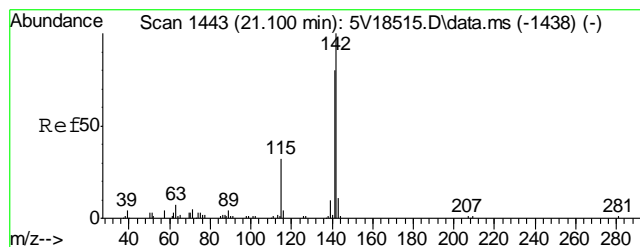
Tgt Ion:	152	Resp:	213993
Ion Ratio	Lower	Upper	
152	100		
115	51.4	41.4	62.0
150	159.3	153.9	230.9



#91  
Naphthalene  
Concen: 0.93 ug/l  
RT: 19.570 min Scan# 1309  
Delta R.T. 0.012 min  
Lab File: 5V21920.D  
Acq: 15 Jun 2012 1:06 am

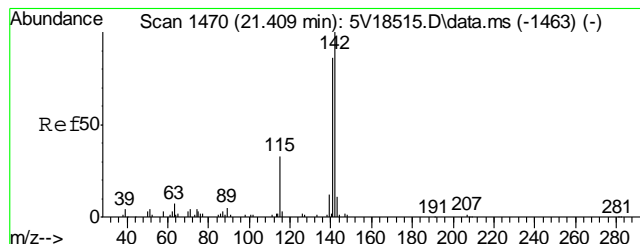
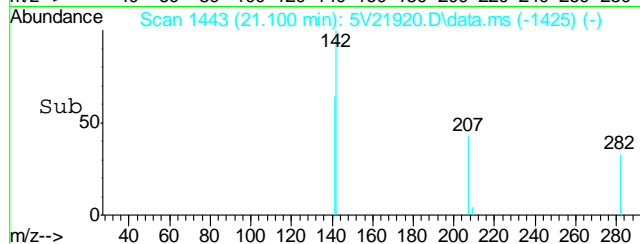
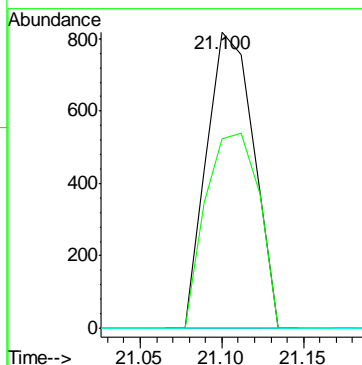
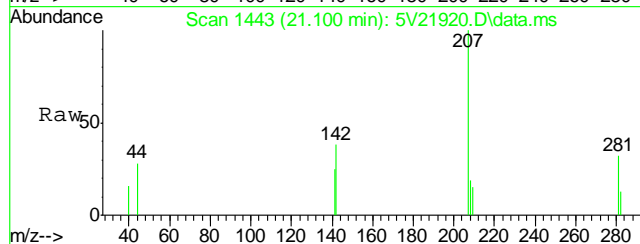
Tgt Ion: 128 Resp: 3802





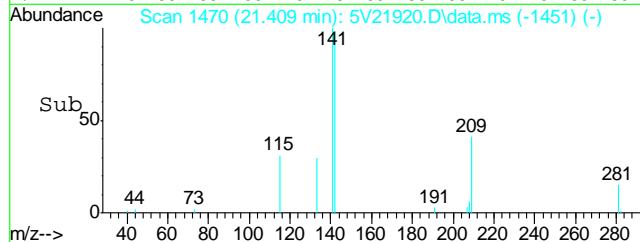
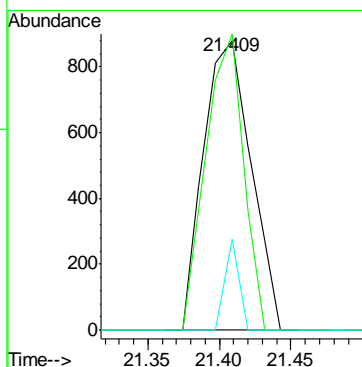
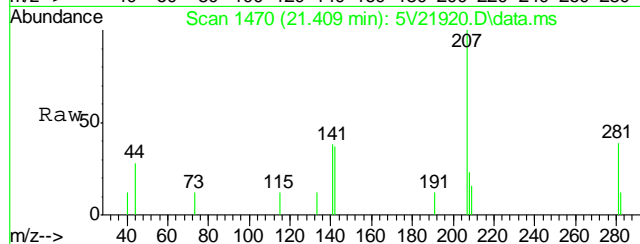
#94  
2-Methylnaphthalene  
Concen: 1.71 ug/l  
RT: 21.100 min Scan# 1443  
Delta R.T. 0.000 min  
Lab File: 5V21920.D  
Acq: 15 Jun 2012 1:06 am

Tgt Ion:	142	Resp:	1632
Ion Ratio	Lower	Upper	
142	100		
141	74.7	66.2	99.4
115	0.0	25.9	38.9#



#95  
1-Methylnaphthalene  
Concen: 1.65 ug/l  
RT: 21.409 min Scan# 1470  
Delta R.T. 0.012 min  
Lab File: 5V21920.D  
Acq: 15 Jun 2012 1:06 am

Tgt Ion:	142	Resp:	2026
Ion Ratio	Lower	Upper	
142	100		
141	80.9	68.9	103.3
115	9.4	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: D35489  
Account: XTOKRWR XTO Energy  
Project: FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6068-MB	3G09680.D	1	06/15/12	DC	06/15/12	OP6068	E3G427

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D35489-1

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	74% 10-145%
321-60-8	2-Fluorobiphenyl	84% 10-130%
1718-51-0	Terphenyl-d14	90% 22-130%

## Blank Spike Summary

Page 1 of 1

Job Number: D35489  
Account: XTOKRWR XTO Energy  
Project: FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6068-BS	3G09681.D	1	06/15/12	DC	06/15/12	OP6068	E3G427

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D35489-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	72.0	86	34-130
120-12-7	Anthracene	83.3	72.3	87	35-130
56-55-3	Benzo(a)anthracene	83.3	79.9	96	36-130
50-32-8	Benzo(a)pyrene	83.3	92.7	111	36-130
205-99-2	Benzo(b)fluoranthene	83.3	76.6	92	35-130
207-08-9	Benzo(k)fluoranthene	83.3	69.7	84	37-130
218-01-9	Chrysene	83.3	74.0	89	40-130
53-70-3	Dibenzo(a,h)anthracene	83.3	93.3	112	32-130
206-44-0	Fluoranthene	83.3	82.1	99	38-130
86-73-7	Fluorene	83.3	78.6	94	35-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	87.1	105	28-130
91-20-3	Naphthalene	83.3	73.0	88	35-130
129-00-0	Pyrene	83.3	69.8	84	37-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	73%	10-145%
321-60-8	2-Fluorobiphenyl	81%	10-130%
1718-51-0	Terphenyl-d14	89%	22-130%

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D35489  
Account: XTOKRWR XTO Energy  
Project: FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6068-MS	3G09684.D	1	06/15/12	DC	06/15/12	OP6068	E3G427
OP6068-MSD	3G09685.D	1	06/15/12	DC	06/15/12	OP6068	E3G427
D35488-1	3G09683.D	1	06/15/12	DC	06/15/12	OP6068	E3G427

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D35489-1

CAS No.	Compound	D35488-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		95.1	81.8	86	77.7	82	5	10-155/30
120-12-7	Anthracene	ND		95.1	79.5	84	82.2	87	3	10-155/30
56-55-3	Benzo(a)anthracene	ND		95.1	93.7	99	98.7	104	5	10-175/30
50-32-8	Benzo(a)pyrene	ND		95.1	97.8	103	101	106	3	10-164/30
205-99-2	Benzo(b)fluoranthene	ND		95.1	92.9	98	97.3	103	5	10-165/30
207-08-9	Benzo(k)fluoranthene	ND		95.1	59.2	62	58.5	62	1	10-178/30
218-01-9	Chrysene	ND		95.1	79.6	84	86.3	91	8	10-147/30
53-70-3	Dibenzo(a,h)anthracene	ND		95.1	129	136	130	137	1	10-144/30
206-44-0	Fluoranthene	ND		95.1	77.4	81	74.5	79	4	10-207/30
86-73-7	Fluorene	5.5	J	95.1	96.7	96	93.1	92	4	10-163/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		95.1	121	127	121	128	0	10-180/30
91-20-3	Naphthalene	32.0		95.1	117	89	102	74	14	10-198/30
129-00-0	Pyrene	ND		95.1	104	109	108	114	4	10-189/30

CAS No.	Surrogate Recoveries	MS	MSD	D35488-1	Limits
4165-60-0	Nitrobenzene-d5	63%	58%	56%	10-145%
321-60-8	2-Fluorobiphenyl	80%	73%	65%	10-130%
1718-51-0	Terphenyl-d14	107%	111%	85%	22-130%

## GC/MS Semi-volatiles

### Raw Data



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\061512\  
 Data File : 3g09682.D  
 Acq On : 15 Jun 2012 3:05 pm  
 Operator : DONC  
 Sample : D35489-1  
 Misc : OP6068,E3G427,30.00,,,1,1  
 ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jun 15 15:39:28 2012  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G424.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Fri Jun 15 12:25:10 2012  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	6.482	136	308318	4.0000	ug/mL	0.00
6) Acenaphthene-d10	8.874	164	188809	4.0000	ug/mL	-0.01
14) Phenanthrene-d10	11.429	188	302057	4.0000	ug/mL	0.00
18) Chrysene-d12	16.481	240	287573	4.0000	ug/mL	-0.01
23) Perylene-d12	19.058	264	189737	4.0000	ug/mL	-0.01

## System Monitoring Compounds

2) Nitrobenzene-d5	5.772	82	1138434	26.6546	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	53.30%		
7) 2-Fluorobiphenyl	7.870	172	1799826	29.3445	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	58.68%		
20) Terphenyl-d14	14.540	244	1906164	37.8313	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	75.66%		

## Target Compounds

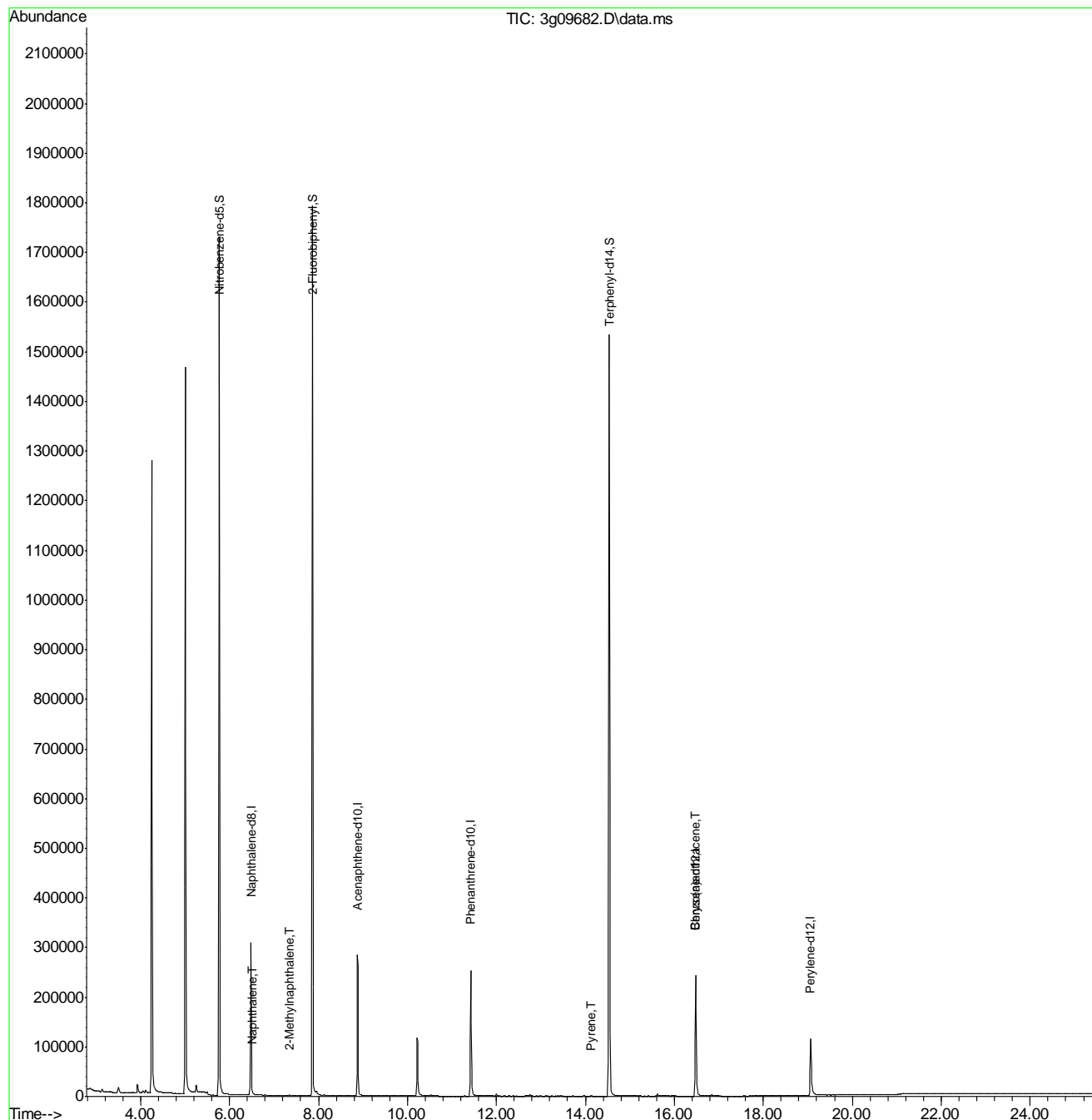
						Qvalue
3) N-Nitrosodimethylamine	0.000	74	0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d	
5) Naphthalene	6.507	128	1993	0.0235	ug/mL	92
8) 2-Methylnaphthalene	7.343	142	707	0.0136	ug/mL	88
9) 1-Methylnaphthalene	0.000	142	0	N.D.	d	
10) Acenaphthylene	0.000	152	0	N.D.	d	
11) Acenaphthene	0.000	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	226	Below	Cal #	69
17) Fluoranthene	0.000	202	0	N.D.	d	
19) Pyrene	14.128	202	376	0.0548	ug/mL	82
21) Benzo(a)anthracene	16.481	228	904	0.0705	ug/mL	78
22) Chrysene	0.000	228	0	N.D.	d	
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	0.000	276	0	N.D.	d	

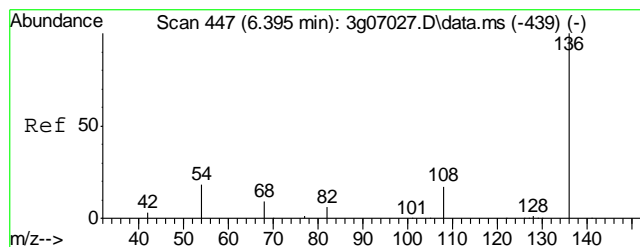
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\061512\  
 Data File : 3g09682.D  
 Acq On : 15 Jun 2012 3:05 pm  
 Operator : DONC  
 Sample : D35489-1  
 Misc : OP6068,E3G427,30.00,,,1,1  
 ALS Vial : 8 Sample Multiplier: 1

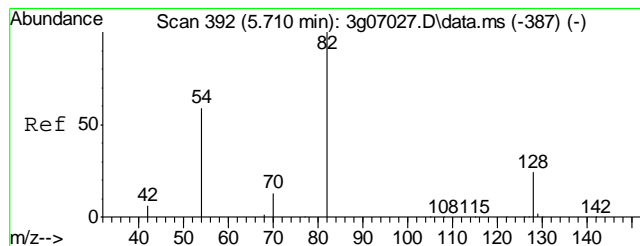
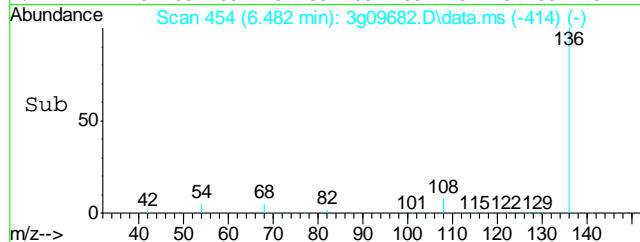
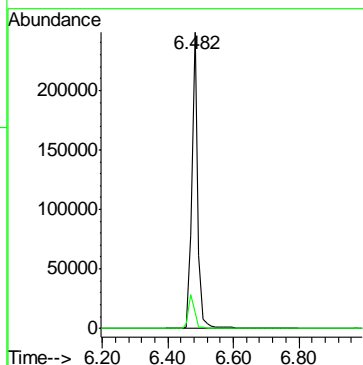
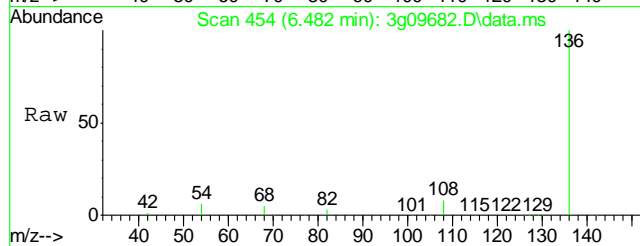
Quant Time: Jun 15 15:39:28 2012  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G424.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Fri Jun 15 12:25:10 2012  
 Response via : Initial Calibration





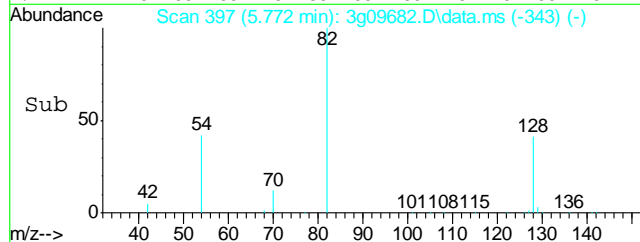
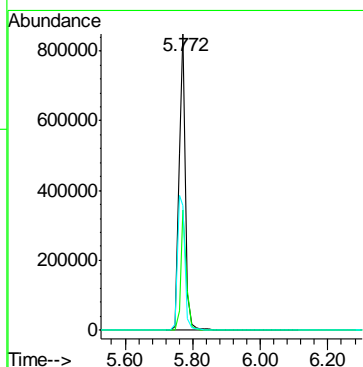
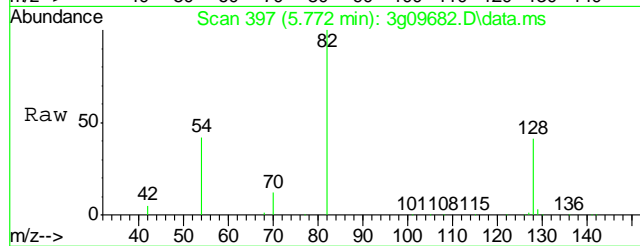
#1  
Naphthalene-d8  
Concen: 4.0000 ug/mL  
RT: 6.482 min Scan# 454  
Delta R.T. 0.000 min  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

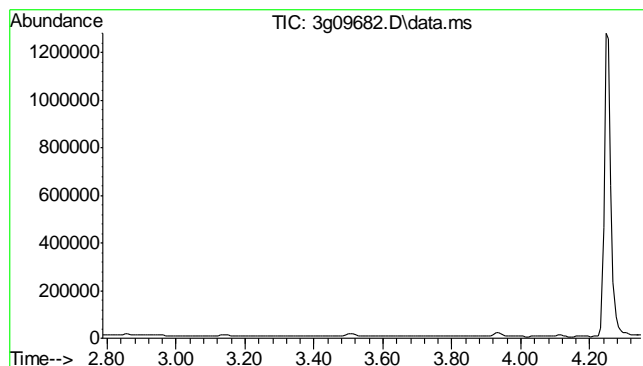
Tgt Ion: 136 Resp: 308318  
Ion Ratio Lower Upper  
136 100  
68 11.8 0.0 32.1



#2  
Nitrobenzene-d5  
Concen: 26.6546 ug/mL  
RT: 5.772 min Scan# 397  
Delta R.T. 0.000 min  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

Tgt Ion: 82 Resp: 1138434  
Ion Ratio Lower Upper  
82 100  
128 35.4 14.3 54.3  
54 54.0 38.1 78.1

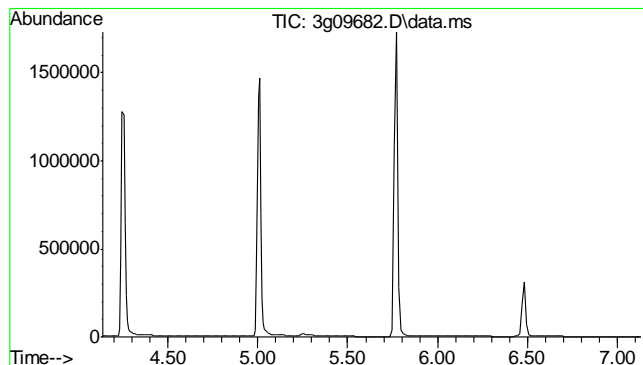
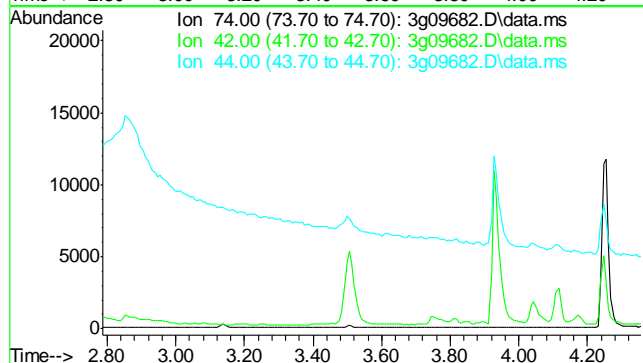




#3  
N-Nitrosodimethylamine  
Concen: N.D. ug/mL  
Expected RT: 2.85 min

Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

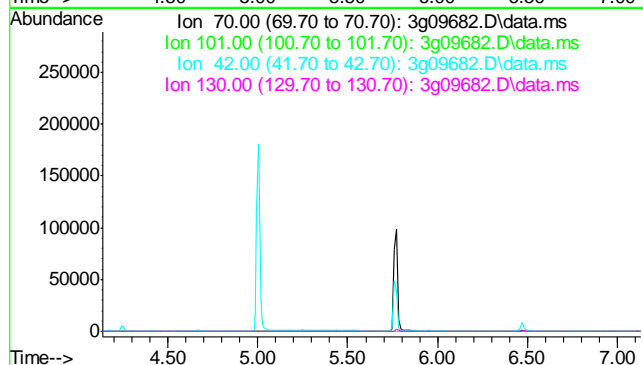
Tgt Ion	Exp Ratio
74	100
42	65.5
44	9.6

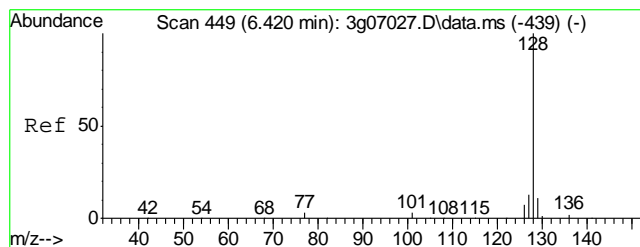


#4  
N-Nitrosodi-propylamine  
Concen: N.D. ug/mL  
Expected RT: 5.63 min

Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

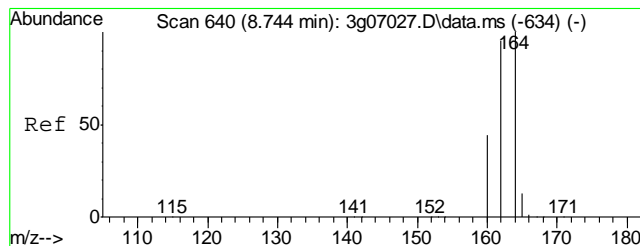
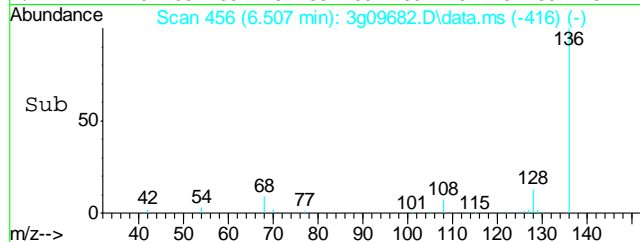
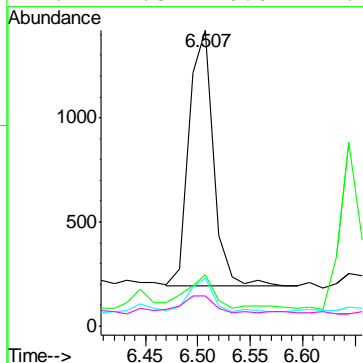
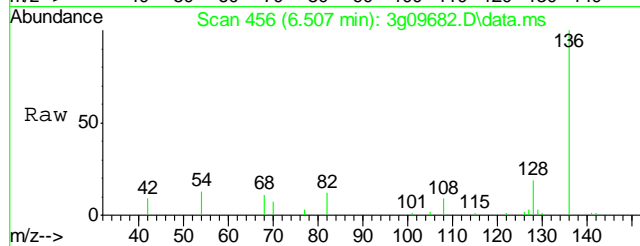
Tgt Ion	Exp Ratio
70	100
101	9.8
42	61.6
130	18.2





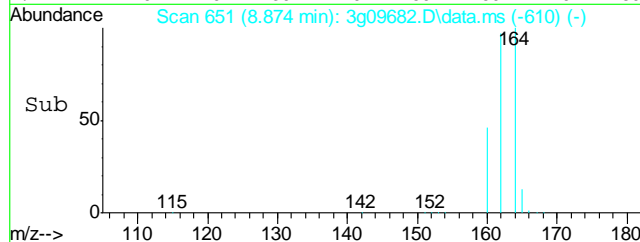
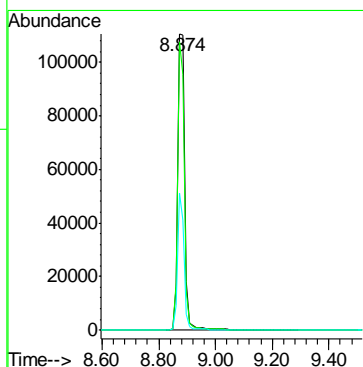
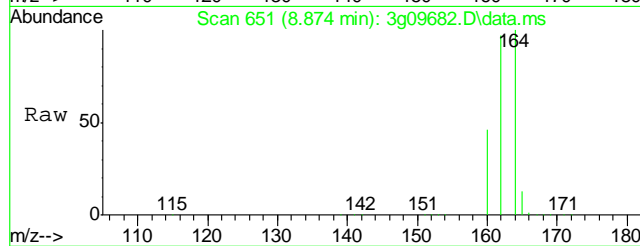
#5  
Naphthalene  
Concen: 0.0235 ug/mL  
RT: 6.507 min Scan# 456  
Delta R.T. 0.000 min  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

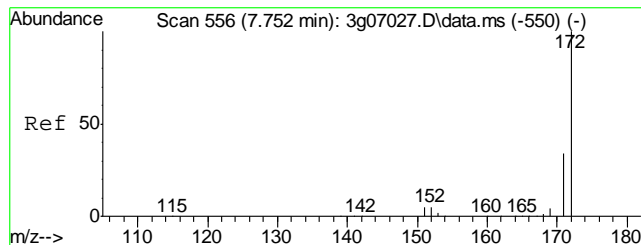
Tgt Ion	Ratio	Lower	Upper
128	100		
129	14.0	0.0	30.8
127	14.1	0.0	32.4
126	12.8	0.0	27.7



#6  
Acenaphthene-d10  
Concen: 4.0000 ug/mL  
RT: 8.874 min Scan# 651  
Delta R.T. -0.012 min  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

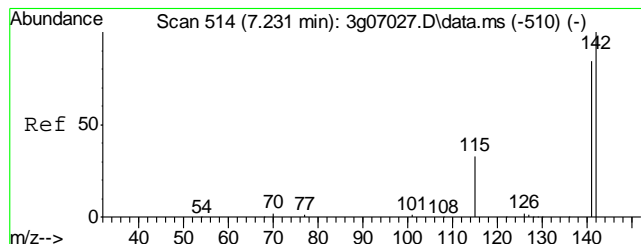
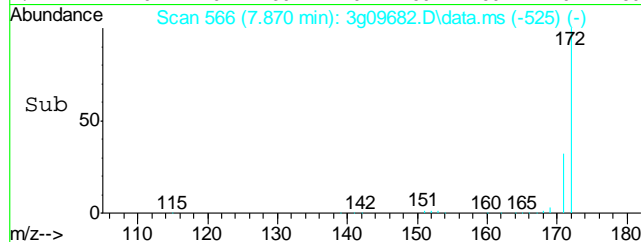
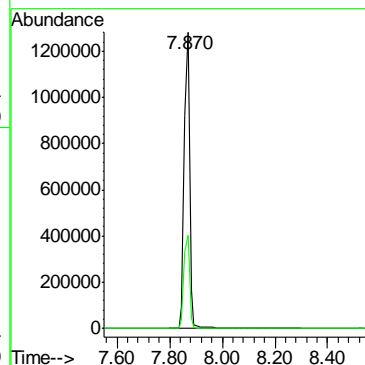
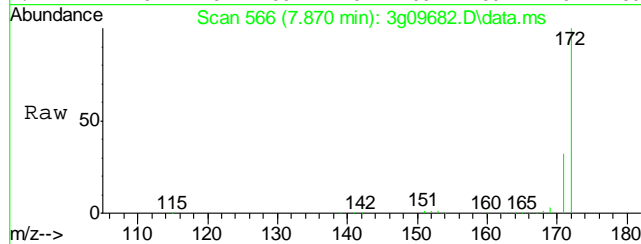
Tgt Ion	Ratio	Lower	Upper
164	100		
162	92.3	72.8	112.8
160	41.9	22.3	62.3





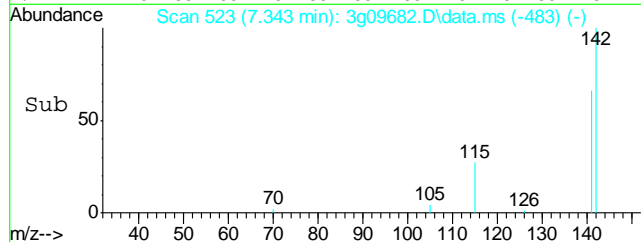
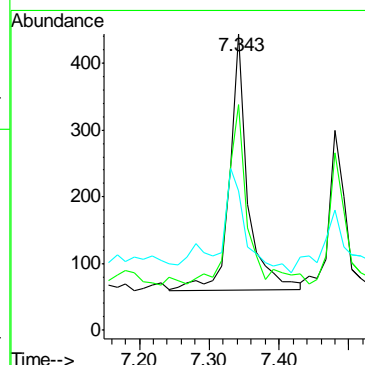
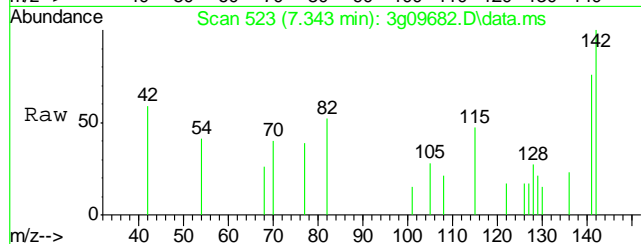
#7  
2-Fluorobiphenyl  
Concen: 29.3445 ug/mL  
RT: 7.870 min Scan# 566  
Delta R.T. 0.000 min  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

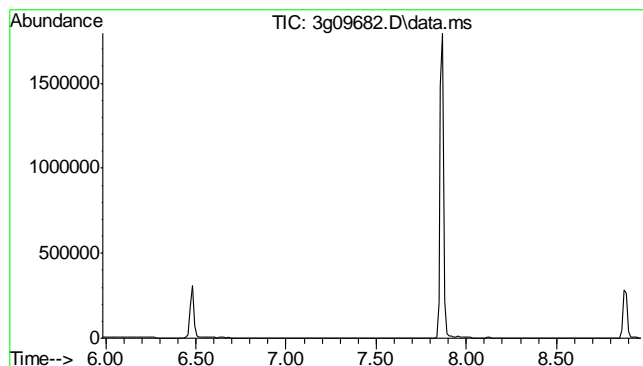
Tgt Ion: 172 Resp: 1799826  
Ion Ratio Lower Upper  
172 100  
171 33.2 13.3 53.3



#8  
2-Methylnaphthalene  
Concen: 0.0136 ug/mL  
RT: 7.343 min Scan# 523  
Delta R.T. 0.000 min  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

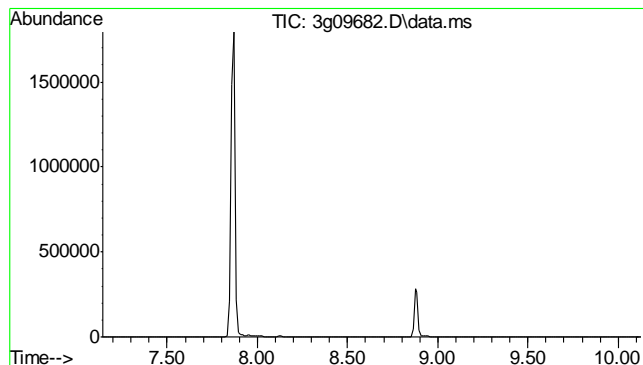
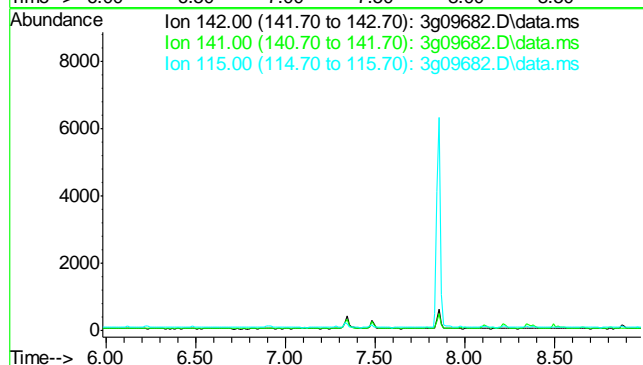
Tgt Ion: 142 Resp: 707  
Ion Ratio Lower Upper  
142 100  
141 73.1 63.5 103.5  
115 43.3 15.6 55.6





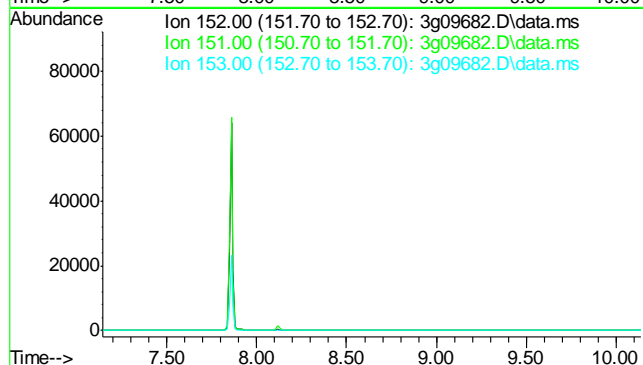
#9  
1-Methylnaphthalene  
Concen: N.D. ug/mL  
Expected RT: 7.48 min  
  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

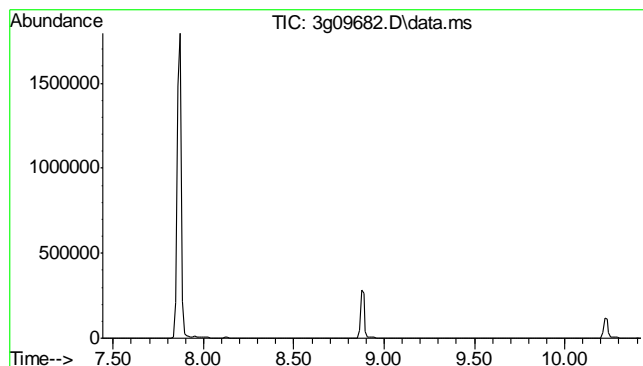
Tgt Ion	Exp Ratio
142	100
141	86.5
115	37.1



#10  
Acenaphthylene  
Concen: N.D. ug/mL  
Expected RT: 8.64 min  
  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

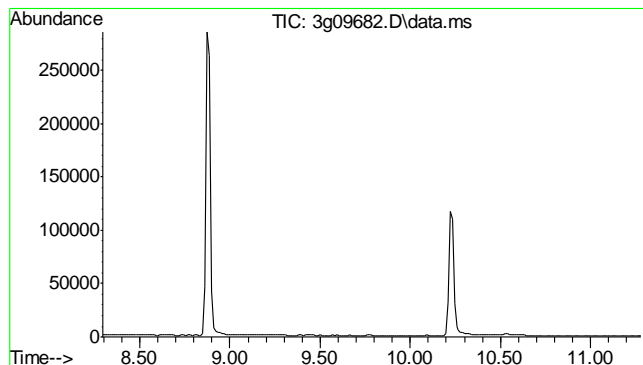
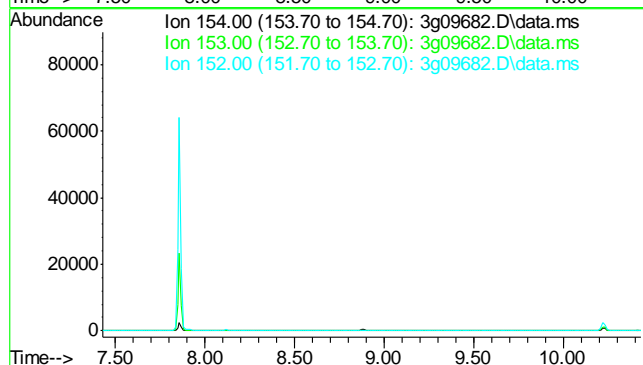
Tgt Ion	Exp Ratio
152	100
151	19.2
153	14.0





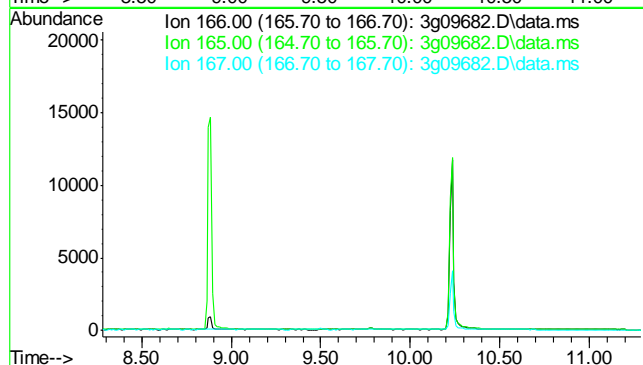
#11  
Acenaphthene  
Concen: N.D. ug/mL  
Expected RT: 8.93 min  
  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

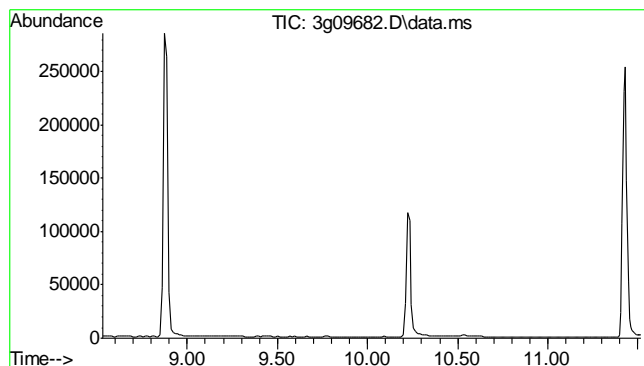
Tgt Ion	Exp Ratio
154	100
153	104.9
152	47.2



#12  
Fluorene  
Concen: N.D. ug/mL  
Expected RT: 9.78 min  
  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

Tgt Ion	Exp Ratio
166	100
165	91.4
167	13.2

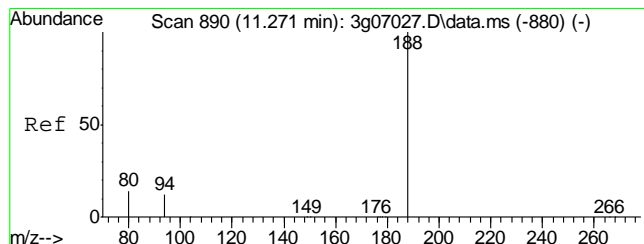
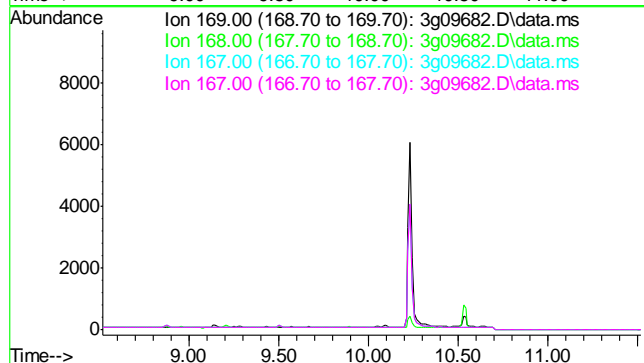




#13  
Diphenylamine  
Concen: N.D. ug/mL  
Expected RT: 10.02 min

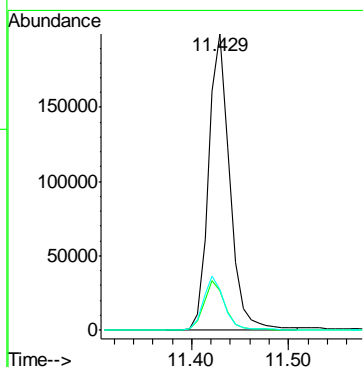
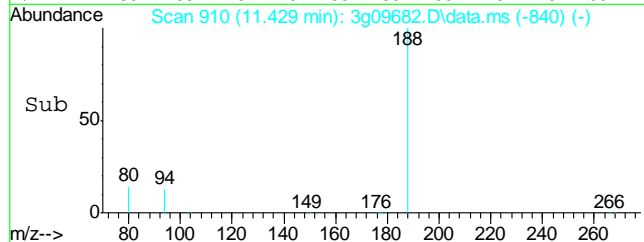
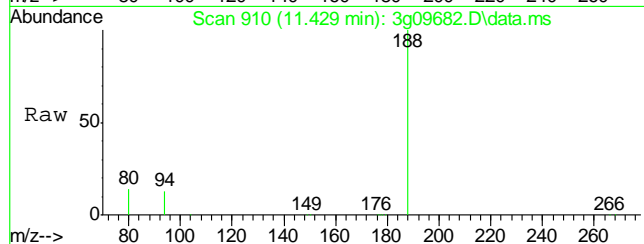
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

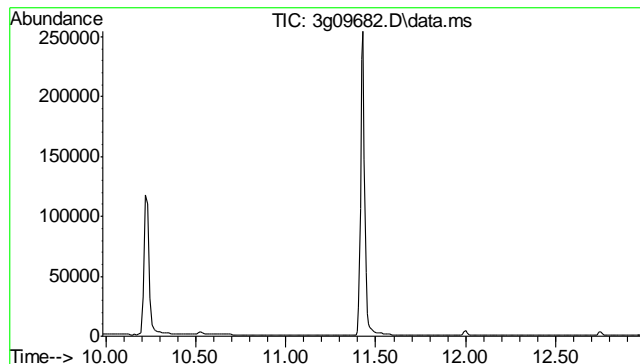
Tgt Ion	Exp Ratio
169	100
168	61.6
167	33.3
167	33.3



#14  
Phenanthrene-d10  
Concen: 4.0000 ug/mL  
RT: 11.429 min Scan# 910  
Delta R.T. 0.000 min  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

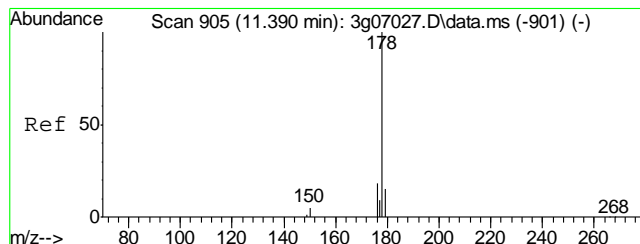
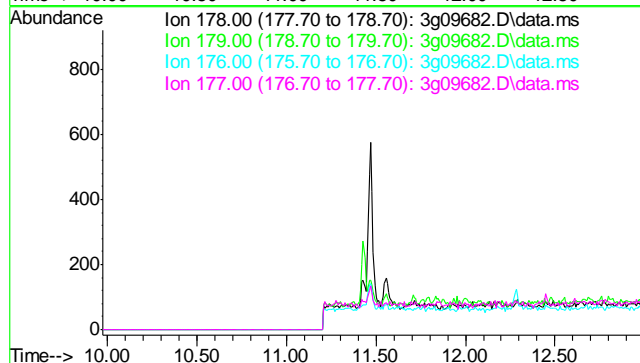
Tgt Ion	Ratio	Lower	Upper
188	100		
94	16.7	0.0	36.4
80	18.1	0.0	38.0





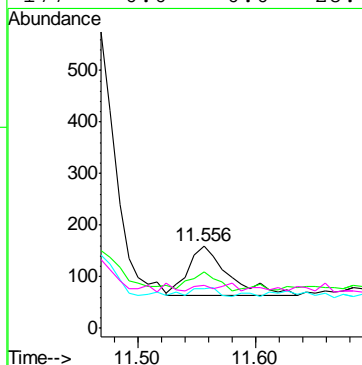
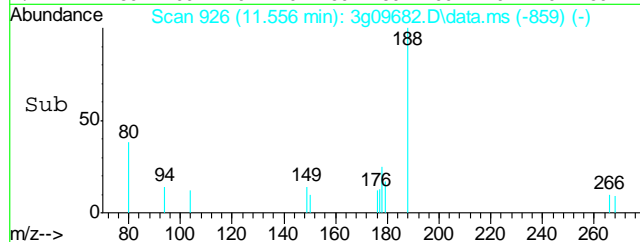
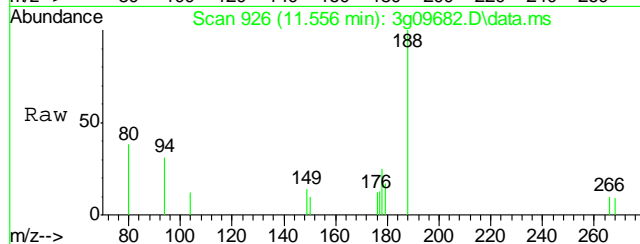
#15  
Phenanthrene  
Concen: N.D. ug/mL  
Expected RT: 11.48 min  
  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

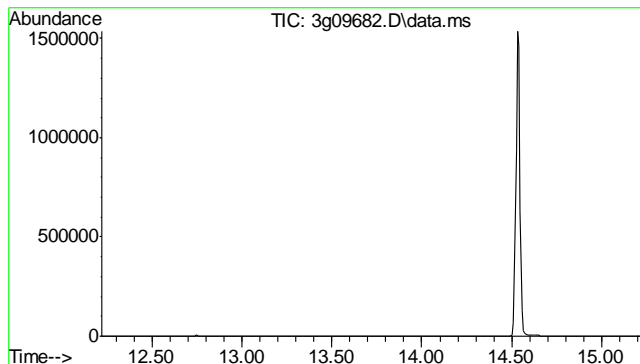
Tgt Ion: 178  
Sig Exp Ratio  
178 100  
179 15.0  
176 18.8  
177 10.3



#16  
Anthracene  
Concen: Below ug/mL  
RT: 11.556 min Scan# 926  
Delta R.T. -0.000 min  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

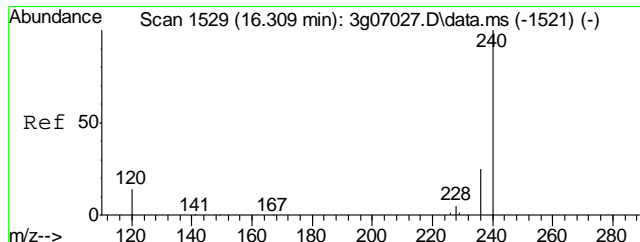
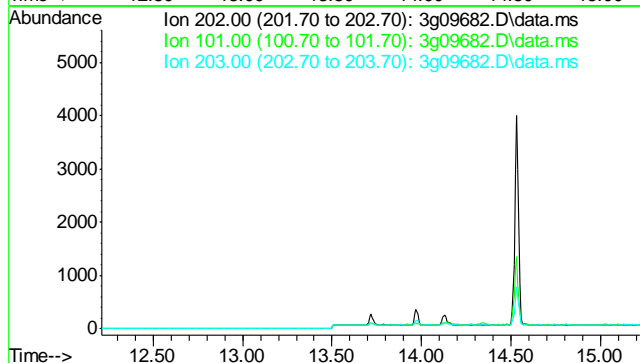
Tgt Ion: 178 Resp: 226  
Ion Ratio Lower Upper  
178 100  
179 24.8 0.0 34.9  
176 0.0 0.0 38.0  
177 0.0 0.0 28.7





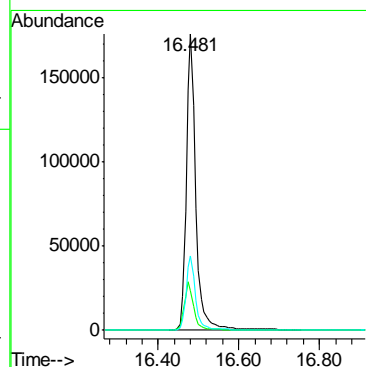
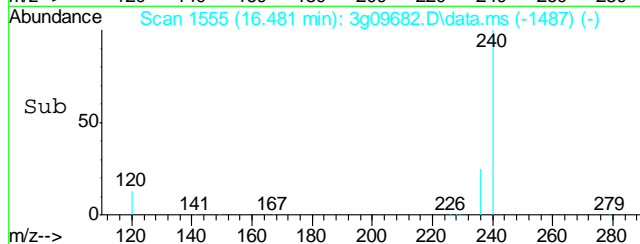
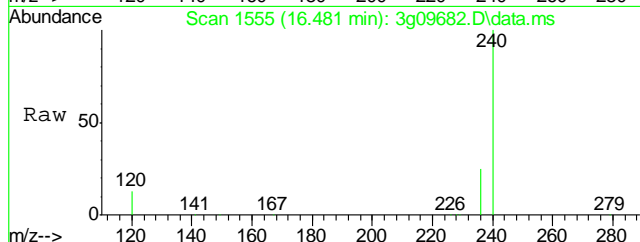
#17  
 Fluoranthene  
 Concen: N.D. ug/mL  
 Expected RT: 13.72 min  
  
 Lab File: 3g09682.D  
 Acq: 15 Jun 12 3:05 pm

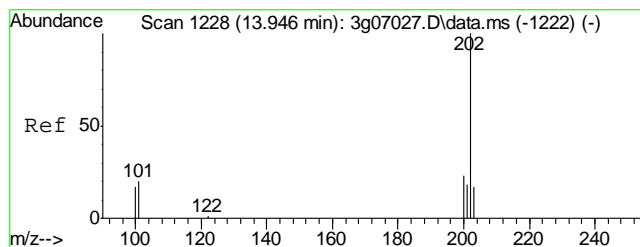
Tgt Ion	Exp Ratio
202	100
101	15.6
203	17.2



#18  
 Chrysene-d12  
 Concen: 4.0000 ug/mL  
 RT: 16.481 min Scan# 1555  
 Delta R.T. -0.013 min  
 Lab File: 3g09682.D  
 Acq: 15 Jun 12 3:05 pm

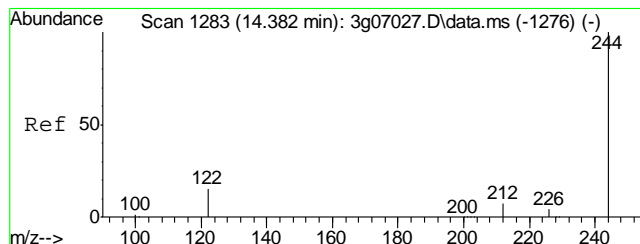
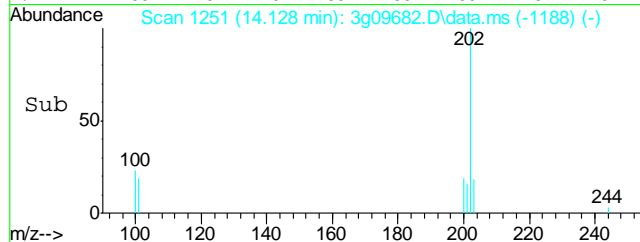
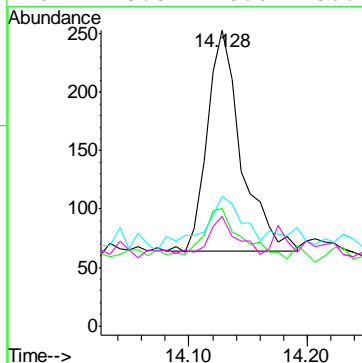
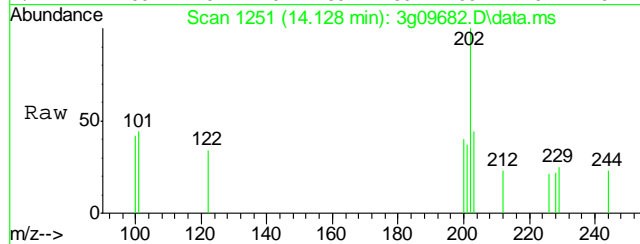
Tgt Ion	Ratio	Lower	Upper
240	100		
120	15.9	0.0	34.7
236	25.3	4.7	44.7





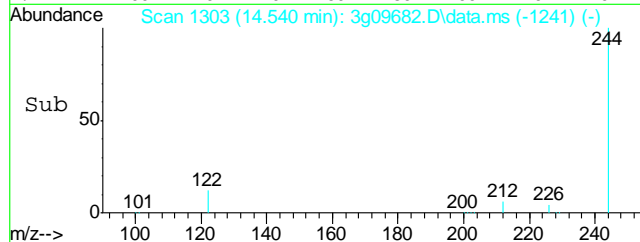
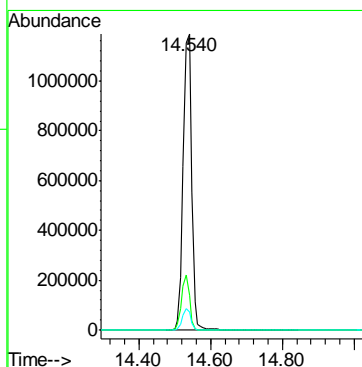
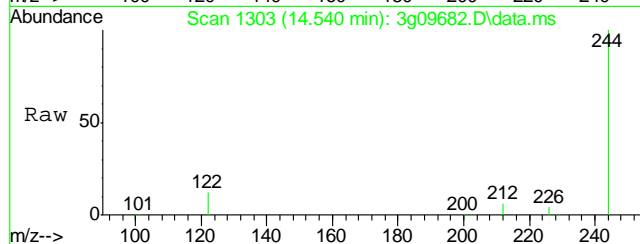
#19  
Pyrene  
Concen: 0.0548 ug/mL  
RT: 14.128 min Scan# 1251  
Delta R.T. 0.000 min  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

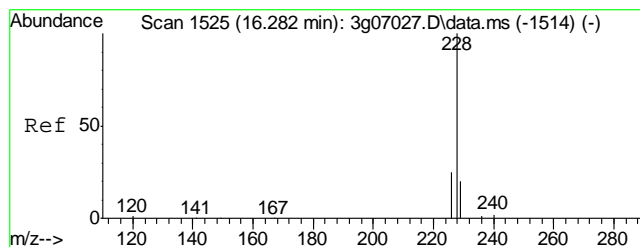
Tgt Ion: 202	Resp: 376
Ion Ratio	Lower Upper
202 100	
200 25.0	0.3 40.3
203 34.0	0.0 37.7
201 13.8	0.0 36.7



#20  
Terphenyl-d14  
Concen: 37.8313 ug/mL  
RT: 14.540 min Scan# 1303  
Delta R.T. -0.008 min  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

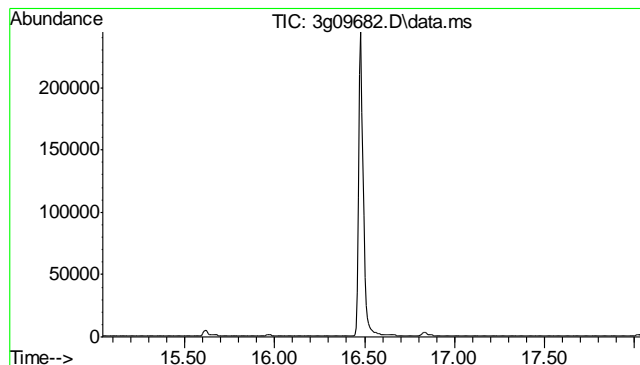
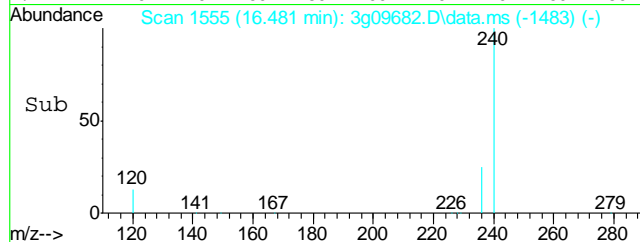
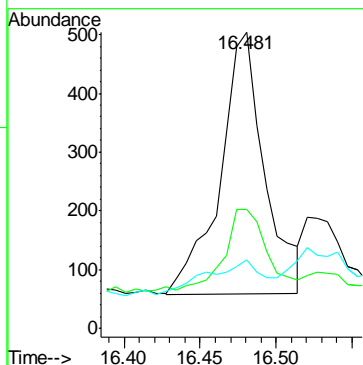
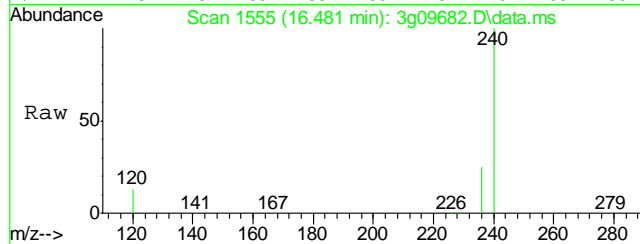
Tgt Ion: 244	Resp: 1906164
Ion Ratio	Lower Upper
244 100	
122 17.5	0.0 35.5
212 7.1	0.0 26.6





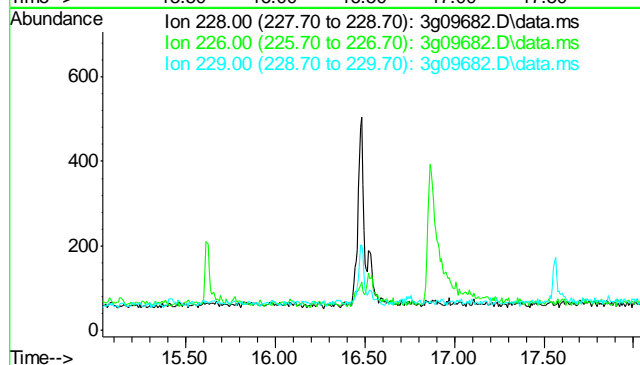
#21  
Benzo(a)anthracene  
Concen: 0.0705 ug/mL  
RT: 16.481 min Scan# 1555  
Delta R.T. 0.020 min  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

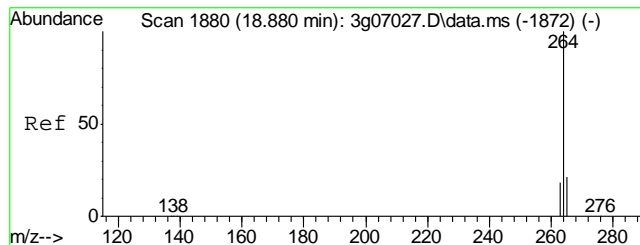
Tgt Ion:	228	Resp:	904
Ion Ratio	Lower	Upper	
228	100		
229	30.6	0.0	39.5
226	15.7	6.1	46.1



#22  
Chrysene  
Concen: N.D. ug/mL  
Expected RT: 16.54 min  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

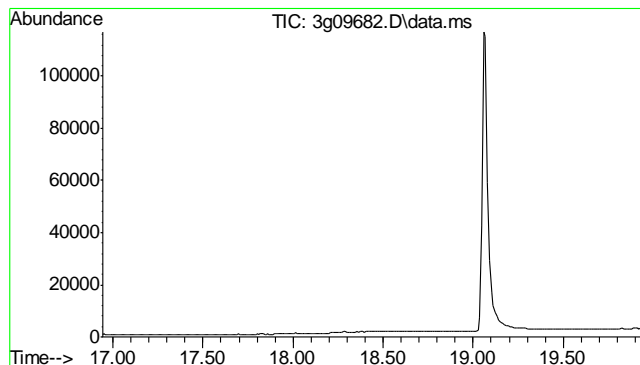
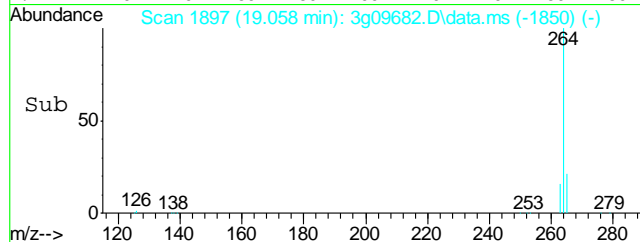
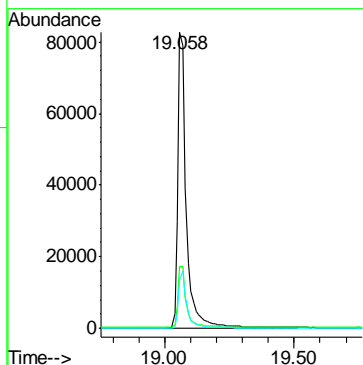
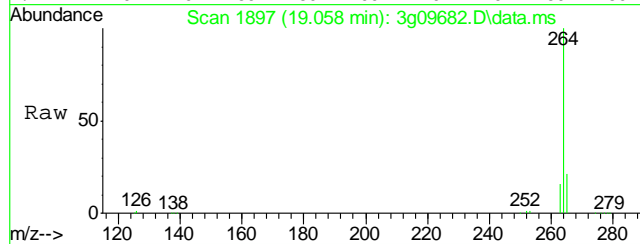
Tgt Ion:	228
Sig	Exp Ratio
228	100
226	28.2
229	18.9





#23  
Perylene-d12  
Concen: 4.0000 ug/mL  
RT: 19.058 min Scan# 1897  
Delta R.T. -0.011 min  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

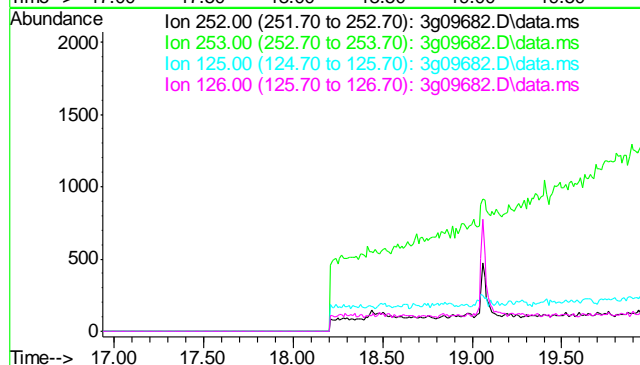
Tgt Ion:	264	Resp:	189737
Ion Ratio	Lower	Upper	
264	100		
265	21.1	0.7	40.7
263	19.0	0.0	39.1

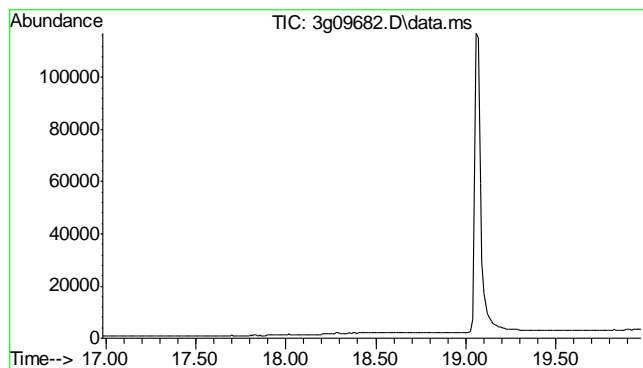


#24  
Benzo(b)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 18.44 min

Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

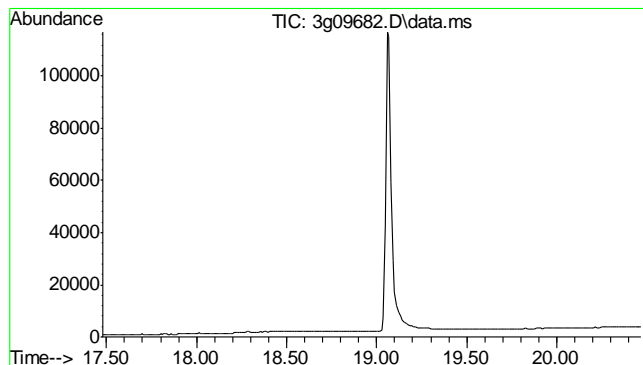
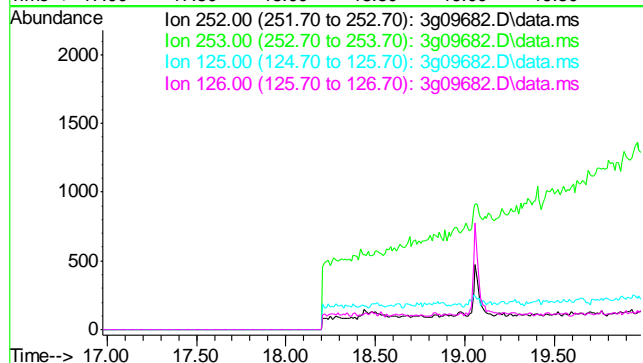
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	21.4
125	12.2
126	16.9





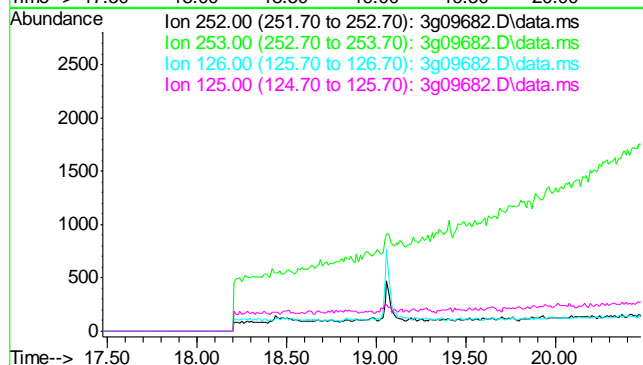
#25  
Benzo(k)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 18.48 min  
  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

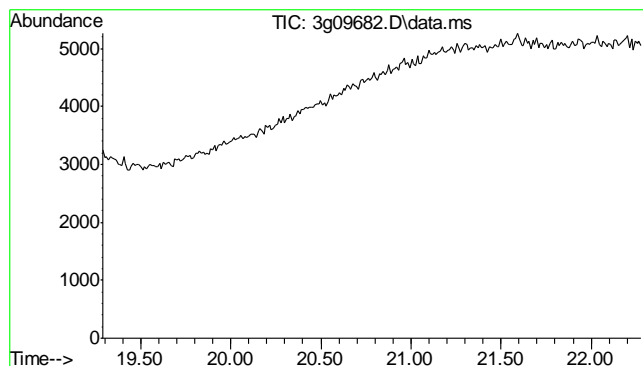
Tgt Ion	Exp Ratio
252	100
253	21.7
125	10.4
126	16.1



#26  
Benzo(a)pyrene  
Concen: N.D. ug/mL  
Expected RT: 18.97 min  
  
Lab File: 3g09682.D  
Acq: 15 Jun 12 3:05 pm

Tgt Ion	Exp Ratio
252	100
253	21.5
126	16.6
125	12.0

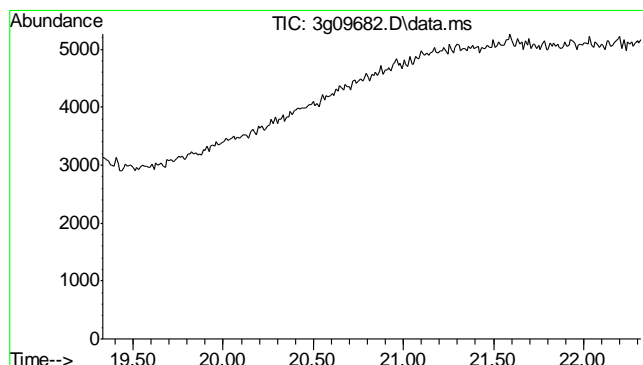
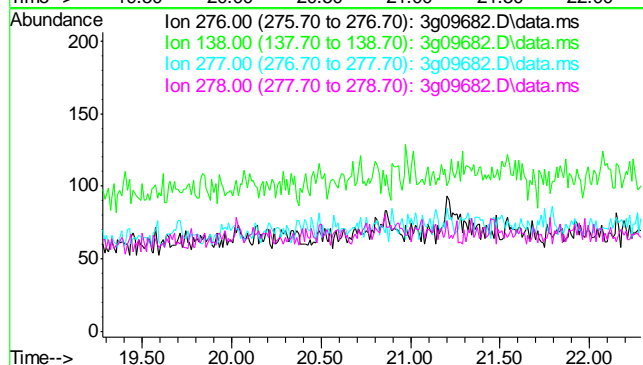




#27  
 Indeno(1,2,3-cd)pyrene  
 Concen: N.D. ug/mL  
 Expected RT: 20.78 min

Lab File: 3g09682.D  
 Acq: 15 Jun 12 3:05 pm

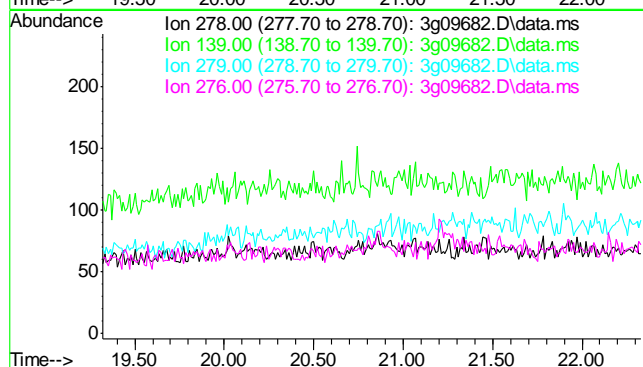
Tgt Ion	Sig	Exp Ratio
276	100	
138	26.6	
277	24.8	
278	78.2	

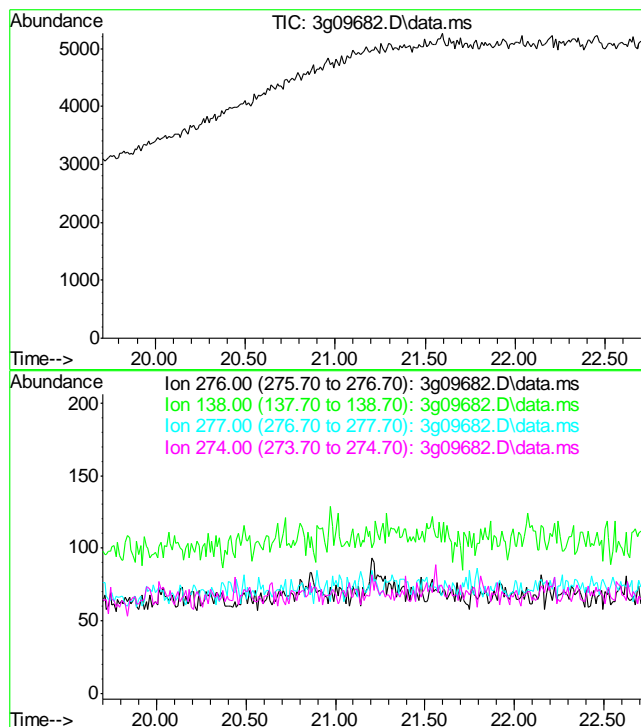


#28  
 Dibenzo(a,h)anthracene  
 Concen: N.D. ug/mL  
 Expected RT: 20.83 min

Lab File: 3g09682.D  
 Acq: 15 Jun 12 3:05 pm

Tgt Ion	Sig	Exp Ratio
278	100	
139	18.4	
279	23.4	
276	127.9	





#29  
 Benzo(g,h,i)perylene  
 Concen: N.D. ug/mL  
 Expected RT: 21.20 min

Lab File: 3g09682.D  
 Acq: 15 Jun 12 3:05 pm

Tgt Ion	Sig	Exp Ratio
276	100	
138	23.6	
277	23.7	
274	21.4	

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\061512\  
 Data File : 3g09680.D  
 Acq On : 15 Jun 2012 1:53 pm  
 Operator : DONC  
 Sample : OP6068-MB  
 Misc : OP6068,E3G427,30.00,,,1,1  
 ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jun 15 15:36:17 2012  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G424.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Fri Jun 15 12:25:10 2012  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	6.483	136	296273	4.0000	ug/mL	0.00
6) Acenaphthene-d10	8.874	164	181310	4.0000	ug/mL	-0.01
14) Phenanthrene-d10	11.430	188	292218	4.0000	ug/mL	0.00
18) Chrysene-d12	16.481	240	282584	4.0000	ug/mL	-0.01
23) Perylene-d12	19.058	264	204851	4.0000	ug/mL	-0.01

## System Monitoring Compounds

2) Nitrobenzene-d5	5.772	82	1522481	37.0956	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	74.20%
7) 2-Fluorobiphenyl	7.870	172	2487390	42.2319	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	84.46%
20) Terphenyl-d14	14.540	244	2237399	45.1892	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	90.38%

## Target Compounds

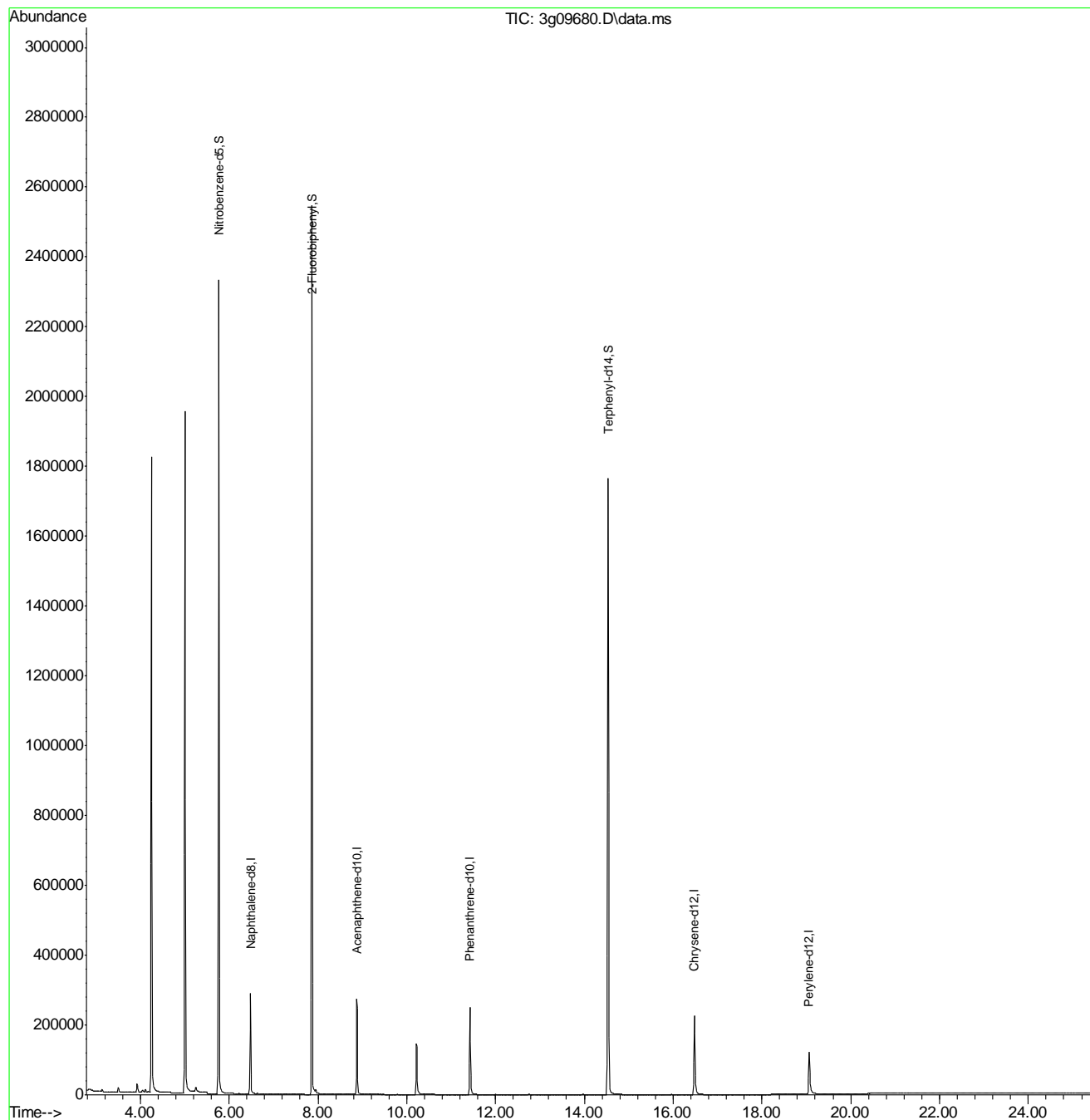
					Qvalue
3) N-Nitrosodimethylamine	0.000	74	0	N.D.	d
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	0.000	128	0	N.D.	d
8) 2-Methylnaphthalene	0.000	142	0	N.D.	d
9) 1-Methylnaphthalene	0.000	142	0	N.D.	d
10) Acenaphthylene	0.000	152	0	N.D.	d
11) Acenaphthene	0.000	154	0	N.D.	d
12) Fluorene	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	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	0.000	228	0	N.D.	d
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	0.000	276	0	N.D.	d

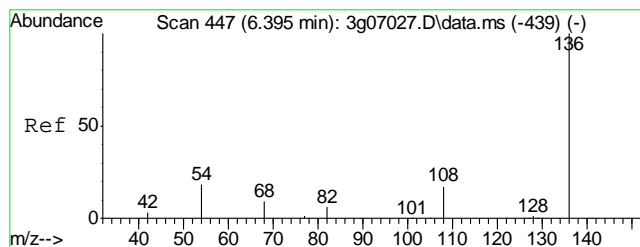
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\061512\  
Data File : 3g09680.D  
Acq On : 15 Jun 2012 1:53 pm  
Operator : DONC  
Sample : OP6068-MB  
Misc : OP6068,E3G427,30.00,,,1,1  
ALS Vial : 6 Sample Multiplier: 1

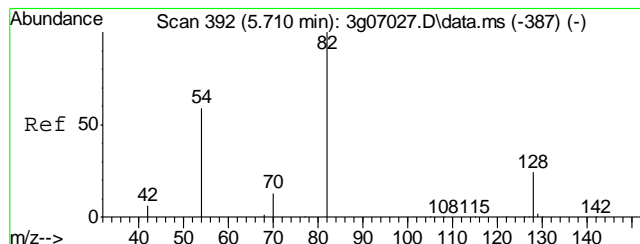
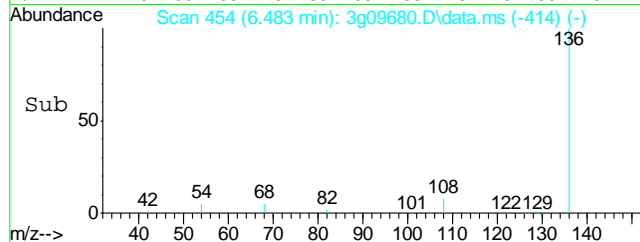
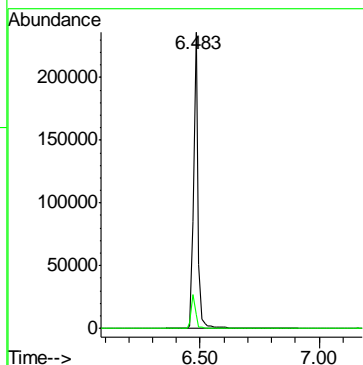
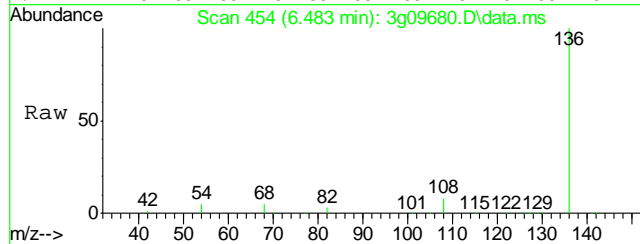
Quant Time: Jun 15 15:36:17 2012  
Quant Method : C:\msdchem\1\METHODS\SIMPE3G424.M  
Quant Title : PAHSIM BASE  
QLast Update : Fri Jun 15 12:25:10 2012  
Response via : Initial Calibration





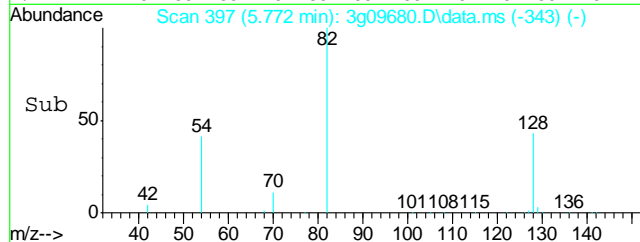
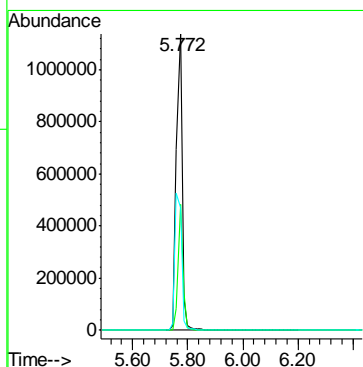
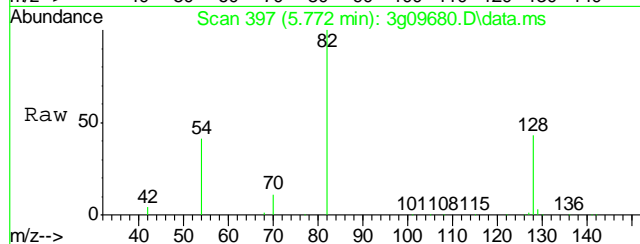
#1  
Naphthalene-d8  
Concen: 4.0000 ug/mL  
RT: 6.483 min Scan# 454  
Delta R.T. 0.000 min  
Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

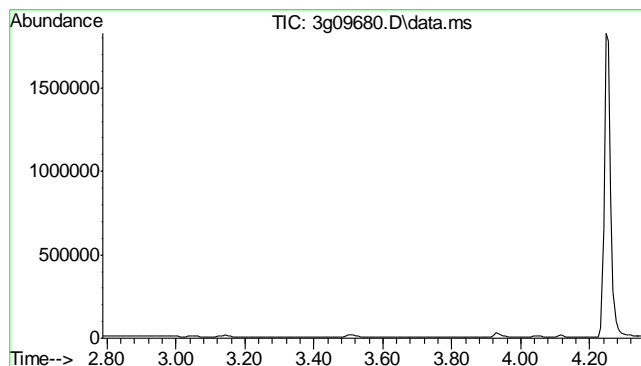
Tgt Ion: 136 Resp: 296273  
Ion Ratio Lower Upper  
136 100  
68 11.4 0.0 32.1



#2  
Nitrobenzene-d5  
Concen: 37.0956 ug/mL  
RT: 5.772 min Scan# 397  
Delta R.T. 0.000 min  
Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

Tgt Ion: 82 Resp: 1522481  
Ion Ratio Lower Upper  
82 100  
128 36.5 14.3 54.3  
54 53.6 38.1 78.1

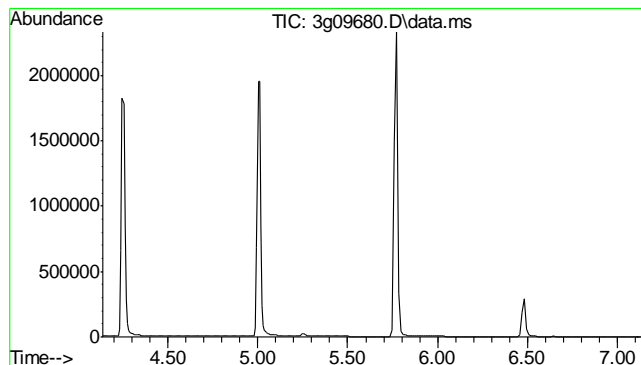
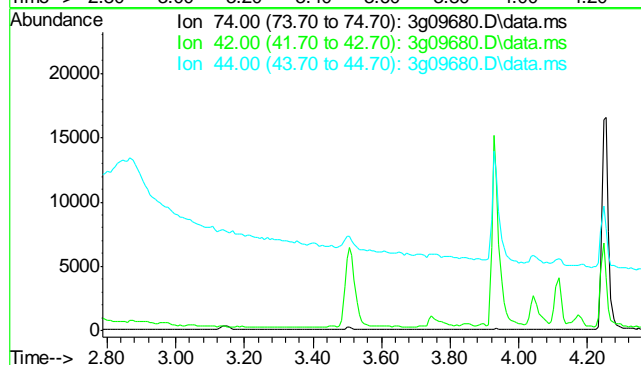




#3  
N-Nitrosodimethylamine  
Concen: N.D. ug/mL  
Expected RT: 2.85 min

Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

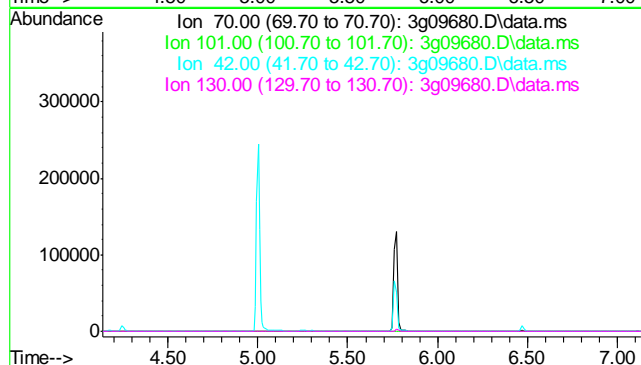
Tgt Ion:	74
Sig	Exp Ratio
74	100
42	65.5
44	9.6

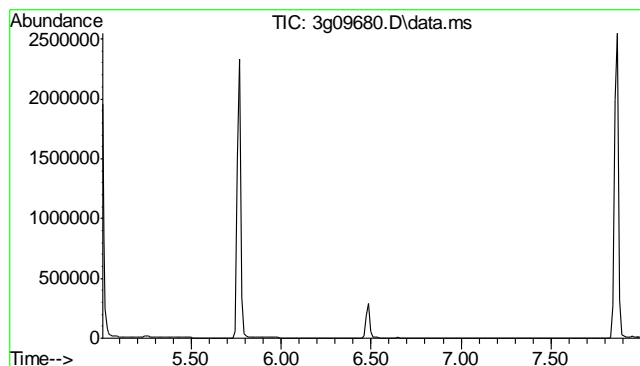


#4  
N-Nitrosodi-propylamine  
Concen: N.D. ug/mL  
Expected RT: 5.63 min

Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

Tgt Ion:	70
Sig	Exp Ratio
70	100
101	9.8
42	61.6
130	18.2

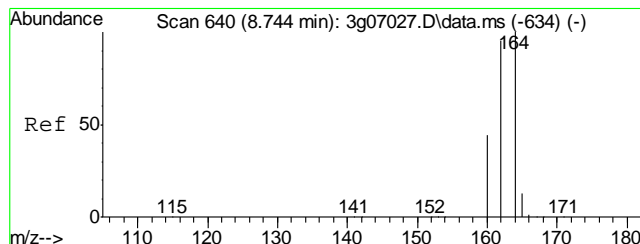
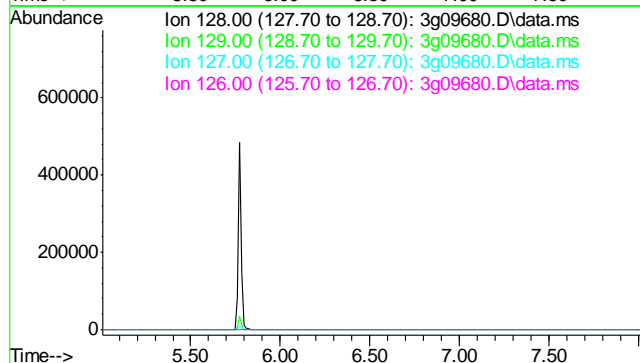




#5  
Naphthalene  
Concen: N.D. ug/mL  
Expected RT: 6.51 min

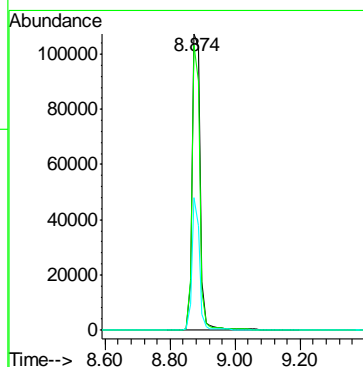
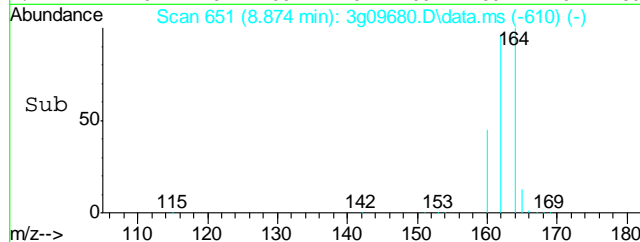
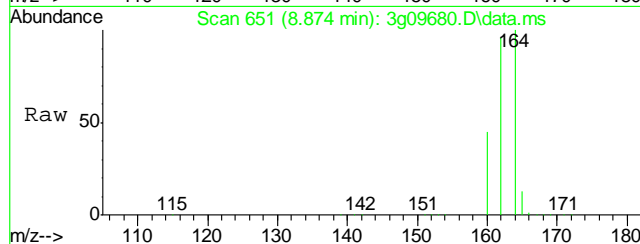
Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

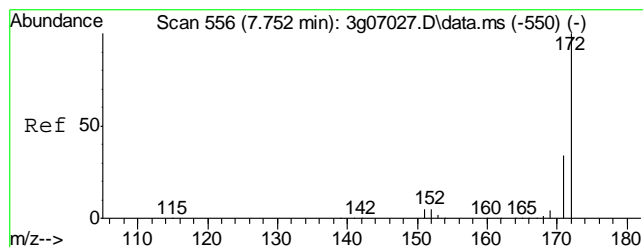
Tgt Ion: 128  
Sig Exp Ratio  
128 100  
129 10.8  
127 12.4  
126 7.7



#6  
Acenaphthene-d10  
Concen: 4.0000 ug/mL  
RT: 8.874 min Scan# 651  
Delta R.T. -0.012 min  
Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

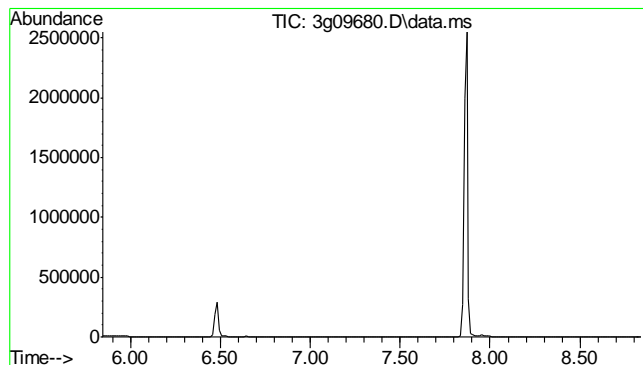
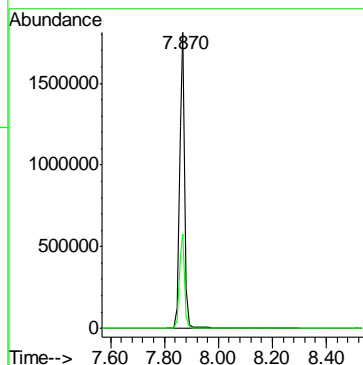
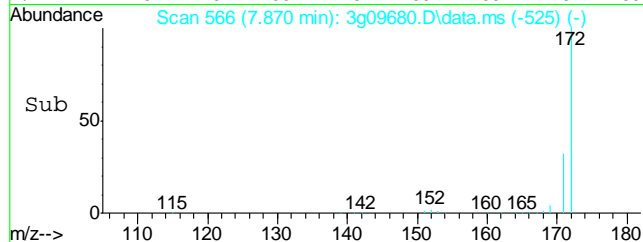
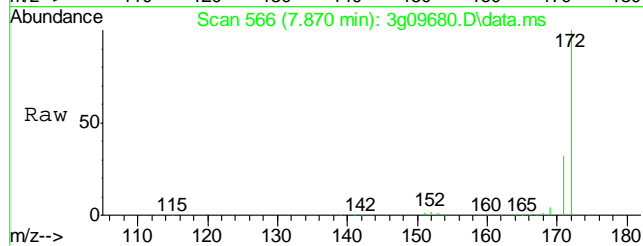
Tgt Ion: 164 Resp: 181310  
Ion Ratio Lower Upper  
164 100  
162 92.3 72.8 112.8  
160 41.3 22.3 62.3





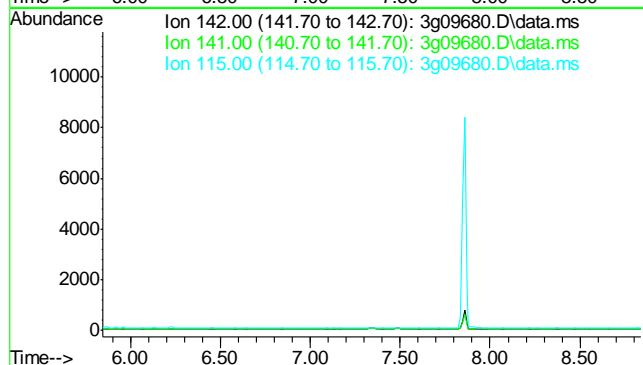
#7  
2-Fluorobiphenyl  
Concen: 42.2319 ug/mL  
RT: 7.870 min Scan# 566  
Delta R.T. 0.000 min  
Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

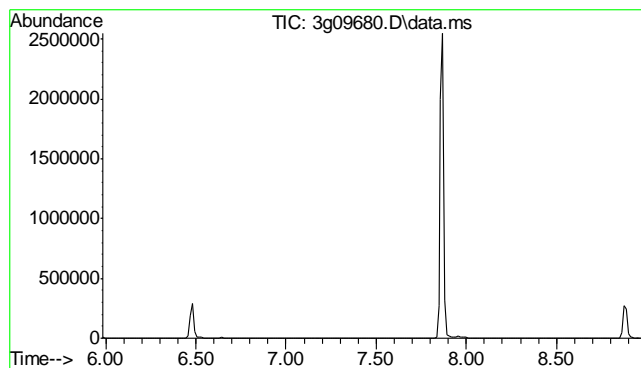
Tgt Ion: 172 Resp: 2487390  
Ion Ratio Lower Upper  
172 100  
171 33.4 13.3 53.3



#8  
2-Methylnaphthalene  
Concen: N.D. ug/mL  
Expected RT: 7.34 min  
Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

Tgt Ion: 142  
Sig Exp Ratio  
142 100  
141 83.5  
115 35.6

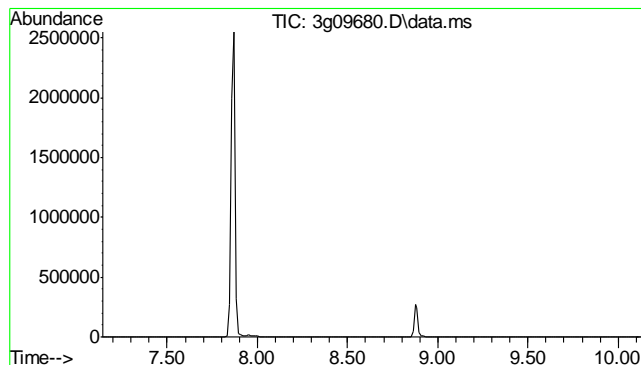
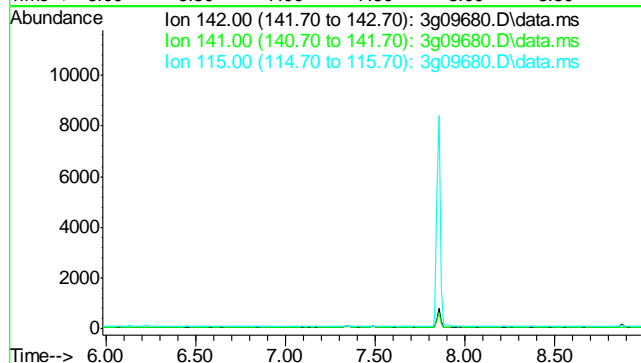




#9  
1-Methylnaphthalene  
Concen: N.D. ug/mL  
Expected RT: 7.48 min

Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

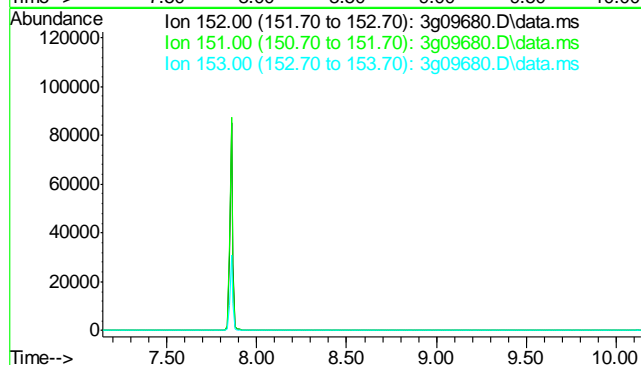
Tgt Ion:	142
Sig	Exp Ratio
142	100
141	86.5
115	37.1

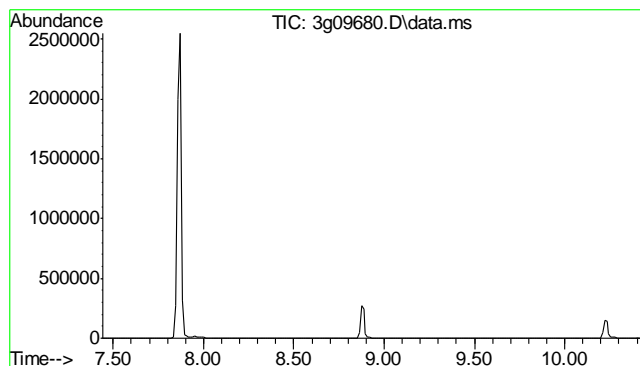


#10  
Acenaphthylene  
Concen: N.D. ug/mL  
Expected RT: 8.64 min

Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

Tgt Ion:	152
Sig	Exp Ratio
152	100
151	19.2
153	14.0

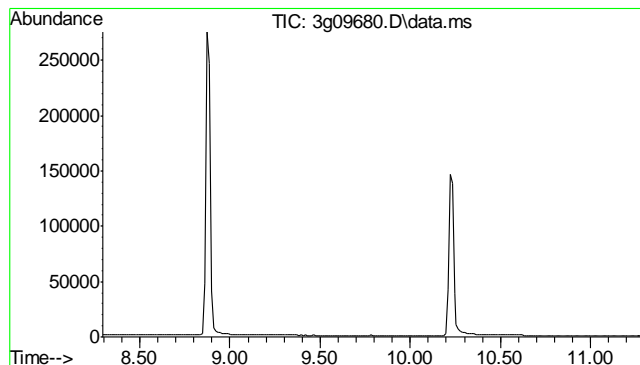
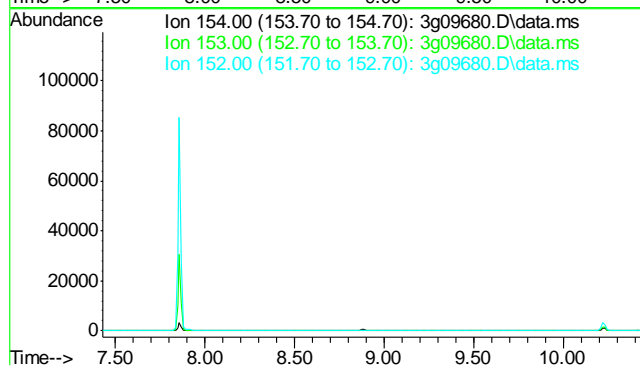




#11  
Acenaphthene  
Concen: N.D. ug/mL  
Expected RT: 8.93 min

Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

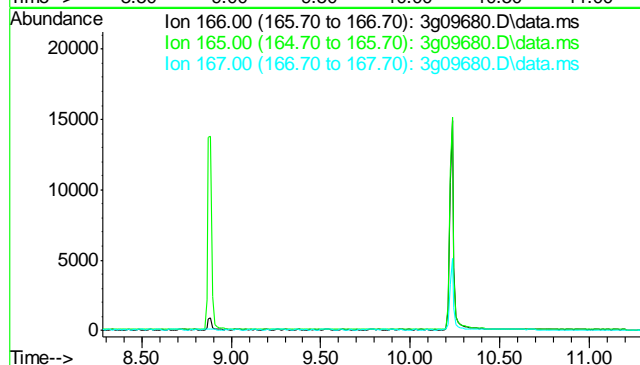
Tgt Ion:	154
Sig	Exp Ratio
154	100
153	104.9
152	47.2

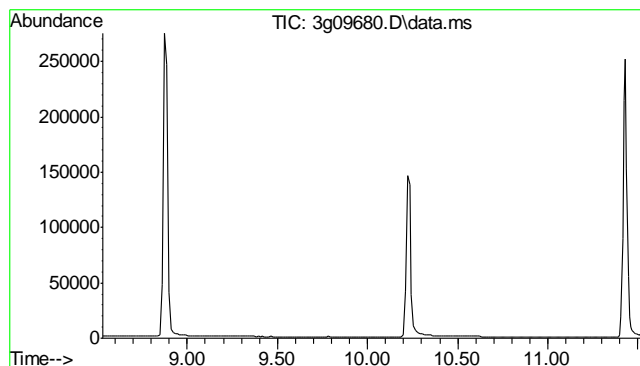


#12  
Fluorene  
Concen: N.D. ug/mL  
Expected RT: 9.78 min

Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

Tgt Ion:	166
Sig	Exp Ratio
166	100
165	91.4
167	13.2

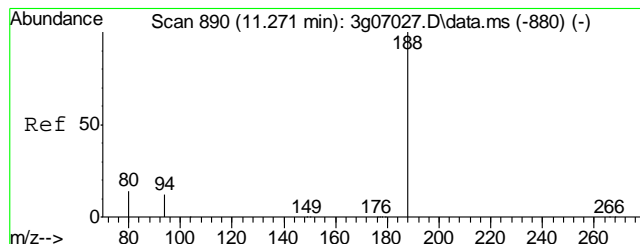
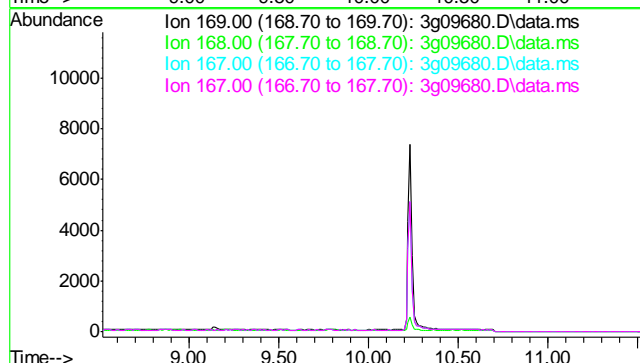




#13  
Diphenylamine  
Concen: N.D. ug/mL  
Expected RT: 10.02 min

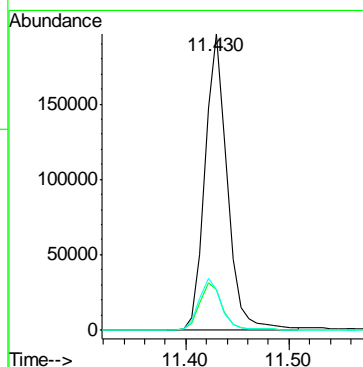
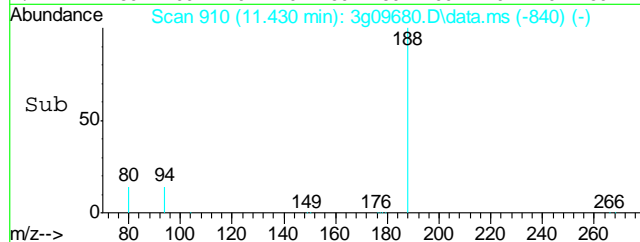
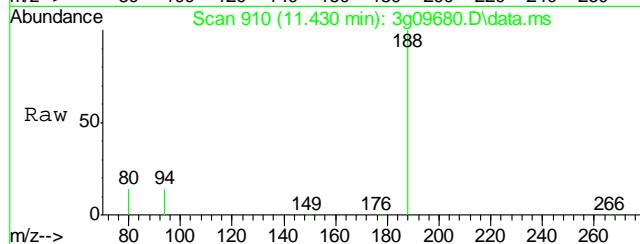
Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

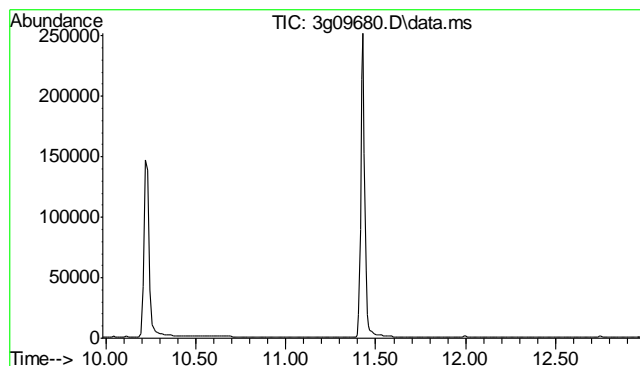
Tgt Ion: 169  
Sig Exp Ratio  
169 100  
168 61.6  
167 33.3  
167 33.3



#14  
Phenanthrene-d10  
Concen: 4.0000 ug/mL  
RT: 11.430 min Scan# 910  
Delta R.T. 0.000 min  
Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

Tgt Ion: 188 Resp: 292218  
Ion Ratio Lower Upper  
188 100  
94 16.4 0.0 36.4  
80 18.0 0.0 38.0

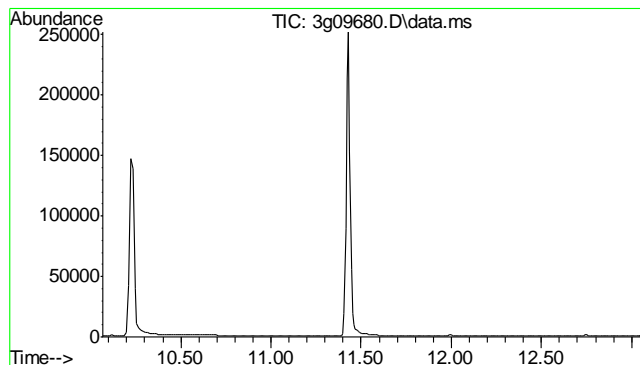
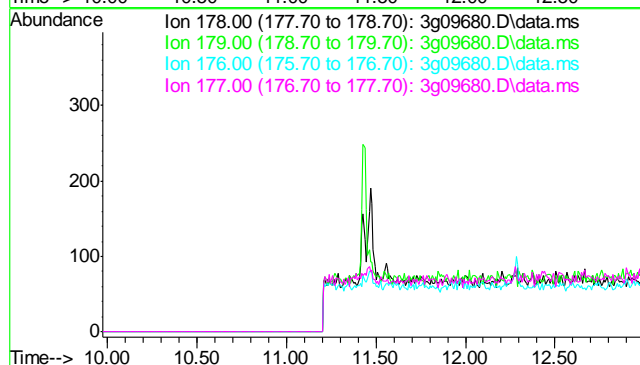




#15  
Phenanthrene  
Concen: N.D. ug/mL  
Expected RT: 11.48 min

Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

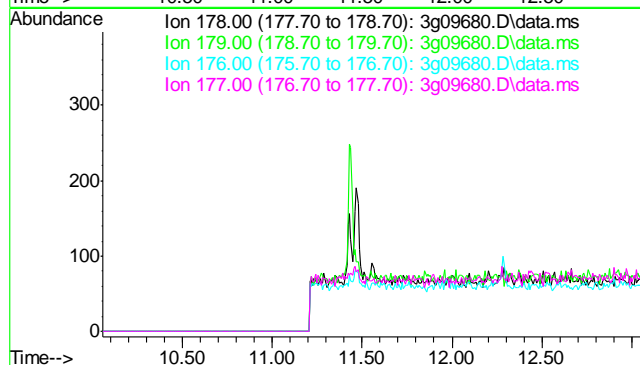
Tgt Ion:	178
Sig	Exp Ratio
178	100
179	15.0
176	18.8
177	10.3

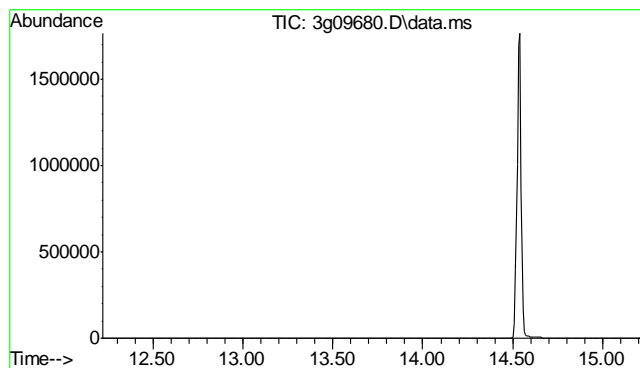


#16  
Anthracene  
Concen: N.D. ug/mL  
Expected RT: 11.56 min

Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

Tgt Ion:	178
Sig	Exp Ratio
178	100
179	14.9
176	18.0
177	8.7

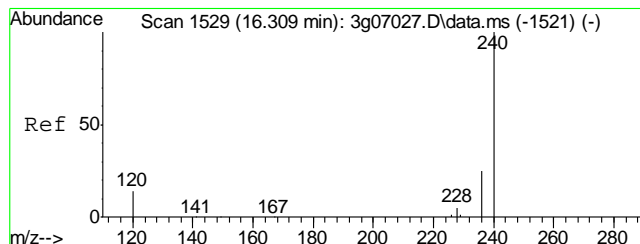
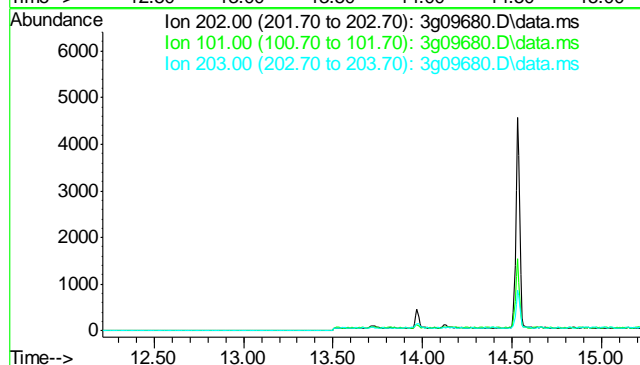




#17  
Fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 13.72 min

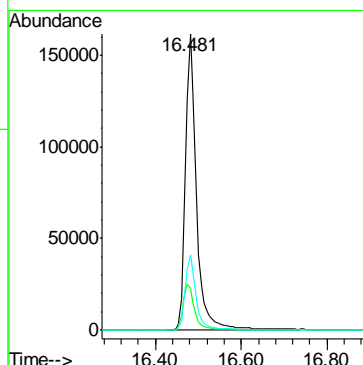
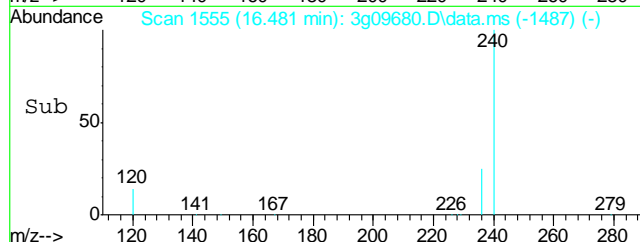
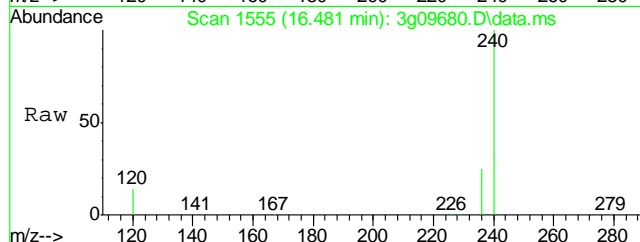
Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

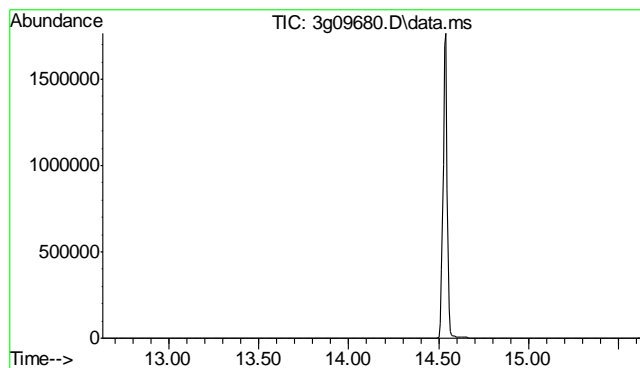
Tgt Ion: 202  
Sig Exp Ratio  
202 100  
101 15.6  
203 17.2



#18  
Chrysene-d12  
Concen: 4.0000 ug/mL  
RT: 16.481 min Scan# 1555  
Delta R.T. -0.013 min  
Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

Tgt Ion: 240 Resp: 282584  
Ion Ratio Lower Upper  
240 100  
120 16.0 0.0 34.7  
236 25.2 4.7 44.7

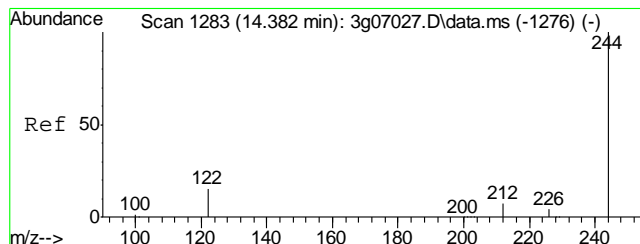
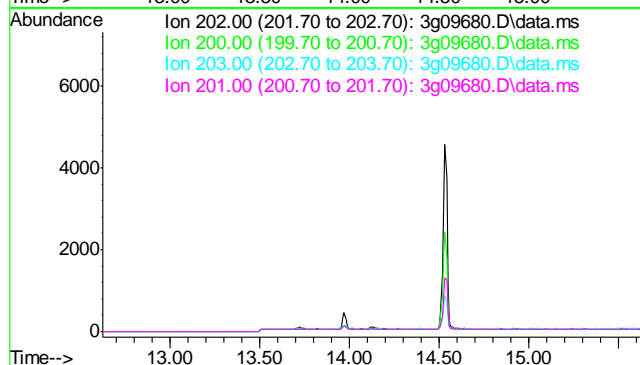




#19  
Pyrene  
Concen: N.D. ug/mL  
Expected RT: 14.13 min

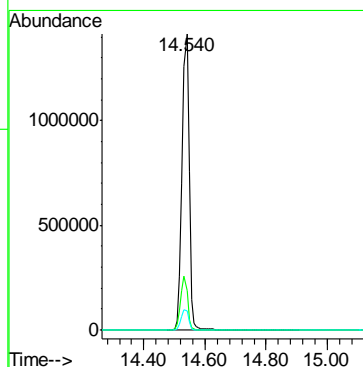
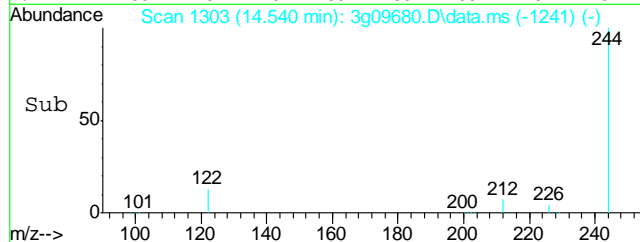
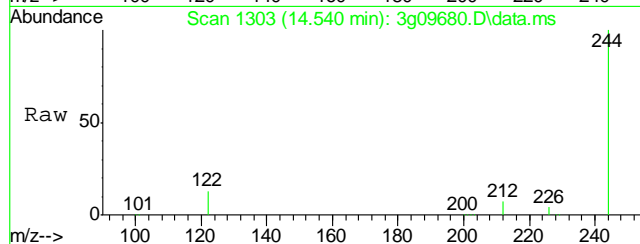
Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

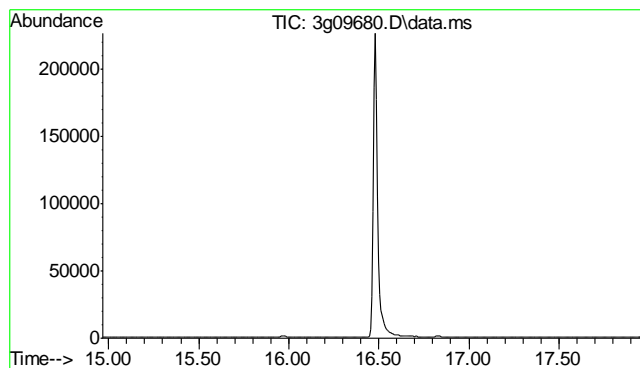
Tgt Ion:	202
Sig	Exp Ratio
202	100
200	20.3
203	17.7
201	16.7



#20  
Terphenyl-d14  
Concen: 45.1892 ug/mL  
RT: 14.540 min Scan# 1303  
Delta R.T. -0.008 min  
Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

Tgt Ion:	244	Resp:	2237399
Ion	Ratio	Lower	Upper
244	100		
122	17.7	0.0	35.5
212	7.1	0.0	26.6

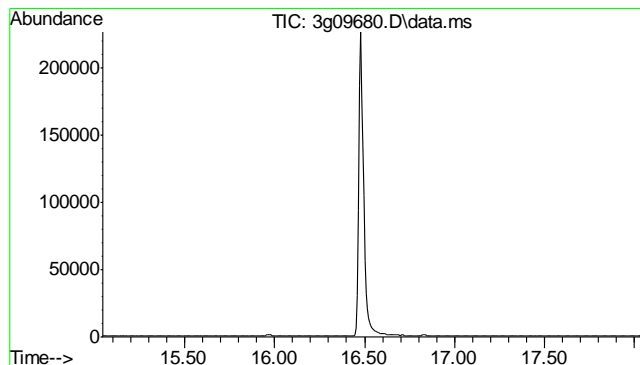
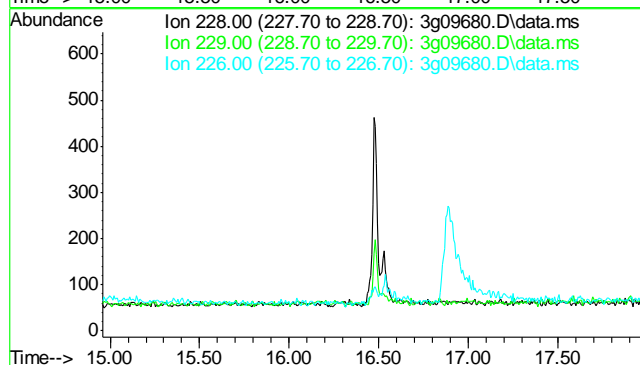




#21  
Benzo(a)anthracene  
Concen: N.D. ug/mL  
Expected RT: 16.46 min

Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

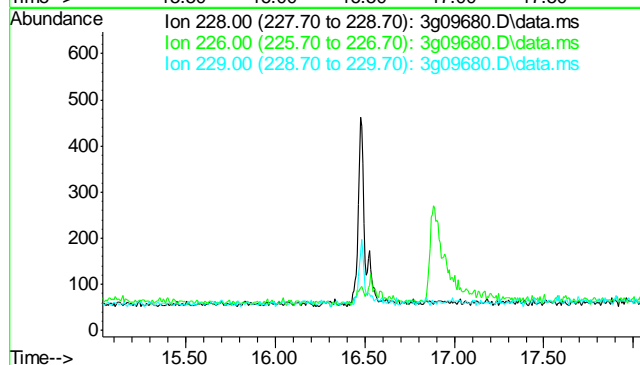
Tgt Ion:	228
Sig	Exp Ratio
228	100
229	19.5
226	26.1

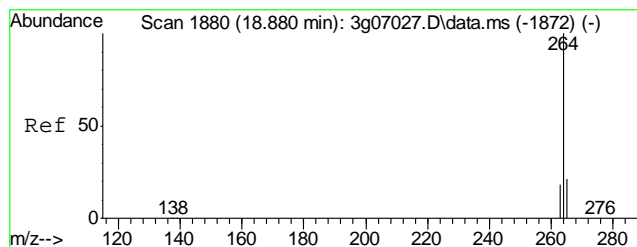


#22  
Chrysene  
Concen: N.D. ug/mL  
Expected RT: 16.54 min

Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

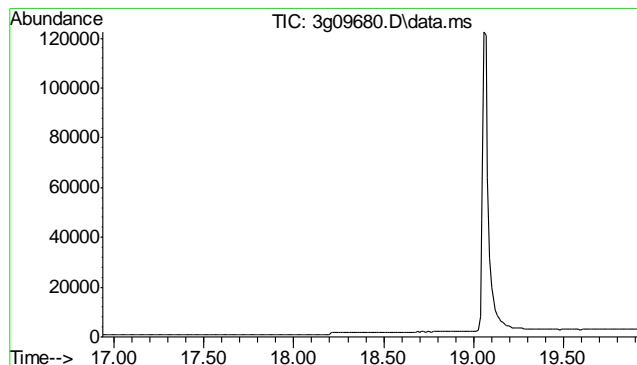
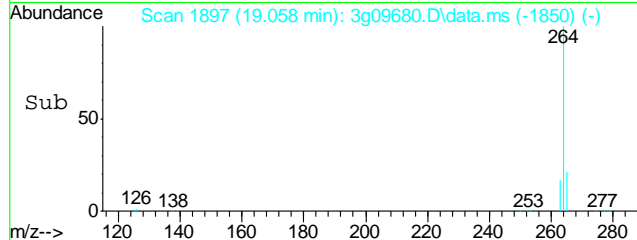
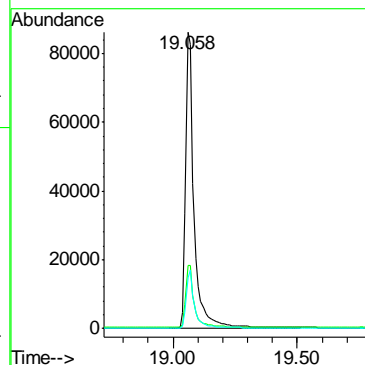
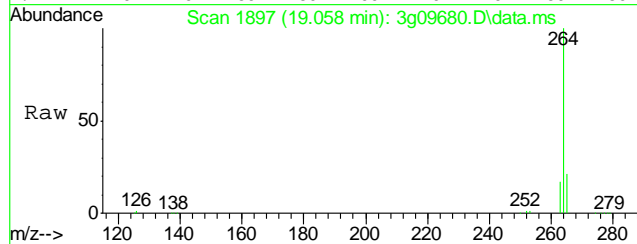
Tgt Ion:	228
Sig	Exp Ratio
228	100
226	28.2
229	18.9





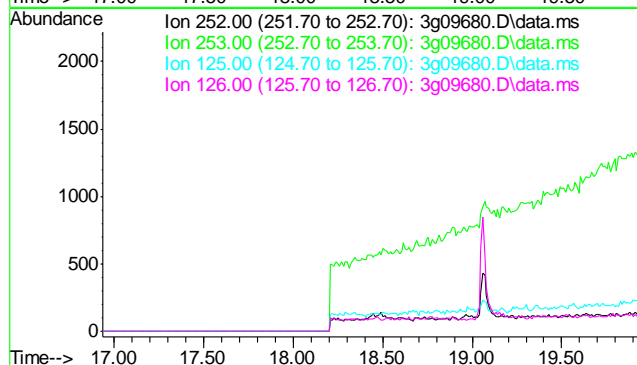
#23  
Perylene-d12  
Concen: 4.0000 ug/mL  
RT: 19.058 min Scan# 1897  
Delta R.T. -0.010 min  
Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

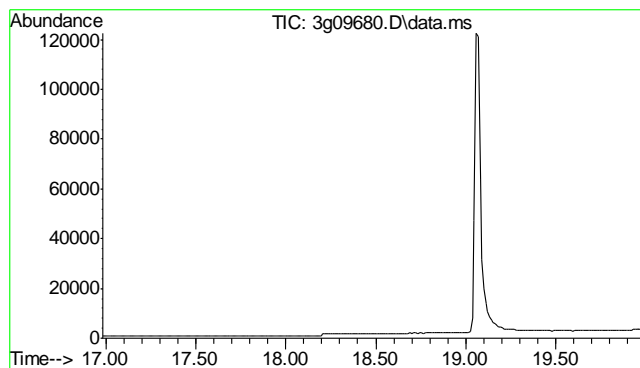
Tgt Ion:	264	Resp:	204851
Ion Ratio	Lower	Upper	
264	100		
265	21.3	0.7	40.7
263	18.9	0.0	39.1



#24  
Benzo(b)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 18.44 min  
Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

Tgt Ion:	252
Sig	Exp Ratio
252	100
253	21.4
125	12.2
126	16.9

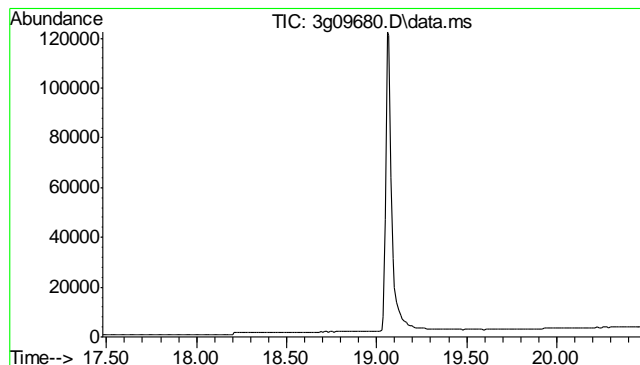
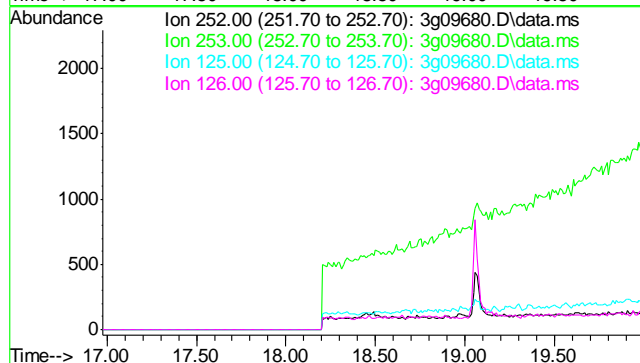




#25  
Benzo(k)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 18.48 min

Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

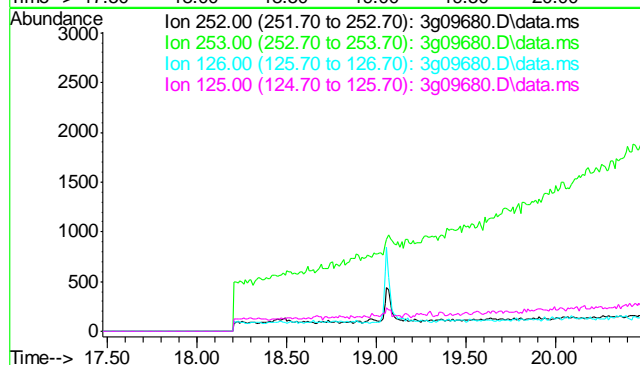
Tgt Ion: 252	
Sig	Exp Ratio
252	100
253	21.7
125	10.4
126	16.1

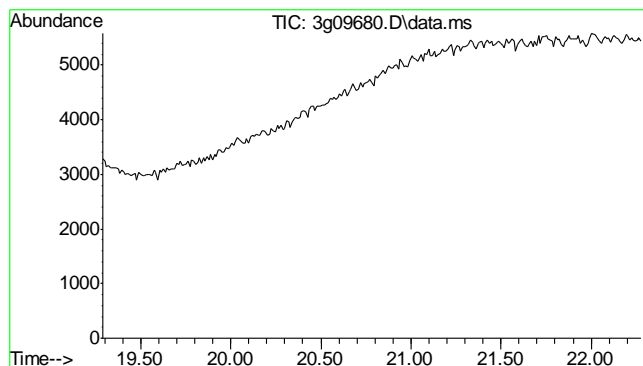


#26  
Benzo(a)pyrene  
Concen: N.D. ug/mL  
Expected RT: 18.97 min

Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

Tgt Ion: 252	
Sig	Exp Ratio
252	100
253	21.5
126	16.6
125	12.0

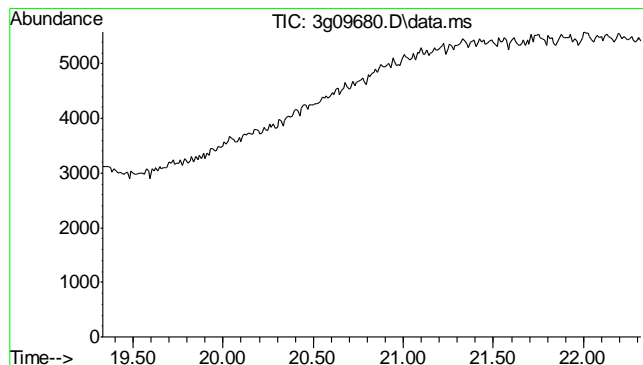
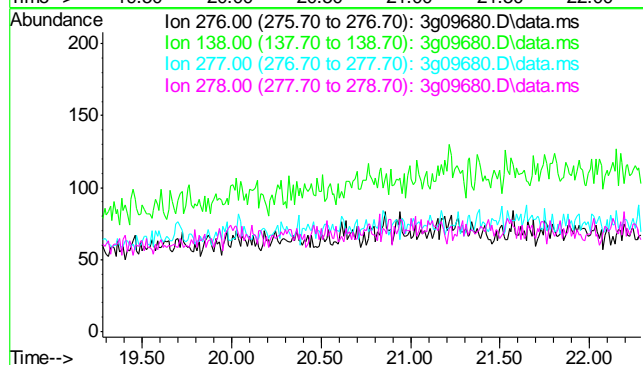




#27  
Indeno(1,2,3-cd)pyrene  
Concen: N.D. ug/mL  
Expected RT: 20.78 min

Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

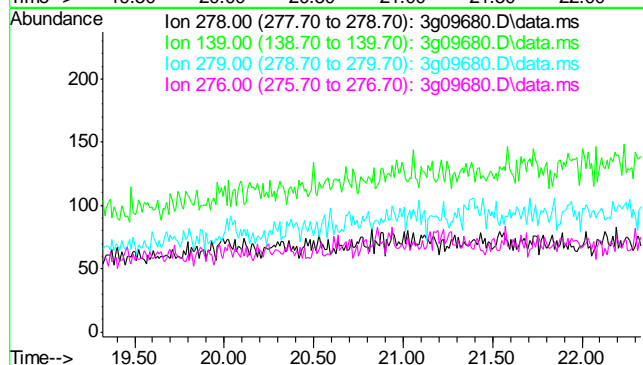
Tgt Ion:	276
Sig	Exp Ratio
276	100
138	26.6
277	24.8
278	78.2

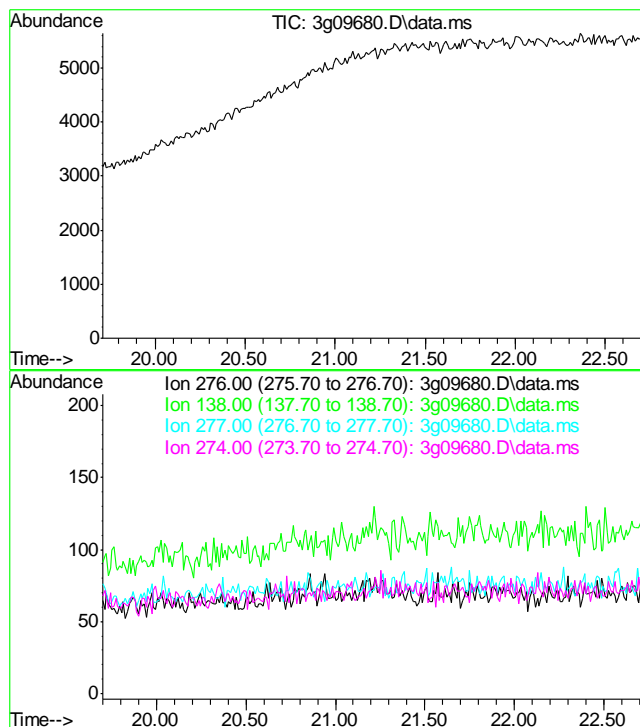


#28  
Dibenz(a,h)anthracene  
Concen: N.D. ug/mL  
Expected RT: 20.83 min

Lab File: 3g09680.D  
Acq: 15 Jun 12 1:53 pm

Tgt Ion:	278
Sig	Exp Ratio
278	100
139	18.4
279	23.4
276	127.9





#29

Benzo(g,h,i)perylene

Concen: N.D. ug/mL

Expected RT: 21.20 min

Lab File: 3g09680.D

Acq: 15 Jun 12 1:53 pm

Tgt Ion: 276

Sig Exp Ratio

276 100

138 23.6

277 23.7

274 21.4

8.2.1

8

## GC Volatiles

### QC Data Summaries

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**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: D35489

Account: XTOKRWR XTO Energy

Project: FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB907-MB	GB16328.D	1	06/14/12	SK	n/a	n/a	GGB907

The QC reported here applies to the following samples:

Method: SW846 8015B

D35489-1

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: D35489  
Account: XTOKRWR XTO Energy  
Project: FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB907-BS	GB16329.D	1	06/14/12	SK	n/a	n/a	GGB907

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

D35489-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	128	116	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	100%	60-140%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D35489  
Account: XTOKRWR XTO Energy  
Project: FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D35344-1MS	GB16331.D	1	06/14/12	SK	n/a	n/a	GGB907
D35344-1MSD	GB16332.D	1	06/14/12	SK	n/a	n/a	GGB907
D35344-1	GB16330.D	1	06/14/12	SK	n/a	n/a	GGB907

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

D35489-1

CAS No.	Compound	D35344-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	63.2		140	219	111	215	108	2	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D35344-1	Limits
120-82-1	1,2,4-Trichlorobenzene	90%	91%	86%	60-140%

## GC Volatiles

## Raw Data

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\061412\GB16345.D\FID1A.CH Vial: 21  
Signal #2 : Y:\1\DATA\061412\GB16345.D\FID2B.CH  
Acq On : 14 Jun 2012 9:08 pm Operator: StephK  
Sample : D35489-1, 50X Inst : GC/MS Ins  
Misc : GC2911,GGB907,5.069,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Jun 15 08:54:32 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Fri Jun 15 08:54:07 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

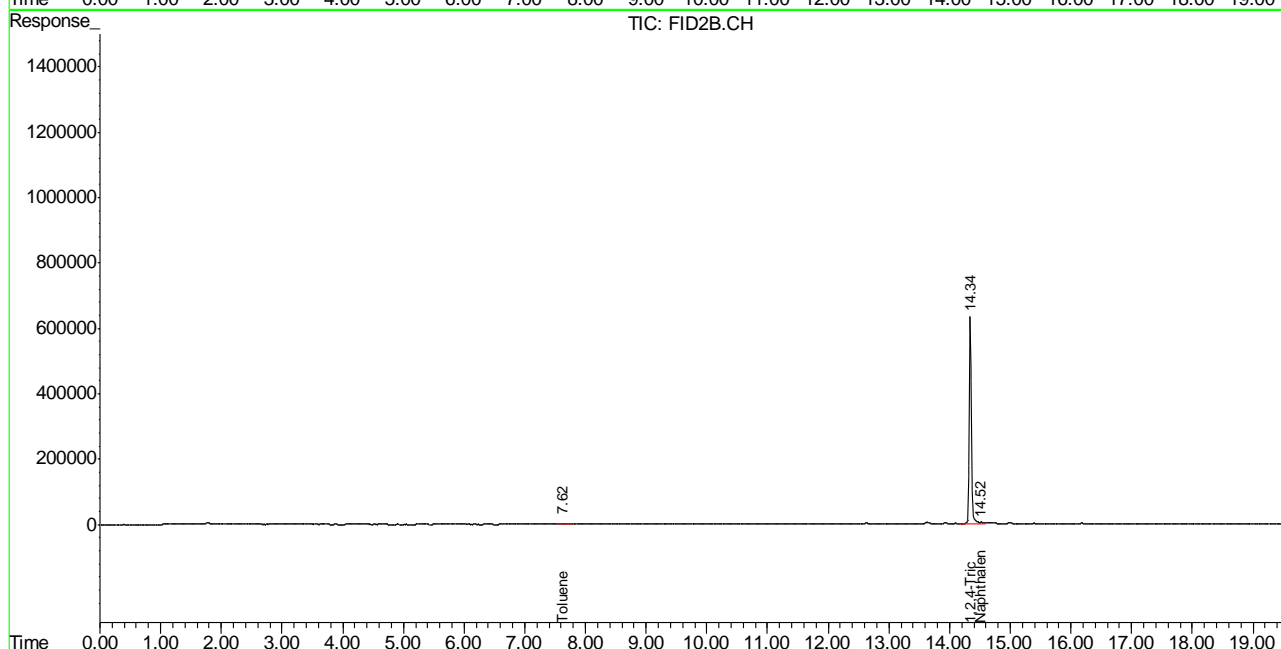
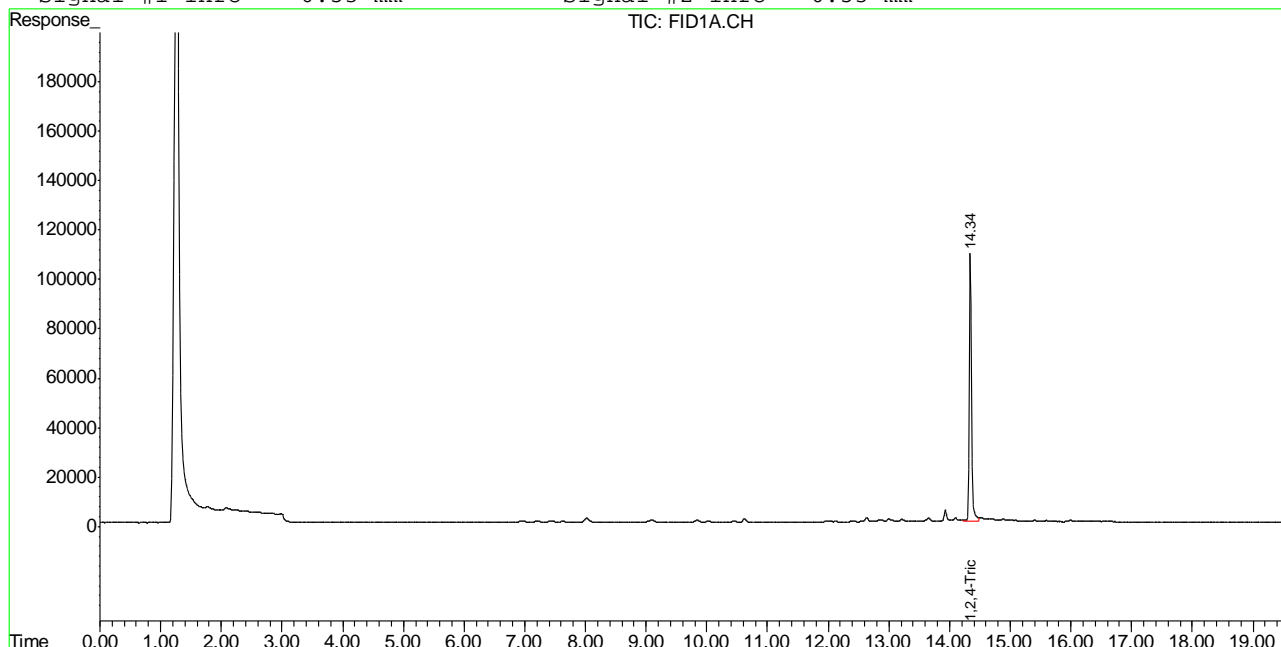
Compound	R.T.	Response	Conc	Units
-----				
System Monitoring Compounds				
2) S 1,2,4-Trichlorobenzene	14.34	2747015	87.669 %	m
10) S 1,2,4-Trichlorobenzene (P)	14.34	15481947	95.257 %	
Target Compounds				
1) H TVH-Gasoline	7.23	4712518	<MDL	mg/L
4) T Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T Benzene	0.00	0	N.D.	ug/L d
6) T Toluene	7.62	117331	0.296	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	14.52	228636	1.159	ug/L

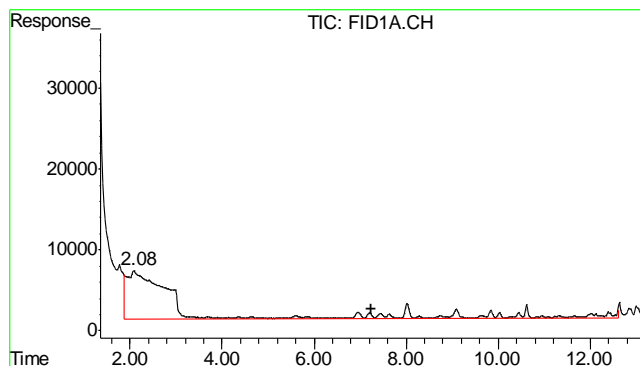
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\061412\GB16345.D\FID1A.CH Vial: 21  
 Signal #2 : Y:\1\DATA\061412\GB16345.D\FID2B.CH  
 Acq On : 14 Jun 2012 9:08 pm Operator: StephK  
 Sample : D35489-1, 50X Inst : GC/MS Ins  
 Misc : GC2911,GGB907,5.069,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Jun 15 8:00 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Fri Jun 15 08:54:07 2012  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TVB4.M

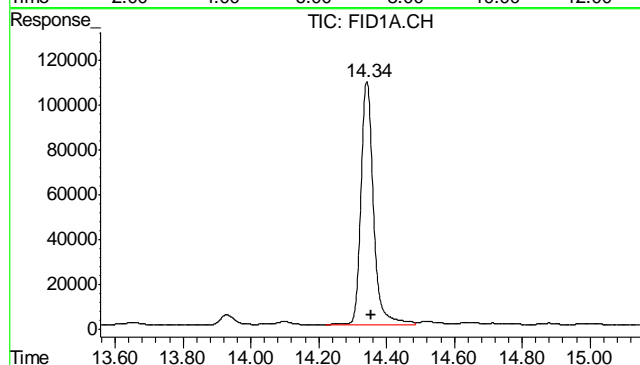
Volume Inj. :  
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





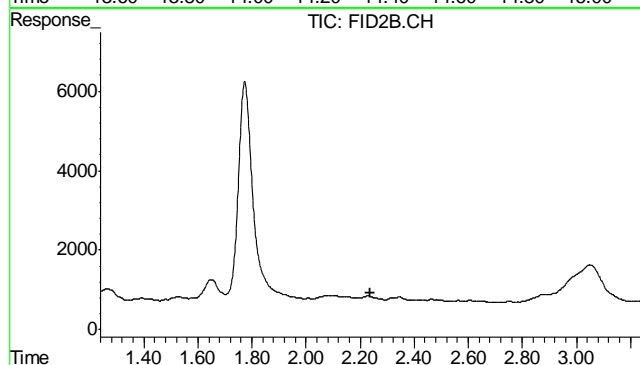
#1 TVH-Gasoline

R.T.: 7.230 min  
Delta R.T.: 0.000 min  
Response: 4712518  
Conc: N.D.



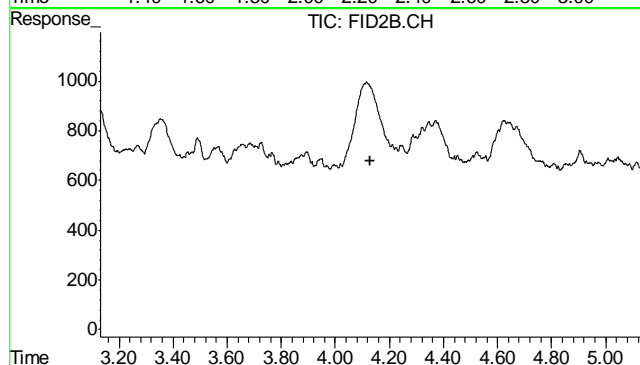
#2 1,2,4-Trichlorobenzene

R.T.: 14.342 min  
Delta R.T.: -0.013 min  
Response: 2747015  
Conc: 87.67 % m



#4 Methyl-t-butyl-ether

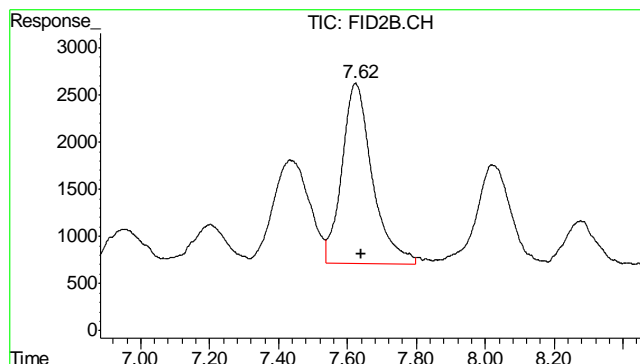
R.T.: 0.000 min  
Exp R.T.: 2.239 min  
Response: 0  
Conc: N.D.



#5 Benzene

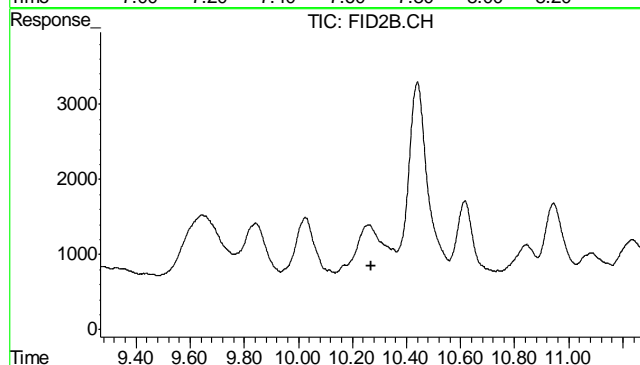
R.T.: 0.000 min  
Exp R.T.: 4.131 min  
Response: 0  
Conc: N.D.

10.1.1  
10



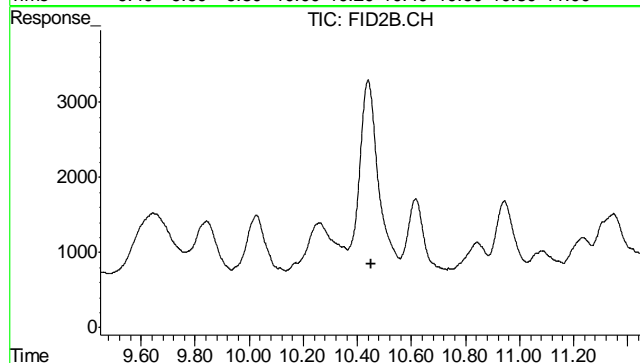
#6 Toluene

R.T.: 7.624 min  
Delta R.T.: -0.014 min  
Response: 117331  
Conc: 0.30 ug/L



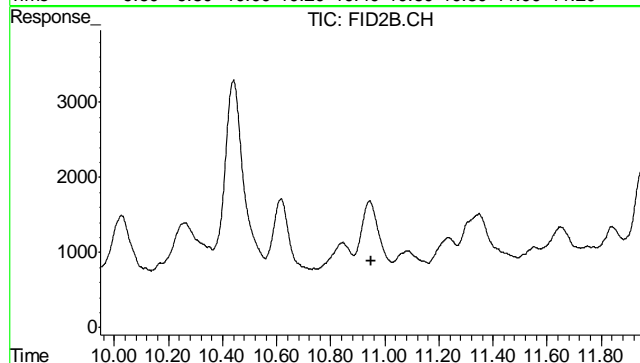
#7 Ethylbenzene

R.T.: 0.000 min  
Exp R.T.: 10.268 min  
Response: 0  
Conc: N.D.



#8 m,p-Xylene

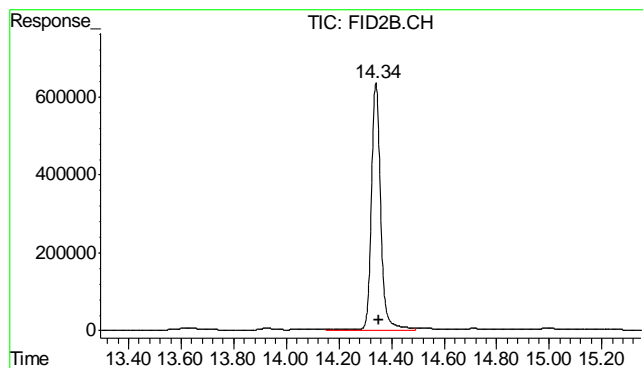
R.T.: 0.000 min  
Exp R.T.: 10.450 min  
Response: 0  
Conc: N.D.



#9 o-Xylene

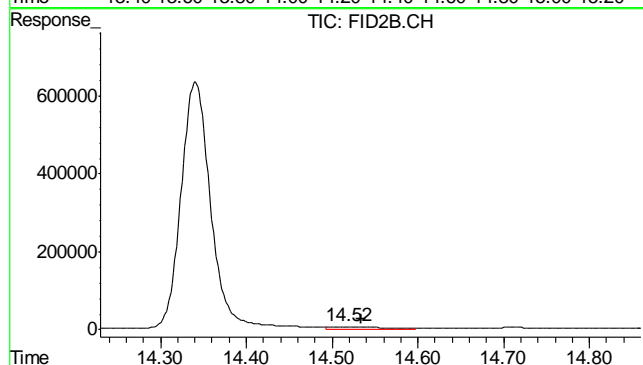
R.T.: 0.000 min  
Exp R.T.: 10.948 min  
Response: 0  
Conc: N.D.

10.1.1  
10



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

R.T.: 14.341 min  
 Delta R.T.: -0.012 min  
 Response: 15481947  
 Conc: 95.26 %



#11 Naphthalene

R.T.: 14.518 min  
 Delta R.T.: -0.017 min  
 Response: 228636  
 Conc: 1.16 ug/L

10.1.1  
10

## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\061412\GB16328.D\FID1A.CH Vial: 4  
Signal #2 : Y:\1\DATA\061412\GB16328.D\FID2B.CH  
Acq On : 14 Jun 2012 11:06 am Operator: StephK  
Sample : MB Inst : GC/MS Ins  
Misc : GC2911,GGB907,5.000,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Jun 14 11:38:19 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Wed Jun 13 13:43:02 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	14.33	2809092	89.650	%
10) S	1,2,4-Trichlorobenzene (P)	14.33	15959745	98.197	%
Target Compounds					
1) H	TVH-Gasoline	7.23	5311946	<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	7.60	168268	0.425	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	14.51	224643	1.139	ug/L

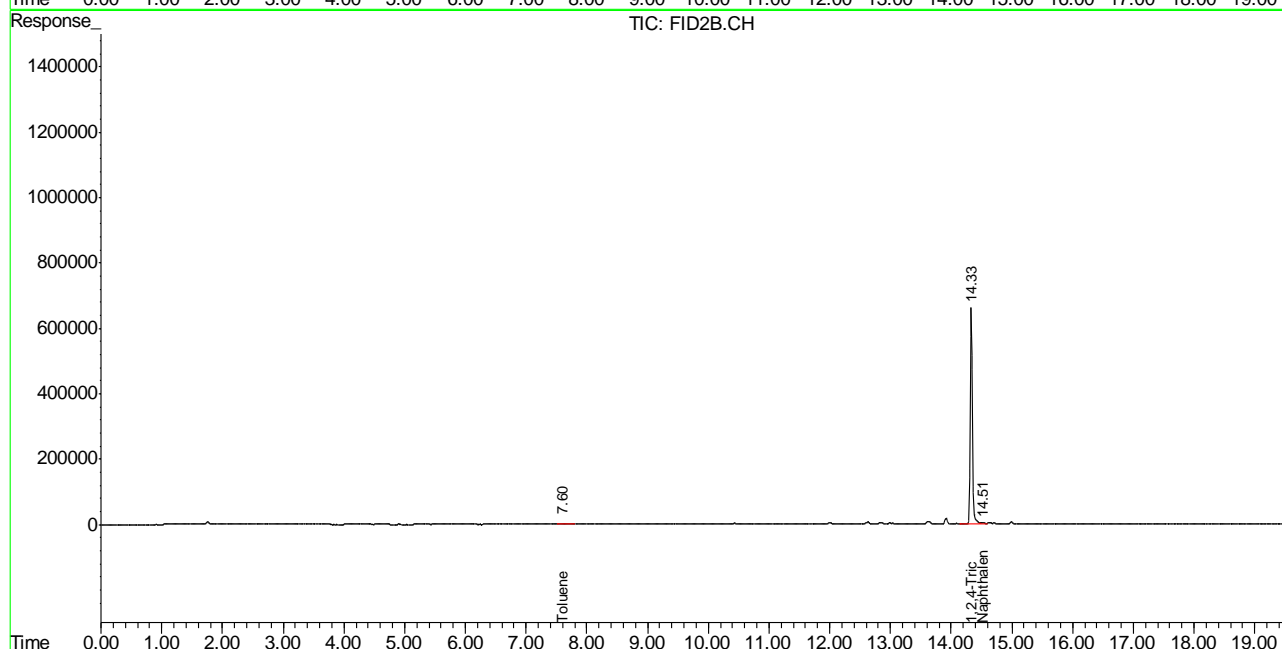
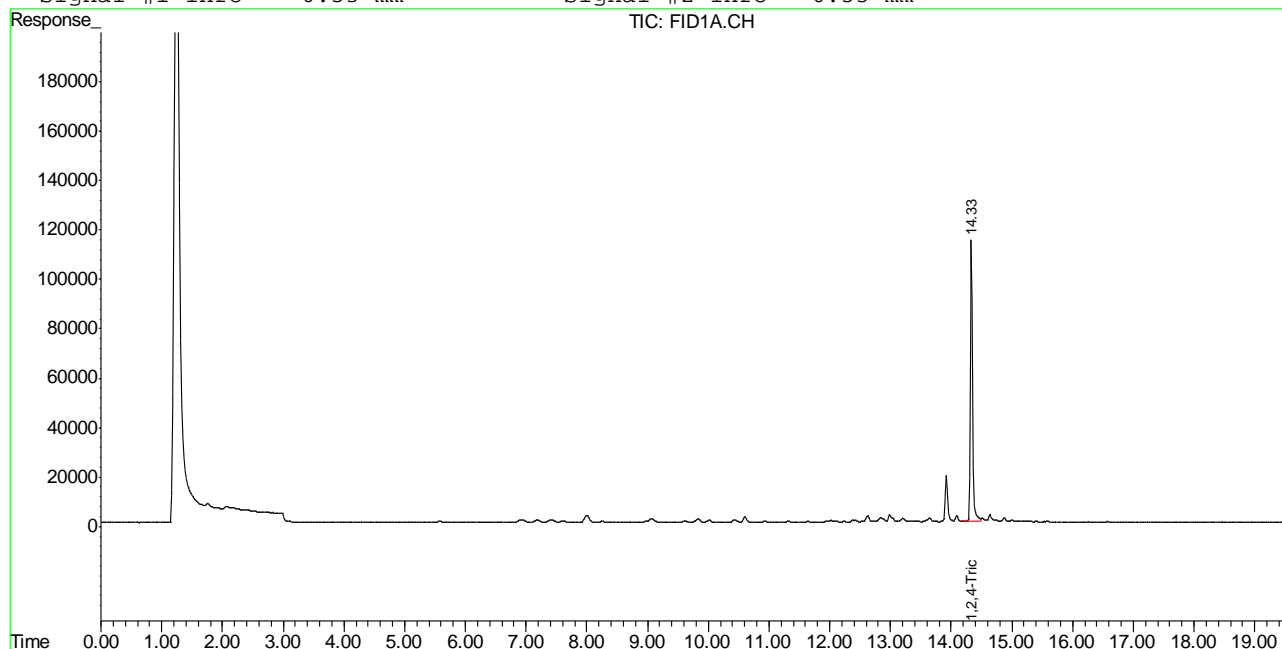
-----  
(f)=RT Delta > 1/2 Window (m)=manual int.  
GB16328.D TB868GB868SOIL.M Fri Jun 15 09:02:01 2012 GC

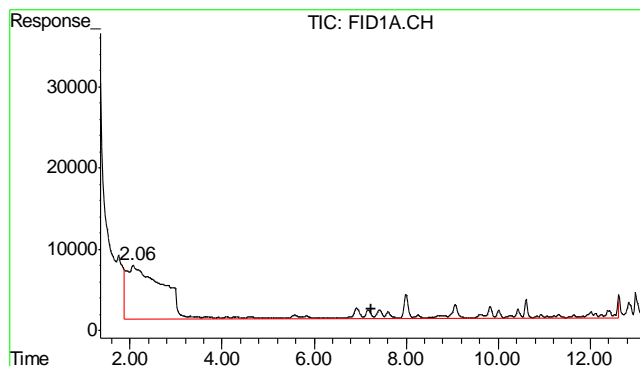
## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\061412\GB16328.D\FID1A.CH Vial: 4  
Signal #2 : Y:\1\DATA\061412\GB16328.D\FID2B.CH  
Acq On : 14 Jun 2012 11:06 am Operator: StephK  
Sample : MB Inst : GC/MS Ins  
Misc : GC2911,GGB907,5.000,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Jun 14 10:41 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Wed Jun 13 13:43:02 2012  
Response via : Multiple Level Calibration  
DataAcq Meth : TVB4.M

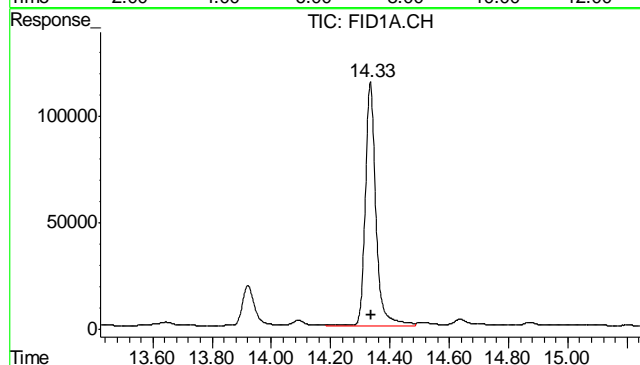
Volume Inj. :  
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





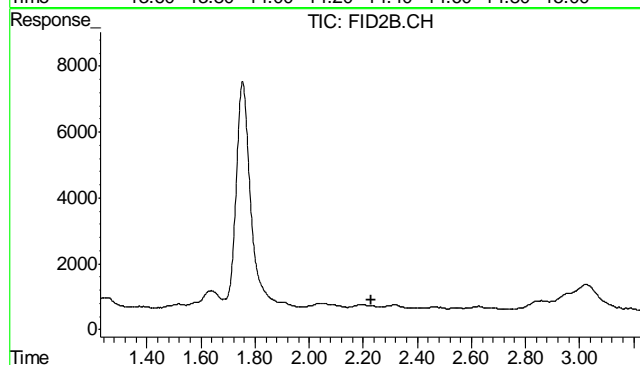
#1 TVH-Gasoline

R.T.: 7.230 min  
Delta R.T.: 0.000 min  
Response: 5311946  
Conc: N.D.



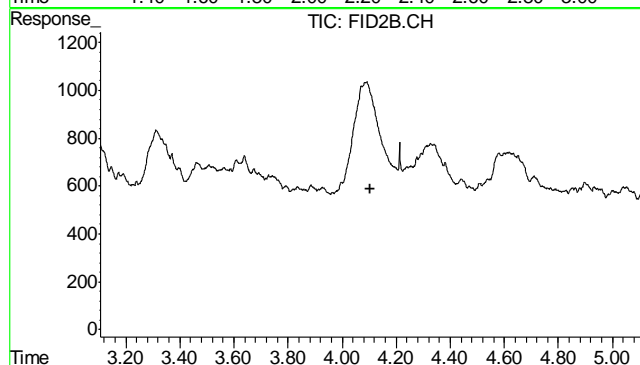
#2 1,2,4-Trichlorobenzene

R.T.: 14.334 min  
Delta R.T.: -0.003 min  
Response: 2809092  
Conc: 89.65 %



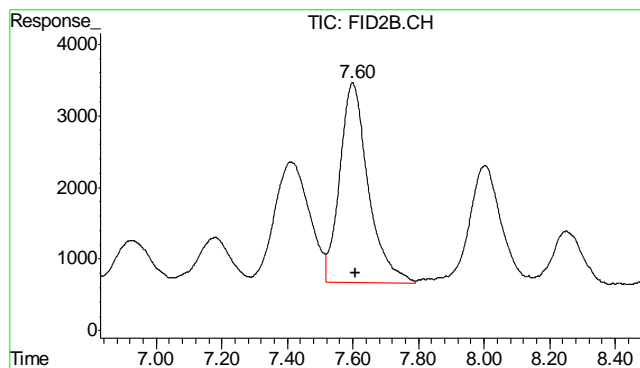
#4 Methyl-t-butyl-ether

R.T.: 0.000 min  
Exp R.T.: 2.228 min  
Response: 0  
Conc: N.D.



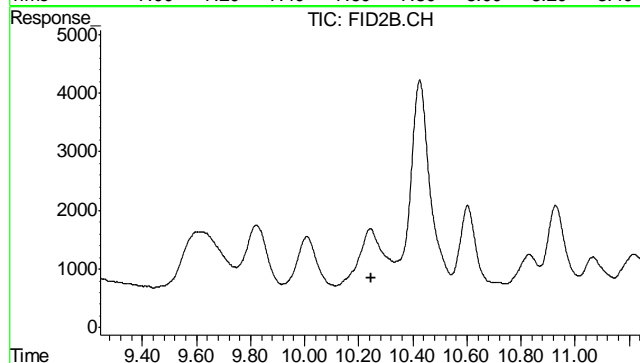
#5 Benzene

R.T.: 0.000 min  
Exp R.T.: 4.105 min  
Response: 0  
Conc: N.D.



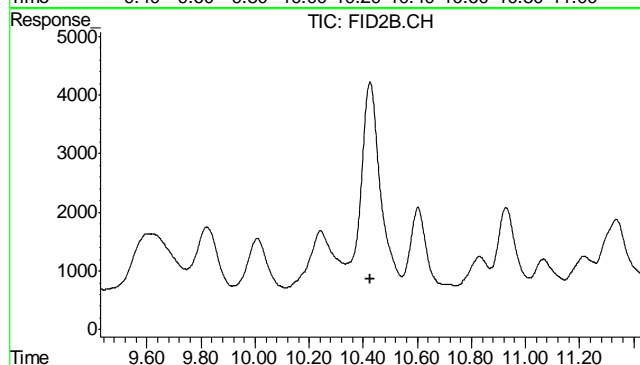
#6 Toluene

R.T.: 7.599 min  
Delta R.T.: -0.011 min  
Response: 168268  
Conc: 0.42 ug/L



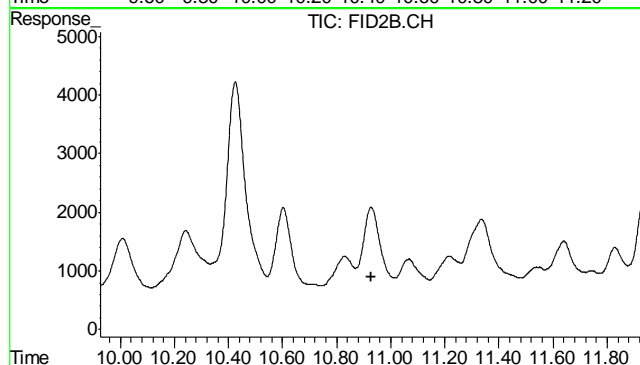
#7 Ethylbenzene

R.T.: 0.000 min  
Exp R.T.: 10.245 min  
Response: 0  
Conc: N.D.



#8 m,p-Xylene

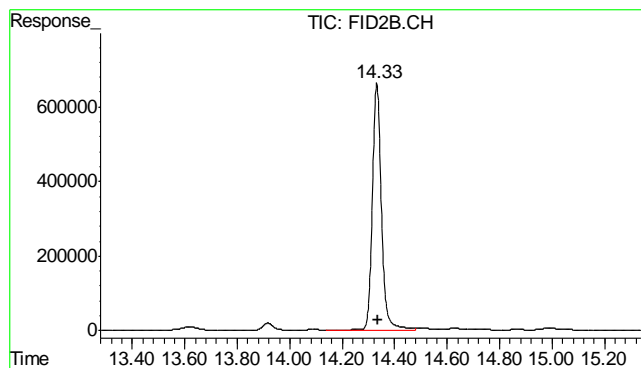
R.T.: 0.000 min  
Exp R.T.: 10.427 min  
Response: 0  
Conc: N.D.



#9 o-Xylene

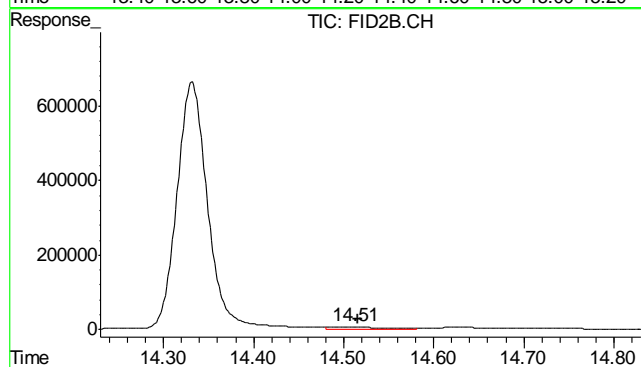
R.T.: 0.000 min  
Exp R.T.: 10.926 min  
Response: 0  
Conc: N.D.

10.2.1 10



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

R.T.: 14.332 min  
Delta R.T.: -0.003 min  
Response: 15959745  
Conc: 98.20 %



#11 Naphthalene

R.T.: 14.510 min  
Delta R.T.: -0.006 min  
Response: 224643  
Conc: 1.14 ug/L

## GC Semi-volatiles

### QC Data Summaries

Includes the following where applicable:

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

**Method Blank Summary**

Page 1 of 1

Job Number: D35489

Account: XTOKRWR XTO Energy

Project: FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6067-MB	FD14354.D	1	06/18/12	AV	06/15/12	OP6067	GFD753

The QC reported here applies to the following samples:

Method: SW846-8015B

D35489-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	6.7	4.3	mg/kg	

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

Blank Spike Summary

Job Number: D35489  
Account: XTOKRWR XTO Energy  
Project: FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6067-BS	FD14356.D	1	06/18/12	AV	06/15/12	OP6067	GFD753

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

D35489-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	504	76	58-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	97%	43-136%

11.2.1  
11

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D35489  
Account: XTOKRWR XTO Energy  
Project: FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6067-MS	FD14358.D	1	06/18/12	AV	06/15/12	OP6067	GFD753
OP6067-MSD	FD14360.D	1	06/18/12	AV	06/15/12	OP6067	GFD753
D35488-1	FD14362.D	1	06/18/12	AV	06/15/12	OP6067	GFD753

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

D35489-1

CAS No.	Compound	D35488-1 mg/kg	Spike Q	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	56.4	761	525	61	552	65	5	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D35488-1	Limits
84-15-1	o-Terphenyl	78%	78%	81%	43-136%

11.3.1  
11

## GC Semi-volatiles

### Raw Data

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\JUNE\FD061812.SEC\FD14364.D Vial: 58  
Acq On : 6-18-2012 01:31:19 PM Operator: ashleyv  
Sample : D35489-1 Inst : FID5  
Misc : OP6067,GFD753,30.12,,,1,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Jun 18 14:36:29 2012 Quant Results File: DRO-GFD743R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD743R.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Tue Jun 12 11:16:41 2012  
Response via : Initial Calibration  
DataAcq Meth : DRODUAL.M

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

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	9.61	73297919	1688.257 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	7.40	4442735	106.988 mg/L

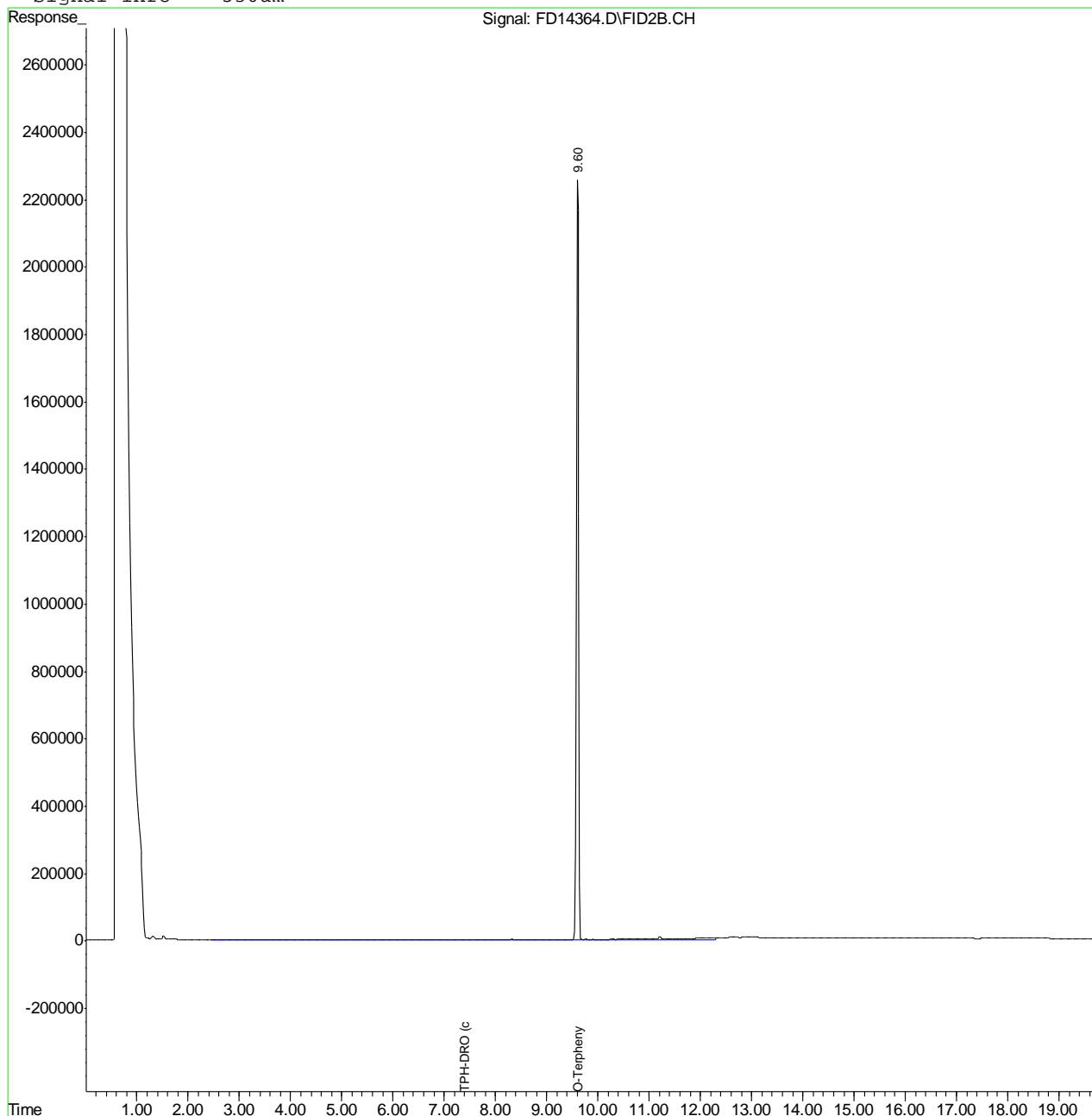
12.1.1  
12

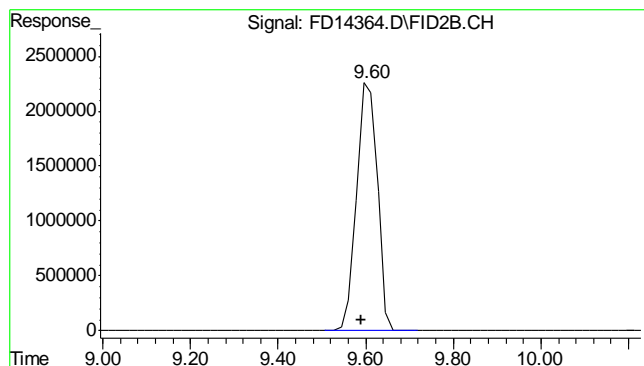
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\JUNE\FD061812.SEC\FD14364.D Vial: 58  
 Acq On : 6-18-2012 01:31:19 PM Operator: ashleyv  
 Sample : D35489-1 Inst : FID5  
 Misc : OP6067,GFD753,30.12,,,1,1 Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jun 19 8:36 2012 Quant Results File: DRO-GFD743R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD743R.M (Chemstation Integrator)  
 Title : 8015B TEH  
 Last Update : Tue Jun 12 11:16:41 2012  
 Response via : Multiple Level Calibration  
 DataAcq Meth : DRODUAL.M

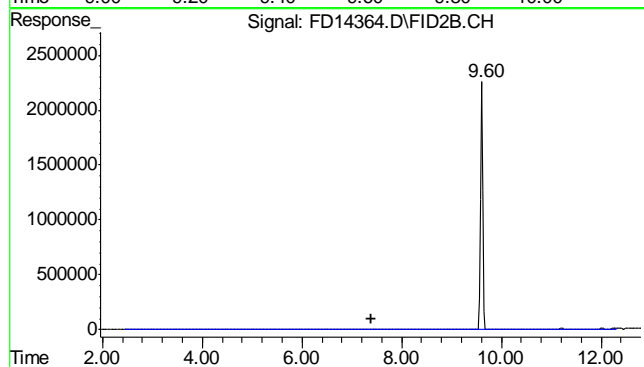
Volume Inj. : 1ul  
 Signal Phase : RTX-5  
 Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.609 min  
Delta R.T.: 0.019 min  
Response: 73297919  
Conc: 1688.26 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 7.400 min  
Delta R.T.: 0.000 min  
Response: 4442735  
Conc: 106.99 mg/L m

12.1.1  
**12**

## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\JUNE\FD061812.SEC\FD14354.D Vial: 53  
Acq On : 18 Jun 2012 11:19 am Operator: ashleyv  
Sample : OP6067-MB Inst : FID5  
Misc : OP6067,GFD753,30.00,,,1,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Jun 18 14:36:24 2012 Quant Results File: DRO-GFD743R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD743R.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Tue Jun 12 11:16:41 2012  
Response via : Initial Calibration  
DataAcq Meth : DRODUAL.M

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

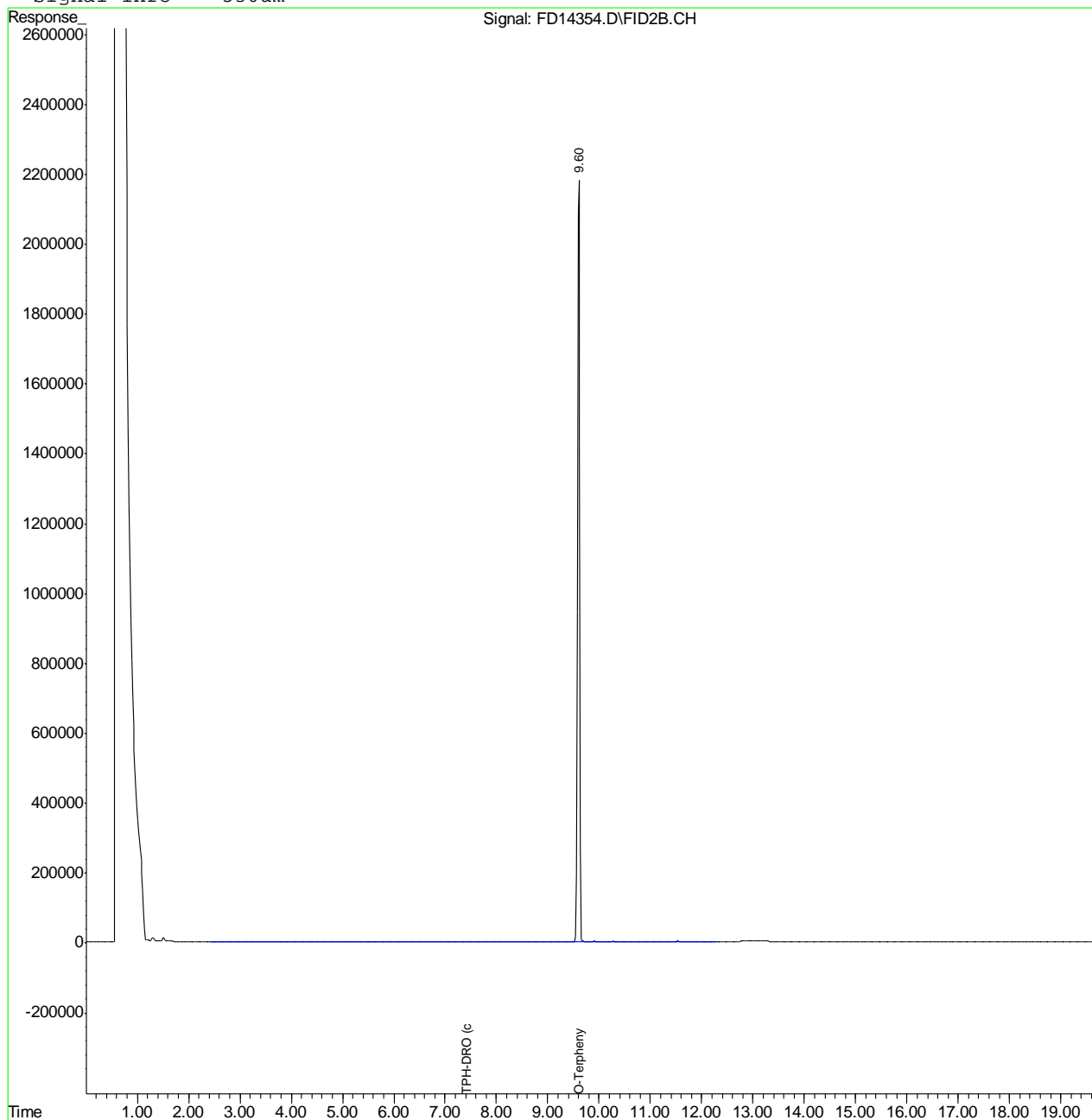
Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	9.61	71200352	1639.944 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	7.40	3174106	76.438 mg/L

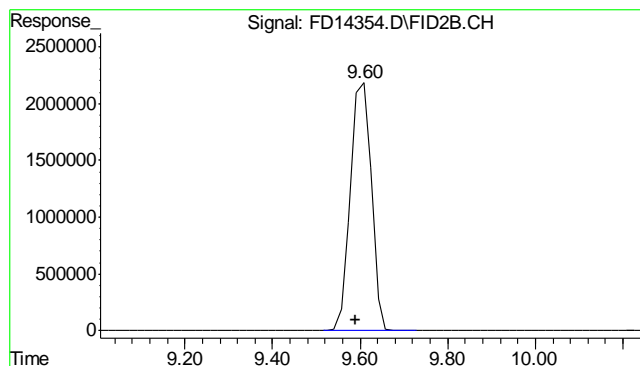
## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\JUNE\FD061812.SEC\FD14354.D Vial: 53  
Acq On : 18 Jun 2012 11:19 am Operator: ashleyv  
Sample : OP6067-MB Inst : FID5  
Misc : OP6067,GFD753,30.00,,,1,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Jun 19 8:31 2012 Quant Results File: DRO-GFD743R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD743R.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Tue Jun 12 11:16:41 2012  
Response via : Multiple Level Calibration  
DataAcq Meth : DRODUAL.M

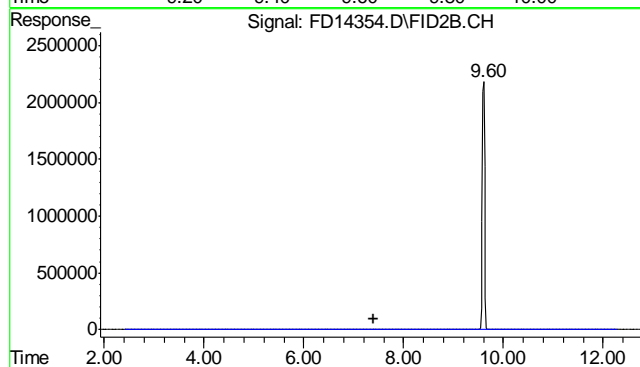
Volume Inj. : 1ul  
Signal Phase : RTX-5  
Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.608 min  
Delta R.T.: 0.018 min  
Response: 71200352  
Conc: 1639.94 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 7.400 min  
Delta R.T.: 0.000 min  
Response: 3174106  
Conc: 76.44 mg/L m

12.2.1  
**12**

## Metals Analysis

### QC Data Summaries

Includes the following where applicable:

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7676  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 06/15/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.042	.06	0.0083	<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		
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 MP7676: D35489-1

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: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7676  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 06/15/12

Metal	D35489-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	6.6	124	113	104.3
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP7676: D35489-1

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: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7676  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 06/15/12

Metal	D35489-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	6.6	121	108	105.7	2.4	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP7676: D35489-1

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: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7676  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 06/15/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	106	100	106.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP7676: D35489-1

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

# SERIAL DILUTION RESULTS SUMMARY

Login Number: D35489  
 Account: XTOKRWR - XTO Energy  
 Project: FRU 297-8B

QC Batch ID: MP7676  
 Matrix Type: SOLID

Methods: SW846 6020A  
 Units: ug/l

Prep Date: 06/15/12

Metal	D35489-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	58.0	68.2	17.7*(a)	0-10	
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP7676: D35489-1

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits  
 (anr) Analyte not requested  
 (a) Serial dilution indicates possible matrix interference.

13.1.4  
13

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7677  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 06/15/12

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	0.060	<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	0.070	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	-0.090	<1.0
Iron	7.0	.12	.87		
Lead	5.0	.19	.24	0.070	<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	0.13	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	-0.050	<5.0
Silicon	5.0	.29	.37		
Silver	3.0	.04	.06	-0.030	<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	1.4	<3.0

Associated samples MP7677: D35489-1

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7677  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

13.2.1

13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7677  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 06/15/12

Metal	D35489-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	159	337	225	79.0 75-125
Beryllium	anr			
Boron				
Cadmium	0.091	48.3	56.3	85.6 75-125
Calcium	anr			
Chromium	41.1	89.3	56.3	85.6 75-125
Cobalt	anr			
Copper	7.2	60.3	56.3	94.3 75-125
Iron	anr			
Lead	10.9	104	113	82.7 75-125
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	14.6	60.1	56.3	80.8 75-125
Phosphorus				
Potassium	anr			
Selenium	0.0	93.0	113	82.6 75-125
Silicon				
Silver	0.23	20.5	22.5	90.0 75-125
Sodium	anr			
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium	anr			
Zinc	39.5	85.3	56.3	81.3 75-125

Associated samples MP7677: D35489-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7677  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

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

13.2.2  
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7677  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 06/15/12

Metal	D35489-1 Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	159	353	216	89.6	4.6	20
Beryllium	anr					
Boron						
Cadmium	0.091	46.4	54.1	85.6	4.0	20
Calcium	anr					
Chromium	41.1	87.0	54.1	84.8	2.6	20
Cobalt	anr					
Copper	7.2	58.2	54.1	94.2	3.5	20
Iron	anr					
Lead	10.9	101	108	83.2	2.9	20
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum						
Nickel	14.6	58.6	54.1	81.3	2.5	20
Phosphorus						
Potassium	anr					
Selenium	0.0	89.0	108	82.2	4.4	20
Silicon						
Silver	0.23	19.5	21.6	89.0	5.0	20
Sodium	anr					
Strontium						
Thallium	anr					
Tin						
Titanium						
Uranium						
Vanadium	anr					
Zinc	39.5	83.0	54.1	80.4	2.7	20

Associated samples MP7677: D35489-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7677  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

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

13.2.2  
13

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7677  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 06/15/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	203	200	101.5	80-120
Beryllium	anr			
Boron				
Cadmium	47.4	50	94.8	80-120
Calcium	anr			
Chromium	50.1	50	100.2	80-120
Cobalt	anr			
Copper	49.6	50	99.2	80-120
Iron	anr			
Lead	95.5	100	95.5	80-120
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	47.7	50	95.4	80-120
Phosphorus				
Potassium	anr			
Selenium	93.8	100	93.8	80-120
Silicon				
Silver	20.2	20	101.0	80-120
Sodium	anr			
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium	anr			
Zinc	47.7	50	95.4	80-120

Associated samples MP7677: D35489-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7677  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

# SERIAL DILUTION RESULTS SUMMARY

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7677  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date: 06/15/12

Metal	D35489-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	1400	1560	12.0*(a)	0-10
Beryllium	anr			
Boron				
Cadmium	0.800	0.00	100.0(b)	0-10
Calcium	anr			
Chromium	362	389	7.6	0-10
Cobalt	anr			
Copper	63.5	56.0	11.8*(a)	0-10
Iron	anr			
Lead	95.7	82.5	13.8*(a)	0-10
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	128	143	11.4*(a)	0-10
Phosphorus				
Potassium	anr			
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	2.00	4.00	100.0(b)	0-10
Sodium	anr			
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium	anr			
Zinc	347	402	15.9*(a)	0-10

Associated samples MP7677: D35489-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7677  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

(a) Serial dilution indicates possible matrix interference.

(b) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

13.2.4

13

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7679  
Matrix Type: AQUEOUS

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

Prep Date: 06/15/12

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	-29	<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	45.0	<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	-100	<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 MP7679: D35489-1A

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7679  
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: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7679  
Matrix Type: AQUEOUS

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

Prep Date: 06/15/12

Metal	D35488-1A Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	5740	139000	125000	106.6	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	2680	131000	125000	102.7	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	109000	242000	125000	106.4	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP7679: D35489-1A

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

13.32  
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7679  
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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7679  
Matrix Type: AQUEOUS

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

Prep Date: 06/15/12

Metal	D35488-1A Original MSD		Spikelot ICPALL2 % Rec		MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	5740	140000	125000	107.4	0.7	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	2680	131000	125000	102.7	0.0	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	109000	245000	125000	108.8	1.2	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP7679: D35489-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7679  
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: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7679  
Matrix Type: AQUEOUS

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

Prep Date: 06/15/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	134000	125000	107.2	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	127000	125000	101.6	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	131000	125000	104.8	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP7679: D35489-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7679  
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: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

QC Batch ID: MP7695  
Matrix Type: SOLID

Methods: SW846 7471B  
Units: mg/kg

Prep Date: 06/18/12

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.10	.0011	.0009	-0.00077	<0.10

Associated samples MP7695: D35489-1

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: D35489  
 Account: XTOKRWR - XTO Energy  
 Project: FRU 297-8B

QC Batch ID: MP7695  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 06/18/12

Metal	D35291-1 Original MS	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.017	0.43	0.44	94.0 75-125

Associated samples MP7695: D35489-1

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: D35489  
 Account: XTOKRWR - XTO Energy  
 Project: FRU 297-8B

QC Batch ID: MP7695  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 06/18/12

Metal	D35291-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.017	0.37	0.431	82.0	15.0	

Associated samples MP7695: D35489-1

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: D35489  
 Account: XTOKRWR - XTO Energy  
 Project: FRU 297-8B

QC Batch ID: MP7695  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 06/18/12

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

Associated samples MP7695: D35489-1

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: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP7514/GN15504	1.0	0.0	mg/kg	261	254	97.2	80-120%
Specific Conductivity	GP7492/GN15439			umhos/cm	10009	9900	98.9	90-110%
pH	GN15437			su	8.00	8.02	100.3	99.3-100.7%

Associated Samples:  
Batch GN15437: D35489-1  
Batch GP7492: D35489-1  
Batch GP7514: D35489-1  
(\*) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP7514/GN15504	D35548-3	mg/kg	0.0	0.0	0.0	0-20%
Redox Potential Vs H2	GN15450	D35488-1	mv	140	135	1.2	0-20%

Associated Samples:  
Batch GN15450: D35489-1  
Batch GP7514: D35489-1  
(\*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP7514/GN15504	D35548-3	mg/kg	0.0	40	40.8	102.0	75-125%

Associated Samples:

Batch GP7514: D35489-1

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D35489  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-8B

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP7514/GN15504	D35548-3	mg/kg	0.0	40	44.0	7.6	

Associated Samples:  
Batch GP7514: D35489-1  
(\*) Outside of QC limits  
(N) Matrix Spike Rec. outside of QC limits