



01/17/13

## Technical Report for

**XTO Energy**

**PCU 296-5A**

**1210-04**

**Accutest Job Number: D42556**

**Sampling Date: 01/08/13**

### Report to:

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

**Total number of pages in report: 193**



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

  
**Brad Madadian**  
Laboratory Director

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

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

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

# Table of Contents

-1-

<b>Section 1: Sample Summary .....</b>	<b>4</b>
<b>Section 2: Case Narrative/Conformance Summary .....</b>	<b>5</b>
<b>Section 3: Summary of Hits .....</b>	<b>8</b>
<b>Section 4: Sample Results .....</b>	<b>10</b>
<b>4.1:</b> D42556-1: CUT 1 OVERBURDEN .....	11
<b>4.2:</b> D42556-1A: CUT 1 OVERBURDEN .....	17
<b>4.3:</b> D42556-2: CUT 1 CONTENTS .....	19
<b>4.4:</b> D42556-2A: CUT 1 CONTENTS .....	25
<b>Section 5: Misc. Forms .....</b>	<b>27</b>
<b>5.1:</b> Chain of Custody .....	28
<b>Section 6: GC/MS Volatiles - QC Data Summaries .....</b>	<b>30</b>
<b>6.1:</b> Method Blank Summary .....	31
<b>6.2:</b> Blank Spike Summary .....	32
<b>6.3:</b> Matrix Spike/Matrix Spike Duplicate Summary .....	33
<b>Section 7: GC/MS Volatiles - Raw Data .....</b>	<b>34</b>
<b>7.1:</b> Samples .....	35
<b>7.2:</b> Method Blanks .....	57
<b>Section 8: GC/MS Semi-volatiles - QC Data Summaries .....</b>	<b>69</b>
<b>8.1:</b> Method Blank Summary .....	70
<b>8.2:</b> Blank Spike Summary .....	71
<b>8.3:</b> Matrix Spike/Matrix Spike Duplicate Summary .....	72
<b>Section 9: GC/MS Semi-volatiles - Raw Data .....</b>	<b>73</b>
<b>9.1:</b> Samples .....	74
<b>9.2:</b> Method Blanks .....	108
<b>Section 10: GC Volatiles - QC Data Summaries .....</b>	<b>125</b>
<b>10.1:</b> Method Blank Summary .....	126
<b>10.2:</b> Blank Spike Summary .....	127
<b>10.3:</b> Matrix Spike/Matrix Spike Duplicate Summary .....	128
<b>Section 11: GC Volatiles - Raw Data .....</b>	<b>129</b>
<b>11.1:</b> Samples .....	130
<b>11.2:</b> Method Blanks .....	140
<b>Section 12: GC Semi-volatiles - QC Data Summaries .....</b>	<b>145</b>
<b>12.1:</b> Method Blank Summary .....	146
<b>12.2:</b> Blank Spike Summary .....	147
<b>12.3:</b> Matrix Spike/Matrix Spike Duplicate Summary .....	148
<b>Section 13: GC Semi-volatiles - Raw Data .....</b>	<b>149</b>
<b>13.1:</b> Samples .....	150
<b>13.2:</b> Method Blanks .....	156
<b>Section 14: Metals Analysis - QC Data Summaries .....</b>	<b>159</b>
<b>14.1:</b> Prep QC MP9242: Ba,Cd,Cr,Cu,Pb,Ni,Se,Ag,Zn .....	160
<b>14.2:</b> Prep QC MP9243: As .....	170
<b>14.3:</b> Prep QC MP9244: Hg .....	175

# Table of Contents

-2-

**14.4:** Prep QC MP9251: Ca,Mg,Na,Sodium Adsorption Ratio ..... 179

**Section 15: General Chemistry - QC Data Summaries ..... 189**

**15.1:** Method Blank and Spike Results Summary ..... 190

**15.2:** Duplicate Results Summary ..... 191

**15.3:** Matrix Spike Results Summary ..... 192

**15.4:** Matrix Spike Duplicate Results Summary ..... 193

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15



Sample Summary

XTO Energy

Job No: D42556

PCU 296-5A  
Project No: 1210-04

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D42556-1	01/08/13	13:00 DS	01/11/13	SO	Soil	CUT 1 OVERBURDEN
D42556-1A	01/08/13	13:00 DS	01/11/13	SO	Soil	CUT 1 OVERBURDEN
D42556-2	01/08/13	13:10 DS	01/11/13	SO	Soil	CUT 1 CONTENTS
D42556-2A	01/08/13	13:10 DS	01/11/13	SO	Soil	CUT 1 CONTENTS

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



## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** XTO Energy

**Job No** D42556

**Site:** PCU 296-5A

**Report Date** 1/17/2013 3:09:26 PM

On 01/11/2013, 2 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D42556 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:** V3V1327

- All samples were analyzed within the recommended method holding time.
- Sample(s) D42512-1MS, D42512-1MSD 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:** OP7223

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D42510-1MS, D42510-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The matrix spike (MS) recovery(s) of Naphthalene are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- The RPD(s) for the MS and MSD recoveries of Naphthalene are outside control limits for sample OP7223-MSD. Variability of recovery may be due to sample matrix/homogeneity.

### Volatiles by GC By Method SW846 8015B

**Matrix** SO

**Batch ID:** GGB1045

- All samples were analyzed within the recommended method holding time.
- Sample(s) D42466-11MS, D42466-11MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

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

**Matrix** SO

**Batch ID:** OP7232

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D42562-1MS, D42562-1MSD 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:** MP9251

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D42556-1AMS, D42556-1AMSD, D42556-1ASDL were used as the QC samples for the metals analysis.

**Matrix** SO

**Batch ID:** MP9242

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D42510-1MS, D42510-1MSD, D42510-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Barium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The serial dilution RPD(s) for Chromium, Lead, Zinc are outside control limits for sample MP9242-SD1. Probable cause due to sample homogeneity.
- MP9242-SD1 for Chromium: Serial dilution indicates possible matrix interference.
- MP9242-SD1 for Lead: Serial dilution indicates possible matrix interference.
- MP9242-SD1 for Zinc: Serial dilution indicates possible matrix interference.

## Metals By Method SW846 6020A

**Matrix** SO

**Batch ID:** MP9243

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D42510-1MS, D42510-1SDL, D42510-1MSD were used as the QC samples for the metals analysis.

## Metals By Method SW846 7471B

**Matrix** SO

**Batch ID:** MP9244

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D42445-1MS, D42445-1MSD were used as the QC samples for the metals analysis.

## Wet Chemistry By Method ASTM D1498-76M

**Matrix** SO

**Batch ID:** GN18422

- Sample(s) D42337-20DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

## Wet Chemistry By Method SM 2510B-2011 MOD

**Matrix** SO

**Batch ID:** GP9098

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

## Wet Chemistry By Method SM19 2540B M

**Matrix** SO

**Batch ID:** GN18412

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

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

**Matrix** SO

**Batch ID:** GP9086

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D42556-1DUP, D42556-1MS, D42556-1MSD were used as the QC samples for the Chromium, Hexavalent analysis.

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

**Matrix** SO

**Batch ID:** R15681

- The data for SW846 3060A/7196A M meets quality control requirements.
- D42556-2 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

**Matrix** SO

**Batch ID:** R15684

- The data for SW846 3060A/7196A M meets quality control requirements.
- D42556-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

### Wet Chemistry By Method SW846 9045D

**Matrix** SO

**Batch ID:** GN18424

- The following samples were run outside of holding time for method SW846 9045D: D42556-1

**Matrix** SO

**Batch ID:** GN18426

- The following samples were run outside of holding time for method SW846 9045D: D42556-2

### Wet Chemistry By Method USDA HANDBOOK 60

**Matrix** SO

**Batch ID:** MP9251

- D42556-1A for Sodium Adsorption Ratio: Calculated as:  $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$
- D42556-2A 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.

## Summary of Hits

**Job Number:** D42556  
**Account:** XTO Energy  
**Project:** PCU 296-5A  
**Collected:** 01/08/13



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

### D42556-1 CUT 1 OVERBURDEN

TPH-DRO (C10-C28)	45.6	7.5	4.5	mg/kg	SW846-8015B
Arsenic	4.4	0.11		mg/kg	SW846 6020A
Barium	679	1.1		mg/kg	SW846 6010C
Chromium	32.7	1.1		mg/kg	SW846 6010C
Copper	11.8	1.1		mg/kg	SW846 6010C
Lead	10.1	5.7		mg/kg	SW846 6010C
Nickel	17.0	3.4		mg/kg	SW846 6010C
Zinc	36.1	3.4		mg/kg	SW846 6010C
Specific Conductivity	1050	1.0		umhos/cm	SM 2510B-2011 MOD
Chromium, Trivalent <sup>a</sup>	32.7	2.1		mg/kg	SW846 3060A/7196A M
Redox Potential Vs H2	176			mv	ASTM D1498-76M
pH	9.54			su	SW846 9045D

### D42556-1A CUT 1 OVERBURDEN

Calcium	92.3	2.0		mg/l	SW846 6010C
Magnesium	26.0	1.0		mg/l	SW846 6010C
Sodium	107	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio <sup>b</sup>	2.53			ratio	USDA HANDBOOK 60

### D42556-2 CUT 1 CONTENTS

Toluene	0.396	0.14	0.072	mg/kg	SW846 8260B
Ethylbenzene	0.179	0.14	0.027	mg/kg	SW846 8260B
Xylene (total)	0.854	0.29	0.14	mg/kg	SW846 8260B
Naphthalene	0.185	0.014	0.013	mg/kg	SW846 8270C BY SIM
Pyrene	0.0270	0.010	0.0053	mg/kg	SW846 8270C BY SIM
TPH-GRO (C6-C10)	24.9	14	7.2	mg/kg	SW846 8015B
TPH-DRO (C10-C28)	604	8.1	4.9	mg/kg	SW846-8015B
Arsenic	10.2	0.12		mg/kg	SW846 6020A
Barium	1640	1.2		mg/kg	SW846 6010C
Chromium	24.1	1.2		mg/kg	SW846 6010C
Copper	24.8	1.2		mg/kg	SW846 6010C
Lead	39.4	6.1		mg/kg	SW846 6010C
Nickel	15.4	3.7		mg/kg	SW846 6010C
Zinc	51.3	3.7		mg/kg	SW846 6010C
Specific Conductivity	8300	1.0		umhos/cm	SM 2510B-2011 MOD
Chromium, Trivalent <sup>a</sup>	24.1	2.2		mg/kg	SW846 3060A/7196A M
Redox Potential Vs H2	135			mv	ASTM D1498-76M
pH	10.66			su	SW846 9045D



## Summary of Hits

Page 2 of 2

**Job Number:** D42556  
**Account:** XTO Energy  
**Project:** PCU 296-5A  
**Collected:** 01/08/13



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

### D42556-2A CUT 1 CONTENTS

Calcium	43.8	2.0	mg/l	SW846 6010C
Sodium	1440	2.0	mg/l	SW846 6010C
Sodium Adsorption Ratio <sup>b</sup>	59.2		ratio	USDA HANDBOOK 60

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

(b) Calculated as:  $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

## Sample Results

## Report of Analysis

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUT 1 OVERBURDEN	
<b>Lab Sample ID:</b>	D42556-1	<b>Date Sampled:</b> 01/08/13
<b>Matrix:</b>	SO - Soil	<b>Date Received:</b> 01/11/13
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b> 88.2
<b>Project:</b>	PCU 296-5A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V22570.D	1	01/12/13	BD	n/a	n/a	V3V1327
Run #2							

	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	0.063	0.031	mg/kg	
108-88-3	Toluene	ND	0.13	0.063	mg/kg	
100-41-4	Ethylbenzene	ND	0.13	0.024	mg/kg	
1330-20-7	Xylene (total)	ND	0.25	0.13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	86%		64-130%
460-00-4	4-Bromofluorobenzene	104%		62-131%
17060-07-0	1,2-Dichloroethane-D4	91%		70-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUT 1 OVERBURDEN	
<b>Lab Sample ID:</b>	D42556-1	<b>Date Sampled:</b> 01/08/13
<b>Matrix:</b>	SO - Soil	<b>Date Received:</b> 01/11/13
<b>Method:</b>	SW846 8270C BY SIM SW846 3546	<b>Percent Solids:</b> 88.2
<b>Project:</b>	PCU 296-5A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G12980.D	1	01/15/13	DC	01/14/13	OP7223	E3G621
Run #2							

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

## COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0094	0.0049	mg/kg	
120-12-7	Anthracene	ND	0.0094	0.0049	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0094	0.0049	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0094	0.0049	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0094	0.0049	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0094	0.0049	mg/kg	
218-01-9	Chrysene	ND	0.0094	0.0049	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0094	0.0049	mg/kg	
206-44-0	Fluoranthene	ND	0.0094	0.0049	mg/kg	
86-73-7	Fluorene	ND	0.0094	0.0049	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0094	0.0049	mg/kg	
91-20-3	Naphthalene	ND	0.013	0.012	mg/kg	
129-00-0	Pyrene	ND	0.0094	0.0049	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	83%		10-159%
321-60-8	2-Fluorobiphenyl	87%		19-131%
1718-51-0	Terphenyl-d14	108%		18-150%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUT 1 OVERBURDEN	
<b>Lab Sample ID:</b>	D42556-1	<b>Date Sampled:</b> 01/08/13
<b>Matrix:</b>	SO - Soil	<b>Date Received:</b> 01/11/13
<b>Method:</b>	SW846 8015B	<b>Percent Solids:</b> 88.2
<b>Project:</b>	PCU 296-5A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB19132.D	1	01/11/13	SK	n/a	n/a	GGB1045
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	13	6.3	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	93%		60-140%		

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

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

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUT 1 OVERBURDEN	<b>Date Sampled:</b>	01/08/13
<b>Lab Sample ID:</b>	D42556-1	<b>Date Received:</b>	01/11/13
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	88.2
<b>Method:</b>	SW846-8015B SW846 3546		
<b>Project:</b>	PCU 296-5A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD21152.D	1	01/15/13	AV	01/15/13	OP7232	GFD1064
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)	45.6	7.5	4.5	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	70%		35-130%		

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

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

## Report of Analysis

**Client Sample ID:** CUT 1 OVERBURDEN  
**Lab Sample ID:** D42556-1  
**Matrix:** SO - Soil  
**Project:** PCU 296-5A

**Date Sampled:** 01/08/13  
**Date Received:** 01/11/13  
**Percent Solids:** 88.2

## Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.4	0.11	mg/kg	5	01/14/13	01/17/13 JB	SW846 6020A <sup>3</sup>	SW846 3050B <sup>5</sup>
Barium	679	1.1	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Cadmium	< 1.1	1.1	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Chromium	32.7	1.1	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Copper	11.8	1.1	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Lead	10.1	5.7	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Mercury	< 0.094	0.094	mg/kg	1	01/15/13	01/15/13 JB	SW846 7471B <sup>2</sup>	SW846 7471B <sup>6</sup>
Nickel	17.0	3.4	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Selenium	< 5.7	5.7	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Silver	< 3.4	3.4	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Zinc	36.1	3.4	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>

- (1) Instrument QC Batch: MA3169  
 (2) Instrument QC Batch: MA3177  
 (3) Instrument QC Batch: MA3182  
 (4) Prep QC Batch: MP9242  
 (5) Prep QC Batch: MP9243  
 (6) Prep QC Batch: MP9244

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b>	CUT 1 OVERBURDEN	<b>Date Sampled:</b>	01/08/13
<b>Lab Sample ID:</b>	D42556-1	<b>Date Received:</b>	01/11/13
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	88.2
<b>Project:</b>	PCU 296-5A		

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
<b>prep: DEPT.OF AG, BOOK N9</b>							
Specific Conductivity	1050	1.0	umhos/cm	1	01/15/13	KB	SM 2510B-2011 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	01/14/13	KB	SW846 3060A/7196A
Chromium, Trivalent <sup>a</sup>	32.7	2.1	mg/kg	1	01/14/13 17:24	JB	SW846 3060A/7196A M
Redox Potential Vs H2	176		mv	1	01/14/13	JD	ASTM D1498-76M
Solids, Percent	88.2		%	1	01/14/13	SWT	SM19 2540B M
pH	9.54		su	1	01/14/13 14:20	JD	SW846 9045D

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

RL = Reporting Limit



Report of Analysis

<b>Client Sample ID:</b>	CUT 1 OVERBURDEN	<b>Date Sampled:</b>	01/08/13
<b>Lab Sample ID:</b>	D42556-1A	<b>Date Received:</b>	01/11/13
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	88.2
<b>Project:</b>	PCU 296-5A		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	92.3	2.0	mg/l	1	01/15/13	01/16/13 JB	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Magnesium	26.0	1.0	mg/l	1	01/15/13	01/16/13 JB	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Sodium	107	2.0	mg/l	1	01/15/13	01/16/13 JB	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>

(1) Instrument QC Batch: MA3180  
(2) Prep QC Batch: MP9251

RL = Reporting Limit

Report of Analysis

**Client Sample ID:** CUT 1 OVERBURDEN  
**Lab Sample ID:** D42556-1A  
**Matrix:** SO - Soil  
**Project:** PCU 296-5A

**Date Sampled:** 01/08/13  
**Date Received:** 01/11/13  
**Percent Solids:** 88.2

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	2.53		ratio	1	01/16/13 12:27	JB	USDA HANDBOOK 60

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

RL = Reporting Limit

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUT 1 CONTENTS	
<b>Lab Sample ID:</b>	D42556-2	<b>Date Sampled:</b> 01/08/13
<b>Matrix:</b>	SO - Soil	<b>Date Received:</b> 01/11/13
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b> 81.8
<b>Project:</b>	PCU 296-5A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V22571.D	1	01/12/13	BD	n/a	n/a	V3V1327
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.06 g	5.0 ml	100 ul
Run #2			

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.072	0.036	mg/kg	
108-88-3	Toluene	0.396	0.14	0.072	mg/kg	
100-41-4	Ethylbenzene	0.179	0.14	0.027	mg/kg	
1330-20-7	Xylene (total)	0.854	0.29	0.14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	87%		64-130%
460-00-4	4-Bromofluorobenzene	105%		62-131%
17060-07-0	1,2-Dichloroethane-D4	87%		70-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUT 1 CONTENTS	
<b>Lab Sample ID:</b>	D42556-2	<b>Date Sampled:</b> 01/08/13
<b>Matrix:</b>	SO - Soil	<b>Date Received:</b> 01/11/13
<b>Method:</b>	SW846 8270C BY SIM SW846 3546	<b>Percent Solids:</b> 81.8
<b>Project:</b>	PCU 296-5A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G12987.D	1	01/15/13	DC	01/14/13	OP7223	E3G621
Run #2							

	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	0.010	0.0053	mg/kg	
120-12-7	Anthracene	ND	0.010	0.0053	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.010	0.0053	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.010	0.0053	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.010	0.0053	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.010	0.0053	mg/kg	
218-01-9	Chrysene	ND	0.010	0.0053	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.010	0.0053	mg/kg	
206-44-0	Fluoranthene	ND	0.010	0.0053	mg/kg	
86-73-7	Fluorene	ND	0.010	0.0053	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.010	0.0053	mg/kg	
91-20-3	Naphthalene	0.185	0.014	0.013	mg/kg	
129-00-0	Pyrene	0.0270	0.010	0.0053	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	58%		10-159%
321-60-8	2-Fluorobiphenyl	82%		19-131%
1718-51-0	Terphenyl-d14	89%		18-150%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUT 1 CONTENTS	<b>Date Sampled:</b>	01/08/13
<b>Lab Sample ID:</b>	D42556-2	<b>Date Received:</b>	01/11/13
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	81.8
<b>Method:</b>	SW846 8015B		
<b>Project:</b>	PCU 296-5A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB19133.D	1	01/11/13	SK	n/a	n/a	GGB1045
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	24.9	14	7.2	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	85%		60-140%		

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

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

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUT 1 CONTENTS	
<b>Lab Sample ID:</b>	D42556-2	<b>Date Sampled:</b> 01/08/13
<b>Matrix:</b>	SO - Soil	<b>Date Received:</b> 01/11/13
<b>Method:</b>	SW846-8015B SW846 3546	<b>Percent Solids:</b> 81.8
<b>Project:</b>	PCU 296-5A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD21153.D	1	01/15/13	AV	01/15/13	OP7232	GFD1064
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	604	8.1	4.9	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	81%		35-130%		

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

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

## Report of Analysis

<b>Client Sample ID:</b>	CUT 1 CONTENTS	<b>Date Sampled:</b>	01/08/13
<b>Lab Sample ID:</b>	D42556-2	<b>Date Received:</b>	01/11/13
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	81.8
<b>Project:</b>	PCU 296-5A		

## Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	10.2	0.12	mg/kg	5	01/14/13	01/17/13 JB	SW846 6020A <sup>3</sup>	SW846 3050B <sup>5</sup>
Barium	1640	1.2	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Cadmium	< 1.2	1.2	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Chromium	24.1	1.2	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Copper	24.8	1.2	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Lead	39.4	6.1	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Mercury	< 0.10	0.10	mg/kg	1	01/15/13	01/15/13 JB	SW846 7471B <sup>2</sup>	SW846 7471B <sup>6</sup>
Nickel	15.4	3.7	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Selenium	< 6.1	6.1	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Silver	< 3.7	3.7	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>
Zinc	51.3	3.7	mg/kg	1	01/14/13	01/14/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>4</sup>

(1) Instrument QC Batch: MA3169

(2) Instrument QC Batch: MA3177

(3) Instrument QC Batch: MA3182

(4) Prep QC Batch: MP9242

(5) Prep QC Batch: MP9243

(6) Prep QC Batch: MP9244

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b>	CUT 1 CONTENTS	<b>Date Sampled:</b>	01/08/13
<b>Lab Sample ID:</b>	D42556-2	<b>Date Received:</b>	01/11/13
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	81.8
<b>Project:</b>	PCU 296-5A		

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
<b>prep: DEPT.OF AG, BOOK N9</b>							
Specific Conductivity	8300	1.0	umhos/cm	1	01/15/13	KB	SM 2510B-2011 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	01/14/13	KB	SW846 3060A/7196A
Chromium, Trivalent <sup>a</sup>	24.1	2.2	mg/kg	1	01/14/13 17:34	JB	SW846 3060A/7196A M
Redox Potential Vs H2	135		mv	1	01/14/13	JD	ASTM D1498-76M
Solids, Percent	81.8		%	1	01/14/13	SWT	SM19 2540B M
pH	10.66		su	1	01/14/13 14:20	JD	SW846 9045D

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

RL = Reporting Limit



Report of Analysis

<b>Client Sample ID:</b>	CUT 1 CONTENTS	<b>Date Sampled:</b>	01/08/13
<b>Lab Sample ID:</b>	D42556-2A	<b>Date Received:</b>	01/11/13
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	81.8
<b>Project:</b>	PCU 296-5A		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	43.8	2.0	mg/l	1	01/15/13	01/16/13 JB	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Magnesium	< 1.0	1.0	mg/l	1	01/15/13	01/16/13 JB	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Sodium	1440	2.0	mg/l	1	01/15/13	01/16/13 JB	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>

(1) Instrument QC Batch: MA3180  
(2) Prep QC Batch: MP9251

RL = Reporting Limit

Report of Analysis

**Client Sample ID:** CUT 1 CONTENTS  
**Lab Sample ID:** D42556-2A  
**Matrix:** SO - Soil  
**Project:** PCU 296-5A

**Date Sampled:** 01/08/13  
**Date Received:** 01/11/13  
**Percent Solids:** 81.8

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	59.2		ratio	1	01/16/13 13:14	JB	USDA HANDBOOK 60

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

RL = Reporting Limit

4.4  
4

## Misc. Forms

5

### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody

4036 Youngfield Street, Wheat Ridge, CO 80033  
TEL: 303-425-6021 FAX: 303-425-6854  
[www.accutest.com](http://www.accutest.com)

FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job # <b>D42556</b>

[illegible]

## D42556: Chain of Custody

Page 1 of 2

## Accutest Laboratories Sample Receipt Summary

**Accutest Job Number:** D42556

**Client:** KRW

**Immediate Client Services Action Required:** No

**Date / Time Received:** 1/11/2013 3:30:00 PM

**No. Coolers:** 1

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

**Project:** XTO PCU 296-5A

**Airbill #'s:** HDCO

<b>Cooler Security</b>	<b>Y</b>	<b>or</b>	<b>N</b>		<b>Y</b>	<b>or</b>	<b>N</b>
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"/>

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

<b>Quality Control Preservation</b>	<b>Y</b>	<b>or</b>	<b>N</b>	<b>N/A</b>
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"/>

<b>Sample Integrity - Documentation</b>	<b>Y</b>	<b>or</b>	<b>N</b>
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"/>

<b>Sample Integrity - Condition</b>	<b>Y</b>	<b>or</b>	<b>N</b>
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

<b>Sample Integrity - Instructions</b>	<b>Y</b>	<b>or</b>	<b>N</b>	<b>N/A</b>
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

### 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:** D42556  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V1327-MB	3V22560.D	1	01/12/13	BD	n/a	n/a	V3V1327

The QC reported here applies to the following samples:

Method: SW846 8260B

D42556-1, D42556-2

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	25	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	89% 64-130%
460-00-4	4-Bromofluorobenzene	97% 62-131%
17060-07-0	1,2-Dichloroethane-D4	98% 70-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D42556  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V1327-BS	3V22561.D	1	01/12/13	BD	n/a	n/a	V3V1327

The QC reported here applies to the following samples:

Method: SW846 8260B

D42556-1, D42556-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	47.4	95	70-130
100-41-4	Ethylbenzene	50	48.7	97	70-130
108-88-3	Toluene	50	47.3	95	70-130
1330-20-7	Xylene (total)	150	149	99	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	91%	64-130%
460-00-4	4-Bromofluorobenzene	109%	62-131%
17060-07-0	1,2-Dichloroethane-D4	88%	70-130%

\* = Outside of Control Limits.



# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D42556  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D42512-1MS	3V22564.D	1	01/12/13	BD	n/a	n/a	V3V1327
D42512-1MSD	3V22565.D	1	01/12/13	BD	n/a	n/a	V3V1327
D42512-1	3V22563.D	1	01/12/13	BD	n/a	n/a	V3V1327

The QC reported here applies to the following samples:

Method: SW846 8260B

D42556-1, D42556-2

CAS No.	Compound	D42512-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	72.3		3580	3400	93	3340	91	2	64-139/30
100-41-4	Ethylbenzene	35.0	J	3580	3530	98	3500	97	1	68-136/30
108-88-3	Toluene	138	J	3580	3330	89	3300	88	1	60-130/30
1330-20-7	Xylene (total)	212	J	10700	10800	99	10800	99	0	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D42512-1	Limits
2037-26-5	Toluene-D8	86%	87%	84%	64-130%
460-00-4	4-Bromofluorobenzene	113%	112%	104%	62-131%
17060-07-0	1,2-Dichloroethane-D4	90%	86%	90%	70-130%

\* = Outside of Control Limits.

GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3011113.S\  
Data File : 3V22570.D  
Acq On : 12 Jan 2013 7:13 am  
Operator : BRETD  
Sample : D42556-1  
Misc : MS5218,V3V1327,5.066,,100,5,1  
ALS Vial : 37 Sample Multiplier: 1

Quant Time: Jan 15 08:28:51 2013  
Quant Method : C:\msdchem\1\METHODS\V3AP1299TVH1299SOIL.M  
Quant Title : 8260  
QLast Update : Thu Jan 03 11:40:16 2013  
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.861	168	340365	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.656	114	527966	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.296	117	592540	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.285	152	351094	50.00	ug/l	0.00

System Monitoring Compounds						
33) 1,2-Dichloroethane-d4	12.245	102	34738	45.60	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	91.20%
61) Toluene-d8	14.051	98	612876	42.96	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	85.92%
69) 4-Bromofluorobenzene	16.246	95	320780	52.20	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	104.40%

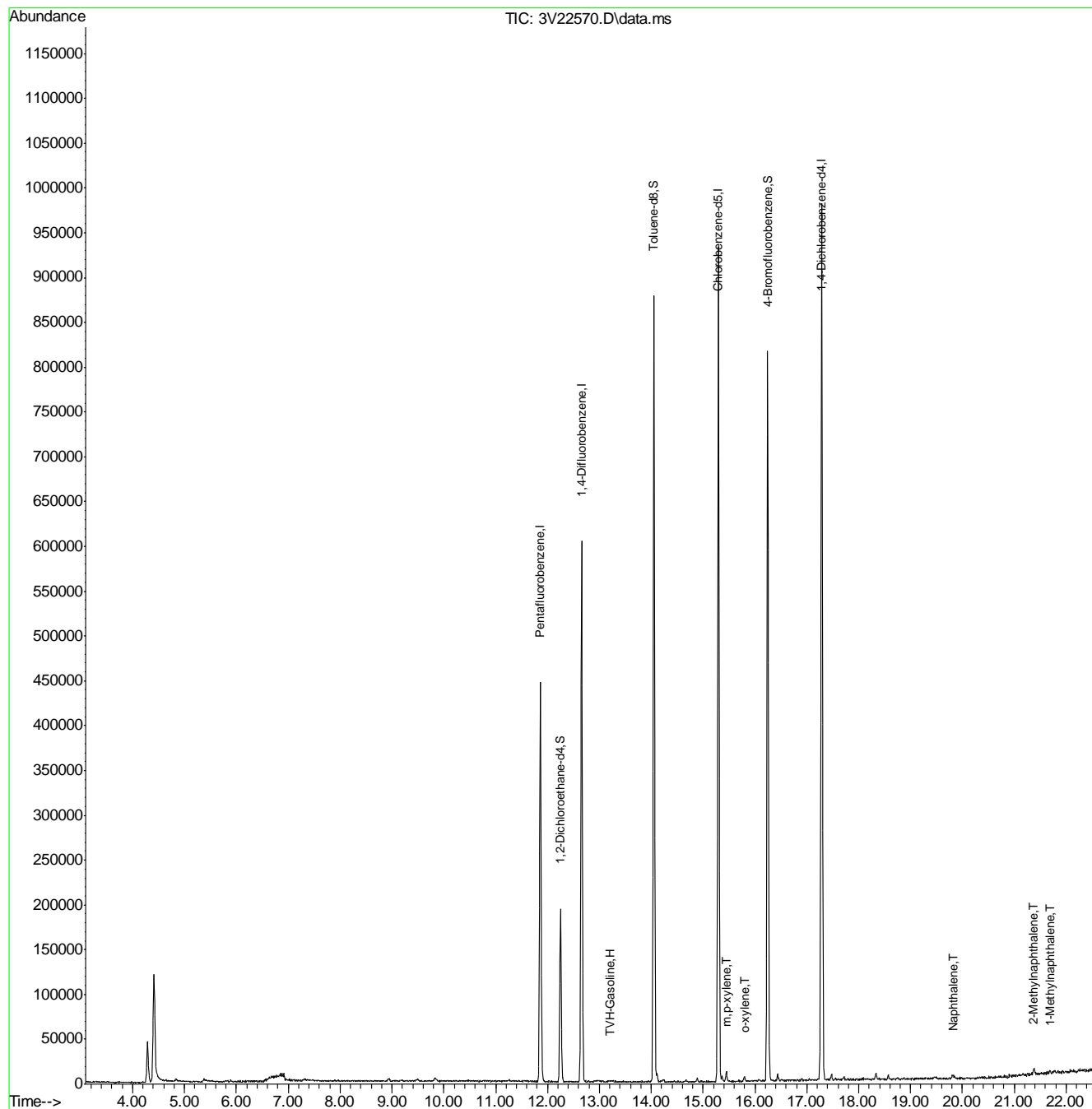
Target Compounds					Qvalue
1) TVH-Gasoline	13.200	TIC	63343m	2.16	ug/l
72) m,p-xylene	15.453	106	4231	0.47	ug/l
73) o-xylene	15.796	106	1803	0.20	ug/l
91) Naphthalene	19.841	128	3513	1.21	ug/l
94) 2-Methylnaphthalene	21.381	142	4567	0.56	ug/l
95) 1-Methylnaphthalene	21.689	142	2164	0.28	ug/l

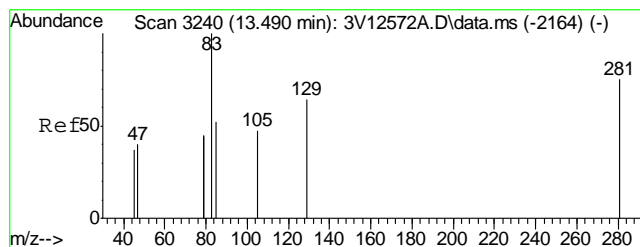
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3011113.S\  
Data File : 3V22570.D  
Acq On : 12 Jan 2013 7:13 am  
Operator : BRETD  
Sample : D42556-1  
Misc : MS5218,V3V1327,5.066,,100,5,1  
ALS Vial : 37 Sample Multiplier: 1

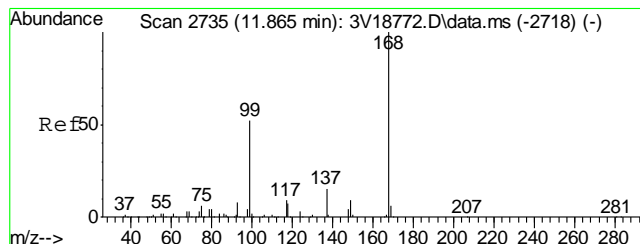
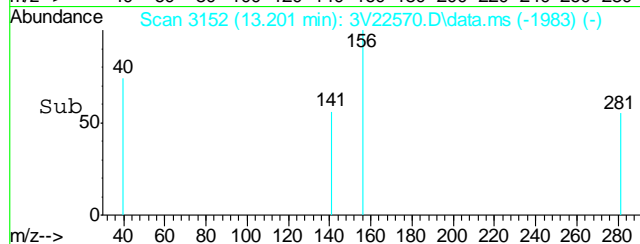
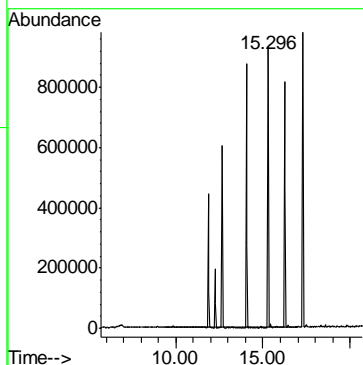
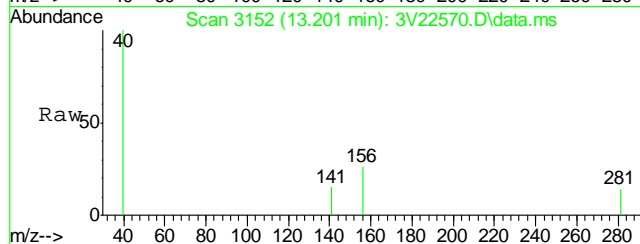
Quant Time: Jan 15 08:28:51 2013  
Quant Method : C:\msdchem\1\METHODS\V3AP1299TVH1299SOIL.M  
Quant Title : 8260  
QLast Update : Thu Jan 03 11:40:16 2013  
Response via : Initial Calibration





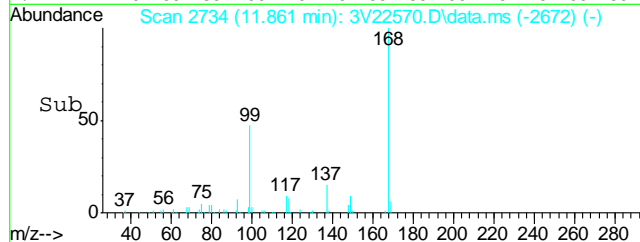
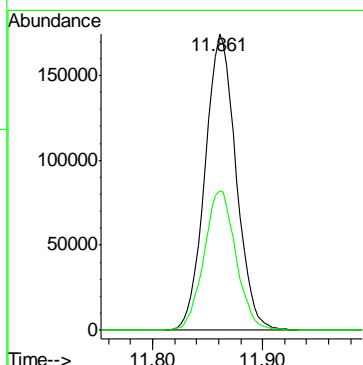
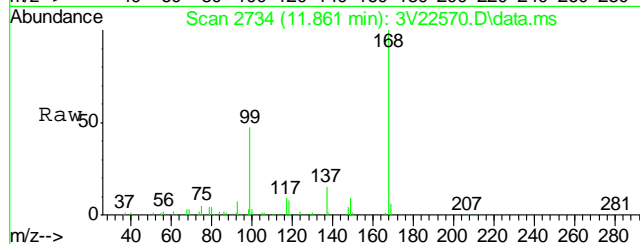
#1  
TVH-Gasoline  
Concen: 2.16 ug/l m  
RT: 13.200 min Scan# 3152  
Delta R.T. 0.000 min  
Lab File: 3V22570.D  
Acq: 12 Jan 2013 7:13 am

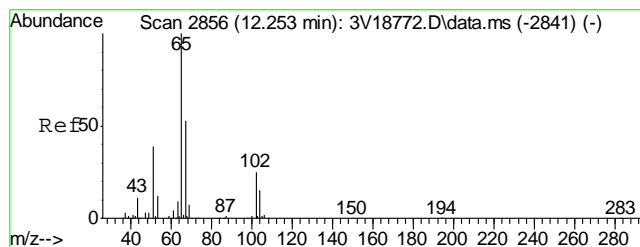
Tgt Ion:TIC Resp: 63343



#2  
Pentafluorobenzene  
Concen: 50.00 ug/l  
RT: 11.861 min Scan# 2734  
Delta R.T. -0.002 min  
Lab File: 3V22570.D  
Acq: 12 Jan 2013 7:13 am

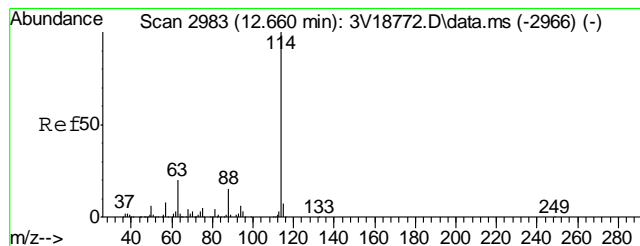
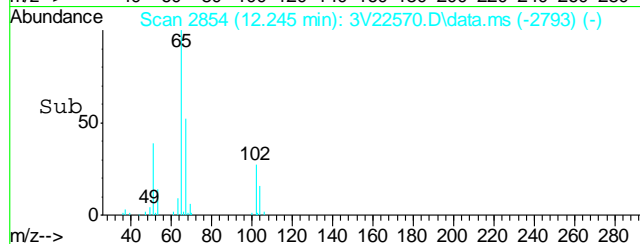
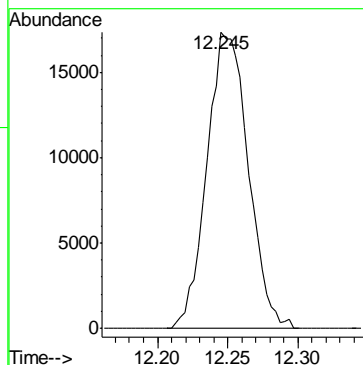
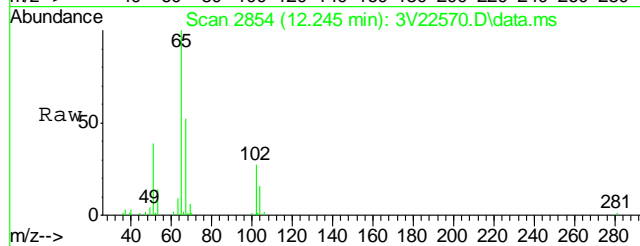
Tgt Ion:168 Resp: 340365  
Ion Ratio Lower Upper  
168 100  
99 48.5 29.0 69.0





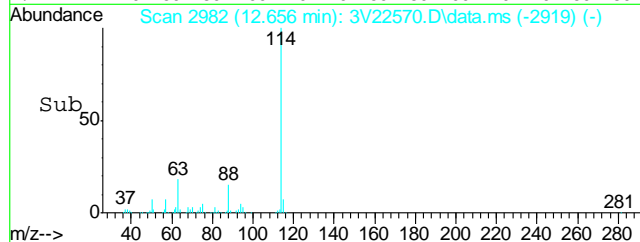
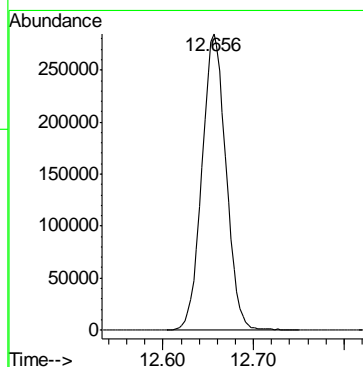
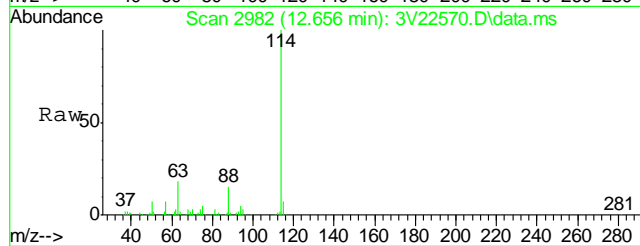
#33  
1,2-Dichloroethane-d4  
Concen: 45.60 ug/l  
RT: 12.245 min Scan# 2854  
Delta R.T. -0.006 min  
Lab File: 3V22570.D  
Acq: 12 Jan 2013 7:13 am

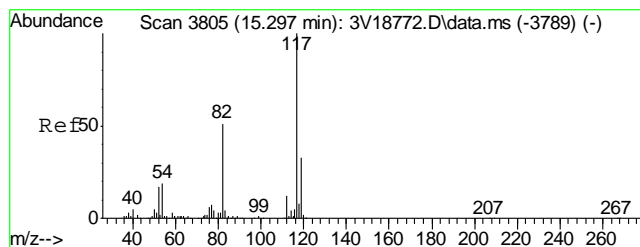
Tgt Ion:102 Resp: 34738



#35  
1,4-Difluorobenzene  
Concen: 50.00 ug/l  
RT: 12.656 min Scan# 2982  
Delta R.T. 0.001 min  
Lab File: 3V22570.D  
Acq: 12 Jan 2013 7:13 am

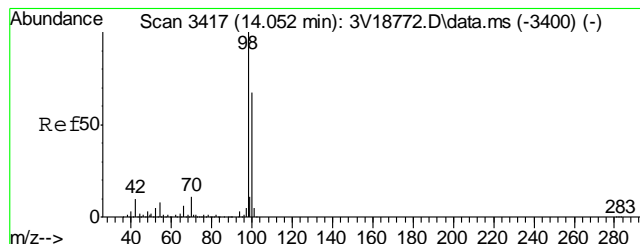
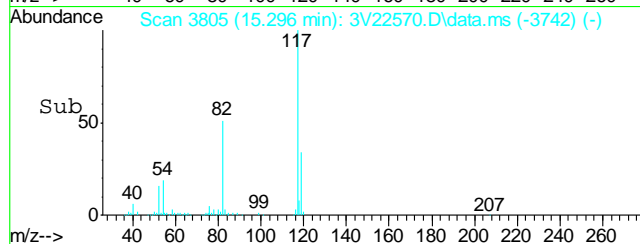
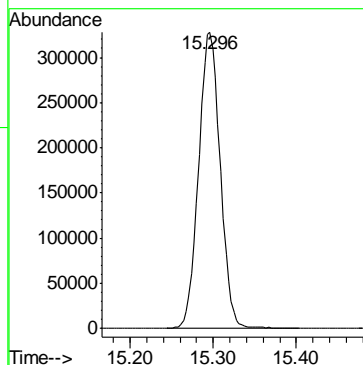
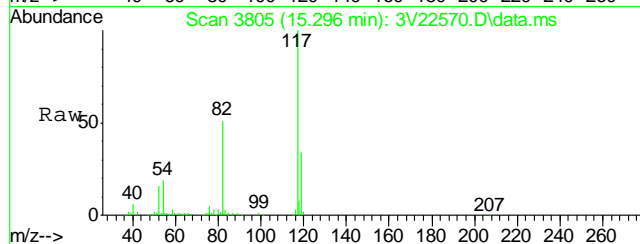
Tgt Ion:114 Resp: 527966





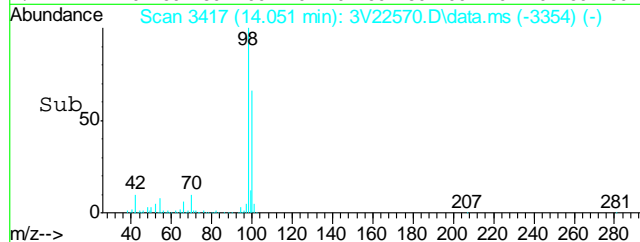
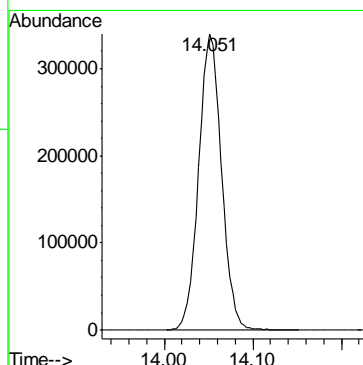
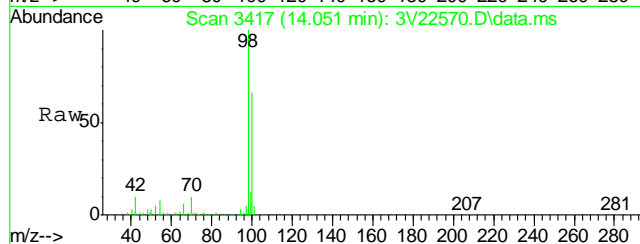
#53  
Chlorobenzene-d5  
Concen: 50.00 ug/l  
RT: 15.296 min Scan# 3805  
Delta R.T. 0.001 min  
Lab File: 3V22570.D  
Acq: 12 Jan 2013 7:13 am

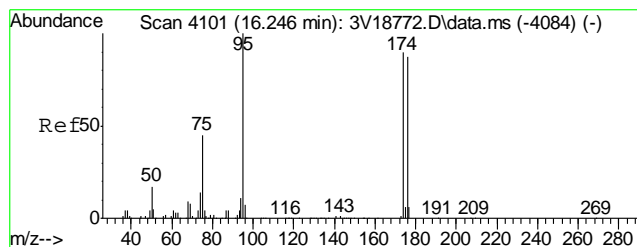
Tgt Ion:117 Resp: 592540



#61  
Toluene-d8  
Concen: 42.96 ug/l  
RT: 14.051 min Scan# 3417  
Delta R.T. 0.001 min  
Lab File: 3V22570.D  
Acq: 12 Jan 2013 7:13 am

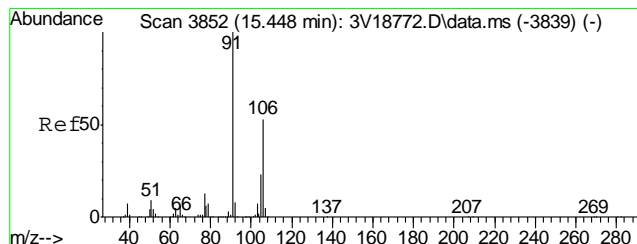
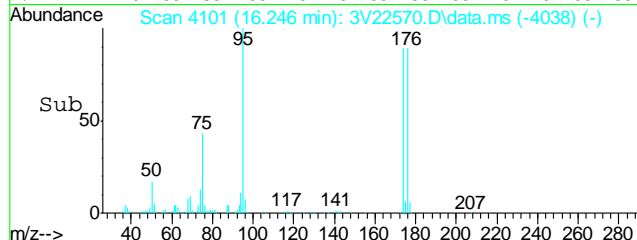
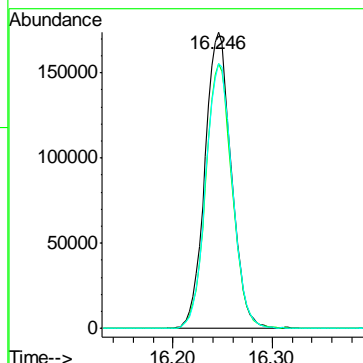
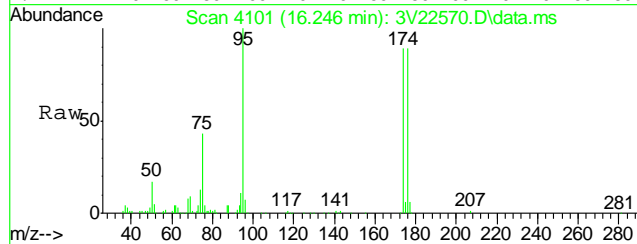
Tgt Ion: 98 Resp: 612876





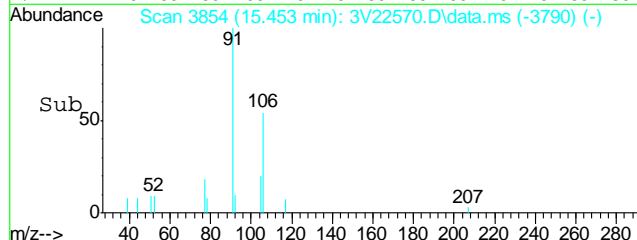
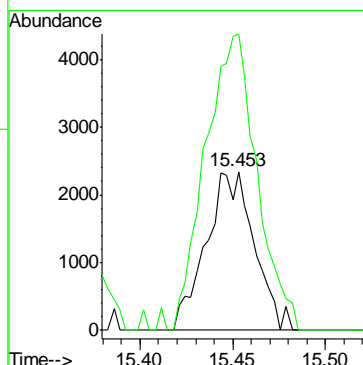
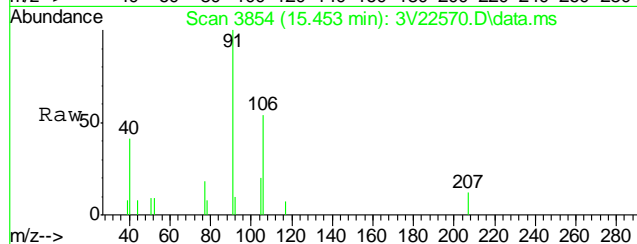
#69  
4-Bromofluorobenzene  
Concen: 52.20 ug/l  
RT: 16.246 min Scan# 4101  
Delta R.T. 0.001 min  
Lab File: 3V22570.D  
Acq: 12 Jan 2013 7:13 am

Tgt Ion	Resp	Lower	Upper
95	320780		
174	89.1	0.0	20.0#
176	90.2	0.0	20.0#

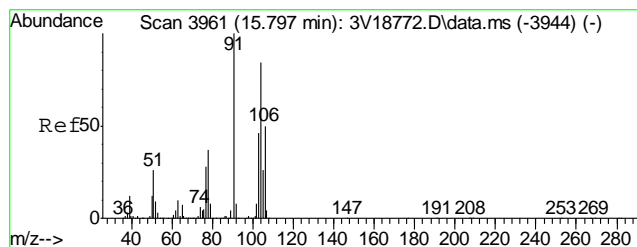


#72  
m,p-xylene  
Concen: 0.47 ug/l  
RT: 15.453 min Scan# 3854  
Delta R.T. 0.004 min  
Lab File: 3V22570.D  
Acq: 12 Jan 2013 7:13 am

Tgt Ion	Resp	Lower	Upper
106	4231		
91	200.4	168.1	208.1

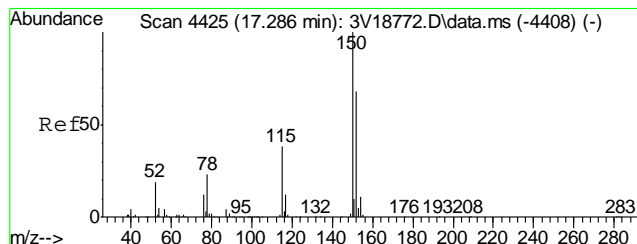
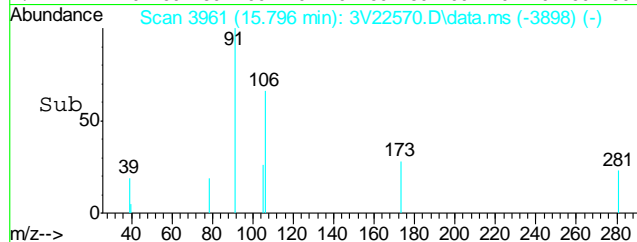
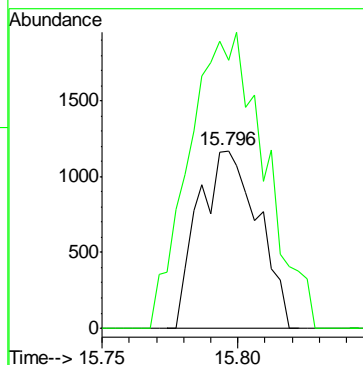
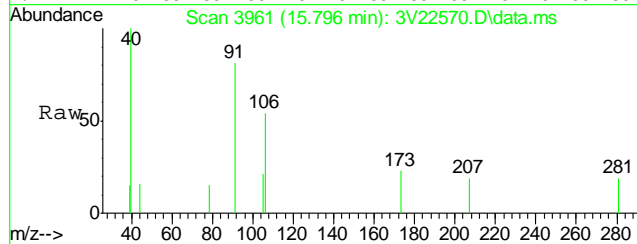






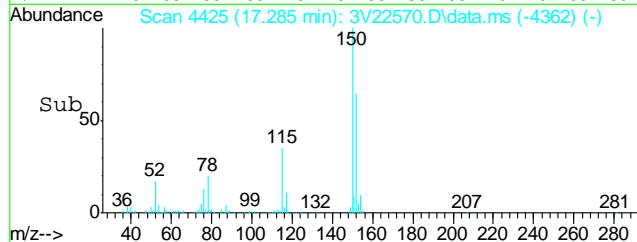
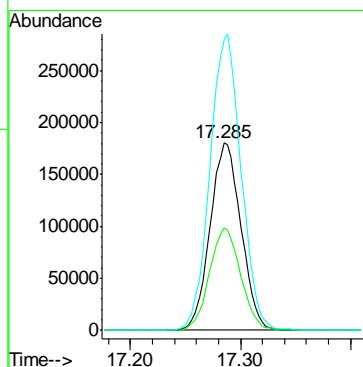
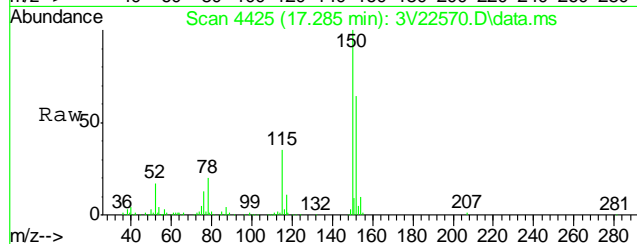
#73  
o-xylene  
Concen: 0.20 ug/l  
RT: 15.796 min Scan# 3961  
Delta R.T. 0.001 min  
Lab File: 3V22570.D  
Acq: 12 Jan 2013 7:13 am

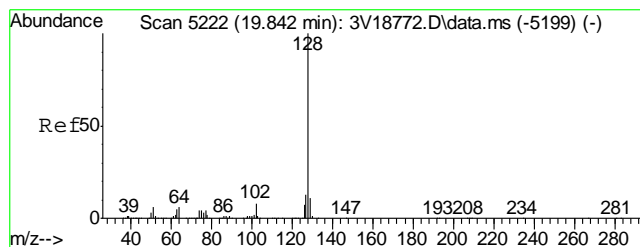
Tgt Ion	Ratio	Lower	Upper
106	100		
91	209.2	180.3	220.3



#74  
1,4-Dichlorobenzene-d4  
Concen: 50.00 ug/l  
RT: 17.285 min Scan# 4425  
Delta R.T. 0.001 min  
Lab File: 3V22570.D  
Acq: 12 Jan 2013 7:13 am

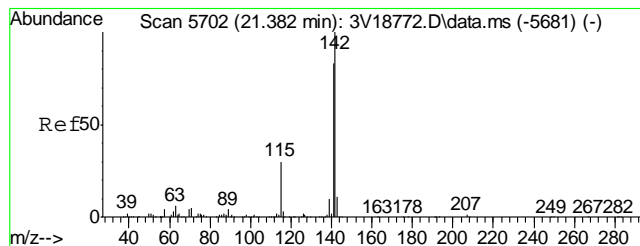
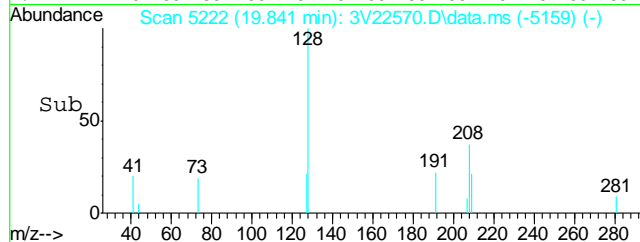
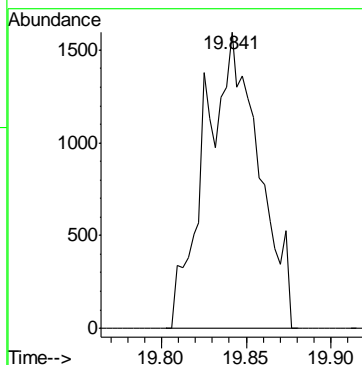
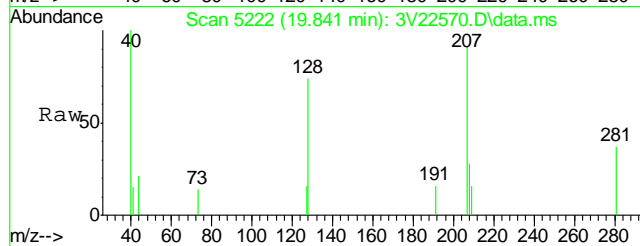
Tgt Ion	Ratio	Lower	Upper
152	100		
115	54.8	34.6	74.6
150	158.7	152.1	192.1





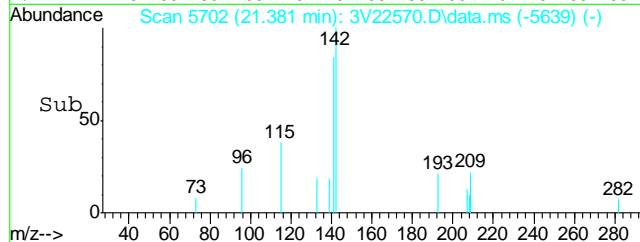
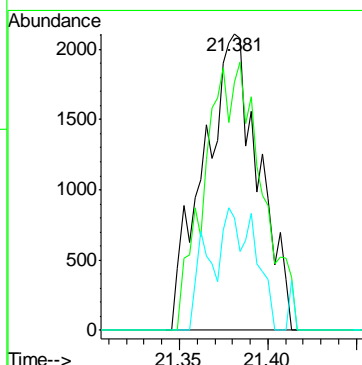
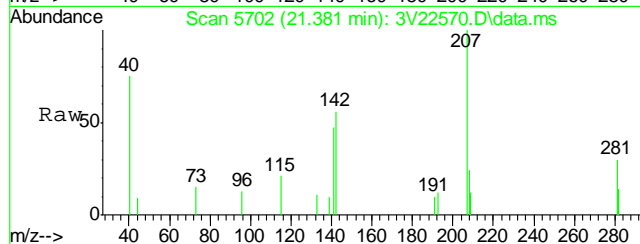
#91  
Naphthalene  
Concen: 1.21 ug/l  
RT: 19.841 min Scan# 5222  
Delta R.T. 0.001 min  
Lab File: 3V22570.D  
Acq: 12 Jan 2013 7:13 am

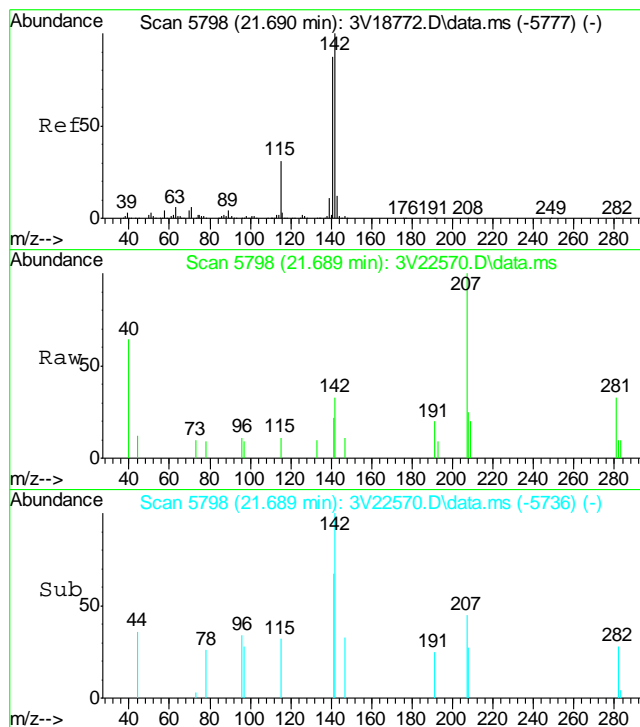
Tgt Ion:128 Resp: 3513



#94  
2-Methylnaphthalene  
Concen: 0.56 ug/l  
RT: 21.381 min Scan# 5702  
Delta R.T. 0.001 min  
Lab File: 3V22570.D  
Acq: 12 Jan 2013 7:13 am

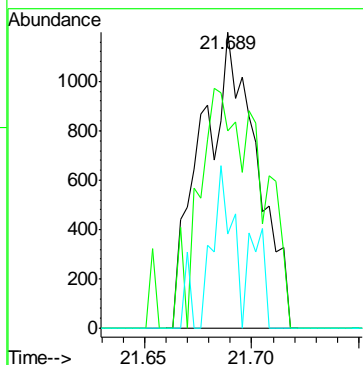
Tgt Ion:142 Resp: 4567  
Ion Ratio Lower Upper  
142 100  
141 93.1 65.8 105.8  
115 23.9 9.7 49.7





#95  
 1-Methylnaphthalene  
 Concen: 0.28 ug/l  
 RT: 21.689 min Scan# 5798  
 Delta R.T. -0.002 min  
 Lab File: 3V22570.D  
 Acq: 12 Jan 2013 7:13 am

Tgt Ion:	142	Resp:	2164
Ion Ratio	Lower	Upper	
142	100		
141	89.9	68.3	108.3
115	19.1	11.8	51.8



7.1.1  
7

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3011113.S\  
 Data File : 3V22571.D  
 Acq On : 12 Jan 2013 7:45 am  
 Operator : BRETD  
 Sample : D42556-2  
 Misc : MS5218,V3V1327,5.060,,100,5,1  
 ALS Vial : 38 Sample Multiplier: 1

Quant Time: Jan 15 08:31:05 2013  
 Quant Method : C:\msdchem\1\METHODS\V3AP1299TVH1299SOIL.M  
 Quant Title : 8260  
 QLast Update : Thu Jan 03 11:40:16 2013  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.859	168	333289	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.655	114	530134	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.295	117	595022	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.283	152	357062	50.00	ug/l	0.00

## System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.250	102	32371	43.40	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	86.80%
61) Toluene-d8	14.050	98	620064	43.28	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	86.56%
69) 4-Bromofluorobenzene	16.244	95	324673	52.61	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	105.22%

## Target Compounds

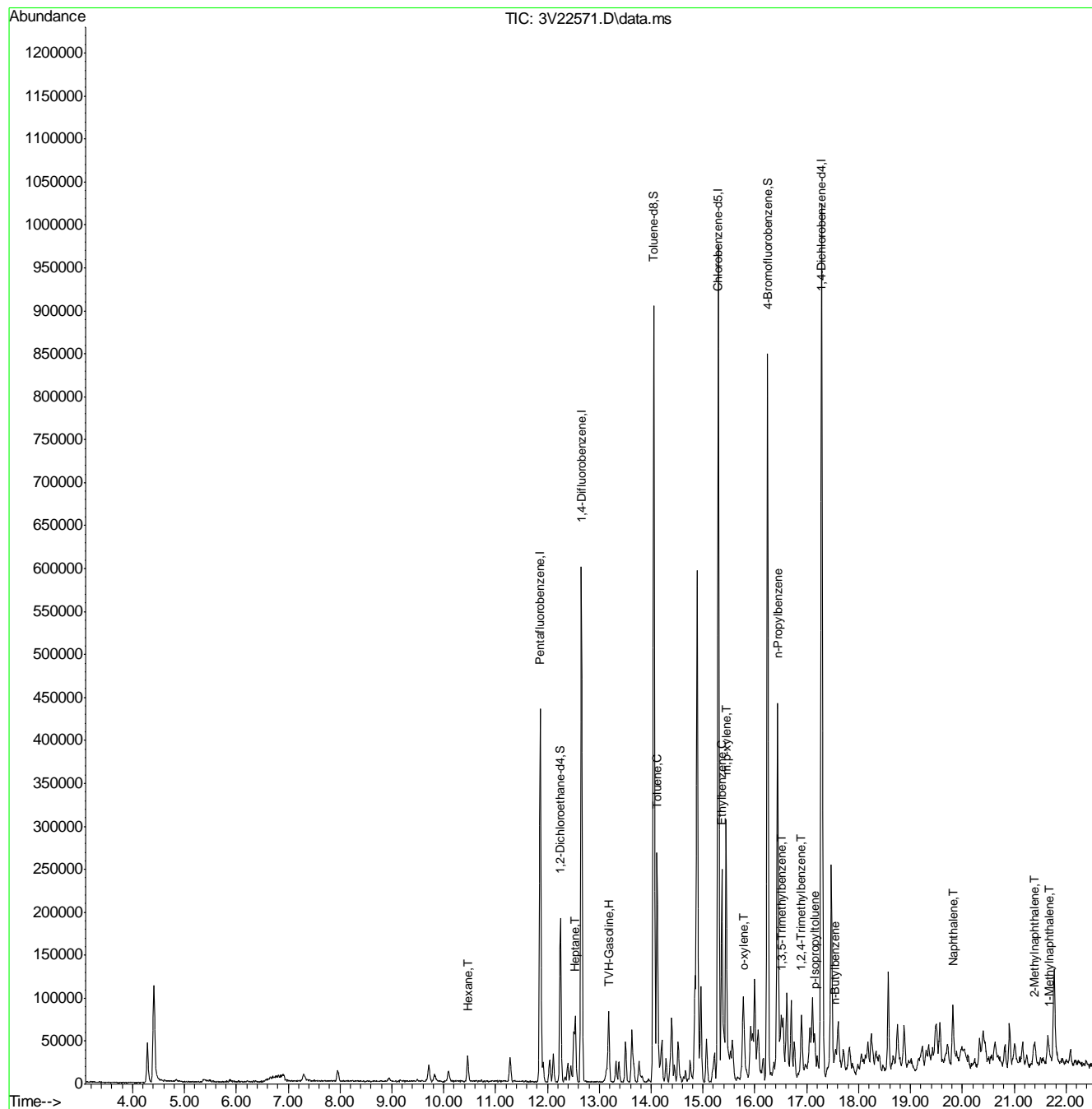
					Qvalue
1) TVH-Gasoline	13.200	TIC	7998907m	272.57	ug/l
41) Hexane	10.460	57	14962	2.41	ug/l 100
43) Heptane	12.536	43	30804	4.33	ug/l 92
62) Toluene	14.114	92	68281	5.53	ug/l 97
66) Ethylbenzene	15.362	91	54248	2.50	ug/l 97
72) m,p-xylene	15.445	106	97828	10.71	ug/l 99
73) o-xylene	15.798	106	10886	1.23	ug/l 99
77) n-Propylbenzene	16.427	91	15879	0.65	ug/l 100
80) 1,3,5-Trimethylbenzene	16.510	105	29541m	1.61	ug/l
82) 1,2,4-Trimethylbenzene	16.898	105	24027	1.28	ug/l 91
86) p-Isopropyltoluene	17.155	119	23185	1.11	ug/l 96
88) n-Butylbenzene	17.540	91	8553	0.50	ug/l # 73
91) Naphthalene	19.833	128	10434	1.57	ug/l 100
94) 2-Methylnaphthalene	21.376	142	15889	1.92	ug/l 94
95) 1-Methylnaphthalene	21.691	142	6363	0.81	ug/l 96

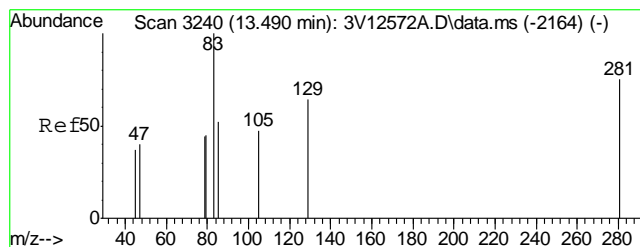
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3011113.S\  
Data File : 3V22571.D  
Acq On : 12 Jan 2013 7:45 am  
Operator : BRETD  
Sample : D42556-2  
Misc : MS5218,V3V1327,5.060,,100,5,1  
ALS Vial : 38 Sample Multiplier: 1

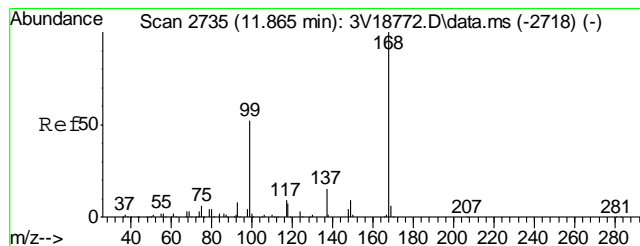
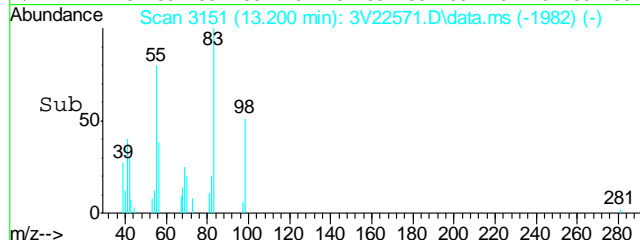
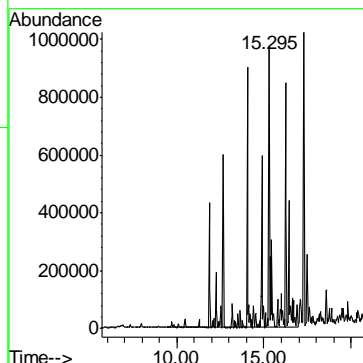
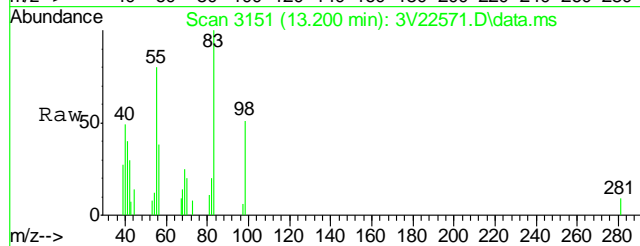
Quant Time: Jan 15 08:31:05 2013  
Quant Method : C:\msdchem\1\METHODS\V3AP1299TVH1299SOIL.M  
Quant Title : 8260  
QLast Update : Thu Jan 03 11:40:16 2013  
Response via : Initial Calibration





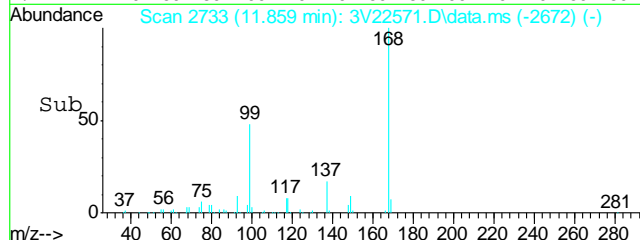
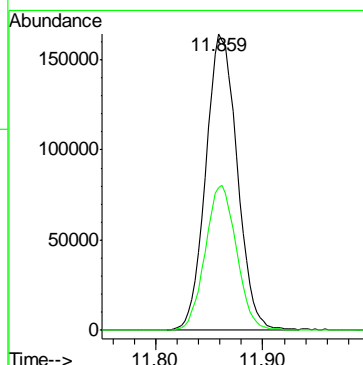
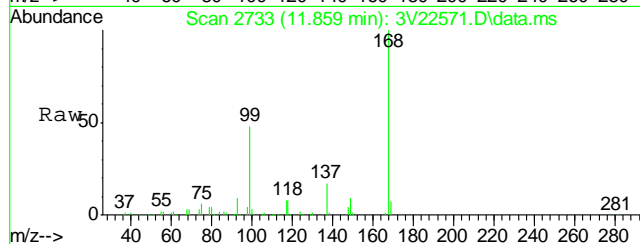
#1  
TVH-Gasoline  
Concen: 272.57 ug/l m  
RT: 13.200 min Scan# 3151  
Delta R.T. 0.000 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

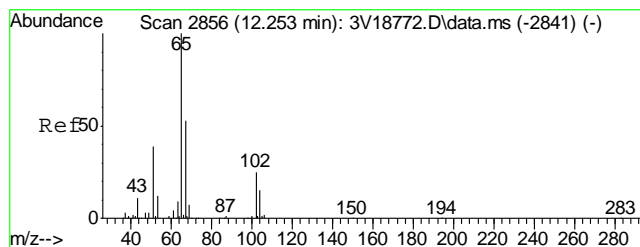
Tgt Ion:TIC Resp: 7998907



#2  
Pentafluorobenzene  
Concen: 50.00 ug/l  
RT: 11.859 min Scan# 2733  
Delta R.T. -0.004 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

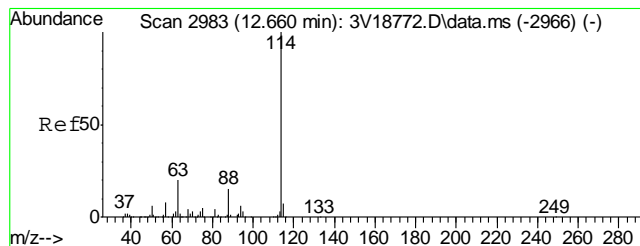
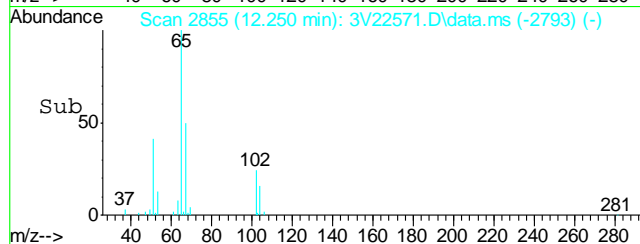
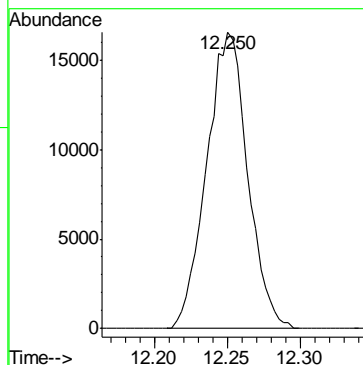
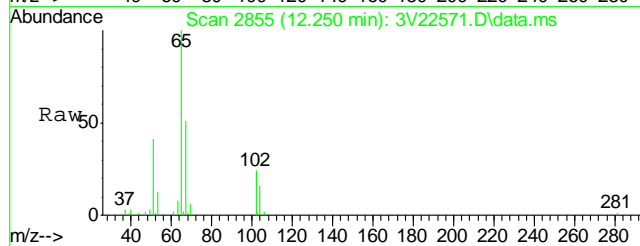
Tgt Ion:168 Resp: 333289  
Ion Ratio Lower Upper  
168 100  
99 48.6 29.0 69.0





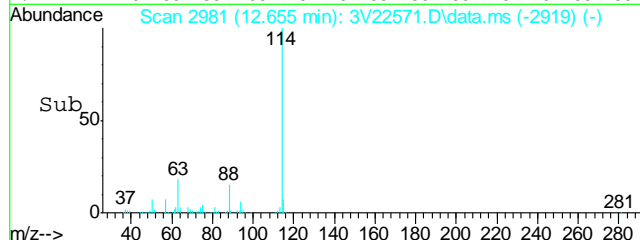
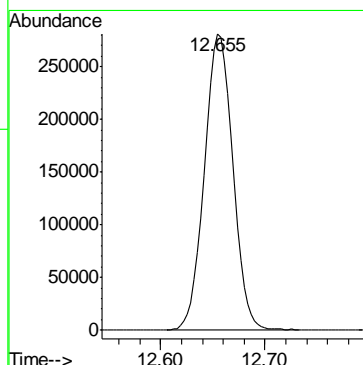
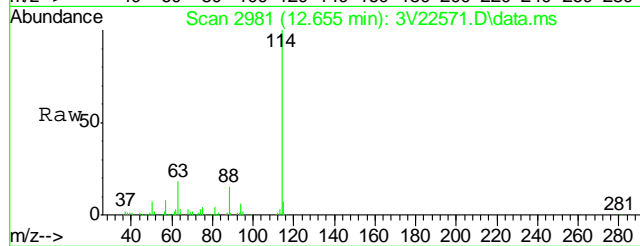
#33  
1,2-Dichloroethane-d4  
Concen: 43.40 ug/l  
RT: 12.250 min Scan# 2855  
Delta R.T. -0.001 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

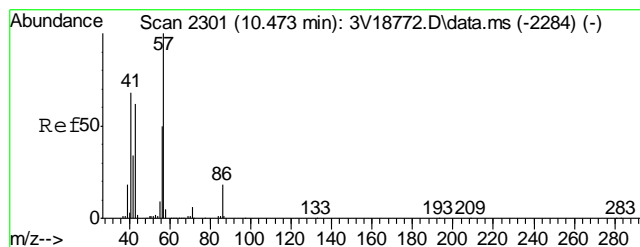
Tgt Ion:102 Resp: 32371



#35  
1,4-Difluorobenzene  
Concen: 50.00 ug/l  
RT: 12.655 min Scan# 2981  
Delta R.T. -0.001 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

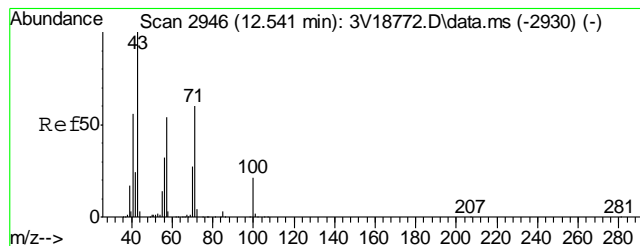
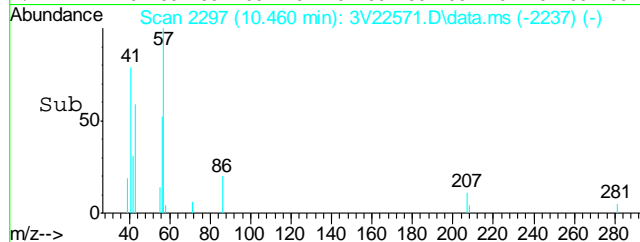
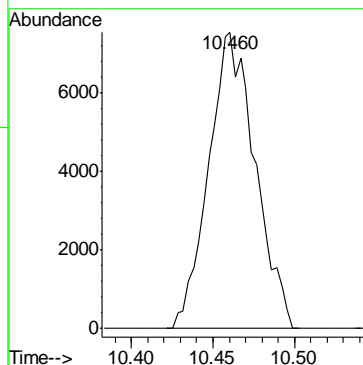
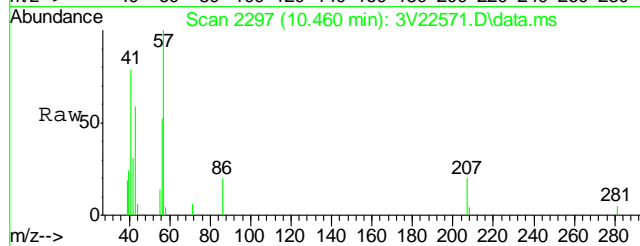
Tgt Ion:114 Resp: 530134





#41  
Hexane  
Concen: 2.41 ug/l  
RT: 10.460 min Scan# 2297  
Delta R.T. -0.007 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

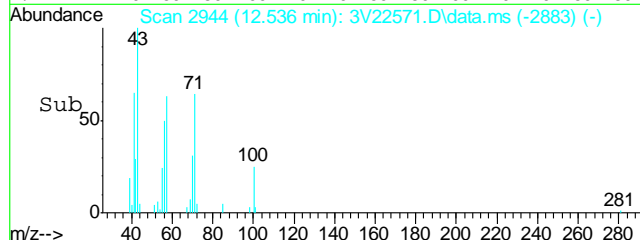
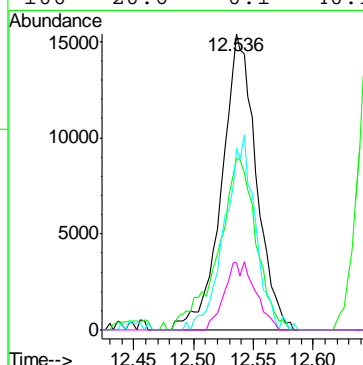
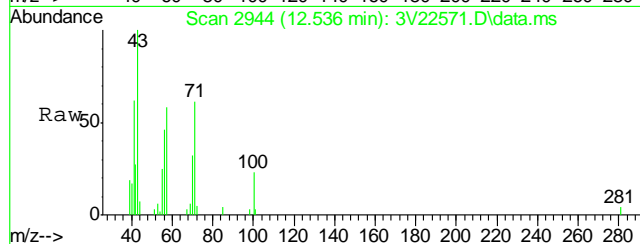
Tgt Ion: 57 Resp: 14962



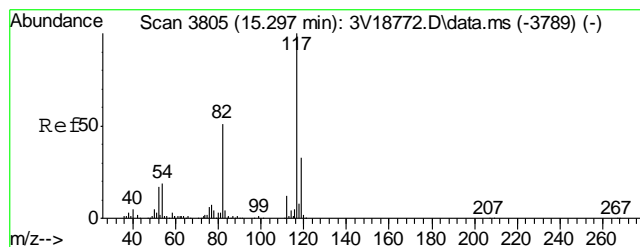
#43  
Heptane  
Concen: 4.33 ug/l  
RT: 12.536 min Scan# 2944  
Delta R.T. -0.004 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

Tgt Ion: 43 Resp: 30804

Ion	Ratio	Lower	Upper
43	100		
57	63.9	32.1	72.1
71	57.9	39.6	79.6
100	20.6	0.1	40.1

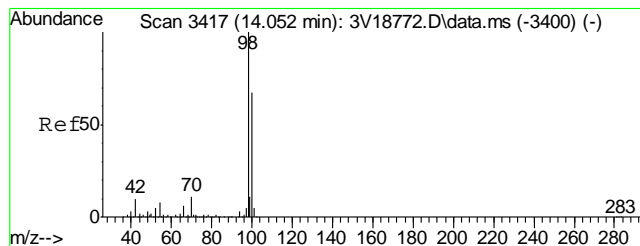
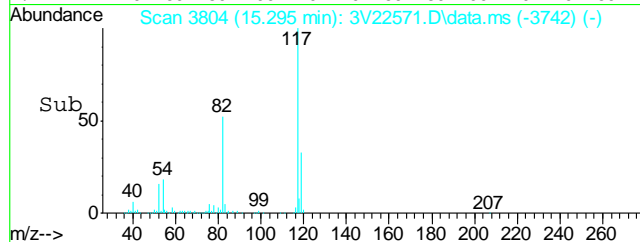
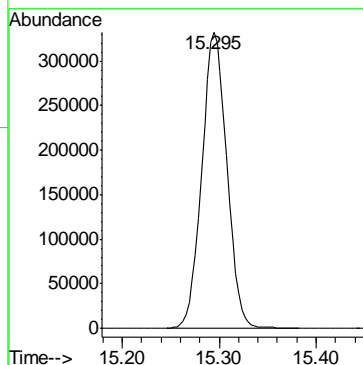
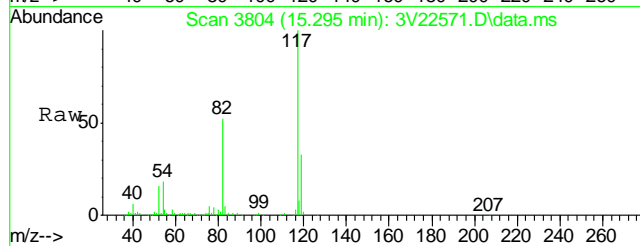






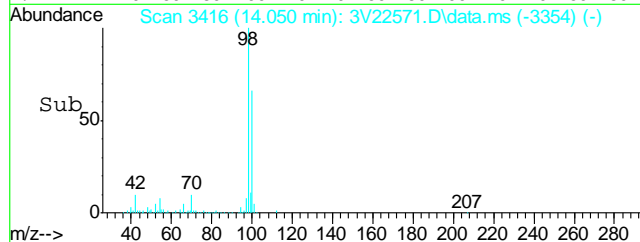
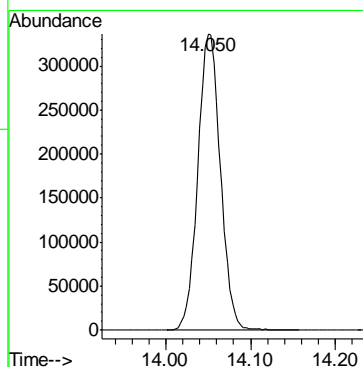
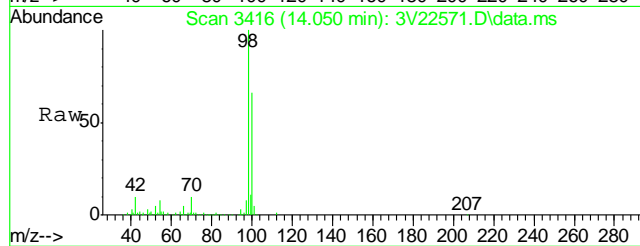
#53  
Chlorobenzene-d5  
Concen: 50.00 ug/l  
RT: 15.295 min Scan# 3804  
Delta R.T. -0.001 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

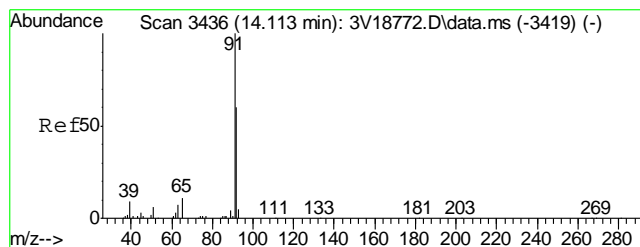
Tgt Ion:117 Resp: 595022



#61  
Toluene-d8  
Concen: 43.28 ug/l  
RT: 14.050 min Scan# 3416  
Delta R.T. -0.001 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

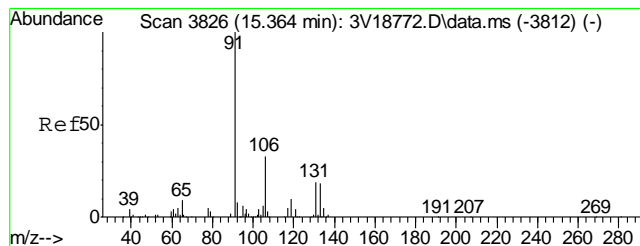
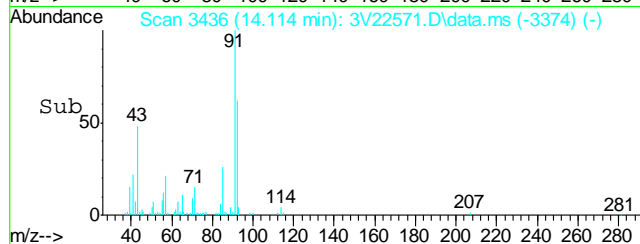
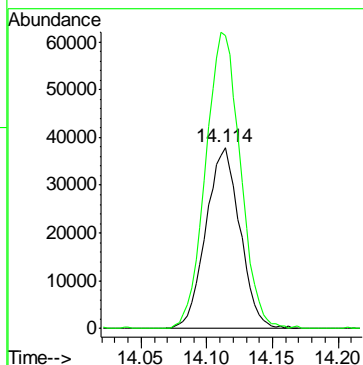
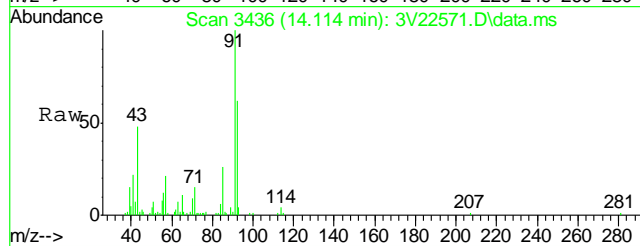
Tgt Ion: 98 Resp: 620064





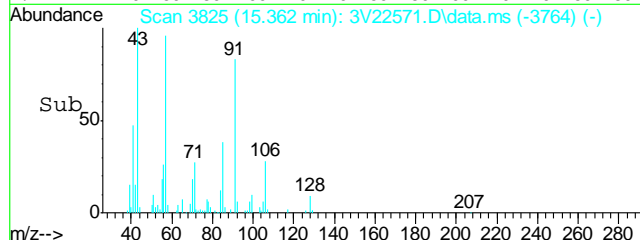
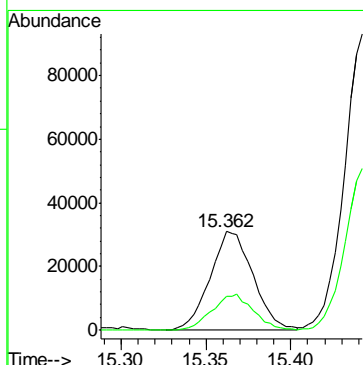
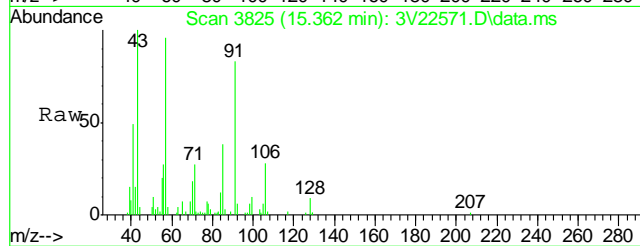
#62  
Toluene  
Concen: 5.53 ug/l  
RT: 14.114 min Scan# 3436  
Delta R.T. 0.000 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

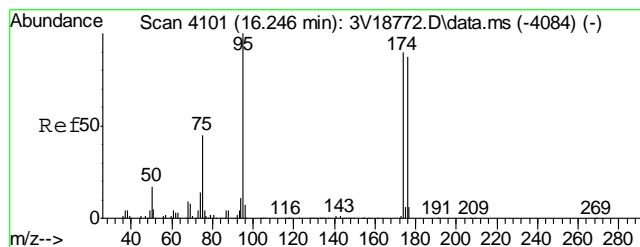
Tgt Ion: 92 Resp: 68281  
Ion Ratio Lower Upper  
92 100  
91 166.7 150.2 190.2



#66  
Ethylbenzene  
Concen: 2.50 ug/l  
RT: 15.362 min Scan# 3825  
Delta R.T. -0.004 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

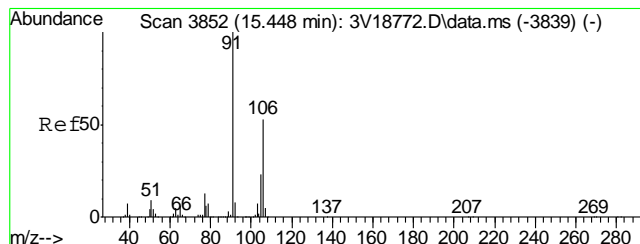
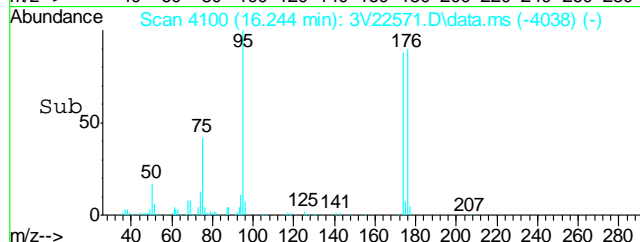
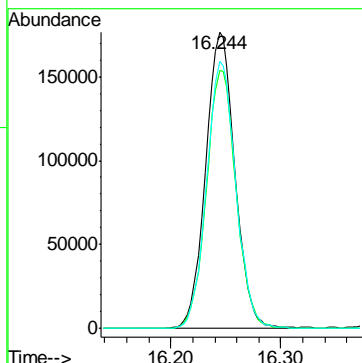
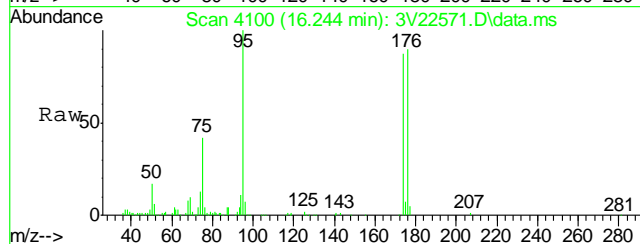
Tgt Ion: 91 Resp: 54248  
Ion Ratio Lower Upper  
91 100  
106 34.8 13.2 53.2





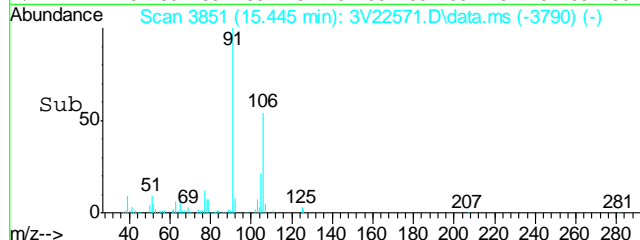
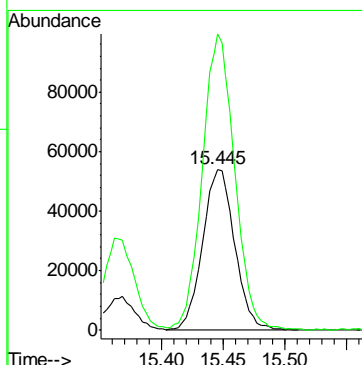
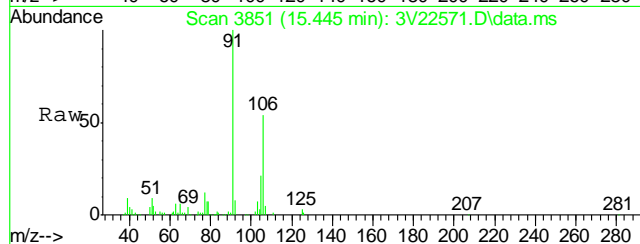
#69  
4-Bromofluorobenzene  
Concen: 52.61 ug/l  
RT: 16.244 min Scan# 4100  
Delta R.T. -0.001 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

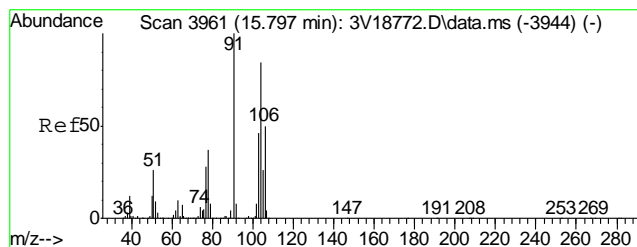
Tgt Ion	Ratio	Lower	Upper
95	100		
174	88.3	0.0	20.0#
176	90.2	0.0	20.0#



#72  
m,p-xylene  
Concen: 10.71 ug/l  
RT: 15.445 min Scan# 3851  
Delta R.T. -0.004 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

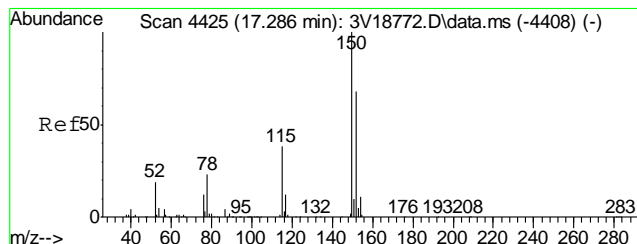
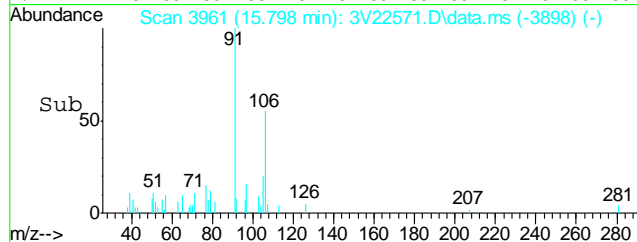
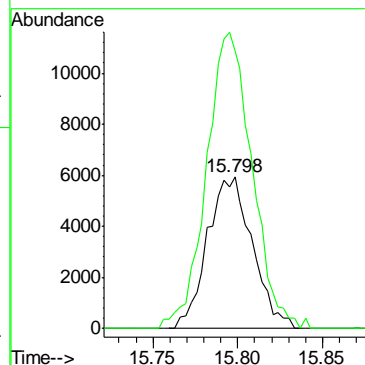
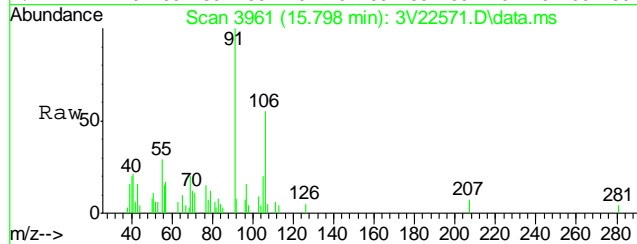
Tgt Ion	Ratio	Lower	Upper
106	100		
91	186.2	168.1	208.1





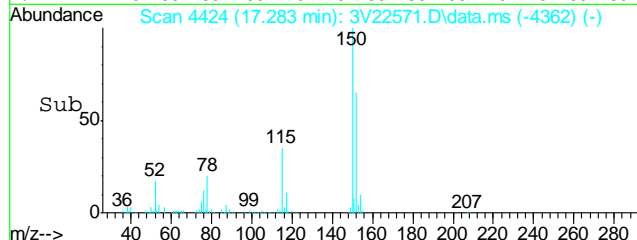
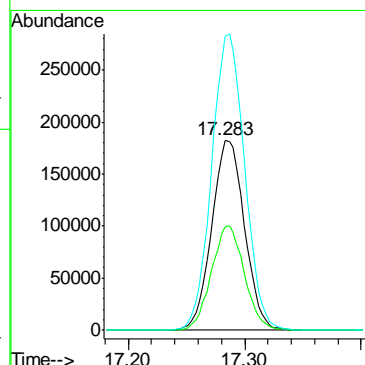
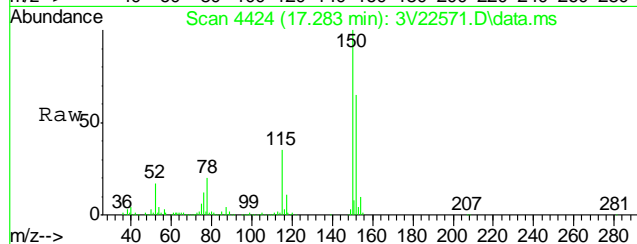
#73  
o-xylene  
Concen: 1.23 ug/l  
RT: 15.798 min Scan# 3961  
Delta R.T. 0.002 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

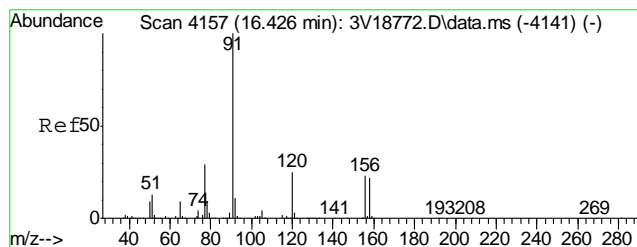
Tgt Ion	Ratio	Lower	Upper
106	100		
91	198.6	180.3	220.3



#74  
1,4-Dichlorobenzene-d4  
Concen: 50.00 ug/l  
RT: 17.283 min Scan# 4424  
Delta R.T. -0.001 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

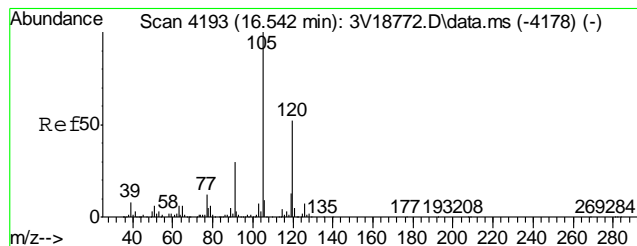
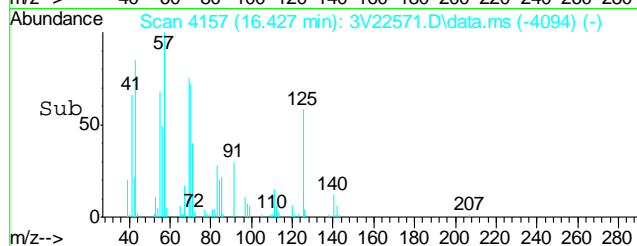
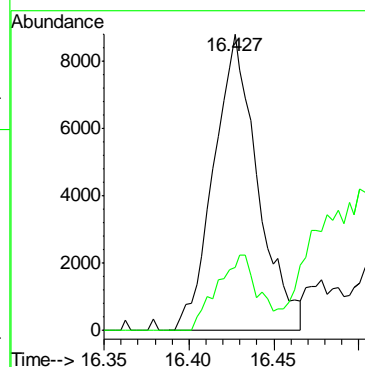
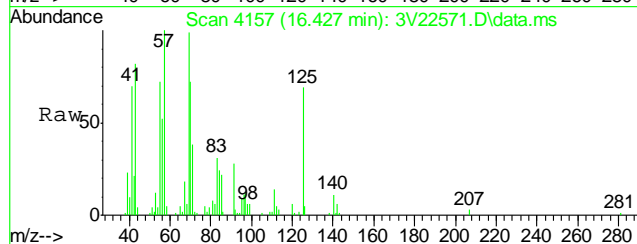
Tgt Ion	Ratio	Lower	Upper
152	100		
115	55.0	34.6	74.6
150	156.6	152.1	192.1





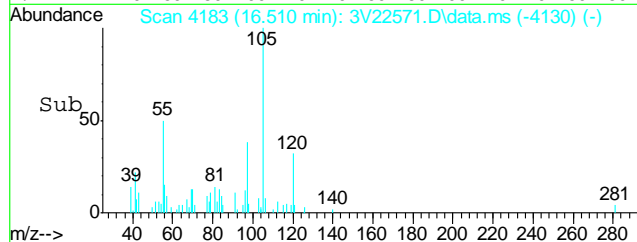
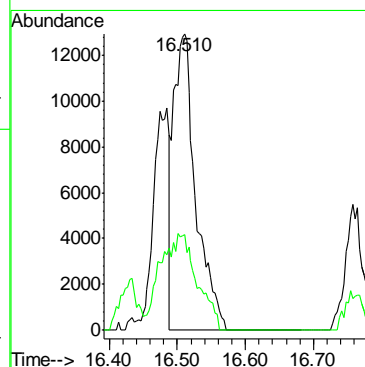
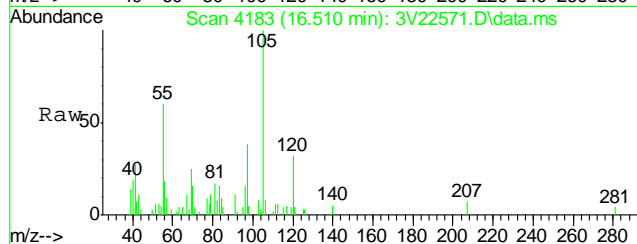
#77  
n-Propylbenzene  
Concen: 0.65 ug/l  
RT: 16.427 min Scan# 4157  
Delta R.T. 0.002 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

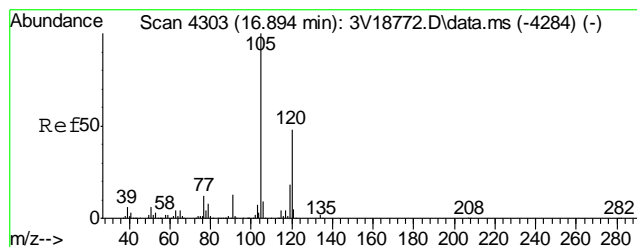
Tgt Ion: 91 Resp: 15879  
Ion Ratio Lower Upper  
91 100  
120 25.1 4.9 44.9



#80  
1,3,5-Trimethylbenzene  
Concen: 1.61 ug/l m  
RT: 16.510 min Scan# 4183  
Delta R.T. -0.030 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

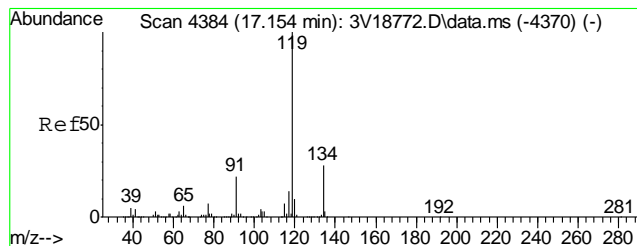
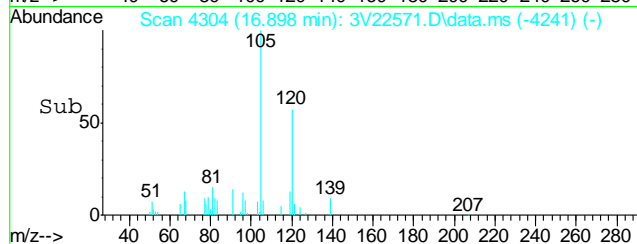
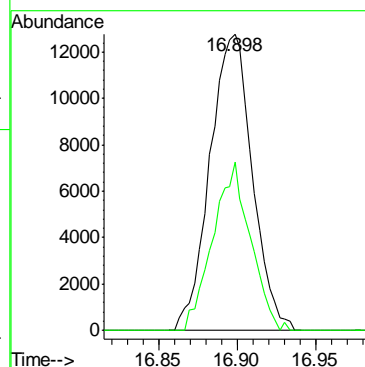
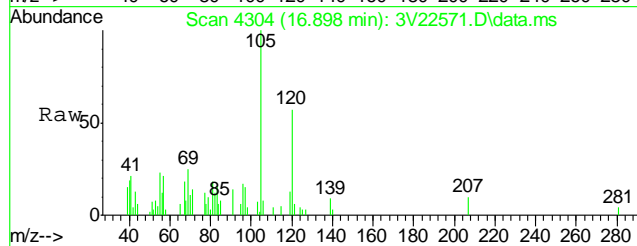
Tgt Ion: 105 Resp: 29541  
Ion Ratio Lower Upper  
105 100  
120 52.9 31.8 71.8





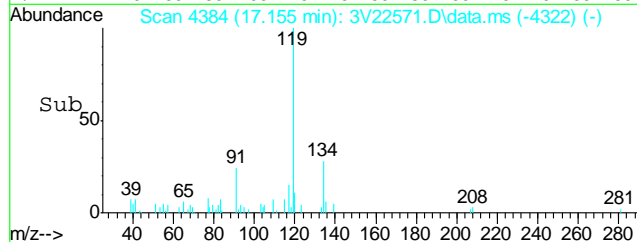
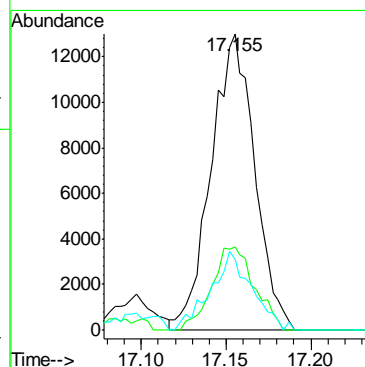
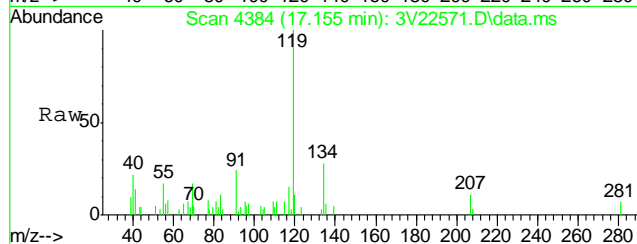
#82  
1,2,4-Trimethylbenzene  
Concen: 1.28 ug/l  
RT: 16.898 min Scan# 4304  
Delta R.T. 0.002 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

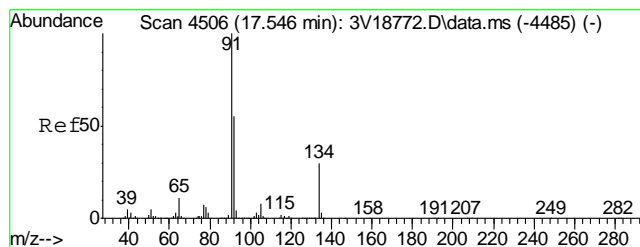
Tgt Ion	Ratio	Lower	Upper
105	100		
120	50.1	36.4	76.4



#86  
p-Isopropyltoluene  
Concen: 1.11 ug/l  
RT: 17.155 min Scan# 4384  
Delta R.T. -0.001 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

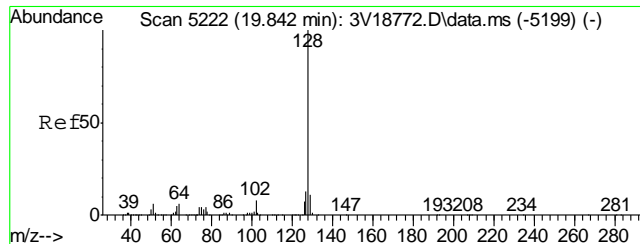
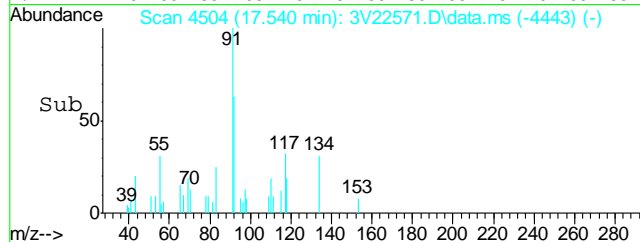
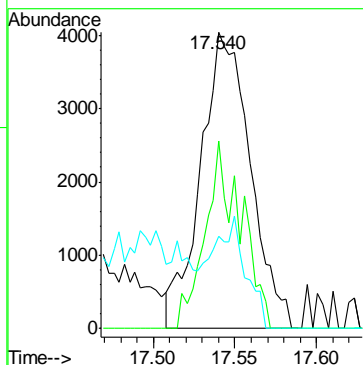
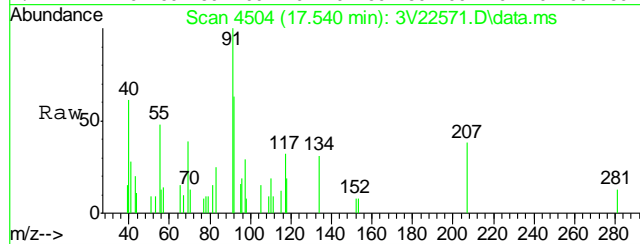
Tgt Ion	Ratio	Lower	Upper
119	100		
134	27.5	7.9	47.9
91	25.1	1.8	41.8





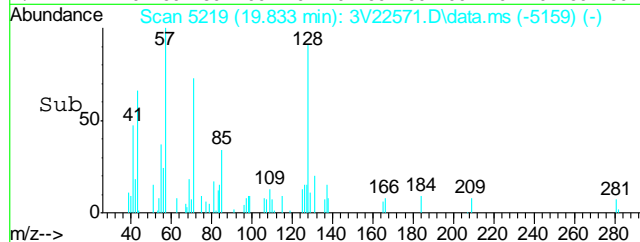
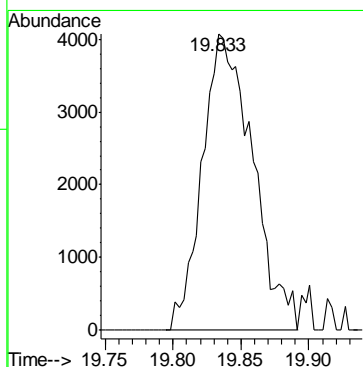
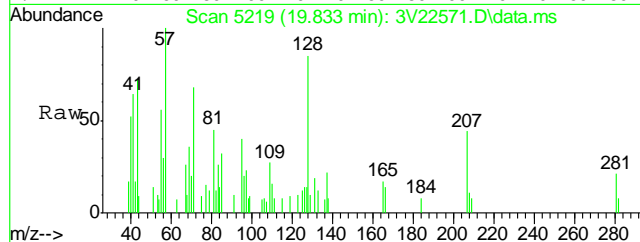
#88  
n-Butylbenzene  
Concen: 0.50 ug/l  
RT: 17.540 min Scan# 4504  
Delta R.T. -0.004 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

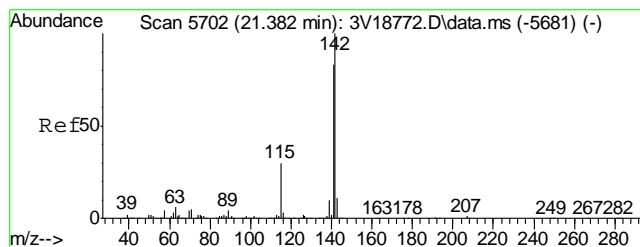
Tgt Ion	Resp	Lower	Upper
91	100		
92	45.7	34.8	74.8
134	0.0	8.9	48.9#



#91  
Naphthalene  
Concen: 1.57 ug/l  
RT: 19.833 min Scan# 5219  
Delta R.T. -0.007 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

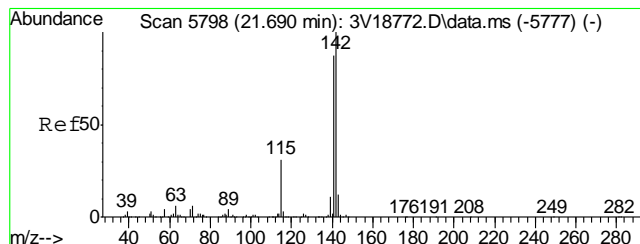
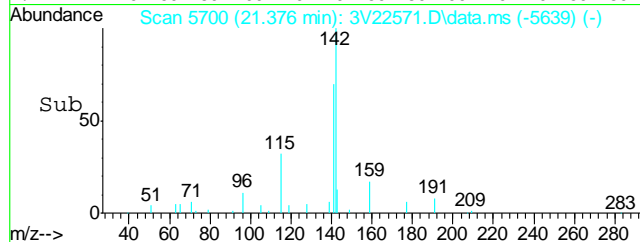
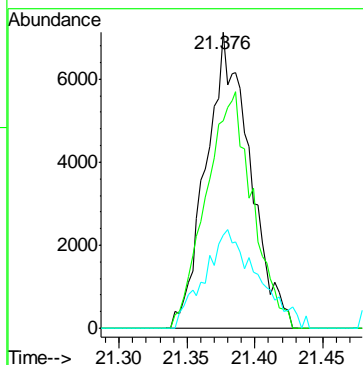
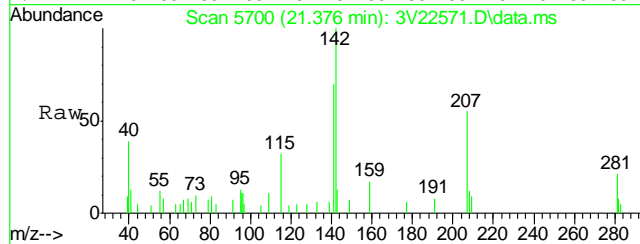
Tgt Ion: 128 Resp: 10434





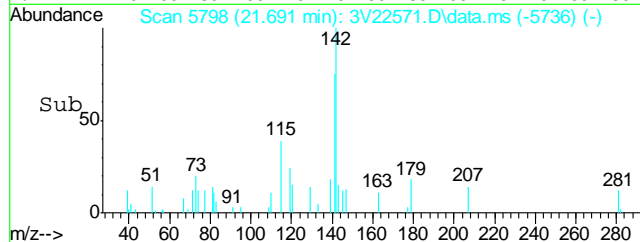
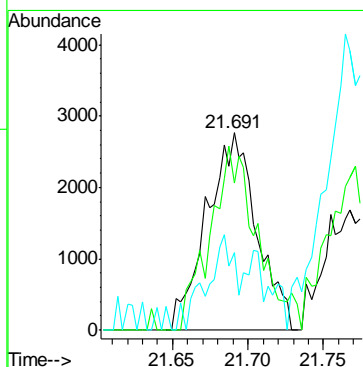
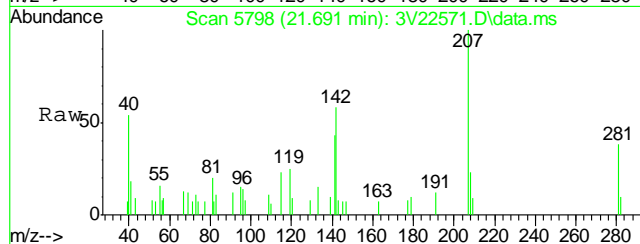
#94  
2-Methylnaphthalene  
Concen: 1.92 ug/l  
RT: 21.376 min Scan# 5700  
Delta R.T. -0.004 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

Tgt Ion	Ratio	Lower	Upper
142	100		
141	85.5	65.8	105.8
115	40.8	9.7	49.7



#95  
1-Methylnaphthalene  
Concen: 0.81 ug/l  
RT: 21.691 min Scan# 5798  
Delta R.T. -0.001 min  
Lab File: 3V22571.D  
Acq: 12 Jan 2013 7:45 am

Tgt Ion	Ratio	Lower	Upper
142	100		
141	87.6	68.3	108.3
115	24.0	11.8	51.8





## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3011113.S\  
 Data File : 3V22560.D  
 Acq On : 12 Jan 2013 2:00 am  
 Operator : BRETD  
 Sample : MB  
 Misc : MS5218,V3V1327,5.00,,100,5,1  
 ALS Vial : 27 Sample Multiplier: 1

Quant Time: Jan 15 08:11:29 2013  
 Quant Method : C:\msdchem\1\METHODS\V3AP1299TVH1299SOIL.M  
 Quant Title : 8260  
 QLast Update : Thu Jan 03 11:40:16 2013  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.863	168	308471	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.659	114	500082	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.295	117	525362	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.287	152	304372	50.00	ug/l	0.00

## System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.251	102	33686	48.79	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	97.58%
61) Toluene-d8	14.054	98	562082	44.44	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	88.88%
69) 4-Bromofluorobenzene	16.245	95	265181	48.67	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	97.34%

## Target Compounds

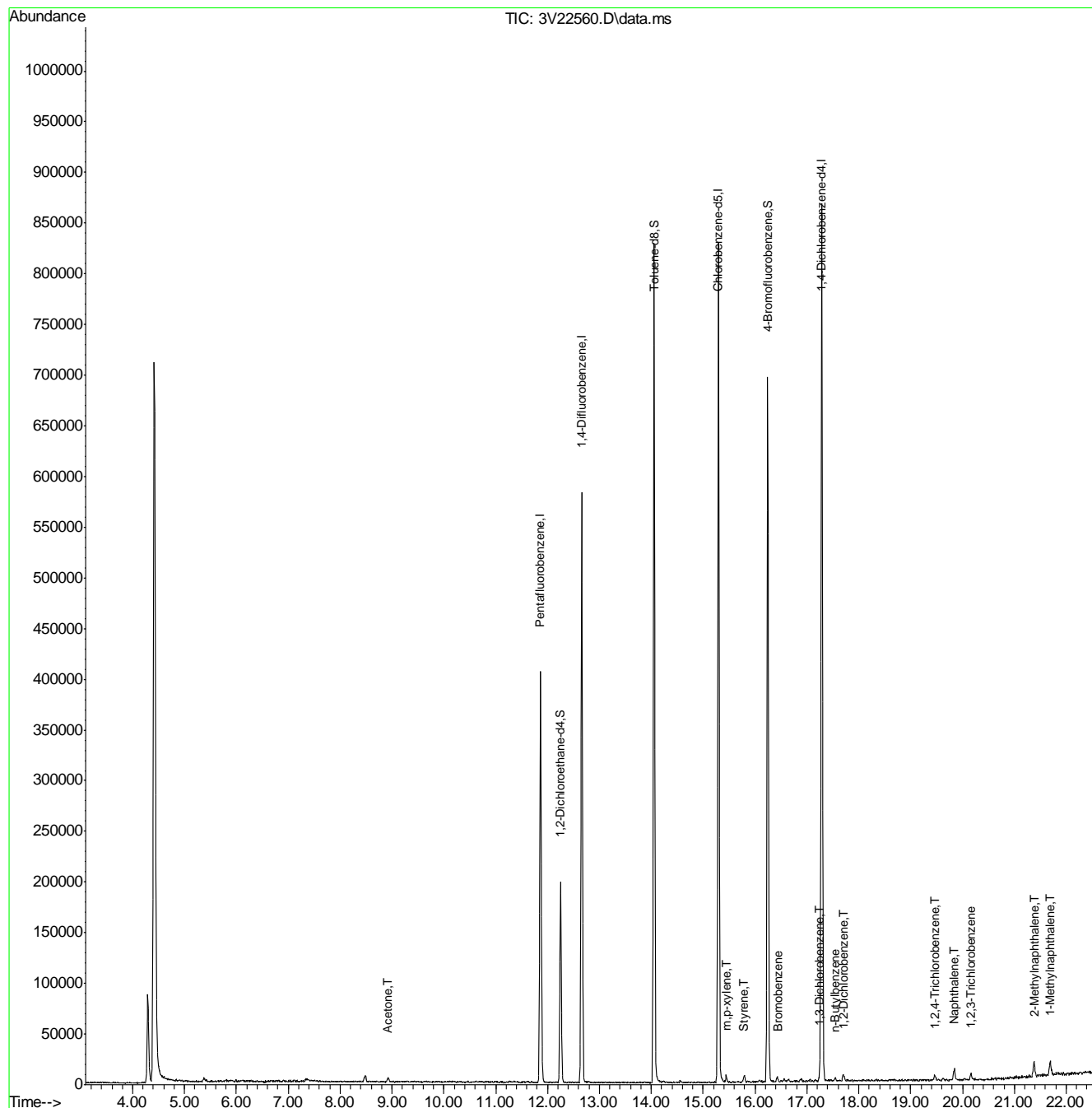
						Qvalue
15) Acetone	8.925	43	6973	0.73	ug/l	100
70) Bromobenzene	16.441	156	1174	0.21	ug/l	90
71) Styrene	15.796	104	1960	0.56	ug/l	86
72) m,p-xylene	15.453	106	2503	0.31	ug/l	90
84) 1,3-Dichlorobenzene	17.239	146	3019	0.28	ug/l	96
87) 1,2-Dichlorobenzene	17.704	146	3319	0.32	ug/l	96
88) n-Butylbenzene	17.541	91	3129	0.22	ug/l	88
90) 1,2,4-Trichlorobenzene	19.462	180	3118	0.48	ug/l	92
91) Naphthalene	19.838	128	16063	2.00	ug/l	100
93) 1,2,3-Trichlorobenzene	20.168	180	3642	0.57	ug/l	94
94) 2-Methylnaphthalene	21.384	142	13326	1.89	ug/l	97
95) 1-Methylnaphthalene	21.692	142	11465	1.71	ug/l	98

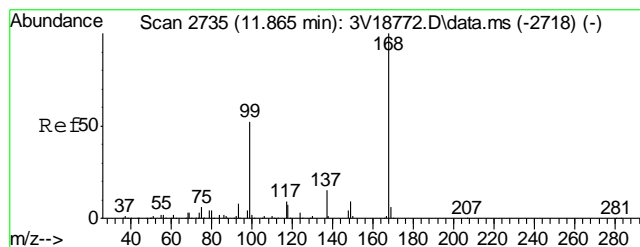
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3011113.S\  
Data File : 3V22560.D  
Acq On : 12 Jan 2013 2:00 am  
Operator : BRETD  
Sample : MB  
Misc : MS5218,V3V1327,5.00,,100,5,1  
ALS Vial : 27 Sample Multiplier: 1

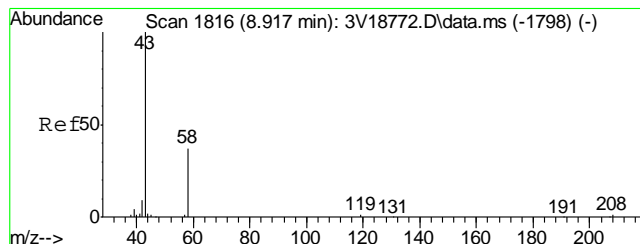
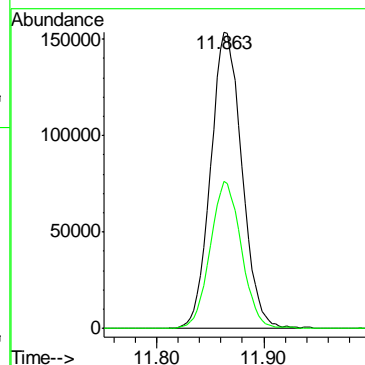
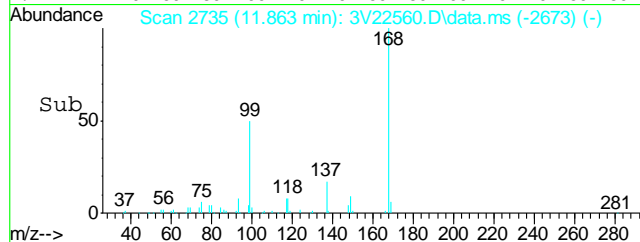
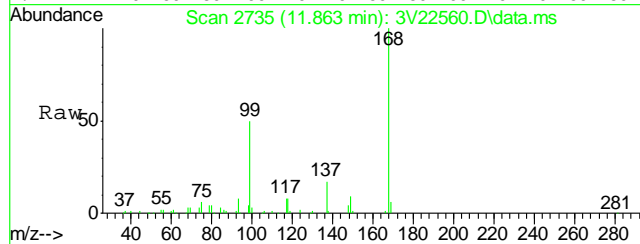
Quant Time: Jan 15 08:11:29 2013  
Quant Method : C:\msdchem\1\METHODS\V3AP1299TVH1299SOIL.M  
Quant Title : 8260  
QLast Update : Thu Jan 03 11:40:16 2013  
Response via : Initial Calibration





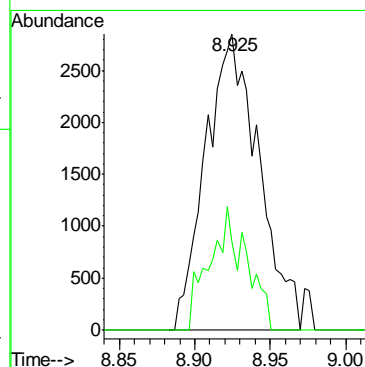
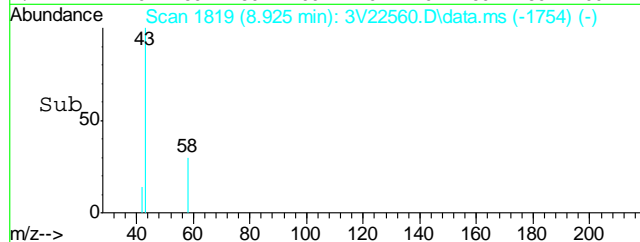
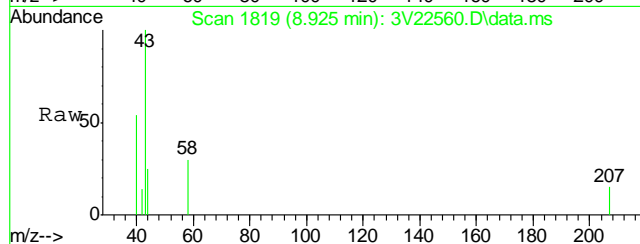
#2  
Pentafluorobenzene  
Concen: 50.00 ug/l  
RT: 11.863 min Scan# 2735  
Delta R.T. 0.000 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

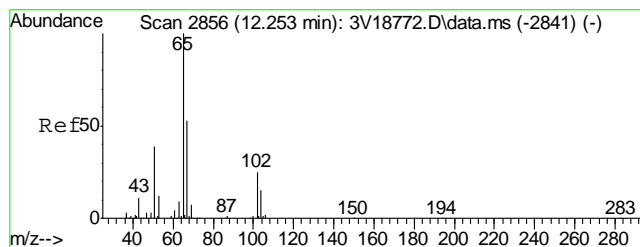
Tgt Ion: 168 Resp: 308471  
Ion Ratio Lower Upper  
168 100  
99 49.5 29.0 69.0



#15  
Acetone  
Concen: 0.73 ug/l  
RT: 8.925 min Scan# 1819  
Delta R.T. 0.010 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

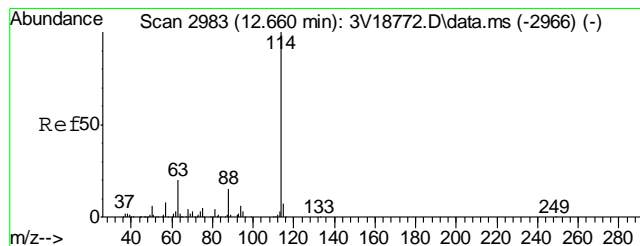
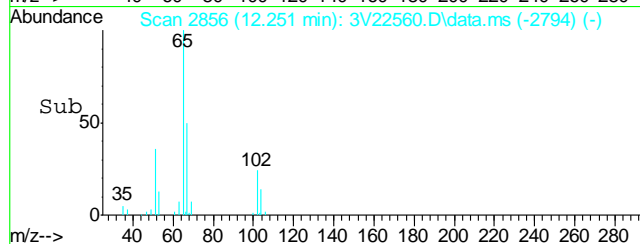
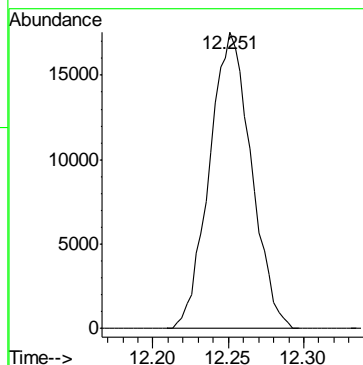
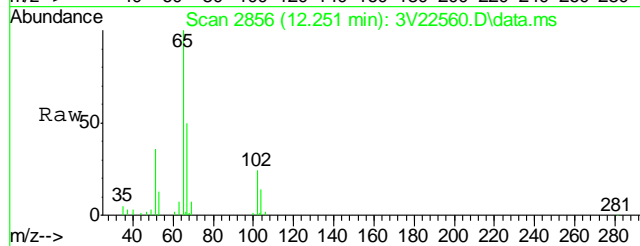
Tgt Ion: 43 Resp: 6973  
Ion Ratio Lower Upper  
43 100  
58 29.0 8.7 48.7





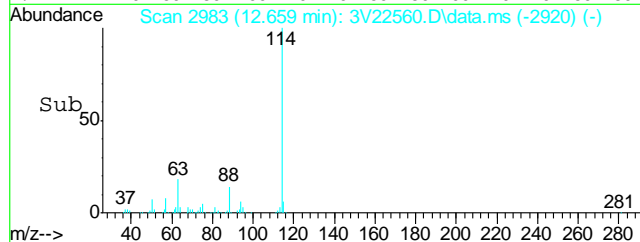
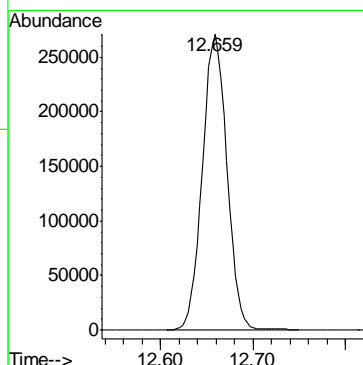
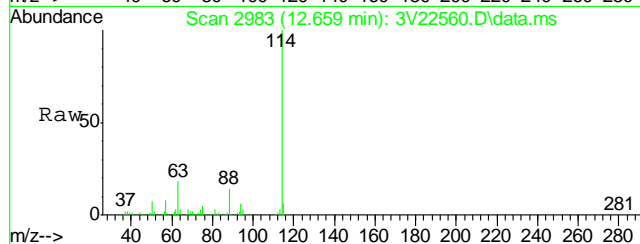
#33  
1,2-Dichloroethane-d4  
Concen: 48.79 ug/l  
RT: 12.251 min Scan# 2856  
Delta R.T. 0.000 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

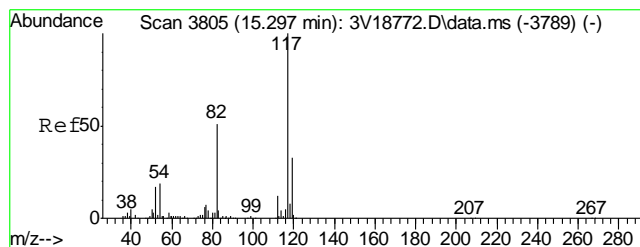
Tgt Ion:102 Resp: 33686



#35  
1,4-Difluorobenzene  
Concen: 50.00 ug/l  
RT: 12.659 min Scan# 2983  
Delta R.T. 0.003 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

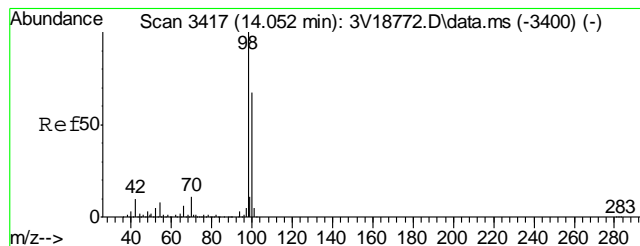
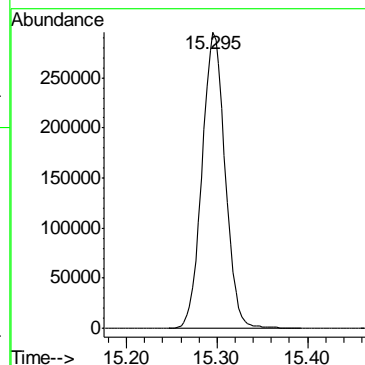
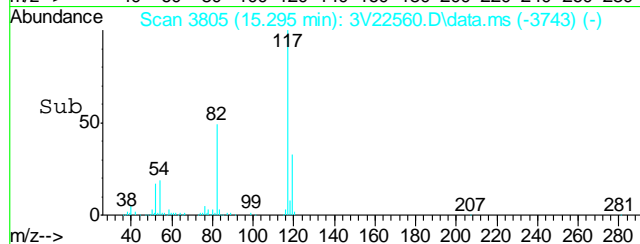
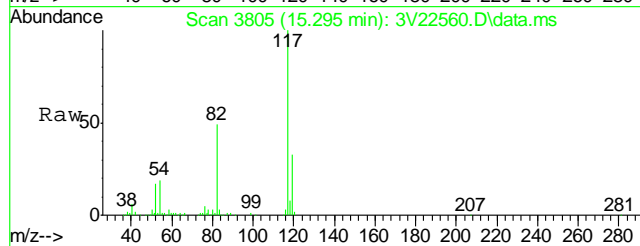
Tgt Ion:114 Resp: 500082





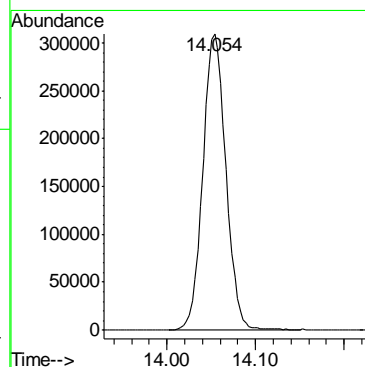
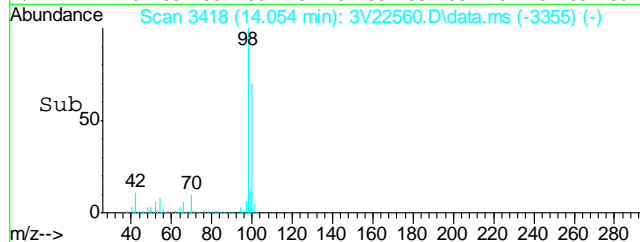
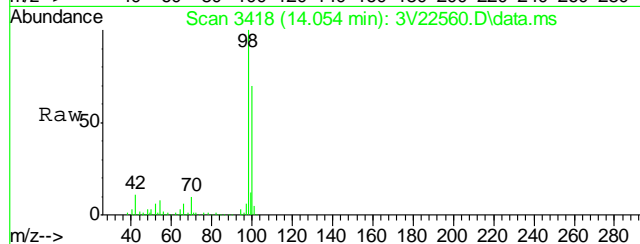
#53  
Chlorobenzene-d5  
Concen: 50.00 ug/l  
RT: 15.295 min Scan# 3805  
Delta R.T. 0.000 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

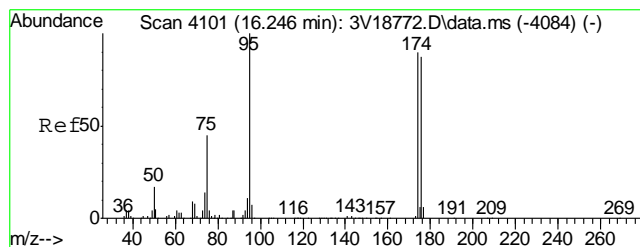
Tgt Ion: 117 Resp: 525362



#61  
Toluene-d8  
Concen: 44.44 ug/l  
RT: 14.054 min Scan# 3418  
Delta R.T. 0.003 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

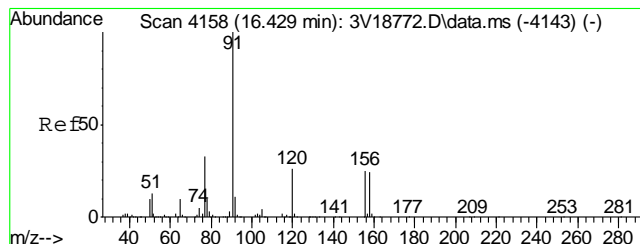
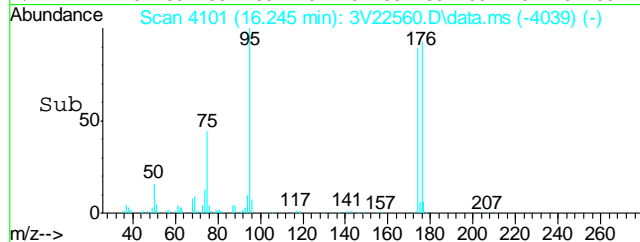
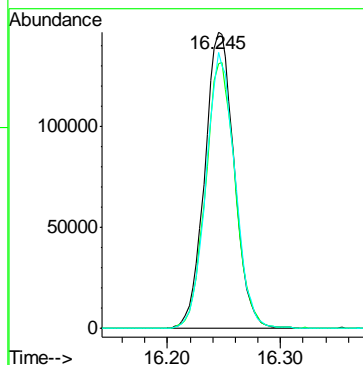
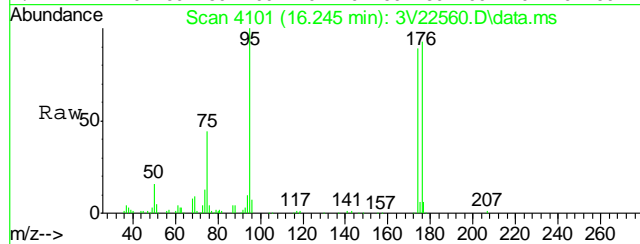
Tgt Ion: 98 Resp: 562082





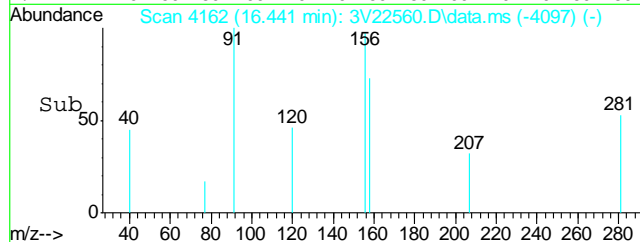
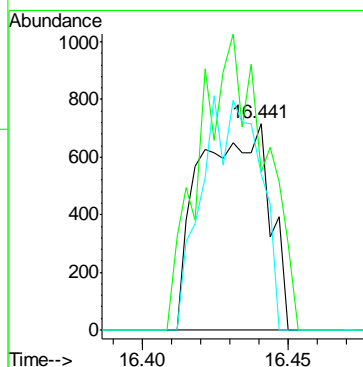
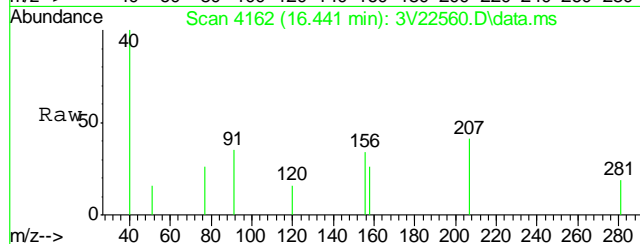
#69  
4-Bromofluorobenzene  
Concen: 48.67 ug/l  
RT: 16.245 min Scan# 4101  
Delta R.T. 0.000 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

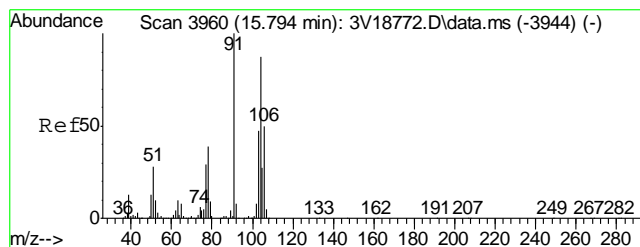
Tgt Ion:	95	Resp:	265181
Ion Ratio	Lower	Upper	
95	100		
174	89.9	0.0	20.0#
176	91.3	0.0	20.0#



#70  
Bromobenzene  
Concen: 0.21 ug/l  
RT: 16.441 min Scan# 4162  
Delta R.T. 0.010 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

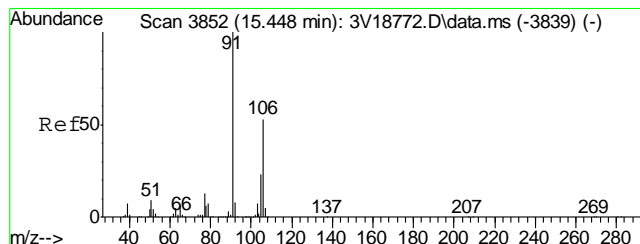
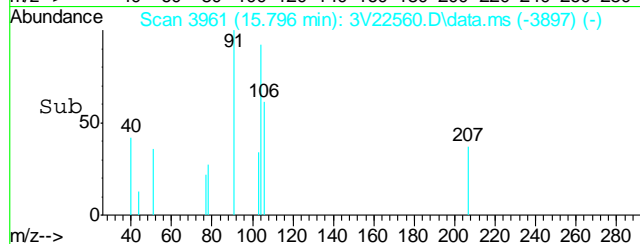
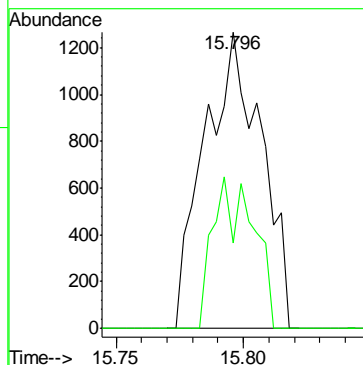
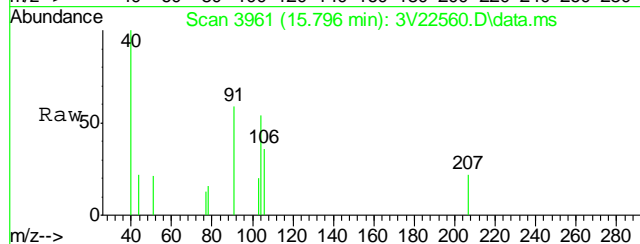
Tgt Ion:	156	Resp:	1174
Ion Ratio	Lower	Upper	
156	100		
77	136.3	135.4	175.4
158	95.1	77.3	117.3





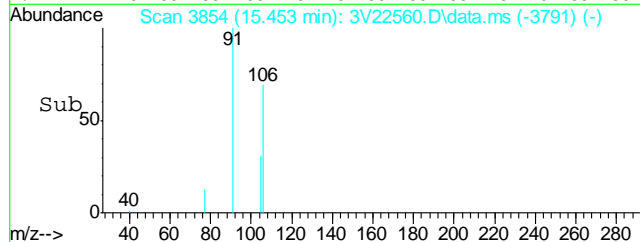
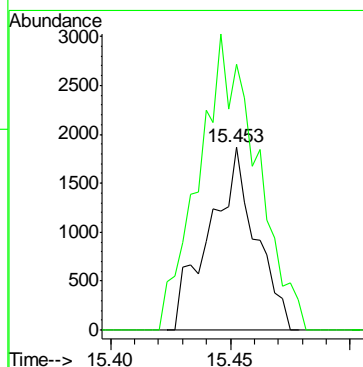
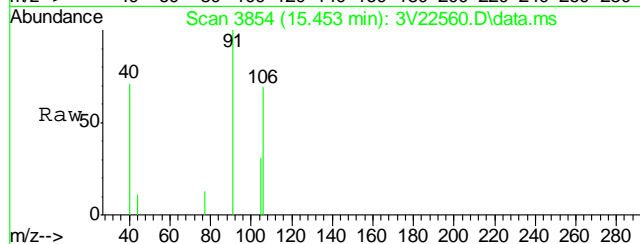
#71  
Styrene  
Concen: 0.56 ug/l  
RT: 15.796 min Scan# 3961  
Delta R.T. 0.004 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

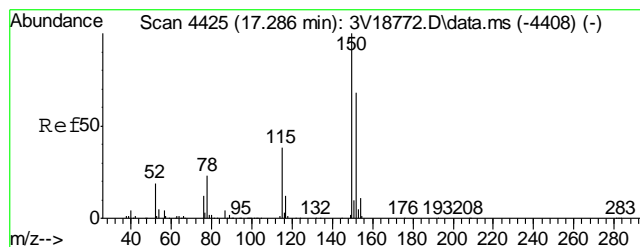
Tgt Ion:104 Resp: 1960  
Ion Ratio Lower Upper  
104 100  
78 36.5 25.4 65.4



#72  
m,p-xylene  
Concen: 0.31 ug/l  
RT: 15.453 min Scan# 3854  
Delta R.T. 0.003 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

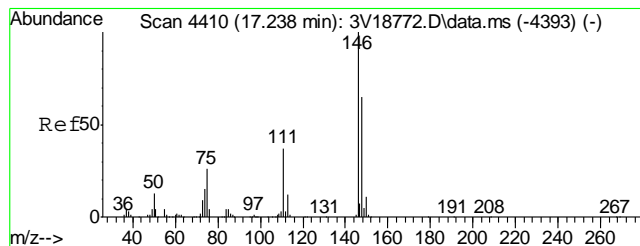
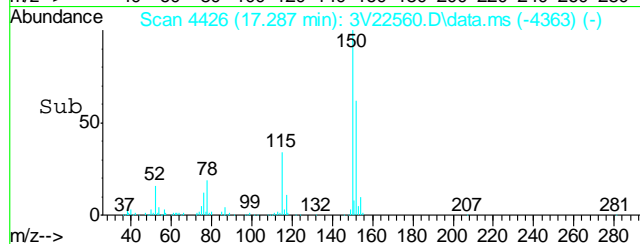
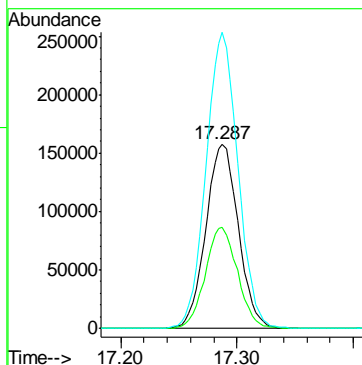
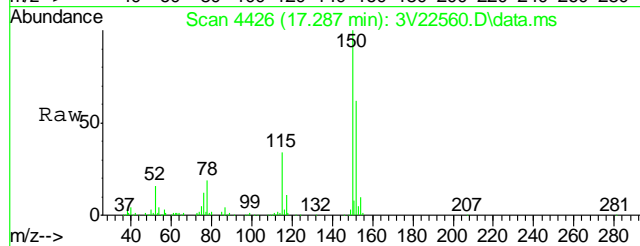
Tgt Ion:106 Resp: 2503  
Ion Ratio Lower Upper  
106 100  
91 202.3 168.1 208.1





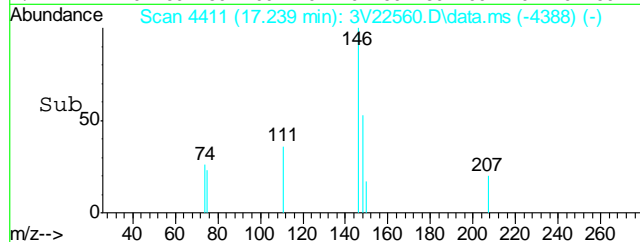
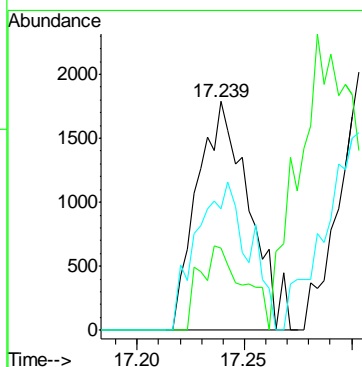
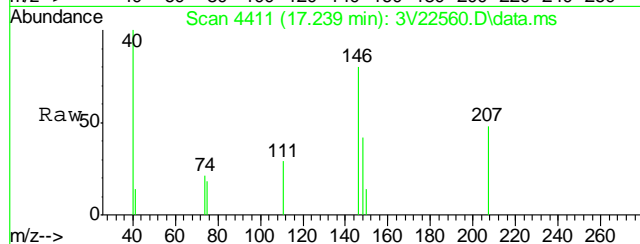
#74  
1,4-Dichlorobenzene-d4  
Concen: 50.00 ug/l  
RT: 17.287 min Scan# 4426  
Delta R.T. 0.003 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

Tgt Ion:	152	Resp:	304372
Ion Ratio	Lower	Upper	
152	100		
115	54.2	34.6	74.6
150	158.2	152.1	192.1

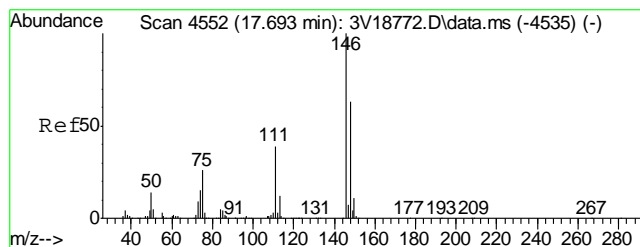


#84  
1,3-Dichlorobenzene  
Concen: 0.28 ug/l  
RT: 17.239 min Scan# 4411  
Delta R.T. 0.004 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

Tgt Ion:	146	Resp:	3019
Ion Ratio	Lower	Upper	
146	100		
111	31.2	17.1	57.1
148	64.9	44.2	84.2

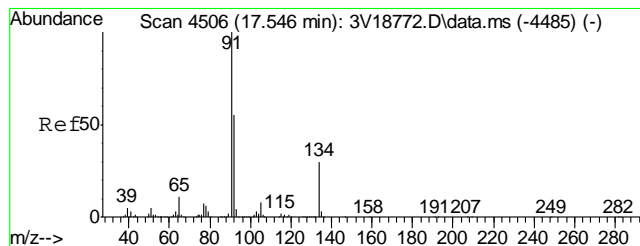
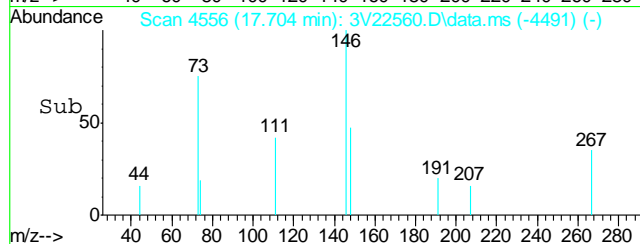
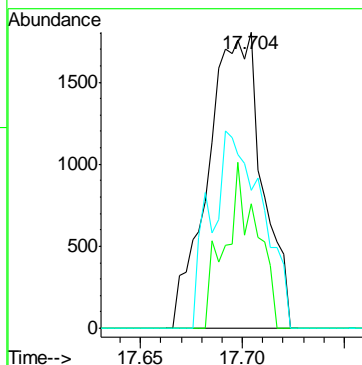
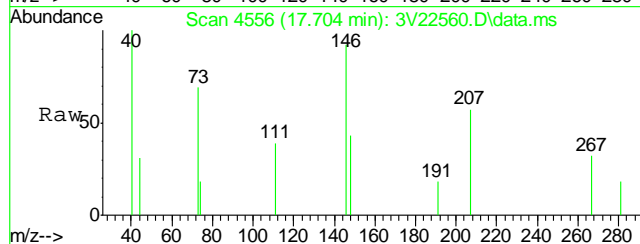






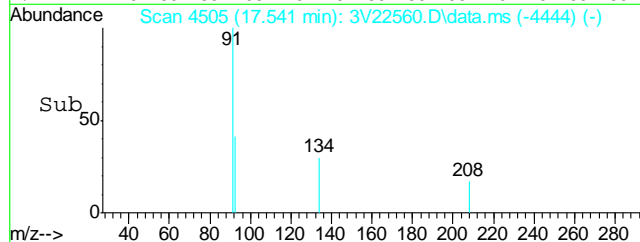
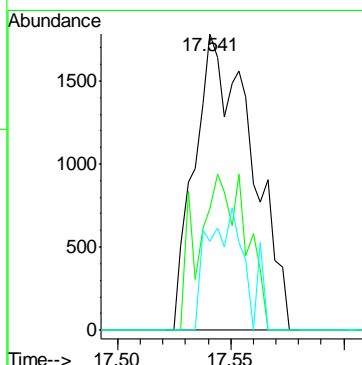
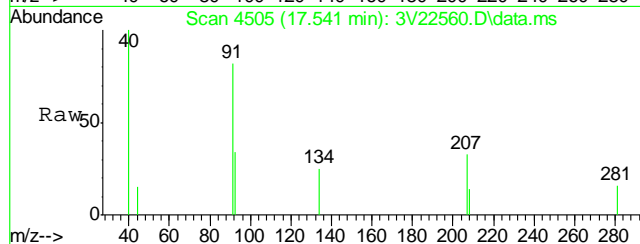
#87  
1,2-Dichlorobenzene  
Concen: 0.32 ug/l  
RT: 17.704 min Scan# 4556  
Delta R.T. 0.010 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

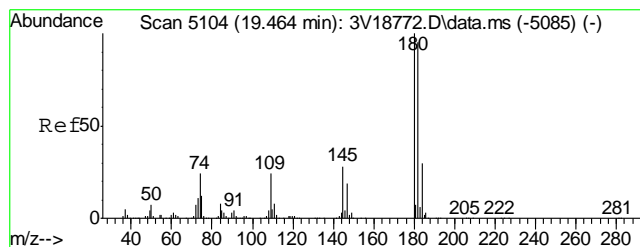
Tgt Ion	Ratio	Lower	Upper
146	100		
111	33.4	18.8	58.8
148	63.2	44.3	84.3



#88  
n-Butylbenzene  
Concen: 0.22 ug/l  
RT: 17.541 min Scan# 4505  
Delta R.T. -0.003 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

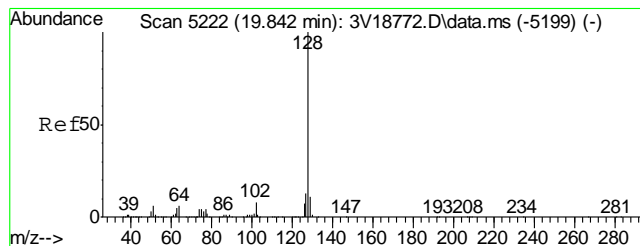
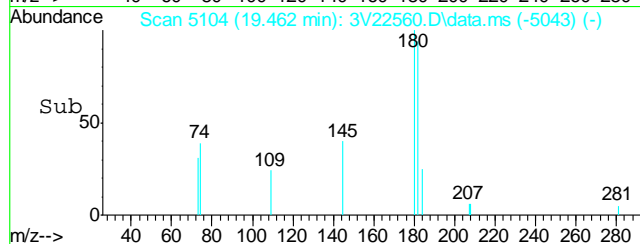
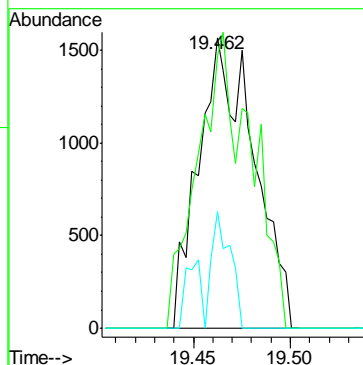
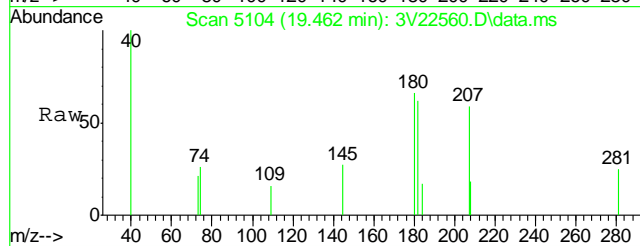
Tgt Ion	Ratio	Lower	Upper
91	100		
92	44.4	34.8	74.8
134	24.3	8.9	48.9





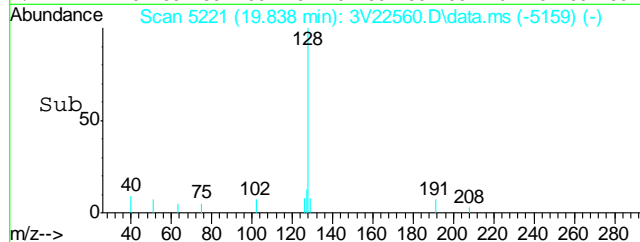
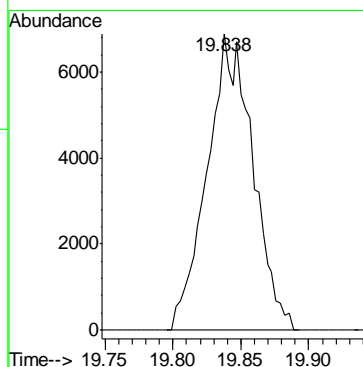
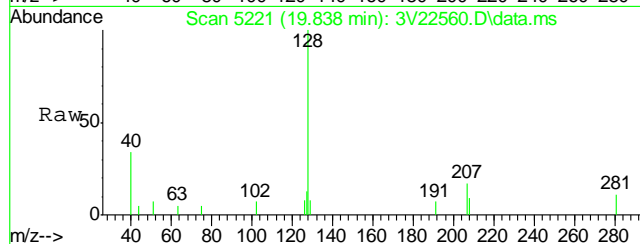
#90  
1,2,4-Trichlorobenzene  
Concen: 0.48 ug/l  
RT: 19.462 min Scan# 5104  
Delta R.T. -0.003 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

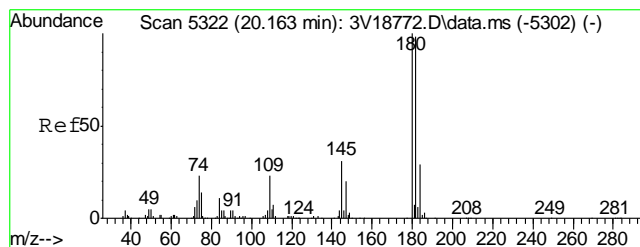
Tgt Ion	Ratio	Lower	Upper
180	100		
182	98.0	75.5	115.5
145	13.6	8.6	48.6



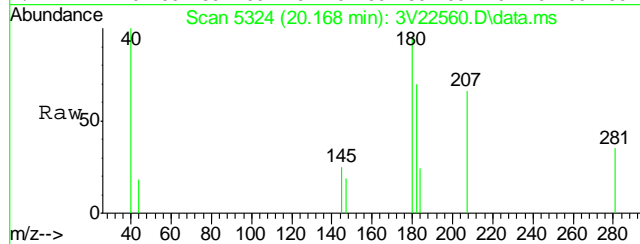
#91  
Naphthalene  
Concen: 2.00 ug/l  
RT: 19.838 min Scan# 5221  
Delta R.T. -0.002 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

Tgt Ion:128 Resp: 16063

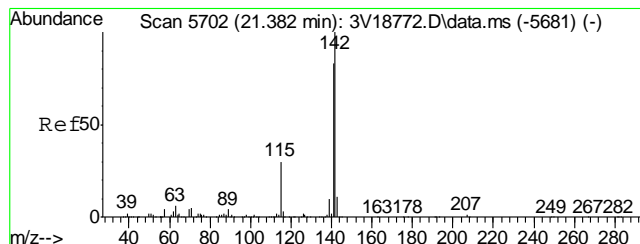
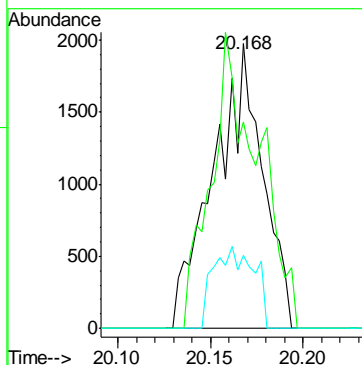
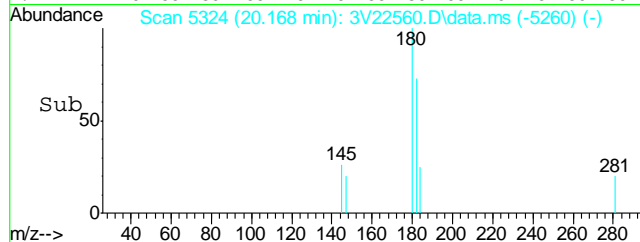




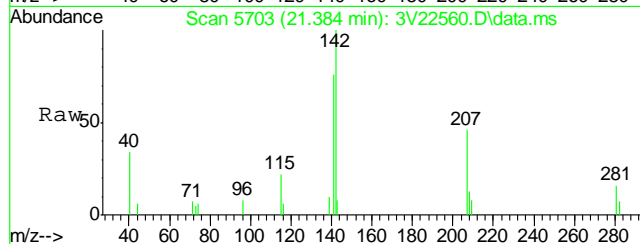
#93  
1,2,3-Trichlorobenzene  
Concen: 0.57 ug/l  
RT: 20.168 min Scan# 5324  
Delta R.T. 0.006 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am



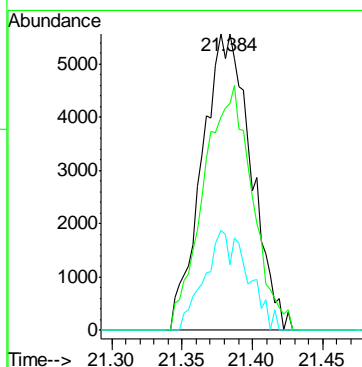
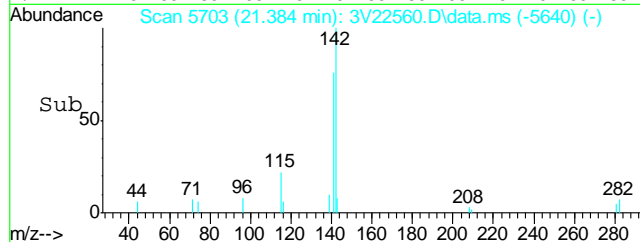
Tgt Ion	Ratio	Lower	Upper
180	100		
182	99.5	75.6	115.6
145	23.7	10.3	50.3

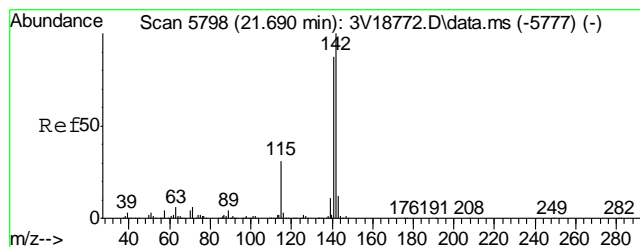


#94  
2-Methylnaphthalene  
Concen: 1.89 ug/l  
RT: 21.384 min Scan# 5703  
Delta R.T. 0.003 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am



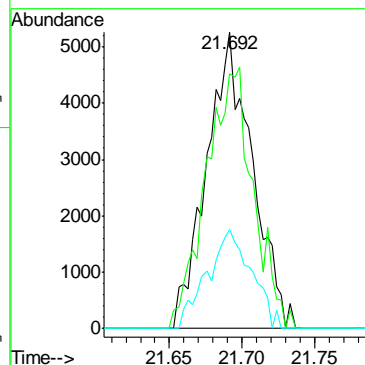
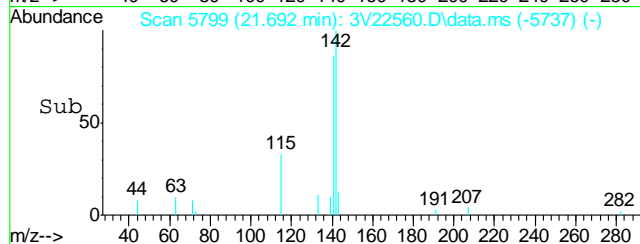
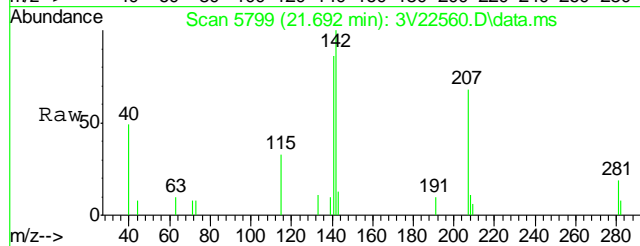
Tgt Ion	Ratio	Lower	Upper
142	100		
141	82.0	65.8	105.8
115	29.4	9.7	49.7





#95  
1-Methylnaphthalene  
Concen: 1.71 ug/l  
RT: 21.692 min Scan# 5799  
Delta R.T. 0.000 min  
Lab File: 3V22560.D  
Acq: 12 Jan 2013 2:00 am

Tgt Ion	Ratio	Lower	Upper
142	100		
141	90.8	68.3	108.3
115	32.2	11.8	51.8



## 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:** D42556  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7223-MB	3G12973.D	1	01/15/13	DC	01/14/13	OP7223	E3G621

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D42556-1, D42556-2

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	
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	
50-32-8	Benzo(a)pyrene	ND	8.3	4.3	ug/kg	
218-01-9	Chrysene	ND	8.3	4.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	8.3	4.3	ug/kg	
206-44-0	Fluoranthene	ND	8.3	4.3	ug/kg	
86-73-7	Fluorene	ND	8.3	4.3	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	8.3	4.3	ug/kg	
91-20-3	Naphthalene	ND	12	10	ug/kg	
129-00-0	Pyrene	ND	8.3	4.3	ug/kg	

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	81% 10-159%
321-60-8	2-Fluorobiphenyl	85% 19-131%
1718-51-0	Terphenyl-d14	105% 18-150%

8.1.1

8

## Blank Spike Summary

Page 1 of 1

**Job Number:** D42556  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7223-BS	3G12974.D	1	01/15/13	DC	01/14/13	OP7223	E3G621

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D42556-1, D42556-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	87.0	104	68-130
120-12-7	Anthracene	83.3	75.1	90	67-130
56-55-3	Benzo(a)anthracene	83.3	79.3	95	65-130
205-99-2	Benzo(b)fluoranthene	83.3	79.2	95	44-130
207-08-9	Benzo(k)fluoranthene	83.3	65.4	78	56-131
50-32-8	Benzo(a)pyrene	83.3	70.8	85	62-130
218-01-9	Chrysene	83.3	70.3	84	70-130
53-70-3	Dibenzo(a,h)anthracene	83.3	79.8	96	55-130
206-44-0	Fluoranthene	83.3	76.4	92	70-130
86-73-7	Fluorene	83.3	80.9	97	70-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	77.2	93	56-130
91-20-3	Naphthalene	83.3	71.1	85	70-130
129-00-0	Pyrene	83.3	74.5	89	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	103%	10-159%
321-60-8	2-Fluorobiphenyl	97%	19-131%
1718-51-0	Terphenyl-d14	107%	18-150%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D42556  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7223-MS	3G12984.D	1	01/15/13	DC	01/14/13	OP7223	E3G621
OP7223-MSD	3G12985.D	1	01/15/13	DC	01/14/13	OP7223	E3G621
D42510-1	3G12983.D	1	01/15/13	DC	01/14/13	OP7223	E3G621

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D42556-1, D42556-2

CAS No.	Compound	D42510-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		98.3	76.7	78	76.8	78	0	25-151/30
120-12-7	Anthracene	ND		98.3	93.2	95	95.1	97	2	39-159/30
56-55-3	Benzo(a)anthracene	ND		98.3	107	109	109	111	2	39-168/30
205-99-2	Benzo(b)fluoranthene	ND		98.3	109	111	110	112	1	24-163/30
207-08-9	Benzo(k)fluoranthene	ND		98.3	70.7	72	74.9	76	6	10-188/30
50-32-8	Benzo(a)pyrene	ND		98.3	77.1	78	79.0	80	2	32-144/30
218-01-9	Chrysene	25.4		98.3	97.1	73	101	77	4	43-150/30
53-70-3	Dibenzo(a,h)anthracene	ND		98.3	76.5	78	79.8	81	4	21-152/30
206-44-0	Fluoranthene	ND		98.3	101	103	102	104	1	36-157/30
86-73-7	Fluorene	198		98.3	260	63	249	52	4	10-182/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		98.3	73.2	74	76.2	77	4	20-154/30
91-20-3	Naphthalene	1070		98.3	1400	336* a	909	-164* a	43* b	10-163/30
129-00-0	Pyrene	31.3		98.3	126	96	127	97	1	25-180/30

CAS No.	Surrogate Recoveries	MS	MSD	D42510-1	Limits
4165-60-0	Nitrobenzene-d5	141%	110%	141%	10-159%
321-60-8	2-Fluorobiphenyl	63%	56%	61%	19-131%
1718-51-0	Terphenyl-d14	98%	96%	91%	18-150%

(a) Outside control limits due to high level in sample relative to spike amount.

(b) Variability of recovery may be due to sample matrix/homogeneity.

\* = Outside of Control Limits.



GC/MS Semi-volatiles

Raw Data

6

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\011513\  
 Data File : 3g12980.D  
 Acq On : 15 Jan 2013 1:06 pm  
 Operator : DONC  
 Sample : D42556-1  
 Misc : OP7223,E3G621,30.06,,,1,1  
 ALS Vial : 11 Sample Multiplier: 1

Quant Time: Jan 15 13:59:15 2013  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G611.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Thu Jan 10 14:18:35 2013  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.620	136	132711	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.337	164	78214	4.0000	ug/mL	0.01
15) Phenanthrene-d10	8.812	188	131819	4.0000	ug/mL	0.00
19) Chrysene-d12	11.443	240	97134	4.0000	ug/mL	0.00
24) Perylene-d12	12.810	264	80773	4.0000	ug/mL	0.00

## System Monitoring Compounds

2) Nitrobenzene-d5	4.935	82	495666	41.5235	ug/mL	-0.01
Spiked Amount 50.000	Range 25 - 135		Recovery =	83.04%		
7) 2-Fluorobiphenyl	6.664	172	1296043	43.4882	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	86.98%		
21) Terphenyl-d14	10.402	244	714045	54.0249	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	108.04%		

## Target Compounds

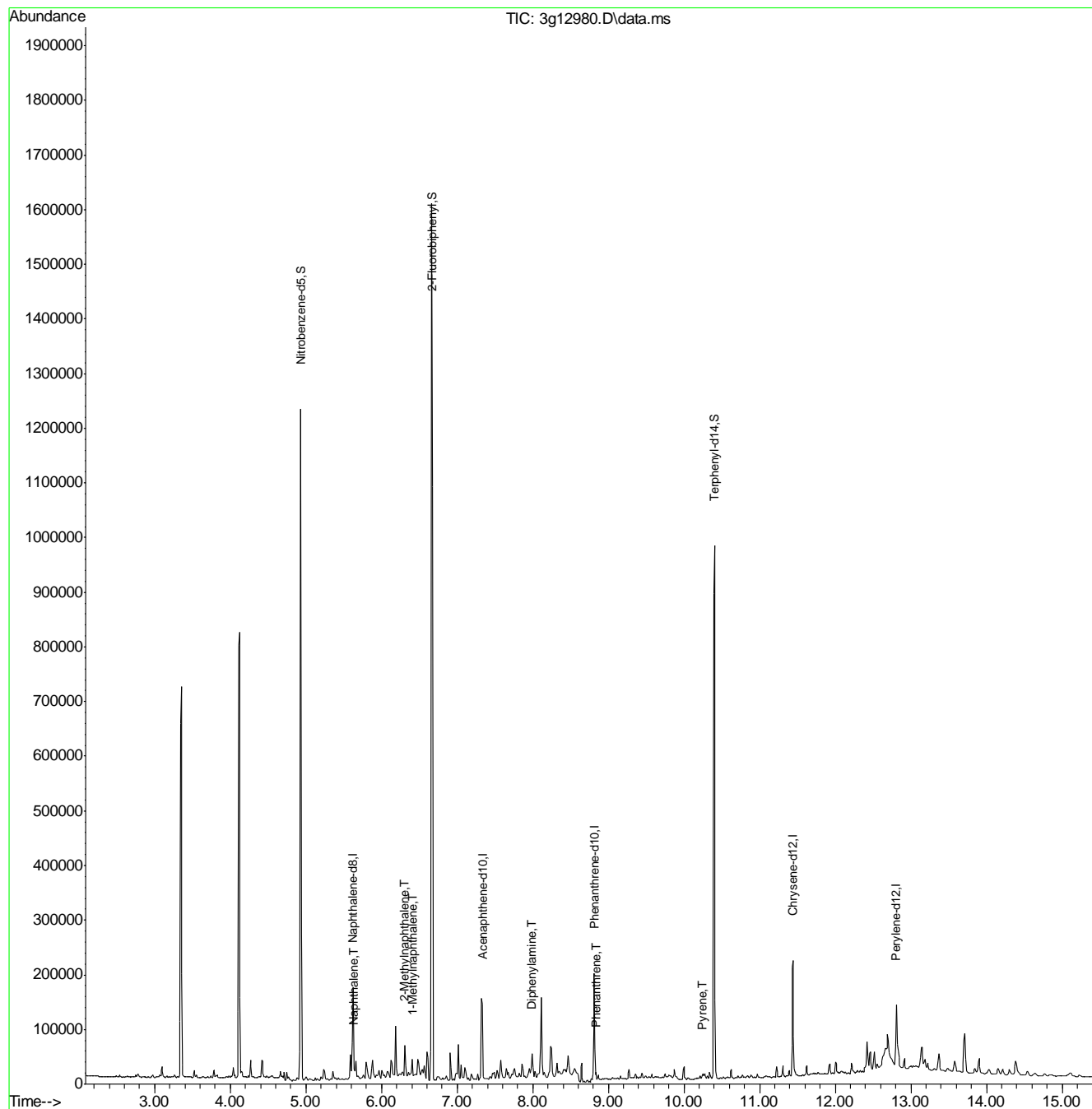
					Qvalue
3) N-Nitrosodimethylamine	2.312	74	50	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D. d	
5) Naphthalene	5.633	128	10781	0.2694 ug/mL#	50
8) 2-Methylnaphthalene	6.306	142	23572	0.9379 ug/mL	90
9) 1-Methylnaphthalene	6.406	142	11401	0.5186 ug/mL	88
10) Acenaphthylene	7.184	152	825	N.D.	
11) Acenaphthene	7.361	154	327	N.D.	
12) Dibenzofuran	0.000	168	0	N.D. d	
13) Fluorene	7.869	166	1274	N.D.	
14) Diphenylamine	7.987	169	24537m	0.9998 ug/mL	
16) Phenanthrene	8.835	178	12035	0.2363 ug/mL#	60
17) Anthracene	8.922	178	452	N.D.	
18) Fluoranthene	10.015	202	986	N.D.	
20) Pyrene	10.244	202	5583	0.1076 ug/mL#	61
22) Benzo(a)anthracene	11.437	228	1261	N.D.	
23) Chrysene	11.463	228	1173	N.D.	
25) Benzo(b)fluoranthene	0.000	252	0	N.D. d	
26) Benzo(k)fluoranthene	0.000	252	0	N.D. d	
27) Benzo(a)pyrene	0.000	252	0	N.D. d	
28) Indeno(1,2,3-cd)pyrene	0.000	276	0	N.D. d	
29) Dibenz(a,h)anthracene	0.000	278	0	N.D. d	
30) Benzo(g,h,i)perylene	14.408	276	469	N.D.	

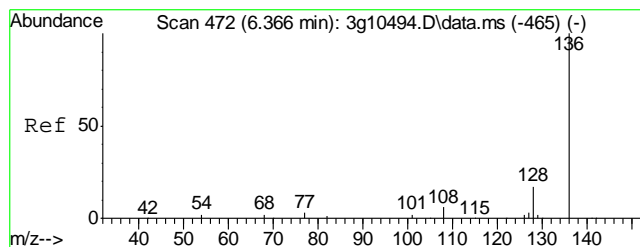
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\011513\  
Data File : 3g12980.D  
Acq On : 15 Jan 2013 1:06 pm  
Operator : DONC  
Sample : D42556-1  
Misc : OP7223,E3G621,30.06,,,1,1  
ALS Vial : 11 Sample Multiplier: 1

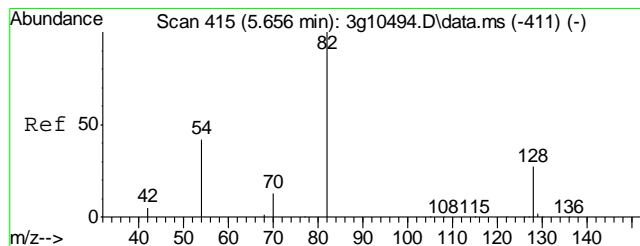
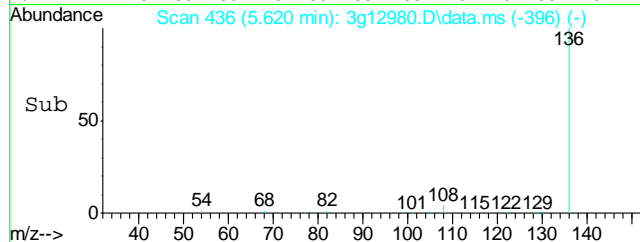
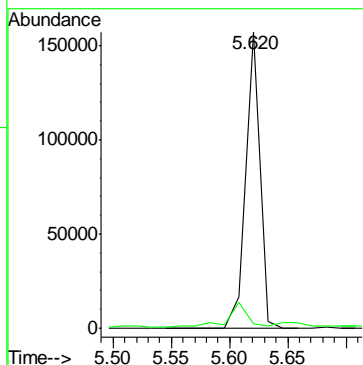
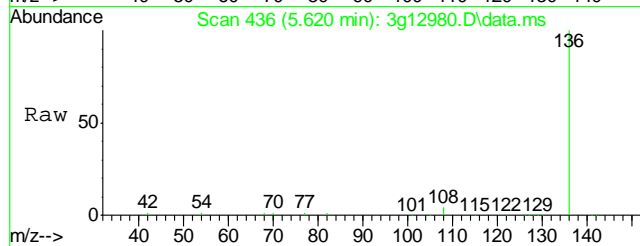
Quant Time: Jan 15 13:59:15 2013  
Quant Method : C:\msdchem\1\METHODS\SIMPE3G611.M  
Quant Title : PAHSIM BASE  
QLast Update : Thu Jan 10 14:18:35 2013  
Response via : Initial Calibration





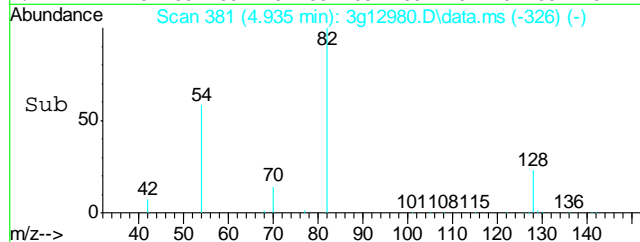
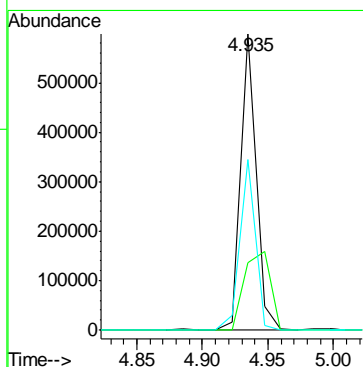
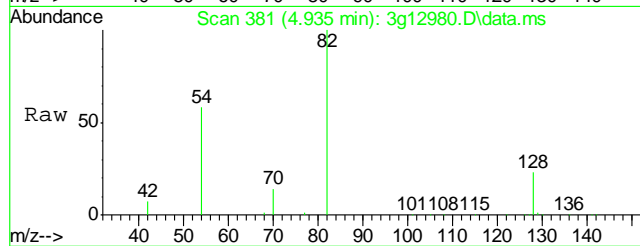
#1  
Naphthalene-d8  
Concen: 4.0000 ug/mL  
RT: 5.620 min Scan# 436  
Delta R.T. -0.000 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

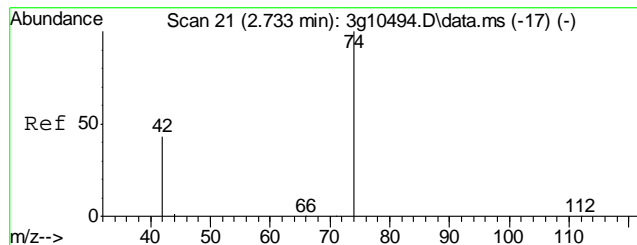
Tgt Ion	Ratio	Lower	Upper
136	100		
68	10.3	0.0	20.8



#2  
Nitrobenzene-d5  
Concen: 41.5235 ug/mL  
RT: 4.935 min Scan# 381  
Delta R.T. -0.014 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

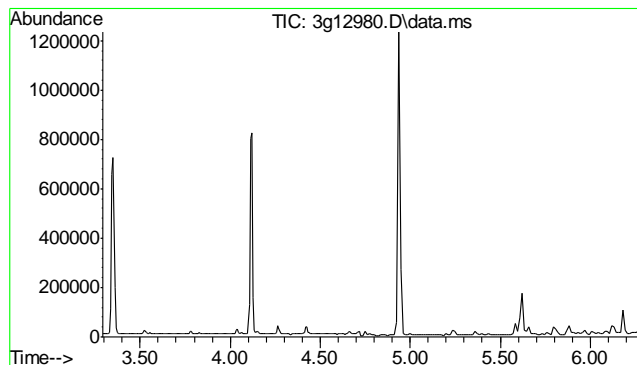
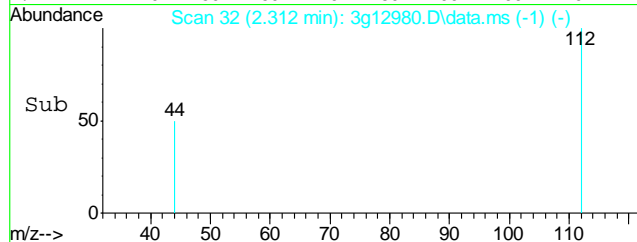
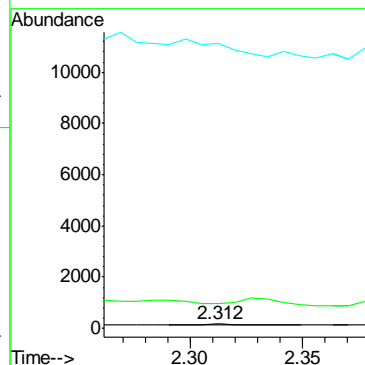
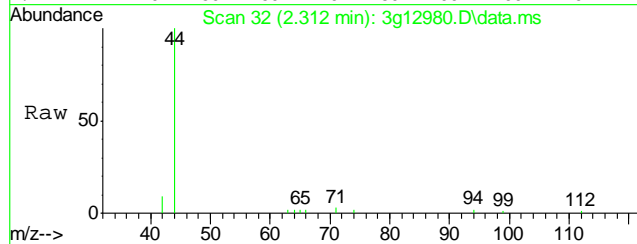
Tgt Ion	Ratio	Lower	Upper
82	100		
128	44.8	36.8	76.8
54	57.9	40.5	80.5





#3  
N-Nitrosodimethylamine  
Concen: Below ug/mL  
RT: 2.312 min Scan# 32  
Delta R.T. -0.024 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

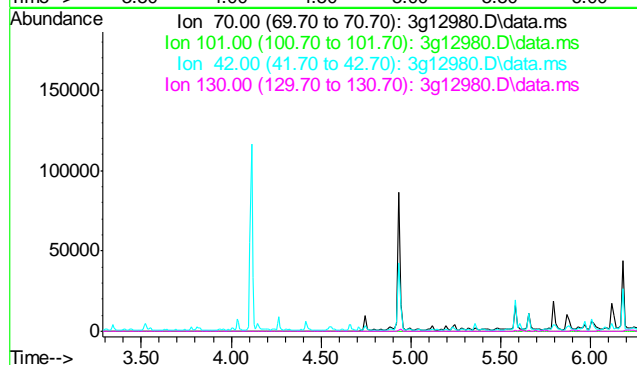
Tgt Ion: 74 Resp: 50  
Ion Ratio Lower Upper  
74 100  
42 742.0 58.5 98.5#  
44 0.0 0.0 24.0

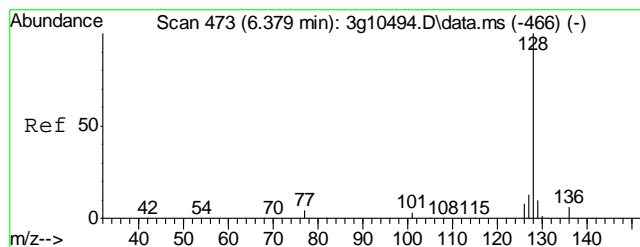


#4  
N-Nitrosodi-propylamine  
Concen: N.D. ug/mL  
Expected RT: 4.79 min

Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

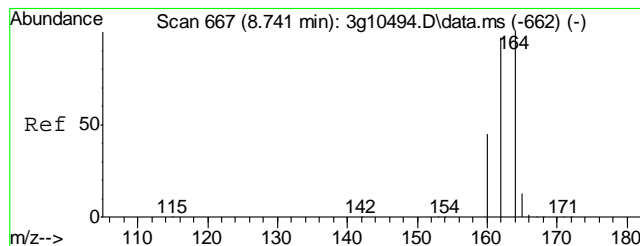
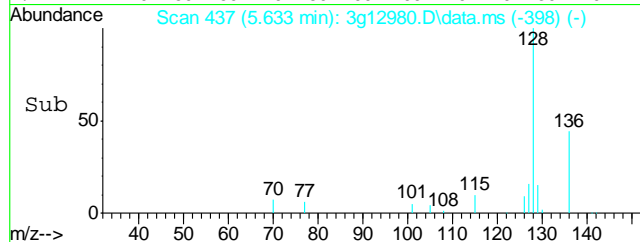
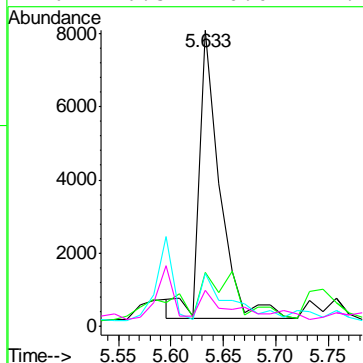
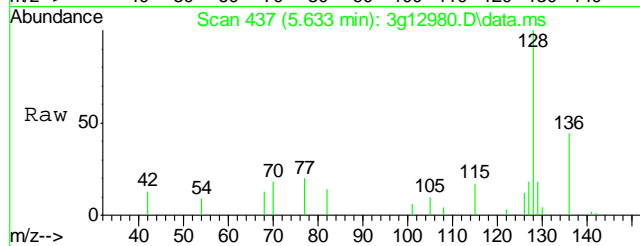
Tgt Ion: 70  
Sig Exp Ratio  
70 100  
101 11.9  
42 57.4  
130 21.7





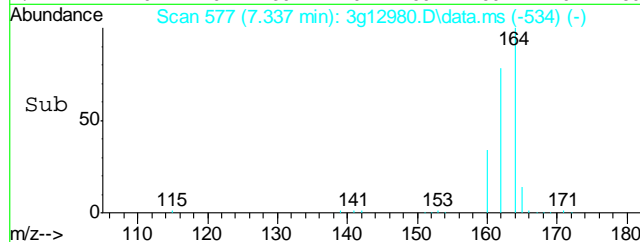
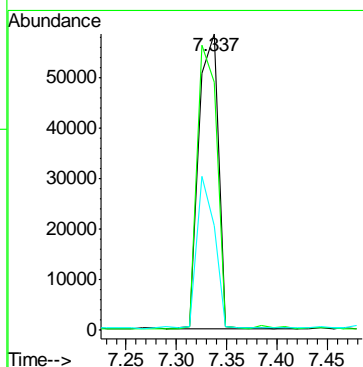
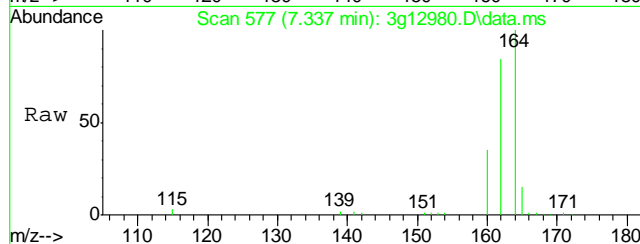
#5  
Naphthalene  
Concen: 0.2694 ug/mL  
RT: 5.633 min Scan# 437  
Delta R.T. -0.012 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

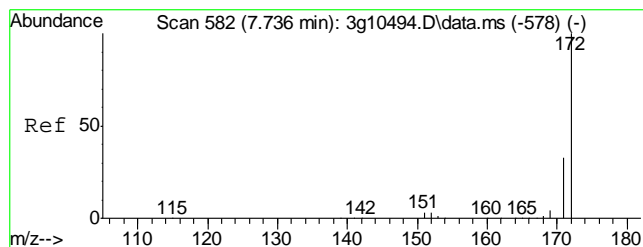
Tgt Ion:	128	Resp:	10781
Ion Ratio	Lower	Upper	
128	100		
129	46.9	0.0	31.2#
127	22.3	0.0	32.4
126	16.5	0.0	27.2



#6  
Acenaphthene-d10  
Concen: 4.0000 ug/mL  
RT: 7.337 min Scan# 577  
Delta R.T. 0.012 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

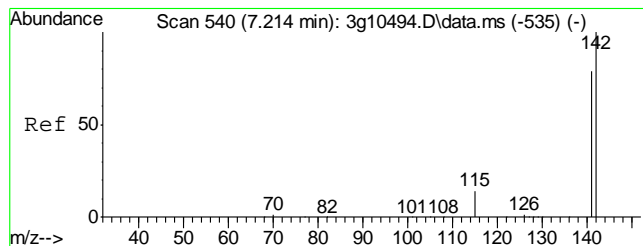
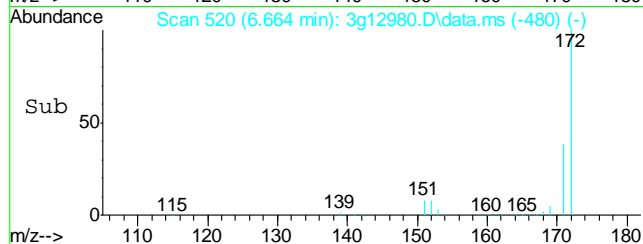
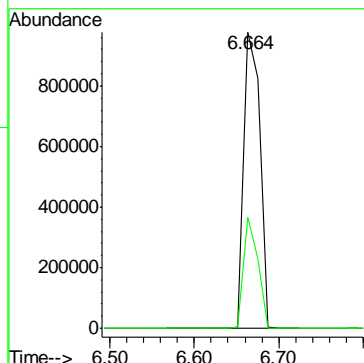
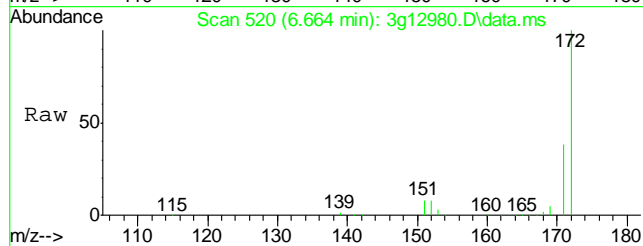
Tgt Ion:	164	Resp:	78214
Ion Ratio	Lower	Upper	
164	100		
162	96.6	88.1	128.1
160	47.0	38.8	78.8





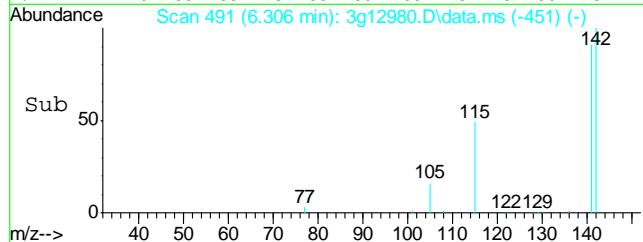
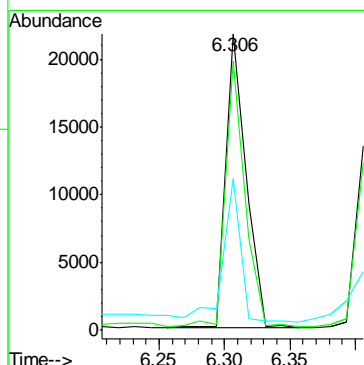
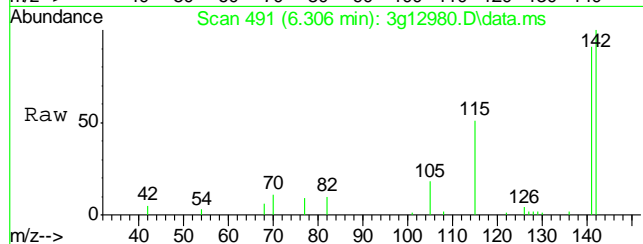
#7  
2-Fluorobiphenyl  
Concen: 43.4882 ug/mL  
RT: 6.664 min Scan# 520  
Delta R.T. -0.002 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

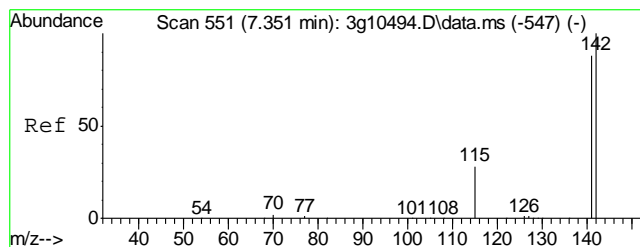
Tgt Ion	Ratio	Lower	Upper
172	100		
171	33.1	12.2	52.2



#8  
2-Methylnaphthalene  
Concen: 0.9379 ug/mL  
RT: 6.306 min Scan# 491  
Delta R.T. -0.005 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

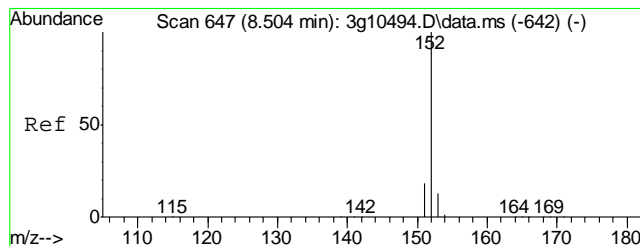
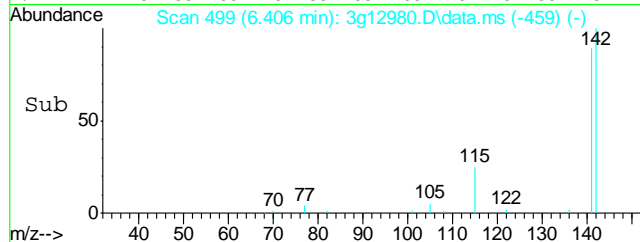
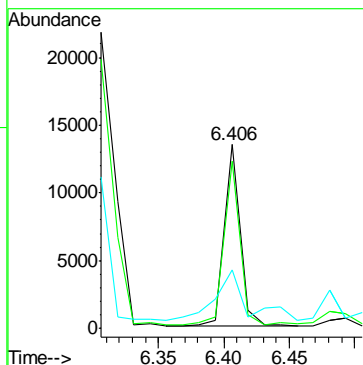
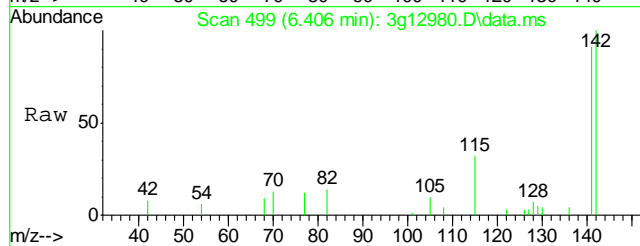
Tgt Ion	Ratio	Lower	Upper
142	100		
141	86.9	62.0	102.0
115	42.8	11.3	51.3





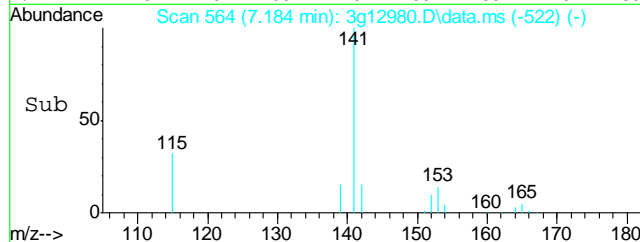
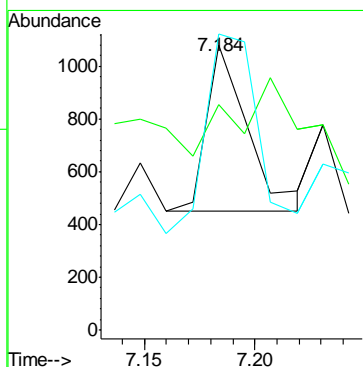
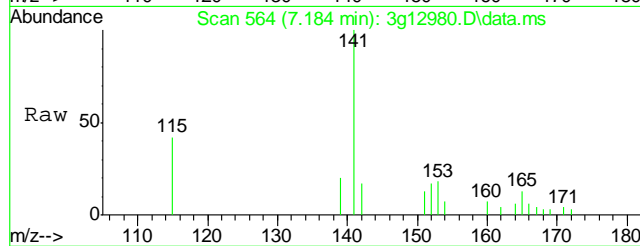
#9  
1-Methylnaphthalene  
Concen: 0.5186 ug/mL  
RT: 6.406 min Scan# 499  
Delta R.T. -0.004 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

Tgt Ion:	142	Resp:	11401
Ion Ratio	100	Lower	Upper
142	100		
141	92.4	67.5	107.5
115	56.8	19.4	59.4

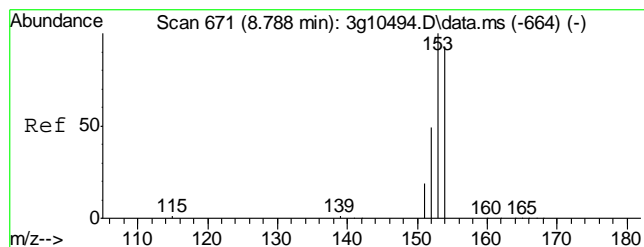


#10  
Acenaphthylene  
Concen: Below ug/mL  
RT: 7.184 min Scan# 564  
Delta R.T. -0.001 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

Tgt Ion:	152	Resp:	825
Ion Ratio	100	Lower	Upper
152	100		
151	0.0	0.0	39.2
153	151.8	0.0	32.9#

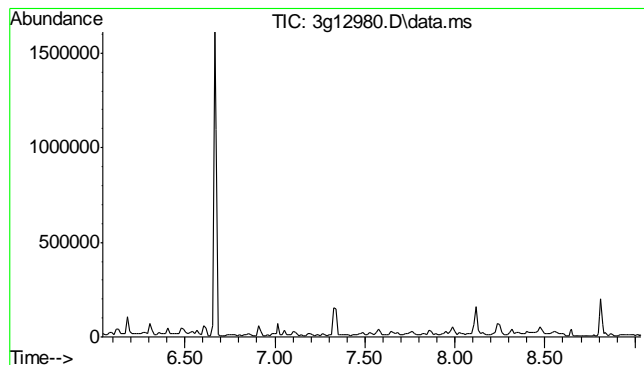
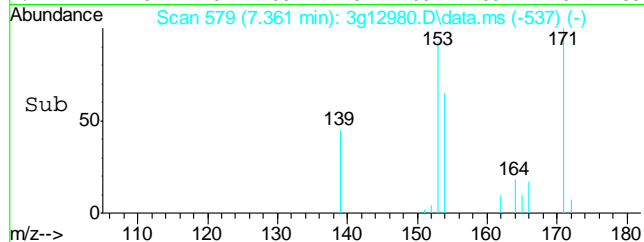
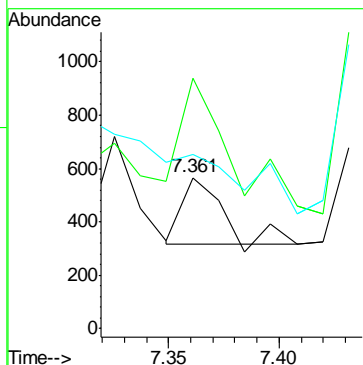
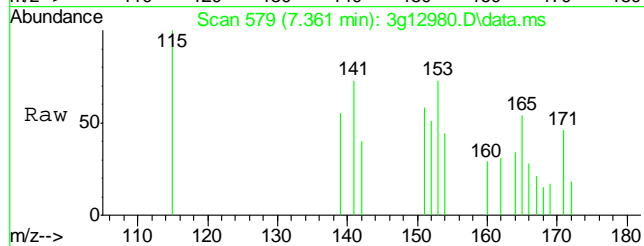






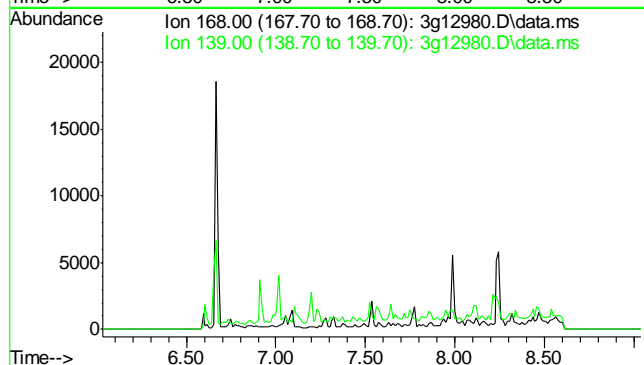
#11  
Acenaphthene  
Concen: Below ug/mL  
RT: 7.361 min Scan# 579  
Delta R.T. 0.001 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

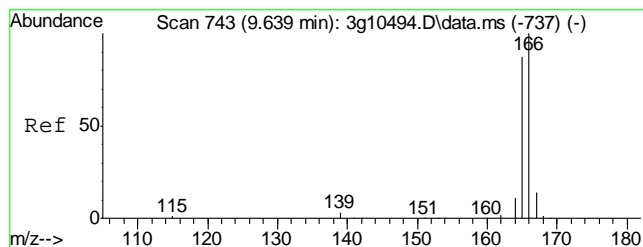
Tgt Ion	Ratio	Lower	Upper
154	100		
153	211.3	82.4	122.4#
152	0.0	30.0	70.0#



#12  
Dibenzofuran  
Concen: N.D. ug/mL  
Expected RT: 7.54 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

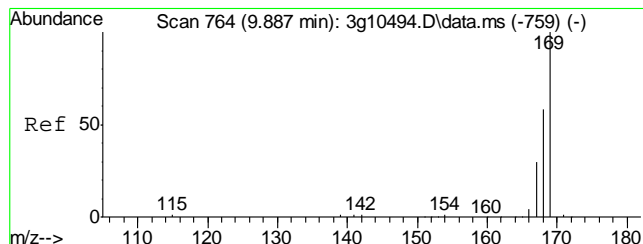
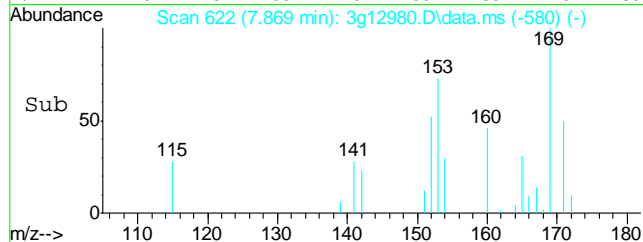
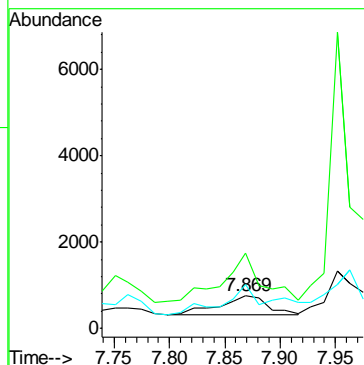
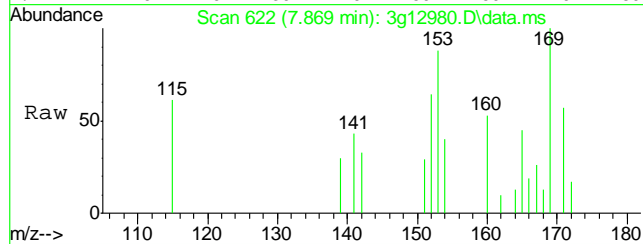
Tgt Ion	Sig	Exp Ratio
168	100	
139	33.4	





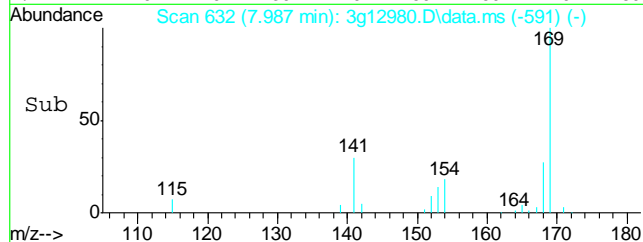
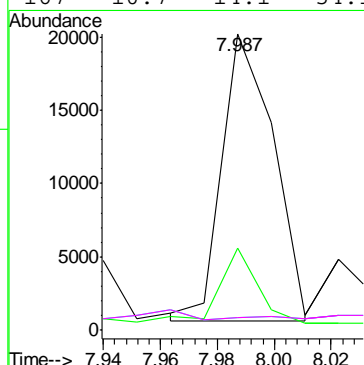
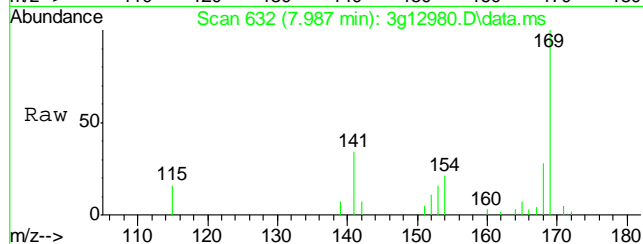
#13  
Fluorene  
Concen: Below ug/mL  
RT: 7.869 min Scan# 622  
Delta R.T. 0.002 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

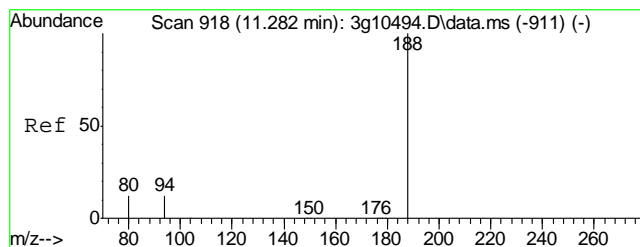
Tgt Ion	Ratio	Lower	Upper
166	100		
165	211.2	72.0	112.0#
167	130.6	0.0	33.1#



#14  
Diphenylamine  
Concen: 0.9998 ug/mL m  
RT: 7.987 min Scan# 632  
Delta R.T. -0.010 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

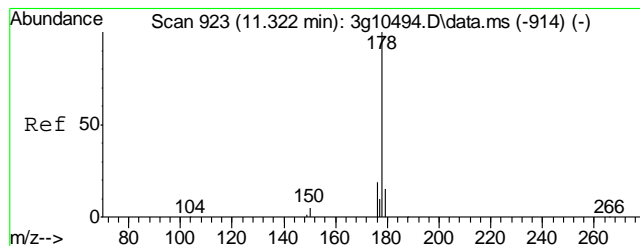
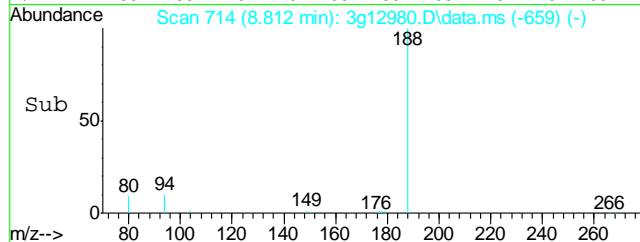
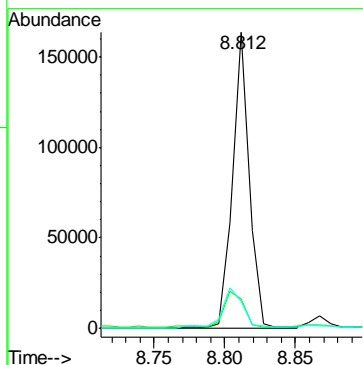
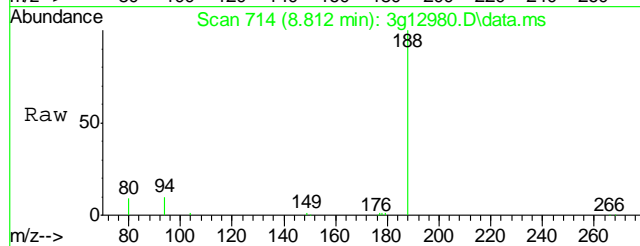
Tgt Ion	Ratio	Lower	Upper
169	100		
168	33.4	41.7	81.7#
167	10.7	14.1	54.1#
167	10.7	14.1	54.1#





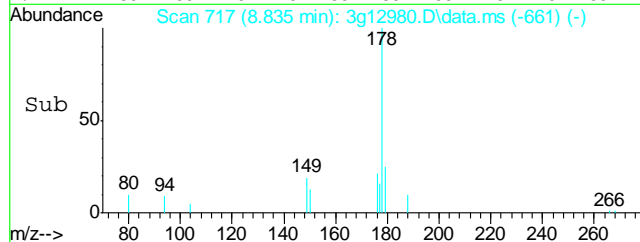
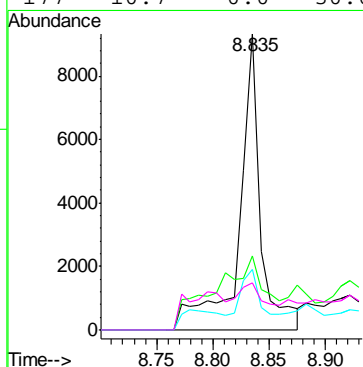
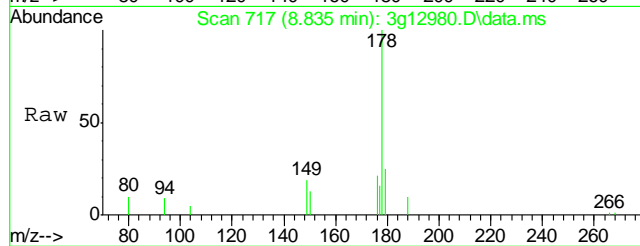
#15  
Phenanthrene-d10  
Concen: 4.0000 ug/mL  
RT: 8.812 min Scan# 714  
Delta R.T. -0.000 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

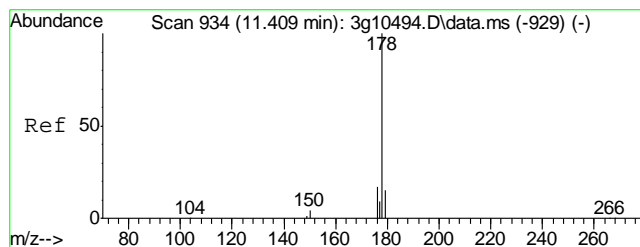
Tgt Ion:188	Resp:	131819
Ion Ratio	Lower	Upper
188	100	
94	14.4	0.0 26.9
80	17.5	0.0 26.3



#16  
Phenanthrene  
Concen: 0.2363 ug/mL  
RT: 8.835 min Scan# 717  
Delta R.T. -0.000 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

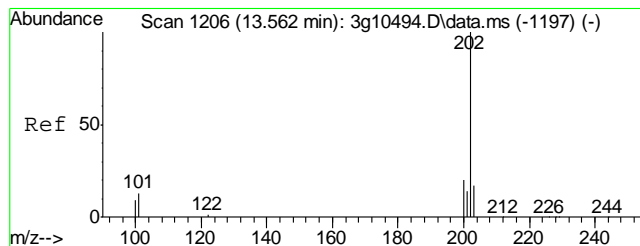
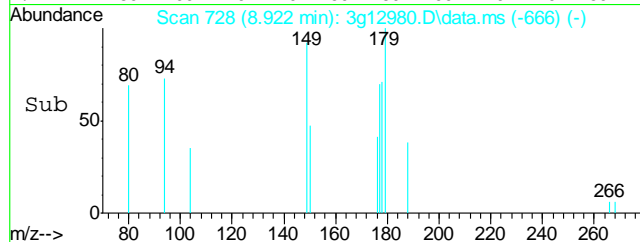
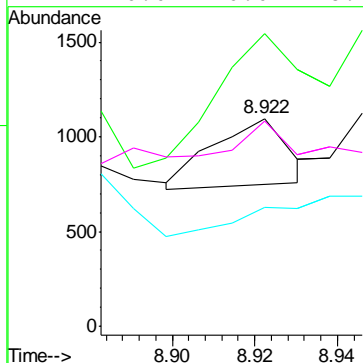
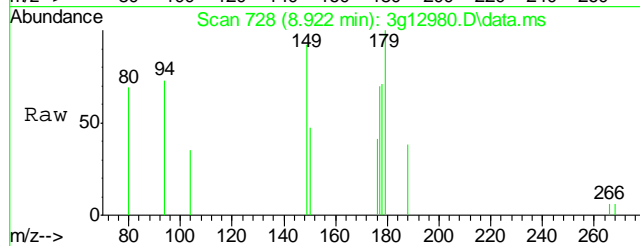
Tgt Ion:178	Resp:	12035
Ion Ratio	Lower	Upper
178	100	
179	61.4	0.0 35.2#
176	17.5	0.0 38.6
177	10.7	0.0 30.0





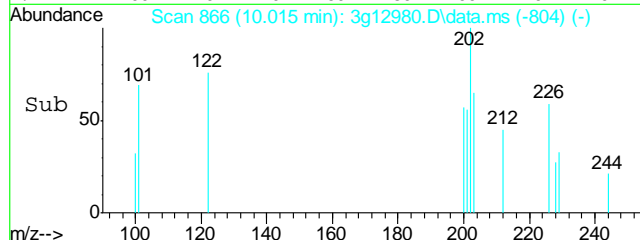
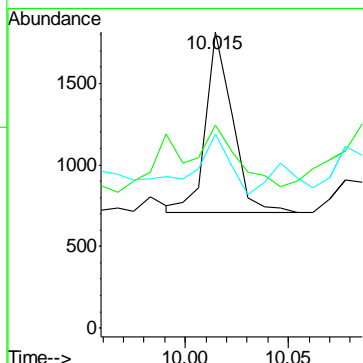
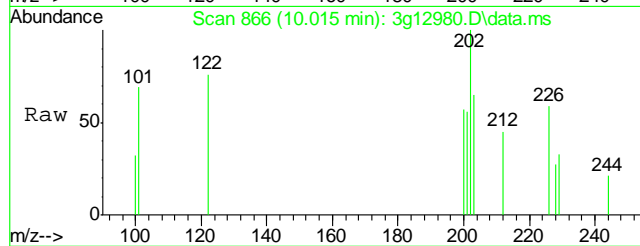
#17  
 Anthracene  
 Concen: Below ug/mL  
 RT: 8.922 min Scan# 728  
 Delta R.T. 0.032 min  
 Lab File: 3g12980.D  
 Acq: 15 Jan 13 1:06 pm

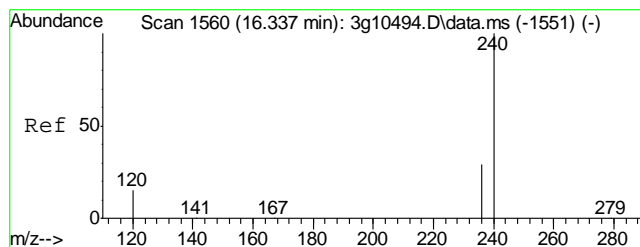
Tgt Ion:	178	Resp:	452
Ion Ratio	Lower	Upper	
178	100		
179	320.6	0.0	35.1#
176	116.2	0.0	38.2#
177	0.0	0.0	28.7



#18  
 Fluoranthene  
 Concen: Below ug/mL  
 RT: 10.015 min Scan# 866  
 Delta R.T. -0.006 min  
 Lab File: 3g12980.D  
 Acq: 15 Jan 13 1:06 pm

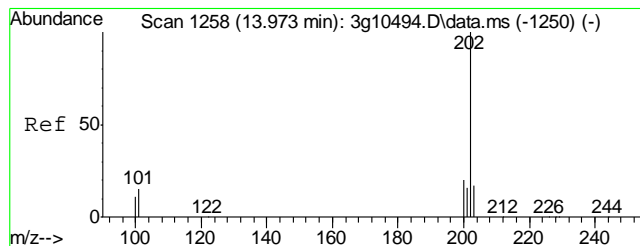
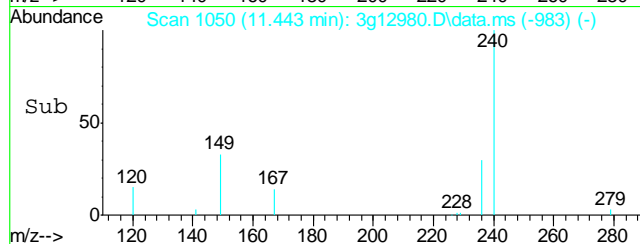
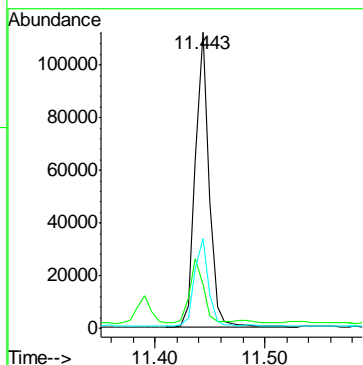
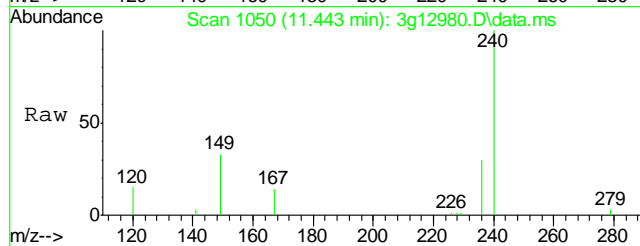
Tgt Ion:	202	Resp:	986
Ion Ratio	Lower	Upper	
202	100		
101	29.3	0.0	32.6
203	85.5	0.0	37.4#





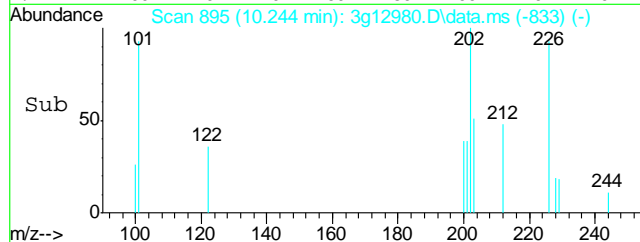
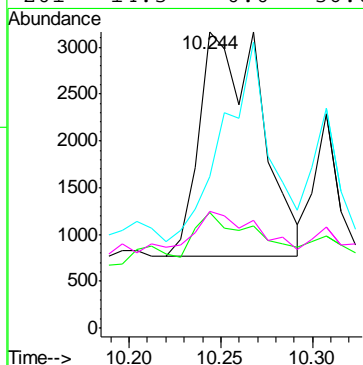
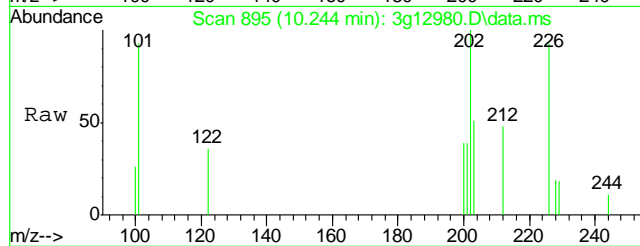
#19  
Chrysene-d12  
Concen: 4.0000 ug/mL  
RT: 11.443 min Scan# 1050  
Delta R.T. -0.000 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

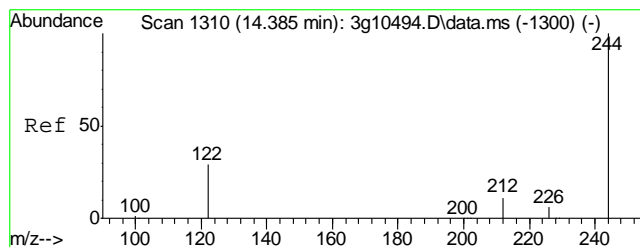
Tgt Ion	Ratio	Lower	Upper
240	100		
120	22.0	0.0	37.3
236	29.9	11.2	51.2



#20  
Pyrene  
Concen: 0.1076 ug/mL  
RT: 10.244 min Scan# 895  
Delta R.T. -0.006 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

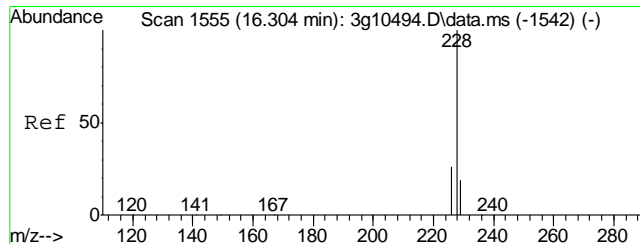
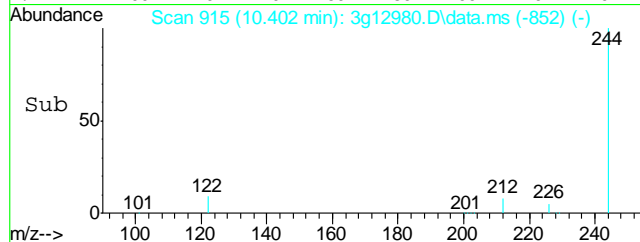
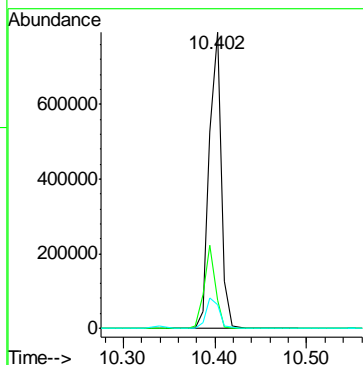
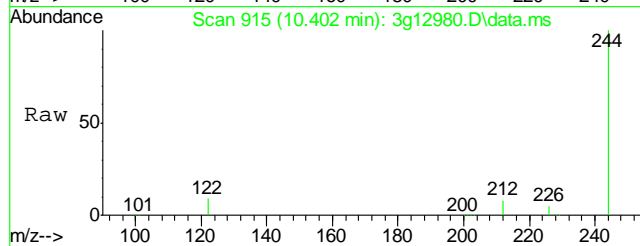
Tgt Ion	Ratio	Lower	Upper
202	100		
200	18.8	0.2	40.2
203	67.0	0.0	37.8#
201	14.3	0.0	36.6





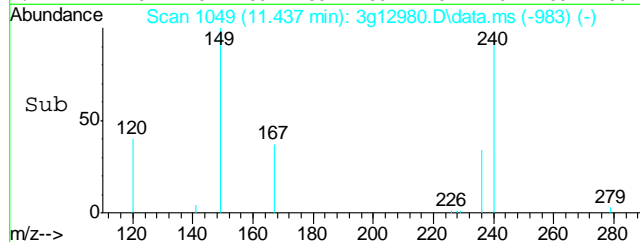
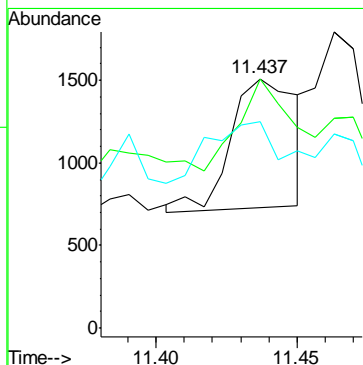
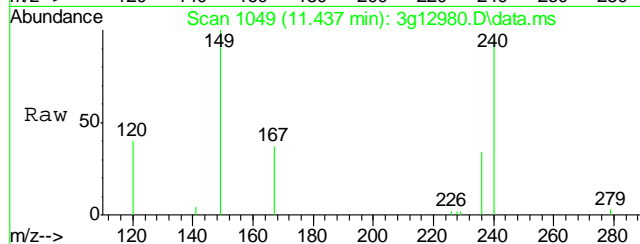
#21  
Terphenyl-d14  
Concen: 54.0249 ug/mL  
RT: 10.402 min Scan# 915  
Delta R.T. 0.002 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

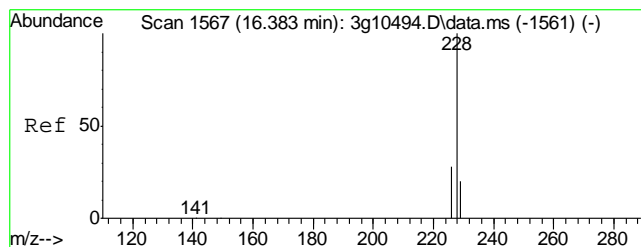
Tgt Ion:	244	Resp:	714045
Ion Ratio	Lower	Upper	
244	100		
122	26.4	7.8	47.8
212	11.1	0.0	32.8



#22  
Benzo(a)anthracene  
Concen: Below ug/mL  
RT: 11.437 min Scan# 1049  
Delta R.T. -0.000 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

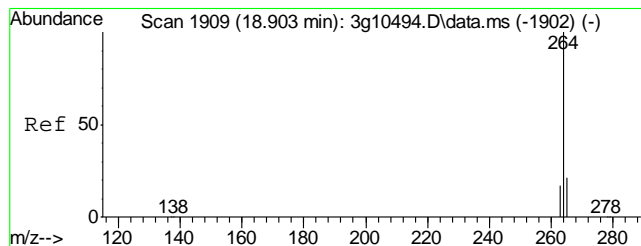
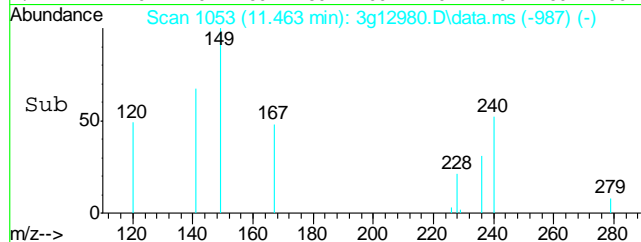
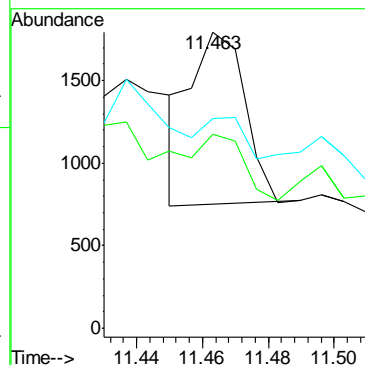
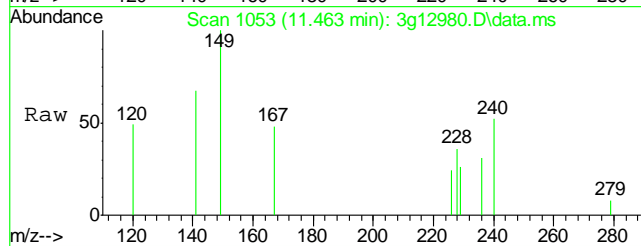
Tgt Ion:	228	Resp:	1261
Ion Ratio	Lower	Upper	
228	100		
229	60.0	0.0	39.4#
226	56.3	6.6	46.6#





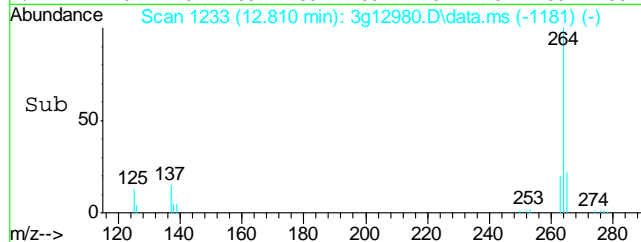
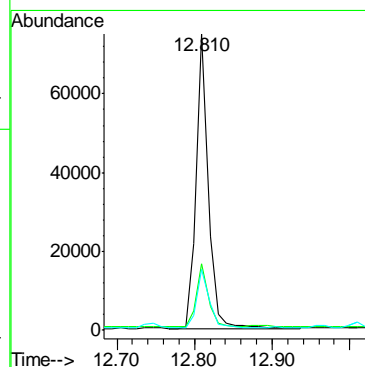
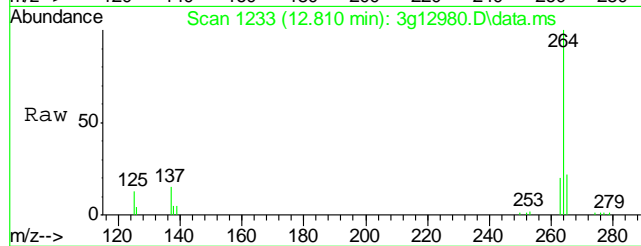
#23  
Chrysene  
Concen: Below ug/mL  
RT: 11.463 min Scan# 1053  
Delta R.T. -0.007 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

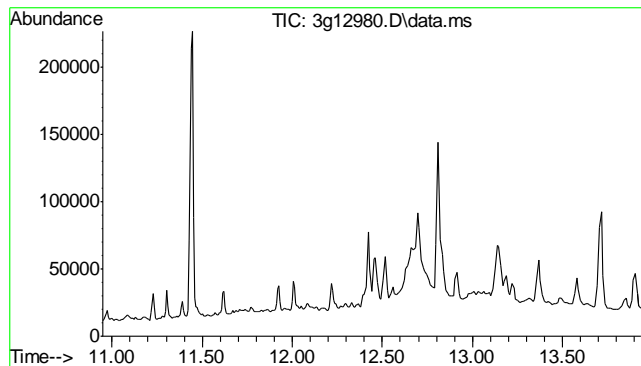
Tgt Ion:	228	Resp:	1173
Ion Ratio	100	Lower	Upper
228	100		
226	28.0	8.6	48.6
229	0.0	0.0	39.4



#24  
Perylene-d12  
Concen: 4.0000 ug/mL  
RT: 12.810 min Scan# 1233  
Delta R.T. -0.000 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

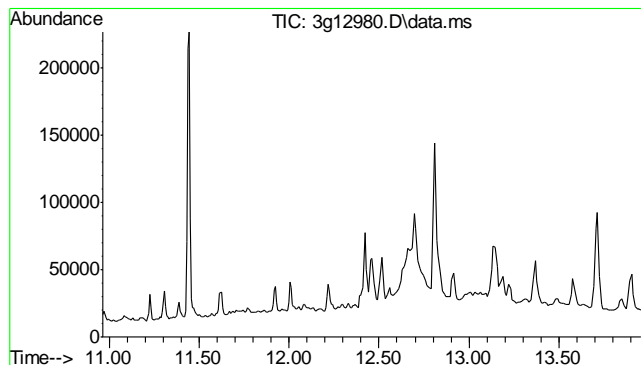
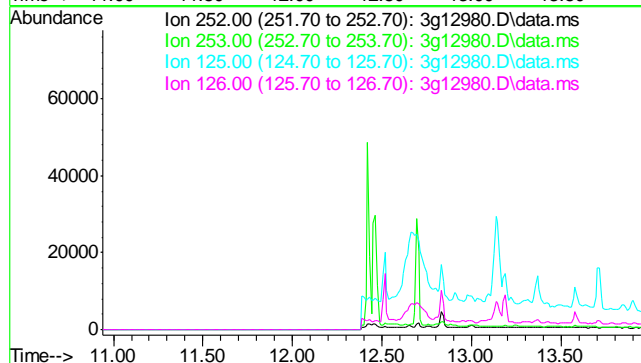
Tgt Ion:	264	Resp:	80773
Ion Ratio	100	Lower	Upper
264	100		
265	21.1	0.6	40.6
263	20.4	0.0	38.8





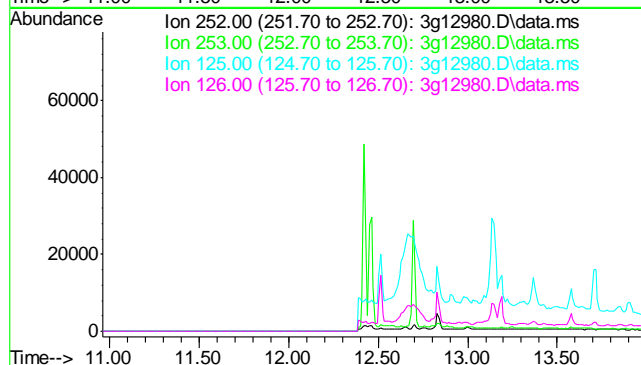
#25  
Benzo(b)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 12.44 min  
  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

Tgt Ion: 252	
Sig	Exp Ratio
252	100
253	51.5
125	13.2
126	46.9

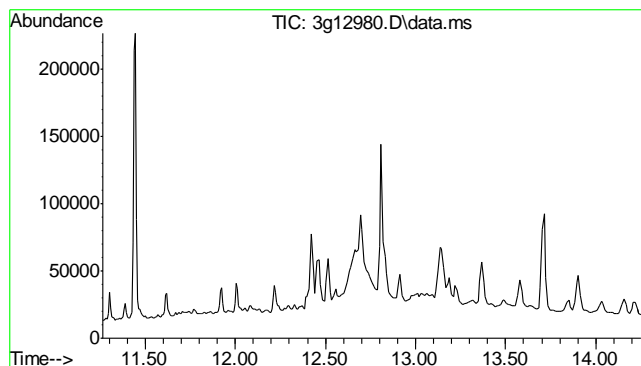


#26  
Benzo(k)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 12.46 min  
  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

Tgt Ion: 252	
Sig	Exp Ratio
252	100
253	37.3
125	9.6
126	34.1

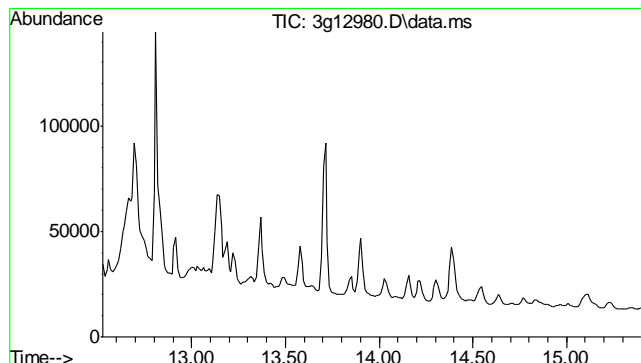
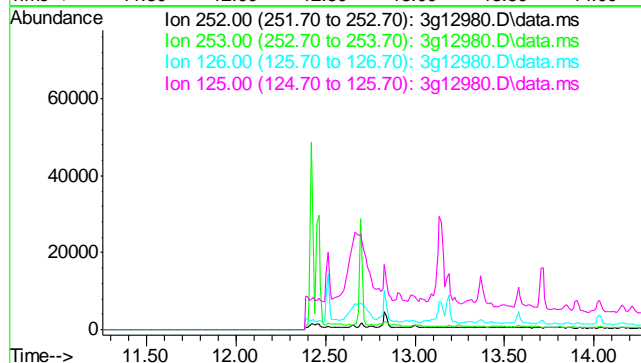






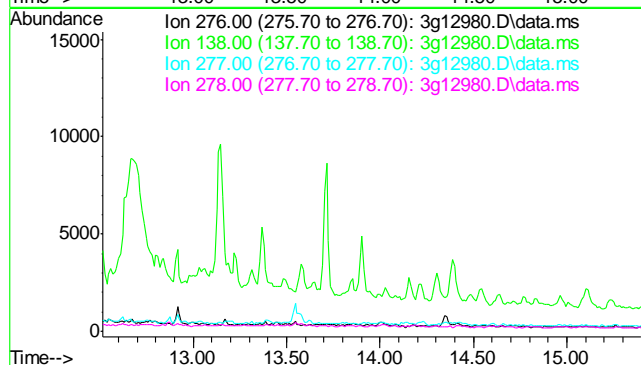
#27  
 Benzo(a)pyrene  
 Concen: N.D. ug/mL  
 Expected RT: 12.76 min  
  
 Lab File: 3g12980.D  
 Acq: 15 Jan 13 1:06 pm

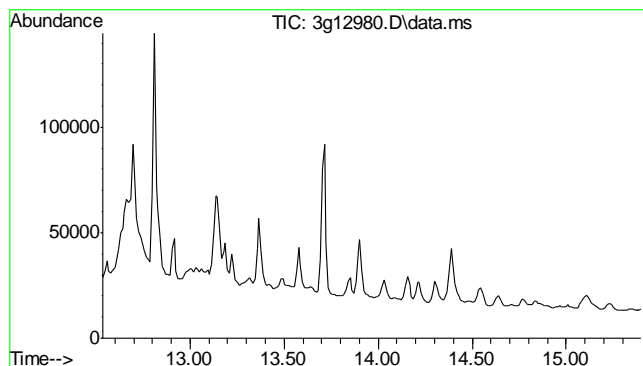
Tgt Ion	Sig	Exp Ratio
252	100	
253	21.5	
126	20.4	
125	14.5	



#28  
 Indeno(1,2,3-cd)pyrene  
 Concen: N.D. ug/mL  
 Expected RT: 14.02 min  
  
 Lab File: 3g12980.D  
 Acq: 15 Jan 13 1:06 pm

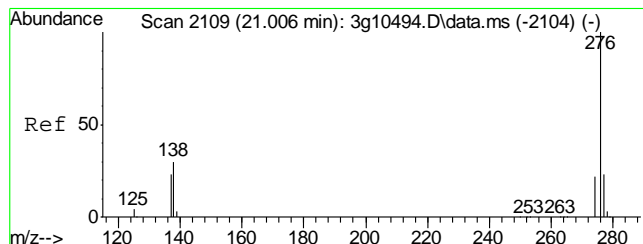
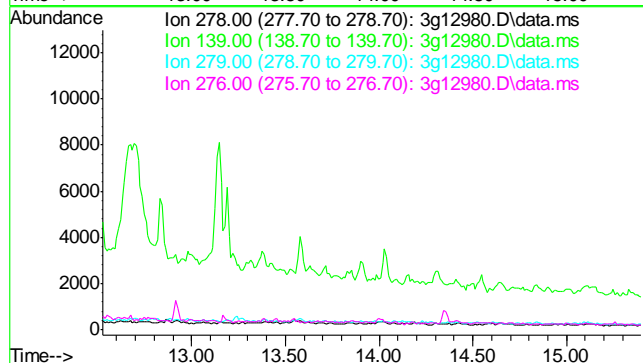
Tgt Ion	Sig	Exp Ratio
276	100	
138	40.0	
277	24.8	
278	76.2	





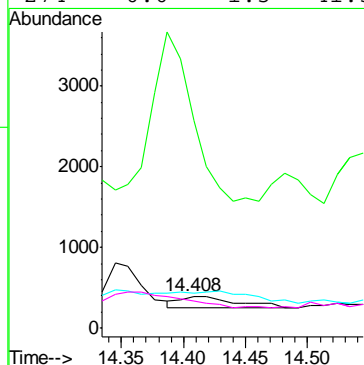
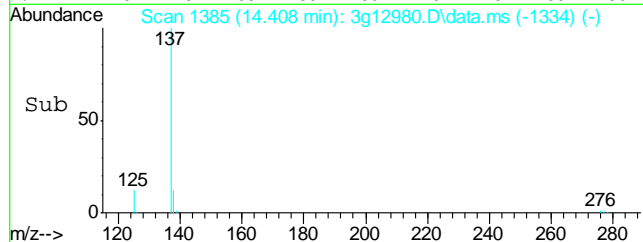
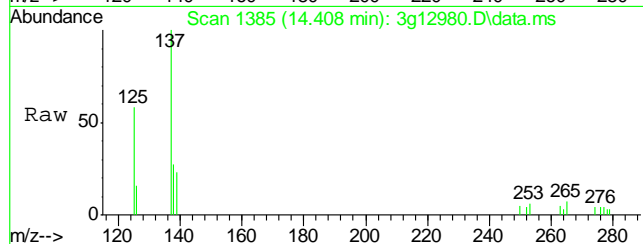
#29  
Dibenz(a,h)anthracene  
Concen: N.D. ug/mL  
Expected RT: 14.03 min  
  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

Tgt Ion: 278  
Sig Exp Ratio  
278 100  
139 30.8  
279 22.9  
276 131.2



#30  
Benzo(g,h,i)perylene  
Concen: Below ug/mL  
RT: 14.408 min Scan# 1385  
Delta R.T. 0.034 min  
Lab File: 3g12980.D  
Acq: 15 Jan 13 1:06 pm

Tgt Ion: 276 Resp: 469  
Ion Ratio Lower Upper  
276 100  
138 1032.0 15.1 55.1#  
277 0.0 3.3 43.3#  
274 0.0 1.5 41.5#



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\011513\  
 Data File : 3g12987.D  
 Acq On : 15 Jan 2013 3:52 pm  
 Operator : DONC  
 Sample : D42556-2  
 Misc : OP7223,E3G621,30.02,,,1,1  
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Jan 16 09:11:53 2013  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G611.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Thu Jan 10 14:18:35 2013  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.620	136	162561	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.337	164	89868	4.0000	ug/mL	0.01
15) Phenanthrene-d10	8.819	188	154602	4.0000	ug/mL	0.00
19) Chrysene-d12	11.450	240	89179	4.0000	ug/mL	0.00
24) Perylene-d12	12.820	264	62316	4.0000	ug/mL	0.01

## System Monitoring Compounds

2) Nitrobenzene-d5	4.935	82	427246	29.2195	ug/mL	-0.01
Spiked Amount 50.000	Range 25 - 135		Recovery =	58.44%		
7) 2-Fluorobiphenyl	6.676	172	1417101	41.0897	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	82.18%		
21) Terphenyl-d14	10.402	244	538734	44.3967	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	88.80%		

## Target Compounds

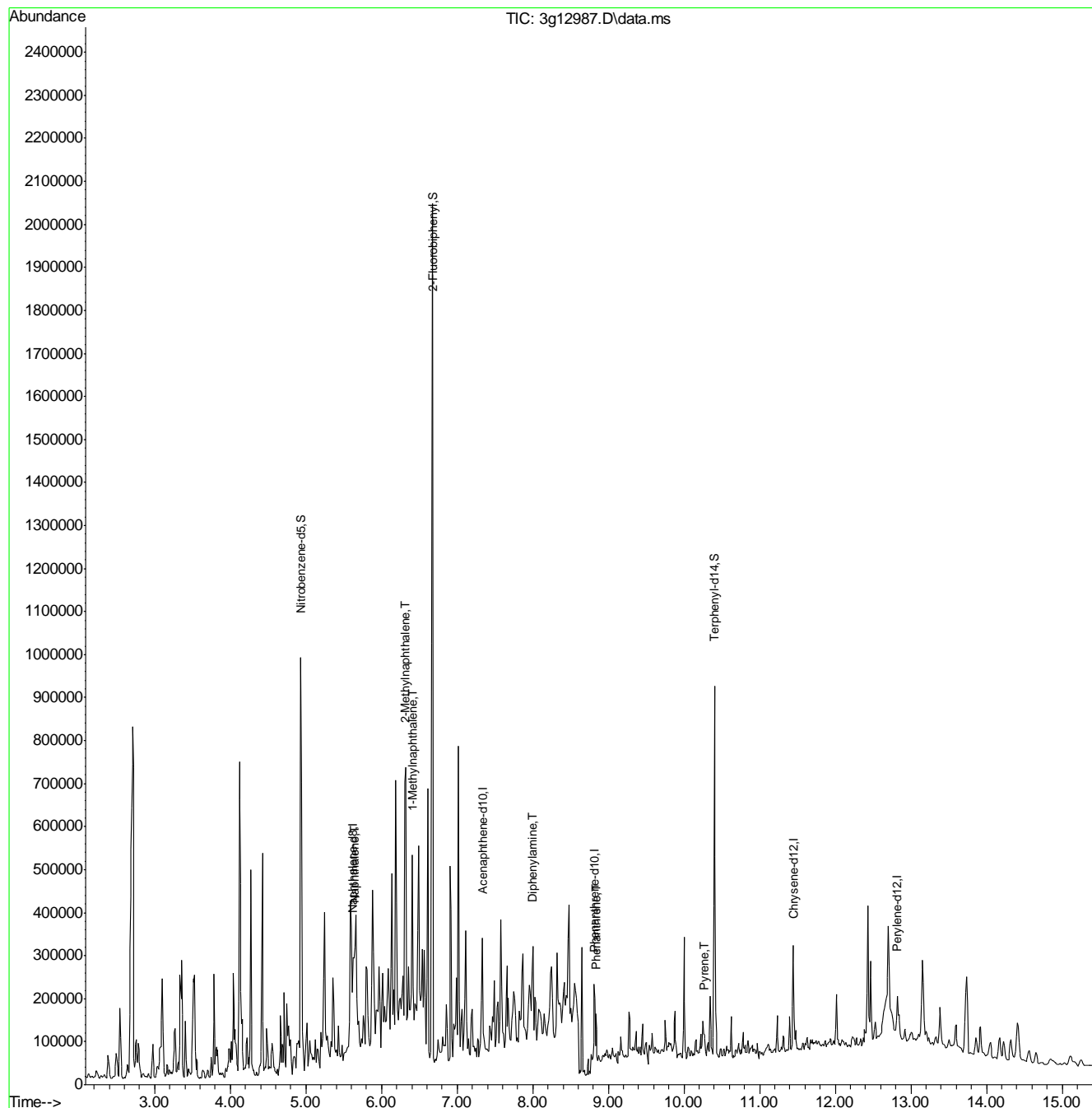
						Qvalue
3) N-Nitrosodimethylamine	0.000	74	0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d	
5) Naphthalene	5.645	128	212128	4.5354	ug/mL	72
8) 2-Methylnaphthalene	6.319	142	378787	13.1167	ug/mL	93
9) 1-Methylnaphthalene	6.406	142	155245m	6.1464	ug/mL	
10) Acenaphthylene	0.000	152	0	N.D.	d	
11) Acenaphthene	0.000	154	0	N.D.	d	
12) Dibenzofuran	0.000	168	0	N.D.	d	
13) Fluorene	0.000	166	0	N.D.	d	
14) Diphenylamine	7.999	169	142230m	5.0440	ug/mL	
16) Phenanthrene	8.835	178	75722	1.2674	ug/mL#	44
17) Anthracene	0.000	178	0	N.D.	d	
18) Fluoranthene	0.000	202	0	N.D.	d	
20) Pyrene	10.268	202	31604	0.6636	ug/mL#	58
22) Benzo(a)anthracene	0.000	228	0	N.D.	d	
23) Chrysene	0.000	228	0	N.D.	d	
25) Benzo(b)fluoranthene	0.000	252	0	N.D.	d	
26) Benzo(k)fluoranthene	0.000	252	0	N.D.	d	
27) Benzo(a)pyrene	0.000	252	0	N.D.	d	
28) Indeno(1,2,3-cd)pyrene	0.000	276	0	N.D.	d	
29) Dibenz(a,h)anthracene	0.000	278	0	N.D.	d	
30) Benzo(g,h,i)perylene	0.000	276	0	N.D.	d	

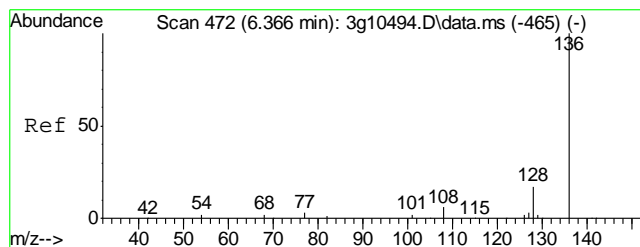
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\011513\  
Data File : 3g12987.D  
Acq On : 15 Jan 2013 3:52 pm  
Operator : DONC  
Sample : D42556-2  
Misc : OP7223,E3G621,30.02,,,1,1  
ALS Vial : 18 Sample Multiplier: 1

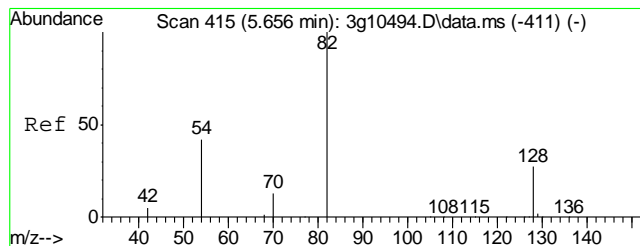
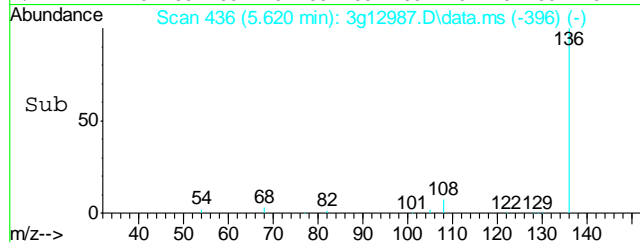
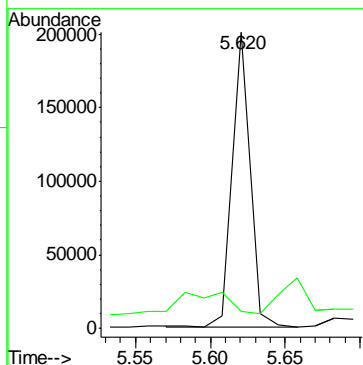
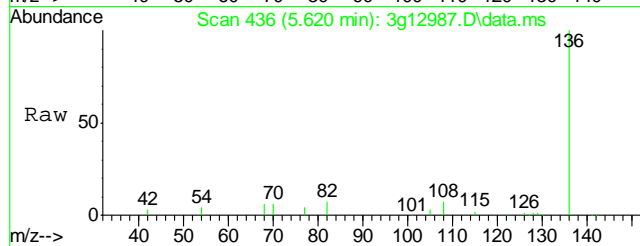
Quant Time: Jan 16 09:11:53 2013  
Quant Method : C:\msdchem\1\METHODS\SIMPE3G611.M  
Quant Title : PAHSIM BASE  
QLast Update : Thu Jan 10 14:18:35 2013  
Response via : Initial Calibration





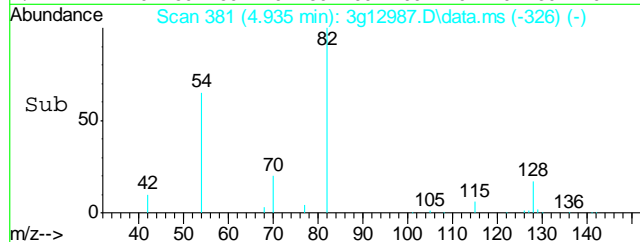
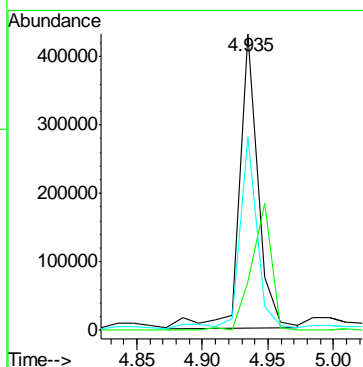
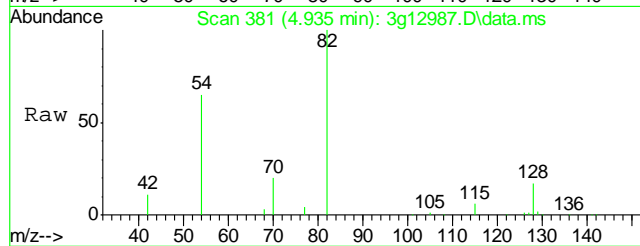
#1  
Naphthalene-d8  
Concen: 4.0000 ug/mL  
RT: 5.620 min Scan# 436  
Delta R.T. -0.000 min  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

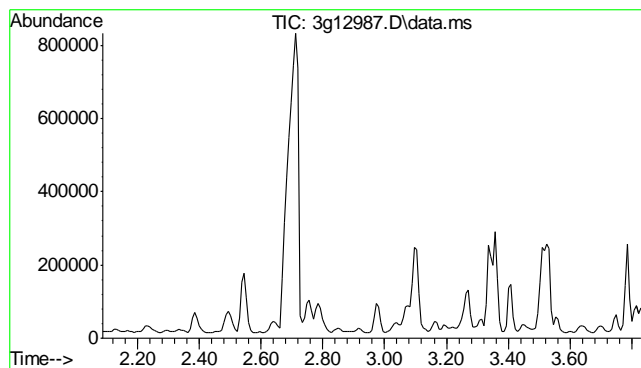
Tgt Ion	Ratio	Lower	Upper
136	100		
68	30.0	0.0	20.8#



#2  
Nitrobenzene-d5  
Concen: 29.2195 ug/mL  
RT: 4.935 min Scan# 381  
Delta R.T. -0.014 min  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

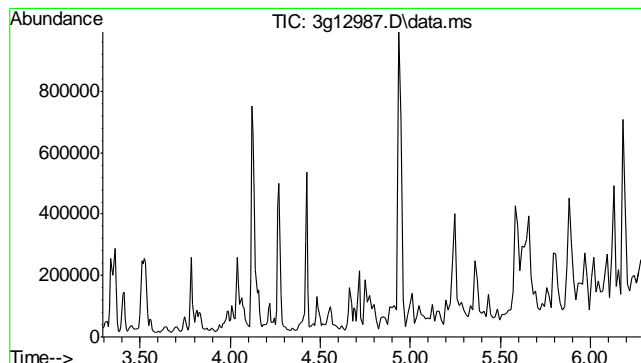
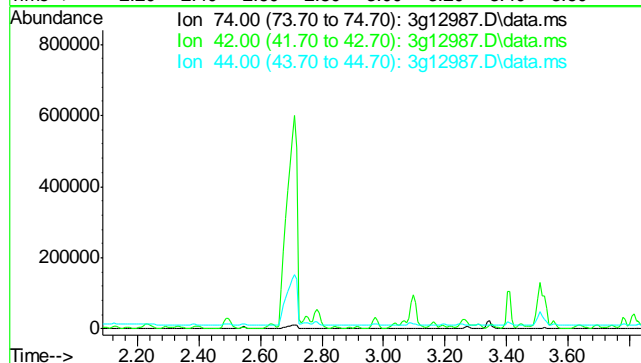
Tgt Ion	Ratio	Lower	Upper
82	100		
128	46.0	36.8	76.8
54	60.4	40.5	80.5





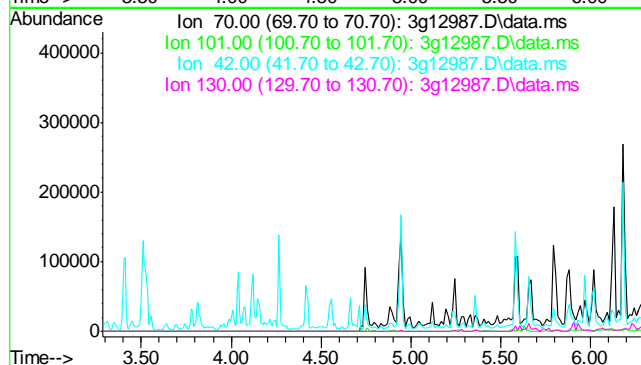
#3  
 N-Nitrosodimethylamine  
 Concen: N.D. ug/mL  
 Expected RT: 2.34 min  
 Lab File: 3g12987.D  
 Acq: 15 Jan 13 3:52 pm

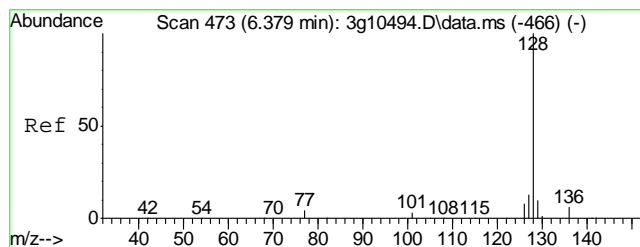
Tgt Ion	Exp Ratio
74	100
42	78.5
44	4.0



#4  
 N-Nitrosodi-propylamine  
 Concen: N.D. ug/mL  
 Expected RT: 4.79 min  
 Lab File: 3g12987.D  
 Acq: 15 Jan 13 3:52 pm

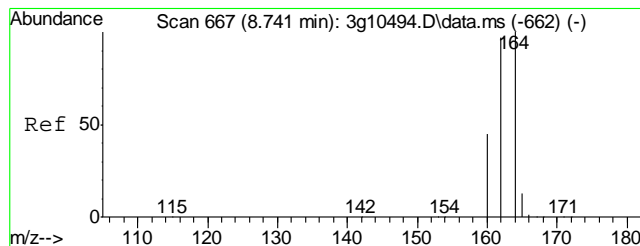
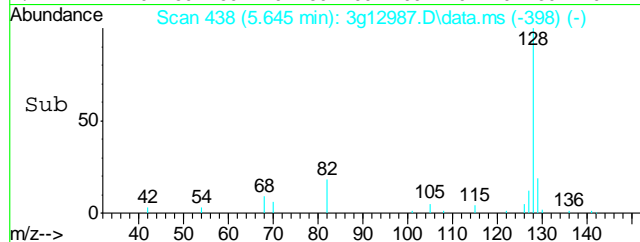
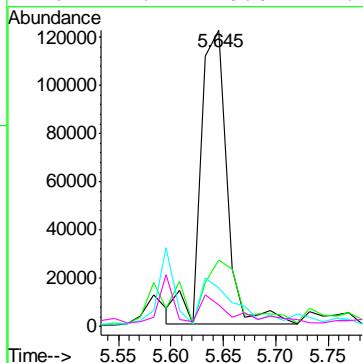
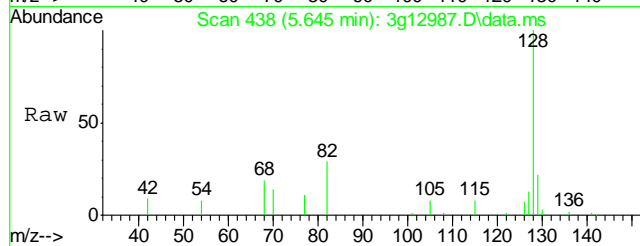
Tgt Ion	Exp Ratio
70	100
101	11.9
42	57.4
130	21.7





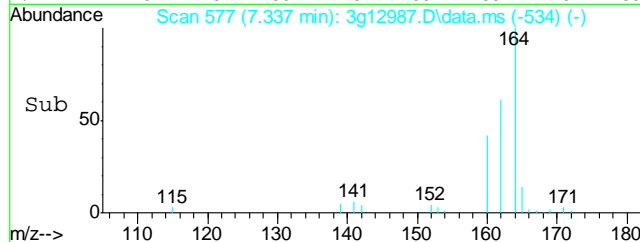
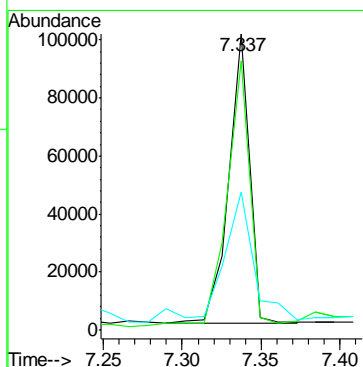
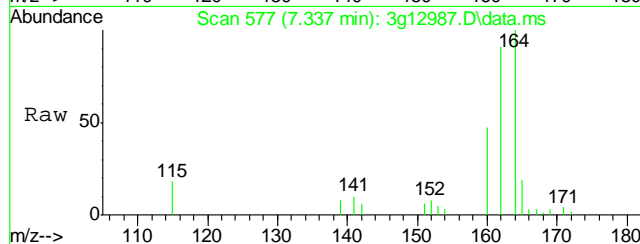
#5  
Naphthalene  
Concen: 4.5354 ug/mL  
RT: 5.645 min Scan# 438  
Delta R.T. 0.001 min  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

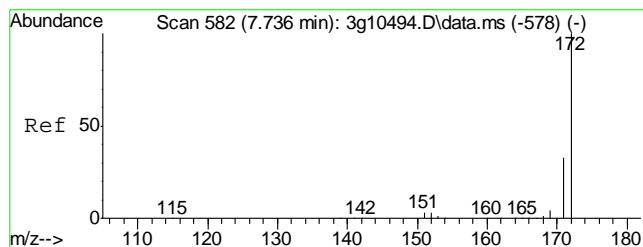
Tgt Ion:128	Resp:	212128
Ion Ratio	Lower	Upper
128	100	
129	28.5	0.0 31.2
127	20.2	0.0 32.4
126	12.1	0.0 27.2



#6  
Acenaphthene-d10  
Concen: 4.0000 ug/mL  
RT: 7.337 min Scan# 577  
Delta R.T. 0.012 min  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

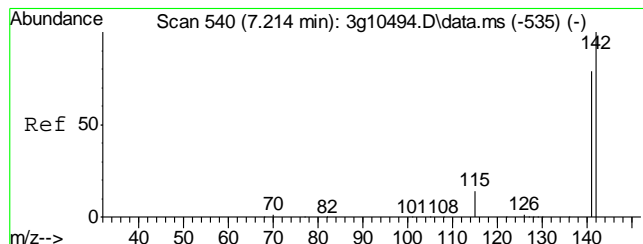
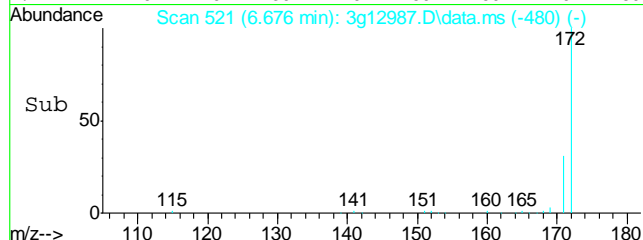
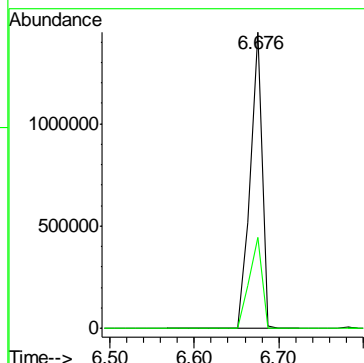
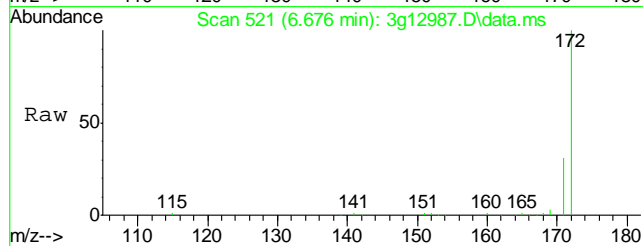
Tgt Ion:164	Resp:	89868
Ion Ratio	Lower	Upper
164	100	
162	100.6	88.1 128.1
160	68.7	38.8 78.8





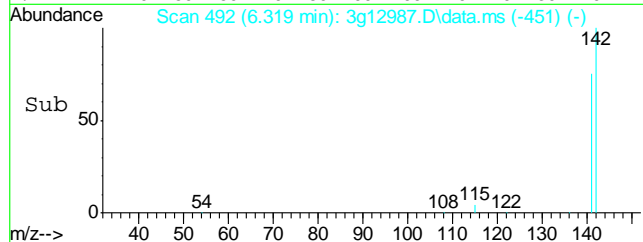
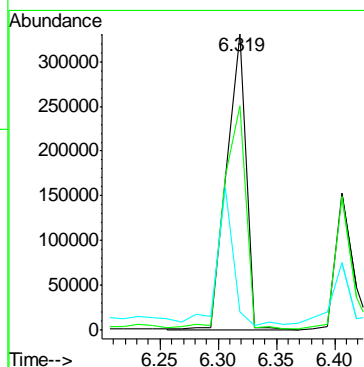
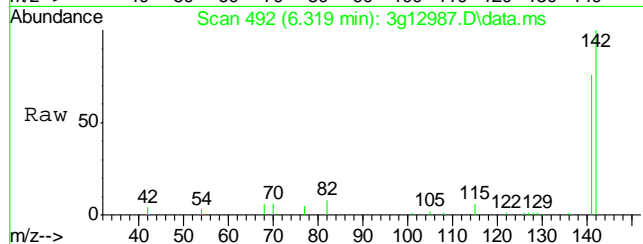
#7  
2-Fluorobiphenyl  
Concen: 41.0897 ug/mL  
RT: 6.676 min Scan# 521  
Delta R.T. 0.010 min  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

Tgt Ion	Ratio	Lower	Upper
172	100		
171	33.4	12.2	52.2

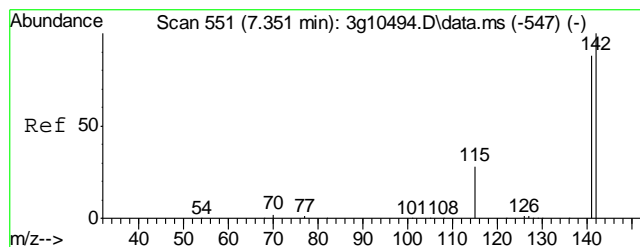


#8  
2-Methylnaphthalene  
Concen: 13.1167 ug/mL  
RT: 6.319 min Scan# 492  
Delta R.T. 0.008 min  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

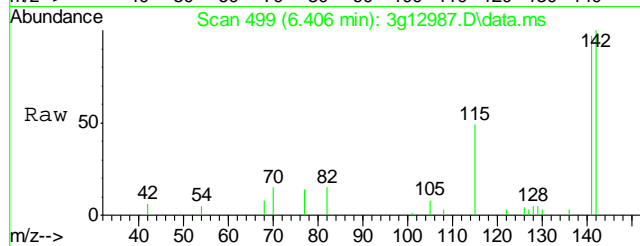
Tgt Ion	Ratio	Lower	Upper
142	100		
141	85.9	62.0	102.0
115	39.0	11.3	51.3



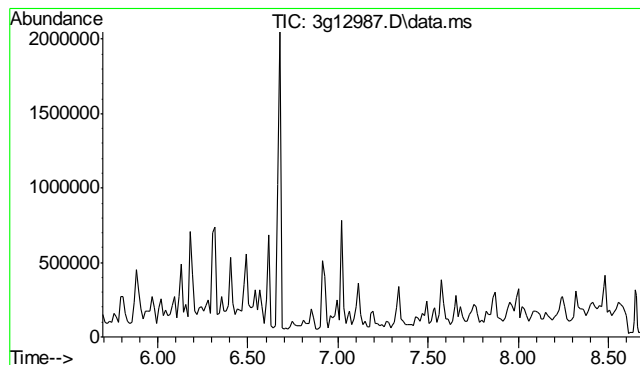
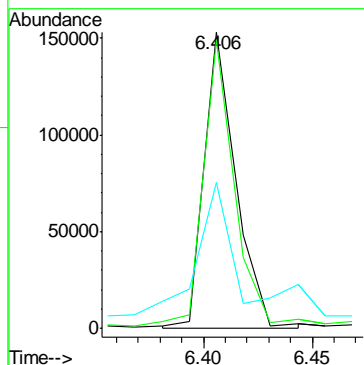
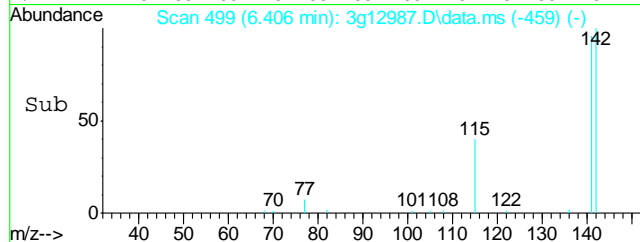




#9  
1-Methylnaphthalene  
Concen: 6.1464 ug/mL m  
RT: 6.406 min Scan# 499  
Delta R.T. -0.004 min  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

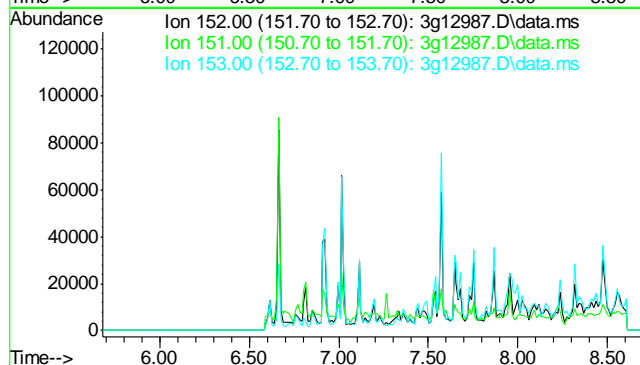


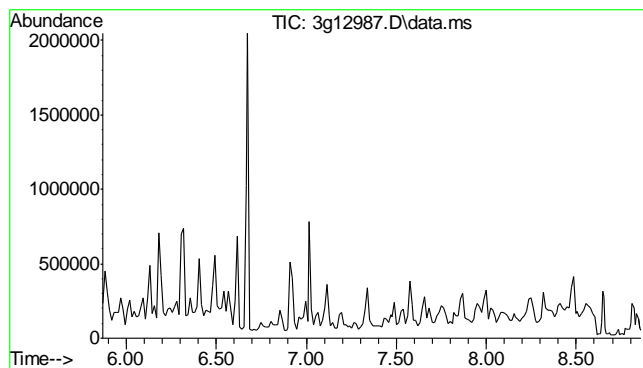
Tgt Ion	Ratio	Lower	Upper
142	100		
141	209.6	67.5	107.5#
115	99.7	19.4	59.4#



#10  
Acenaphthylene  
Concen: N.D. ug/mL  
Expected RT: 7.18 min  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

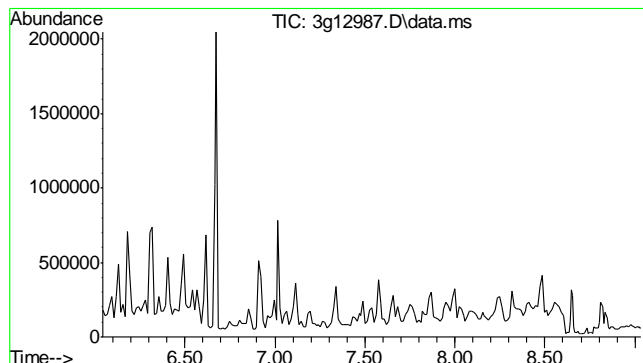
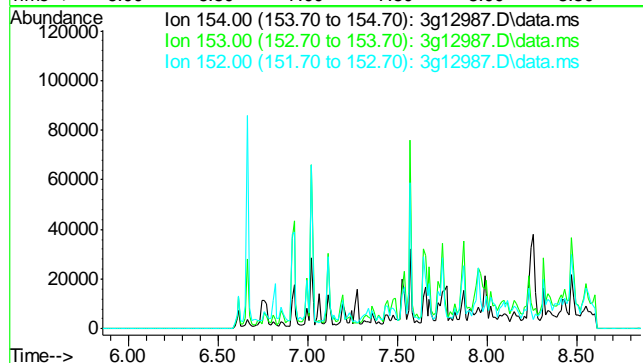
Tgt Ion	Sig	Exp Ratio
152	100	
151	19.2	
153	12.9	





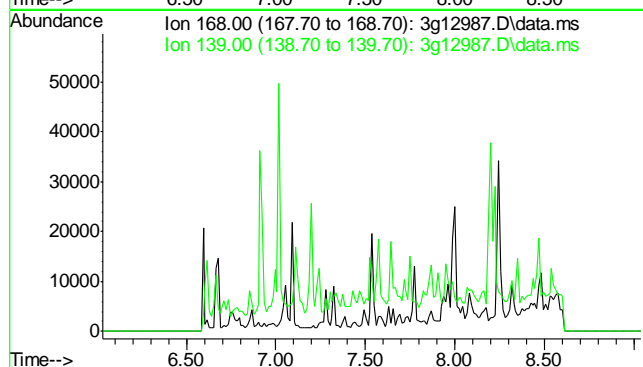
#11  
 Acenaphthene  
 Concen: N.D. ug/mL  
 Expected RT: 7.36 min  
 Lab File: 3g12987.D  
 Acq: 15 Jan 13 3:52 pm

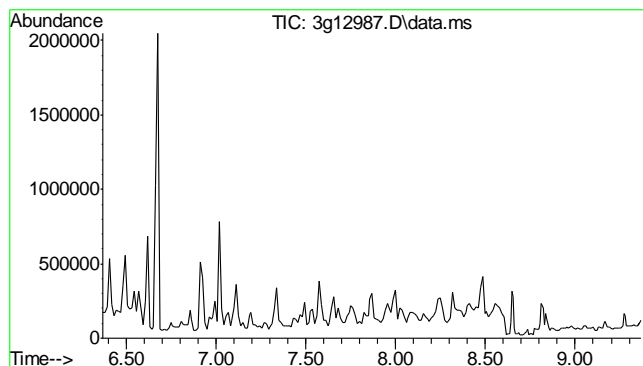
Tgt Ion	Sig	Exp Ratio
154	100	
153	102.4	
152	50.0	



#12  
 Dibenzofuran  
 Concen: N.D. ug/mL  
 Expected RT: 7.54 min  
 Lab File: 3g12987.D  
 Acq: 15 Jan 13 3:52 pm

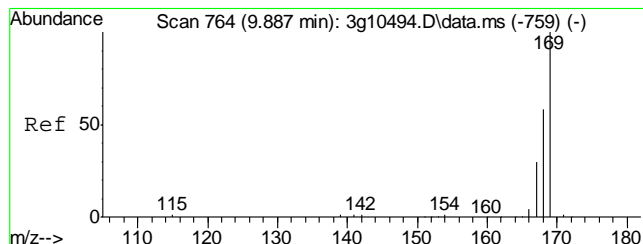
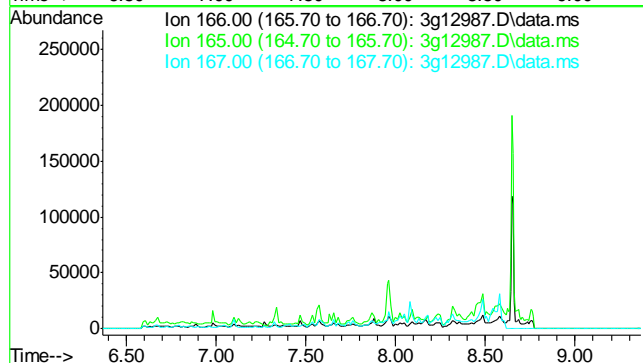
Tgt Ion	Sig	Exp Ratio
168	100	
139	33.4	





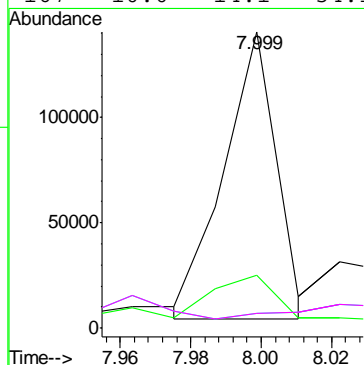
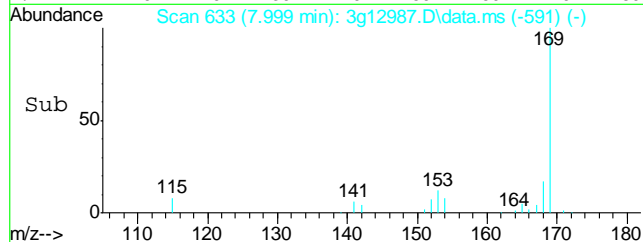
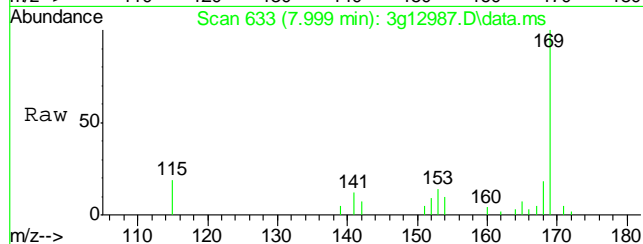
#13  
 Fluorene  
 Concen: N.D. ug/mL  
 Expected RT: 7.87 min  
 Lab File: 3g12987.D  
 Acq: 15 Jan 13 3:52 pm

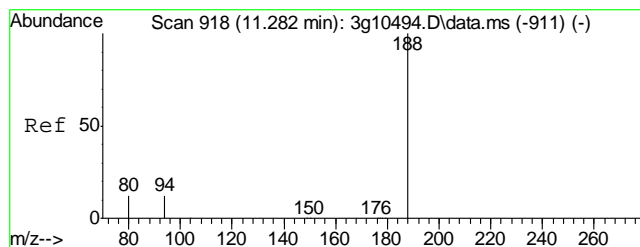
Tgt Ion: 166  
 Sig Exp Ratio  
 166 100  
 165 92.0  
 167 13.1



#14  
 Diphenylamine  
 Concen: 5.0440 ug/mL m  
 RT: 7.999 min Scan# 633  
 Delta R.T. 0.002 min  
 Lab File: 3g12987.D  
 Acq: 15 Jan 13 3:52 pm

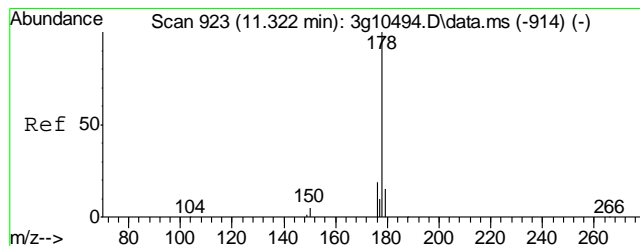
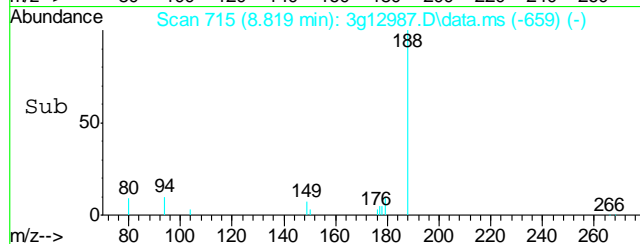
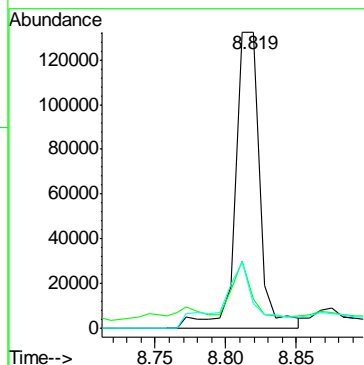
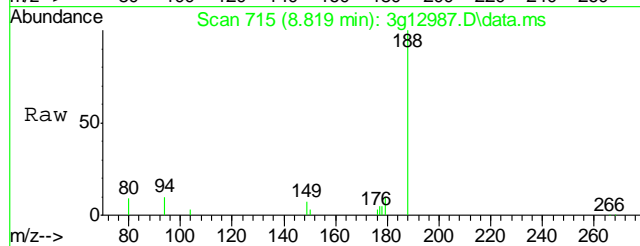
Tgt Ion: 169 Resp: 142230  
 Ion Ratio Lower Upper  
 169 100  
 168 25.8 41.7 81.7#  
 167 10.0 14.1 54.1#  
 167 10.0 14.1 54.1#





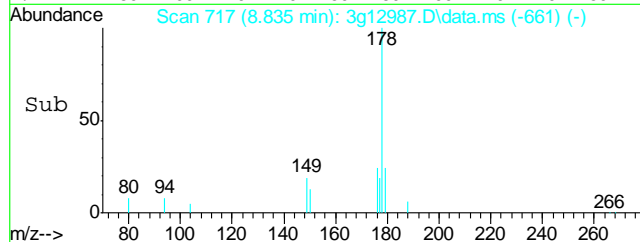
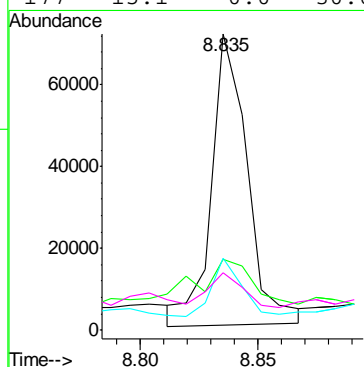
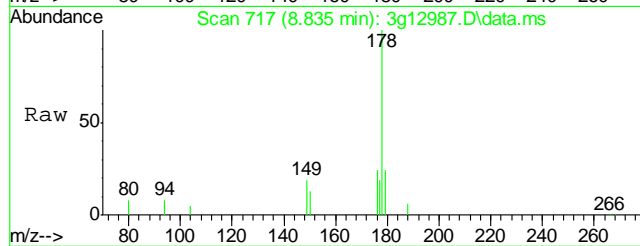
#15  
Phenanthrene-d10  
Concen: 4.0000 ug/mL  
RT: 8.819 min Scan# 715  
Delta R.T. 0.008 min  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

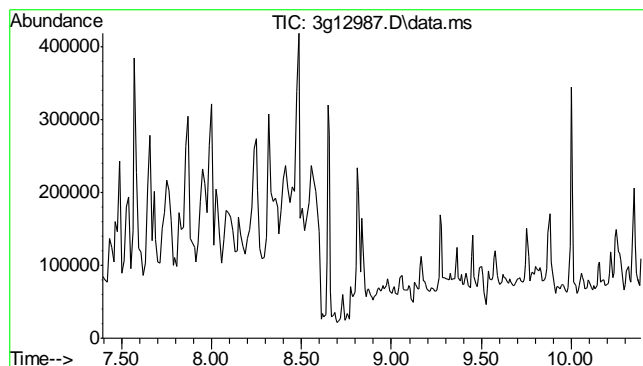
Tgt Ion	Ratio	Lower	Upper
188	100		
94	16.8	0.0	26.9
80	32.8	0.0	26.3#



#16  
Phenanthrene  
Concen: 1.2674 ug/mL  
RT: 8.835 min Scan# 717  
Delta R.T. -0.000 min  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

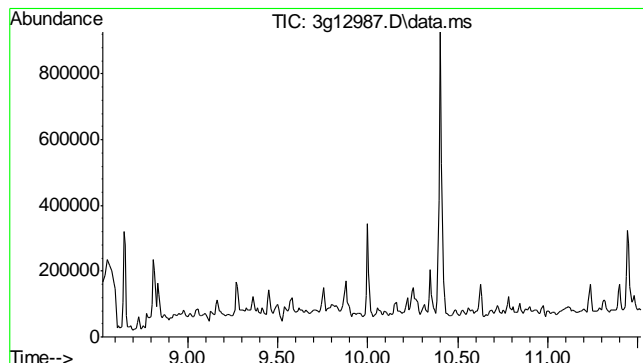
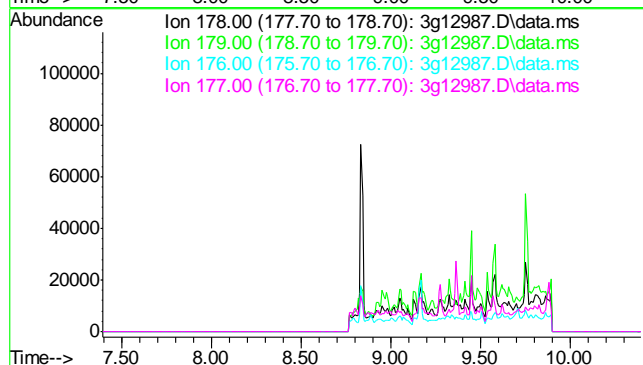
Tgt Ion	Ratio	Lower	Upper
178	100		
179	74.5	0.0	35.2#
176	22.4	0.0	38.6
177	15.1	0.0	30.0





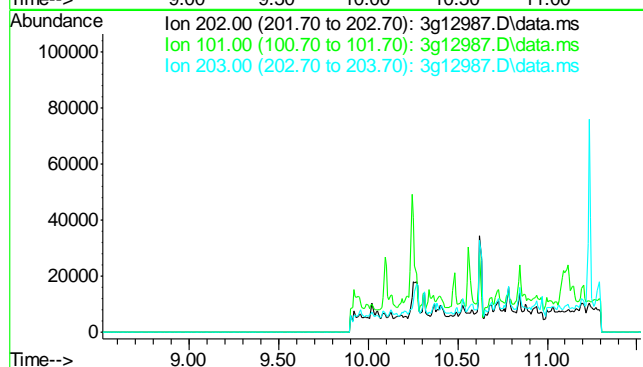
#17  
 Anthracene  
 Concen: N.D. ug/mL  
 Expected RT: 8.89 min  
 Lab File: 3g12987.D  
 Acq: 15 Jan 13 3:52 pm

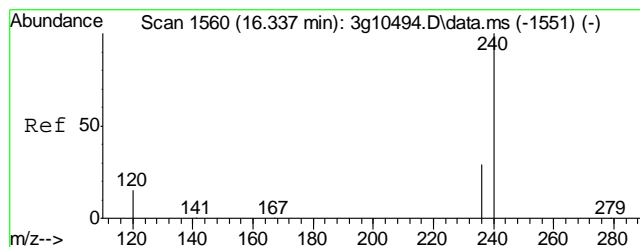
Tgt Ion	Sig	Exp Ratio
178	100	
179	15.1	
176	18.2	
177	8.7	



#18  
 Fluoranthene  
 Concen: N.D. ug/mL  
 Expected RT: 10.02 min  
 Lab File: 3g12987.D  
 Acq: 15 Jan 13 3:52 pm

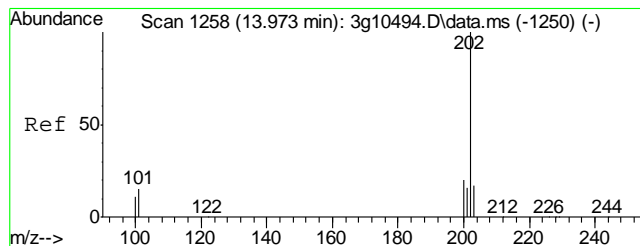
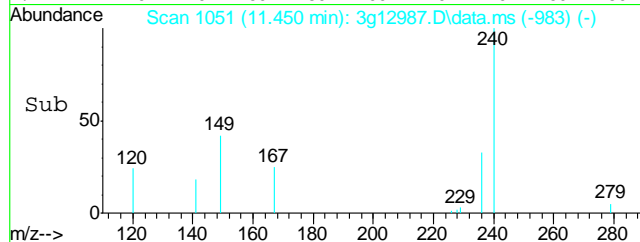
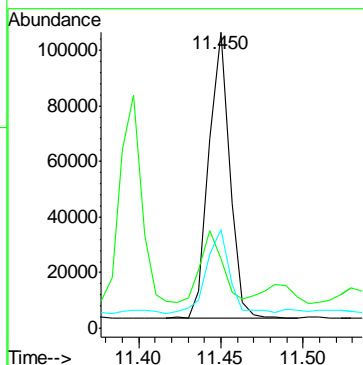
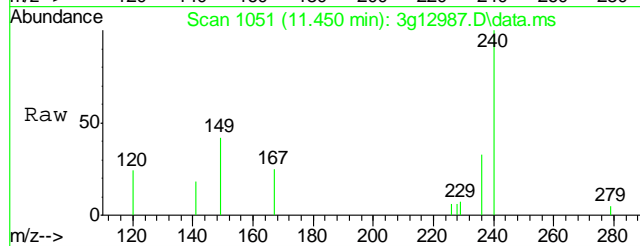
Tgt Ion	Sig	Exp Ratio
202	100	
101	12.6	
203	17.4	





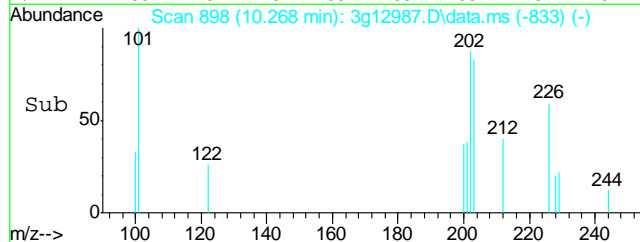
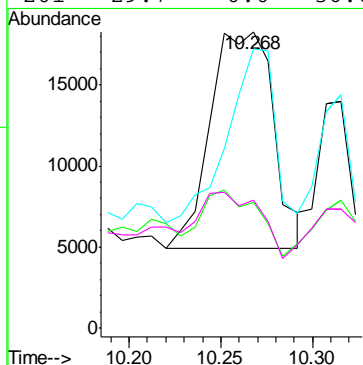
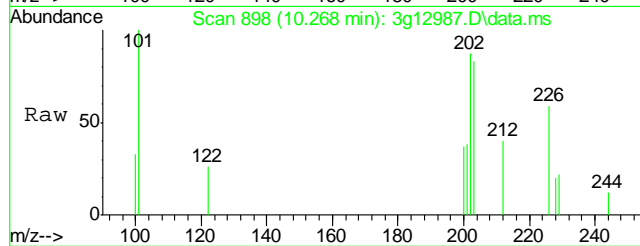
#19  
Chrysene-d12  
Concen: 4.0000 ug/mL  
RT: 11.450 min Scan# 1051  
Delta R.T. 0.007 min  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

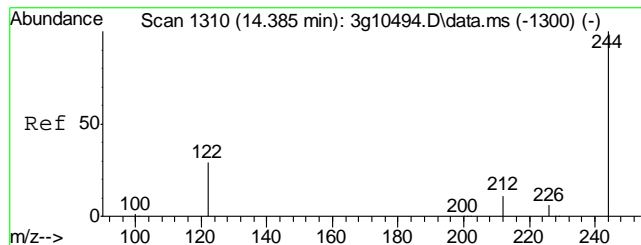
Tgt Ion	Ratio	Lower	Upper
240	100		
120	36.8	0.0	37.3
236	32.0	11.2	51.2



#20  
Pyrene  
Concen: 0.6636 ug/mL  
RT: 10.268 min Scan# 898  
Delta R.T. 0.018 min  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

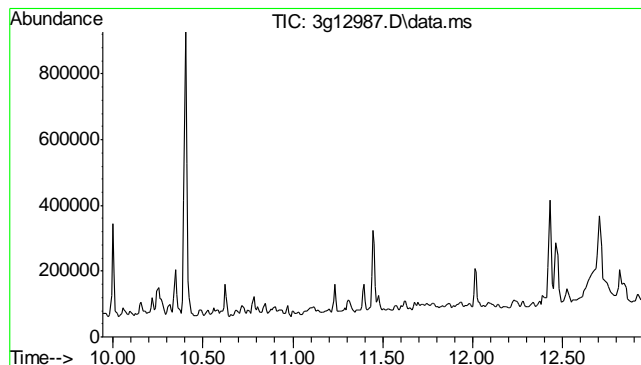
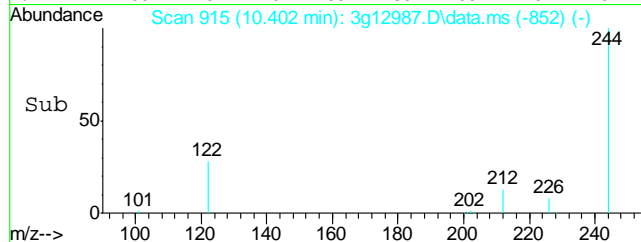
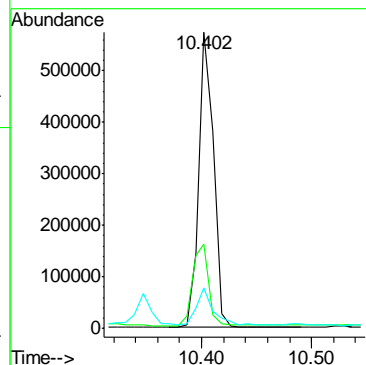
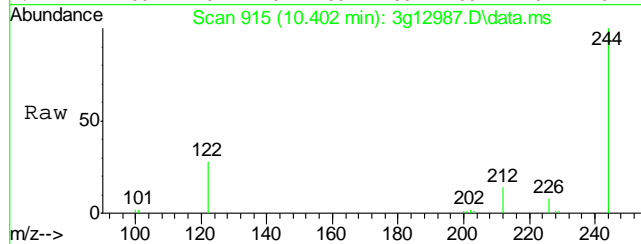
Tgt Ion	Ratio	Lower	Upper
202	100		
200	27.1	0.2	40.2
203	54.7	0.0	37.8
201	29.7	0.0	36.6





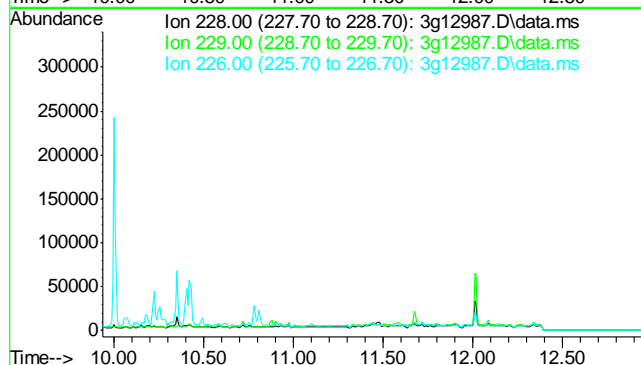
#21  
Terphenyl-d14  
Concen: 44.3967 ug/mL  
RT: 10.402 min Scan# 915  
Delta R.T. 0.002 min  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

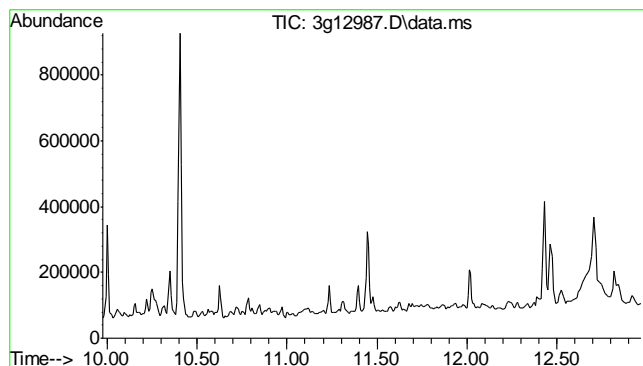
Tgt Ion	Ratio	Lower	Upper
244	100		
122	31.0	7.8	47.8
212	14.6	0.0	32.8



#22  
Benzo(a)anthracene  
Concen: N.D. ug/mL  
Expected RT: 11.44 min  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

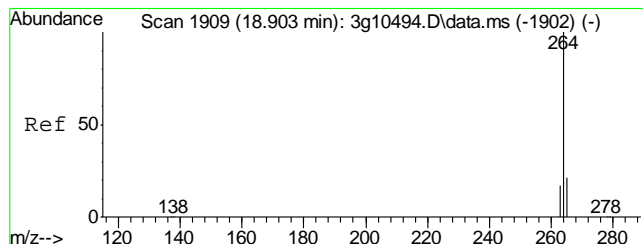
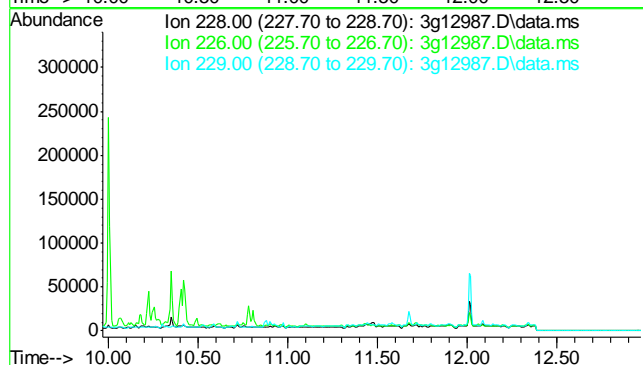
Tgt Ion	Sig	Exp Ratio
228	100	
229		19.4
226		26.6





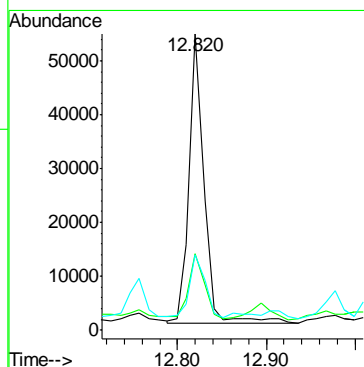
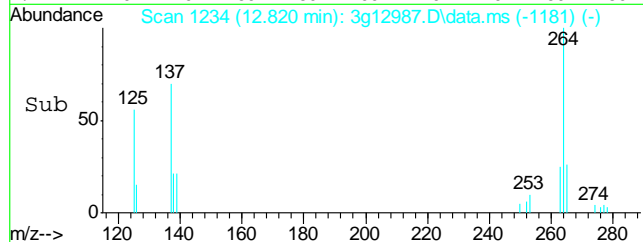
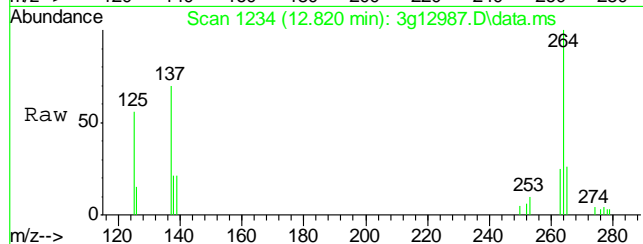
#23  
 Chrysene  
 Concen: N.D. ug/mL  
 Expected RT: 11.47 min  
  
 Lab File: 3g12987.D  
 Acq: 15 Jan 13 3:52 pm

Tgt Ion: 228  
 Sig Exp Ratio  
 228 100  
 226 28.6  
 229 19.4

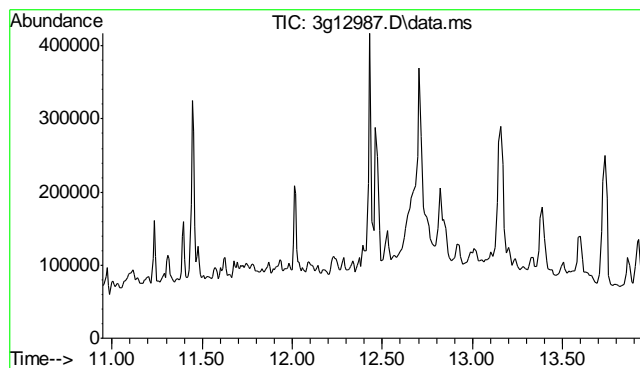


#24  
 Perylene-d12  
 Concen: 4.0000 ug/mL  
 RT: 12.820 min Scan# 1234  
 Delta R.T. 0.010 min  
 Lab File: 3g12987.D  
 Acq: 15 Jan 13 3:52 pm

Tgt Ion: 264 Resp: 62316  
 Ion Ratio Lower Upper  
 264 100  
 265 23.7 0.6 40.6  
 263 22.7 0.0 38.8

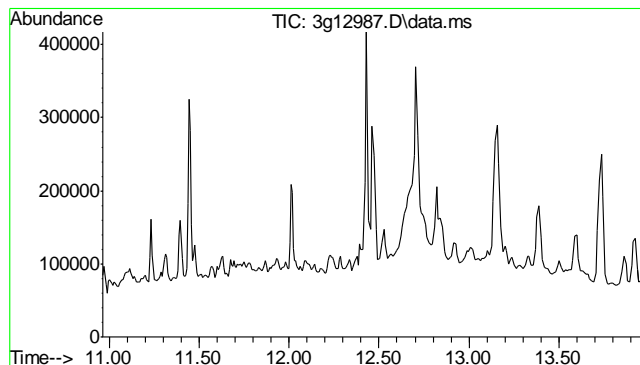
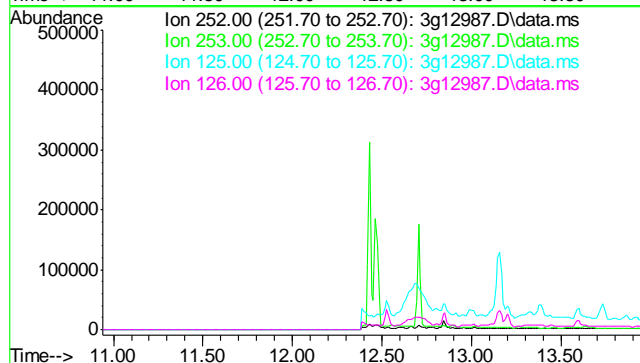






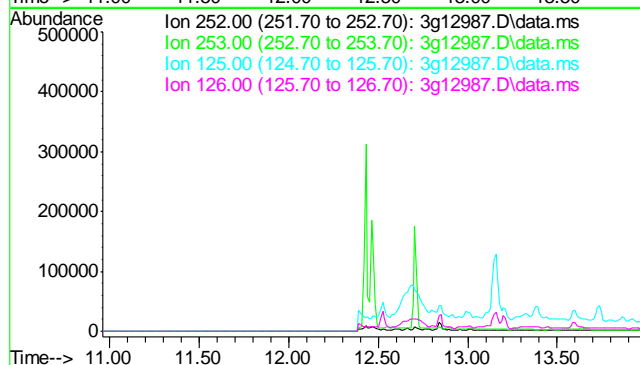
#25  
Benzo(b)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 12.44 min  
  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

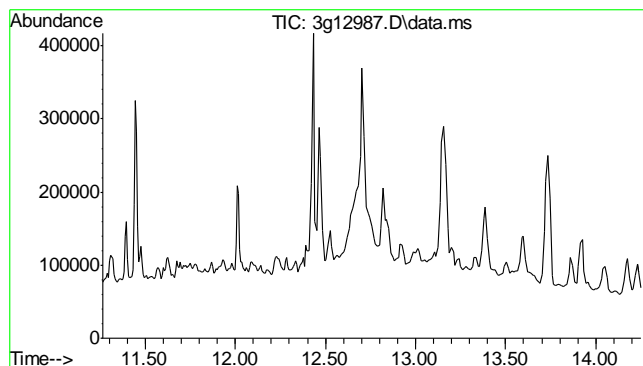
Tgt Ion	Exp Ratio
252	100
253	51.5
125	13.2
126	46.9



#26  
Benzo(k)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 12.46 min  
  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

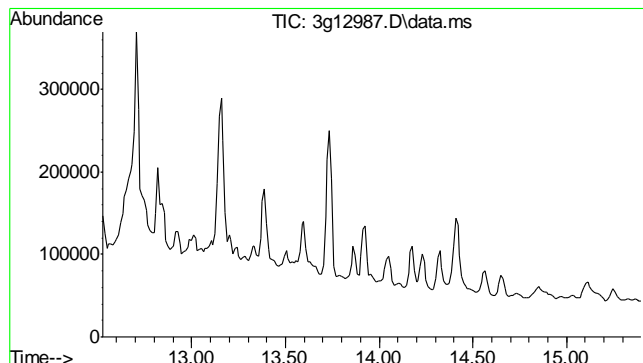
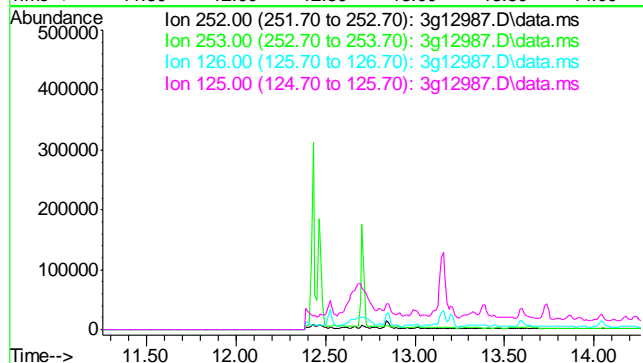
Tgt Ion	Exp Ratio
252	100
253	37.3
125	9.6
126	34.1





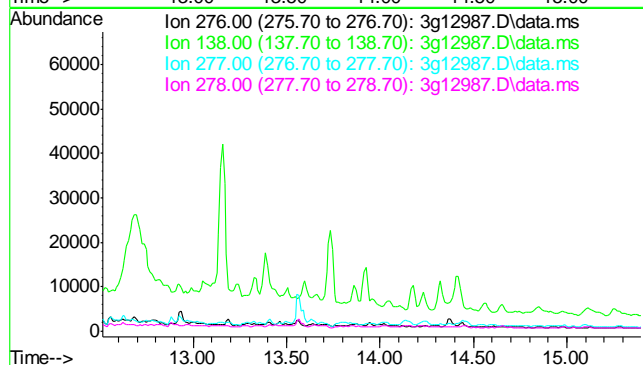
#27  
Benzo(a)pyrene  
Concen: N.D. ug/mL  
Expected RT: 12.76 min  
  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

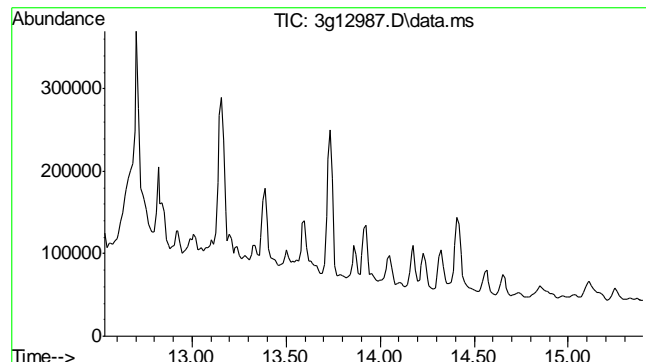
Tgt Ion	Sig	Exp Ratio
252	100	
253	21.5	
126	20.4	
125	14.5	



#28  
Indeno(1,2,3-cd)pyrene  
Concen: N.D. ug/mL  
Expected RT: 14.02 min  
  
Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

Tgt Ion	Sig	Exp Ratio
276	100	
138	40.0	
277	24.8	
278	76.2	

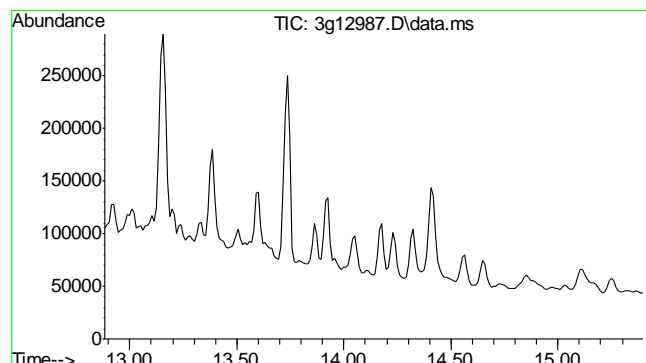
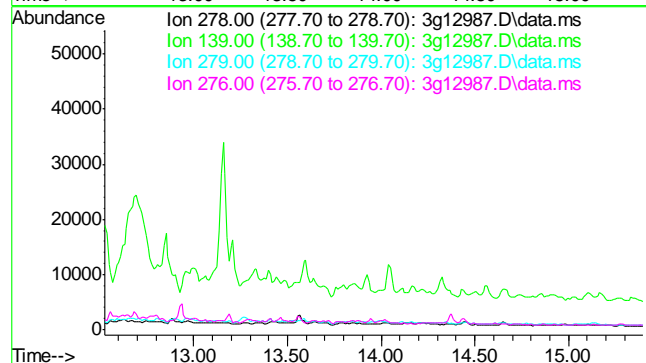




#29  
Dibenz(a,h)anthracene  
Concen: N.D. ug/mL  
Expected RT: 14.03 min

Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

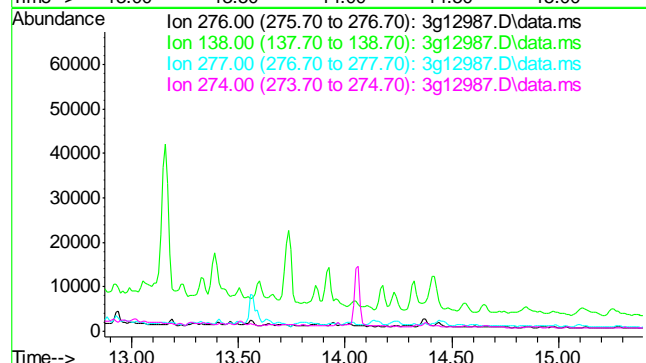
Tgt Ion:	278
Sig	Exp Ratio
278	100
139	30.8
279	22.9
276	131.2



#30  
Benzo(g,h,i)perylene  
Concen: N.D. ug/mL  
Expected RT: 14.37 min

Lab File: 3g12987.D  
Acq: 15 Jan 13 3:52 pm

Tgt Ion:	276
Sig	Exp Ratio
276	100
138	35.1
277	23.3
274	21.5



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\011513\  
 Data File : 3g12973.D  
 Acq On : 15 Jan 2013 10:14 am  
 Operator : DONC  
 Sample : OP7223-MB  
 Misc : OP7223,E3G621,30.00,,,1,1  
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jan 15 13:46:44 2013  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G611.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Thu Jan 10 14:18:35 2013  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.621	136	122903	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.337	164	71901	4.0000	ug/mL	0.01
15) Phenanthrene-d10	8.812	188	128999	4.0000	ug/mL	0.00
19) Chrysene-d12	11.443	240	101544	4.0000	ug/mL	0.00
24) Perylene-d12	12.810	264	84293	4.0000	ug/mL	0.00

## System Monitoring Compounds

2) Nitrobenzene-d5	4.935	82	445750	40.3218	ug/mL	-0.01
Spiked Amount	50.000	Range	25 - 135	Recovery	=	80.64%
7) 2-Fluorobiphenyl	6.676	172	1170373	42.6075	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	85.22%
21) Terphenyl-d14	10.402	244	725496	52.5073	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	105.02%

## Target Compounds

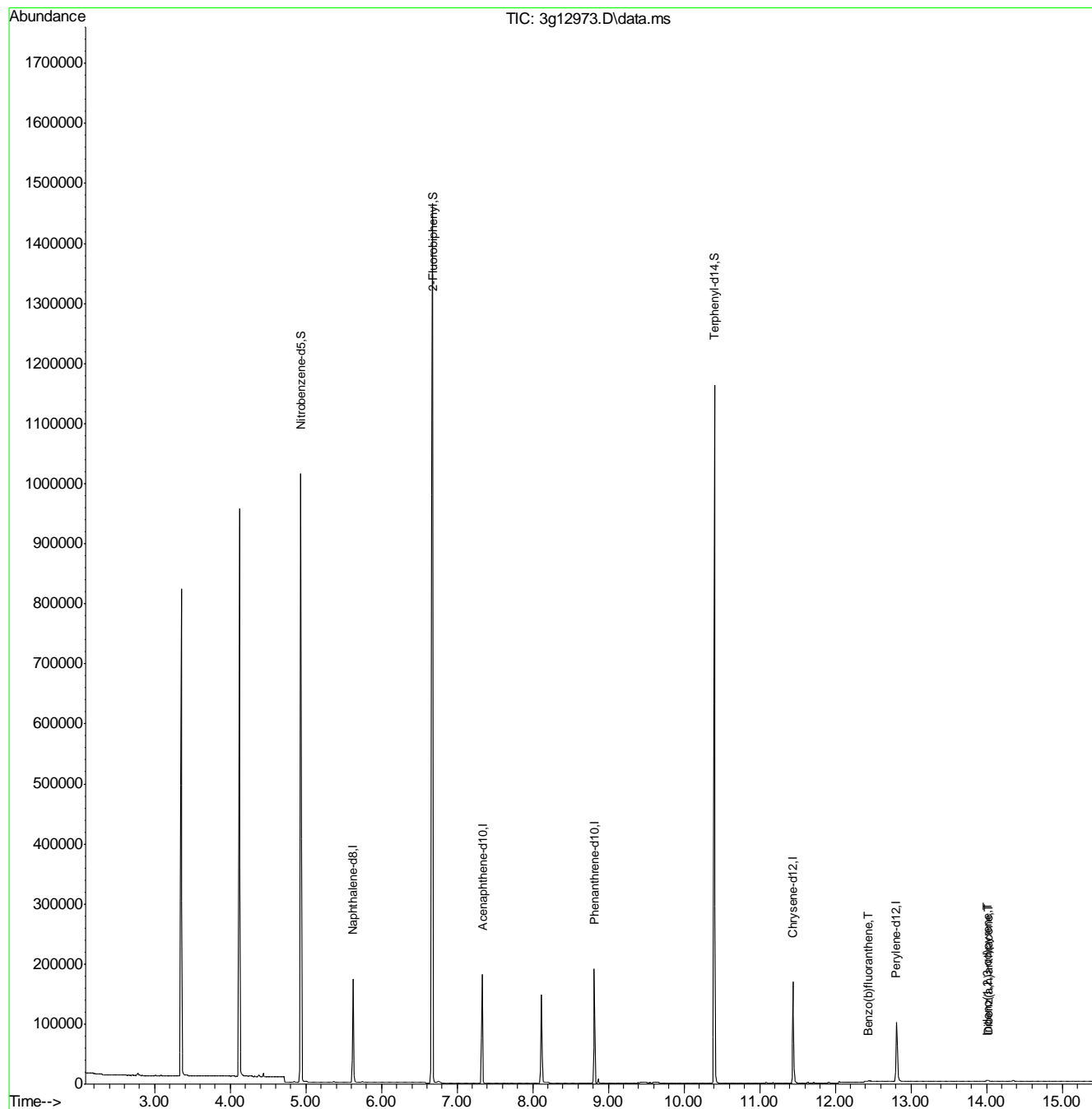
					Qvalue
3) N-Nitrosodimethylamine	2.356	74	24	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.646	128	183	Below	Cal # 48
8) 2-Methylnaphthalene	6.319	142	186	N.D.	
9) 1-Methylnaphthalene	6.394	142	78	N.D.	
10) Acenaphthylene	7.396	152	202	N.D.	
11) Acenaphthene	7.385	154	61	N.D.	
12) Dibenzofuran	7.857	168	73	N.D.	
13) Fluorene	0.000	166	0	N.D.	d
14) Diphenylamine	0.000	169	0	N.D.	d
16) Phenanthrene	8.812	178	152	N.D.	
17) Anthracene	8.891	178	39	N.D.	
18) Fluoranthene	10.015	202	205	N.D.	
20) Pyrene	10.244	202	152	N.D.	
22) Benzo(a)anthracene	11.437	228	1041	N.D.	
23) Chrysene	11.470	228	877	N.D.	
25) Benzo(b)fluoranthene	12.442	252	1135m	0.0649	ug/mL
26) Benzo(k)fluoranthene	12.463	252	1206	N.D.	
27) Benzo(a)pyrene	0.000	252	0	N.D.	d
28) Indeno(1,2,3-cd)pyrene	14.009	276	1461	0.0777	ug/mL 89
29) Dibenz(a,h)anthracene	14.019	278	1174	0.0897	ug/mL 92
30) Benzo(g,h,i)perylene	14.356	276	1418	N.D.	

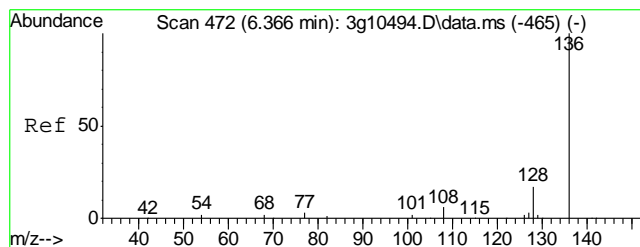
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\011513\  
Data File : 3g12973.D  
Acq On : 15 Jan 2013 10:14 am  
Operator : DONC  
Sample : OP7223-MB  
Misc : OP7223,E3G621,30.00,,,1,1  
ALS Vial : 4 Sample Multiplier: 1

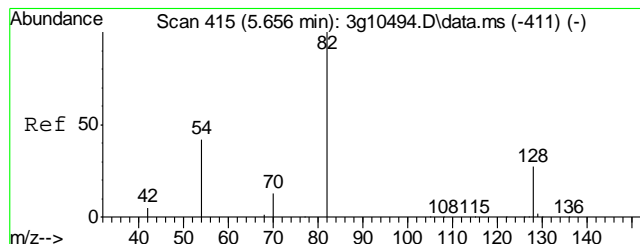
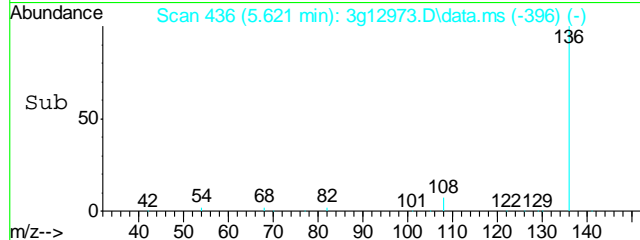
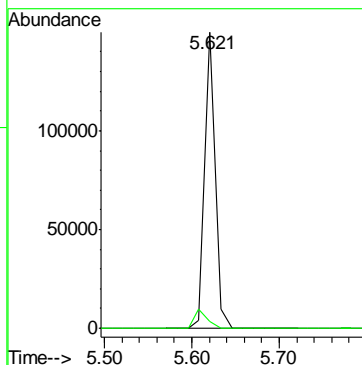
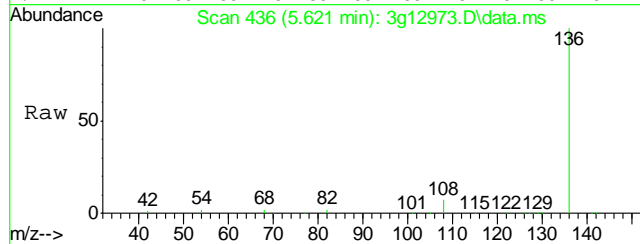
Quant Time: Jan 15 13:46:44 2013  
Quant Method : C:\msdchem\1\METHODS\SIMPE3G611.M  
Quant Title : PAHSIM BASE  
QLast Update : Thu Jan 10 14:18:35 2013  
Response via : Initial Calibration





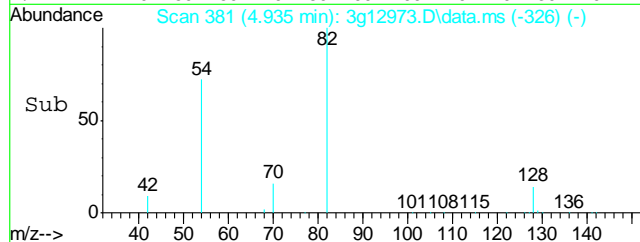
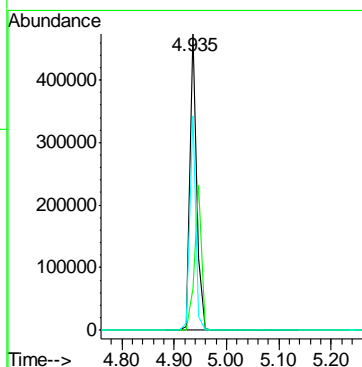
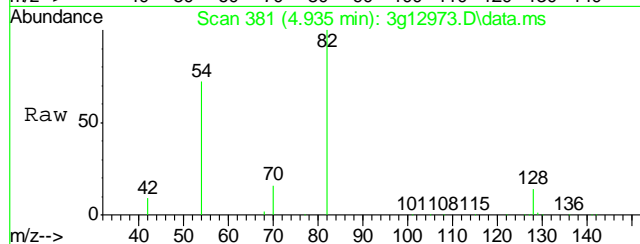
#1  
Naphthalene-d8  
Concen: 4.0000 ug/mL  
RT: 5.621 min Scan# 436  
Delta R.T. 0.000 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

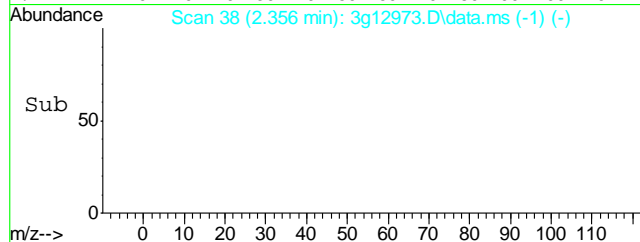
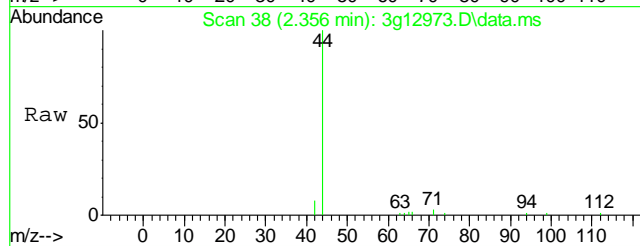
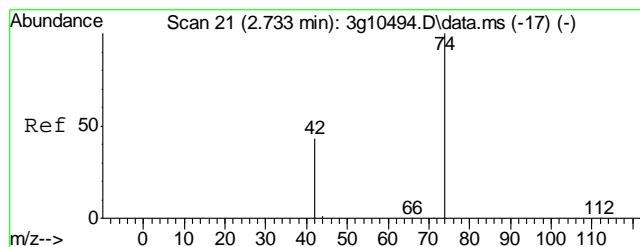
Tgt Ion:	136	Resp:	122903
Ion Ratio	Lower	Upper	
136	100		
68	7.9	0.0	20.8



#2  
Nitrobenzene-d5  
Concen: 40.3218 ug/mL  
RT: 4.935 min Scan# 381  
Delta R.T. -0.014 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

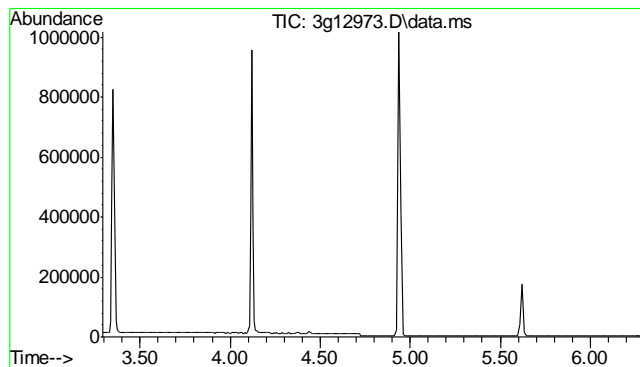
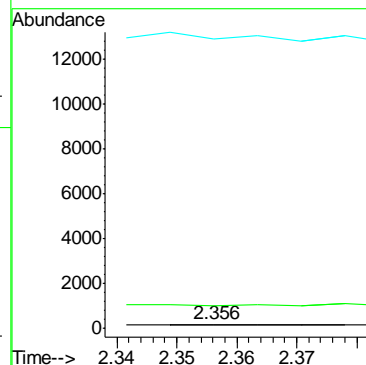
Tgt Ion:	82	Resp:	445750
Ion Ratio	Lower	Upper	
82	100		
128	50.4	36.8	76.8
54	62.9	40.5	80.5





#3  
N-Nitrosodimethylamine  
Concen: Below ug/mL  
RT: 2.356 min Scan# 38  
Delta R.T. 0.020 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

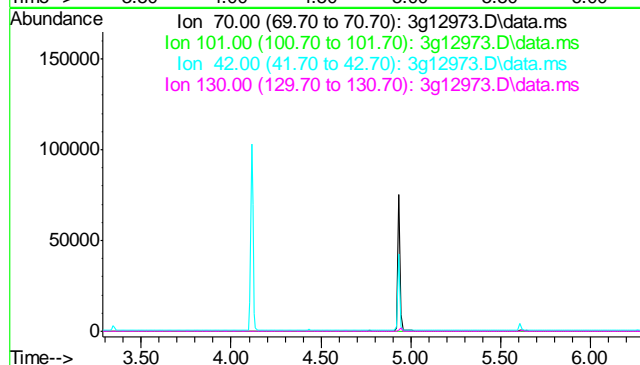
Tgt Ion	74	Resp	24
Ion Ratio	100		
42	0.0	58.5	98.5#
44	0.0	0.0	24.0

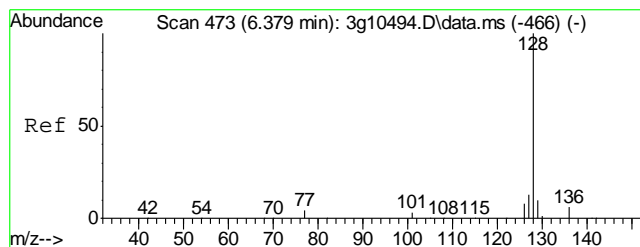


#4  
N-Nitrosodi-propylamine  
Concen: N.D. ug/mL  
Expected RT: 4.79 min

Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

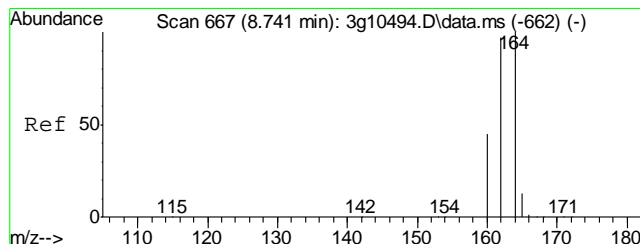
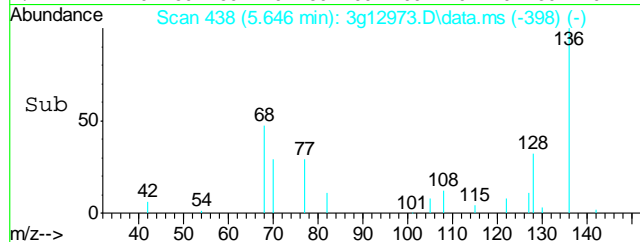
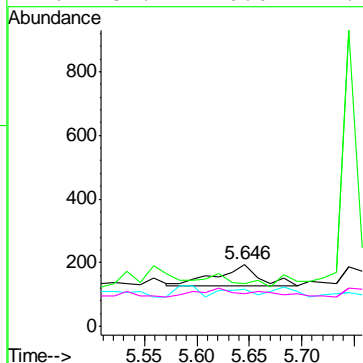
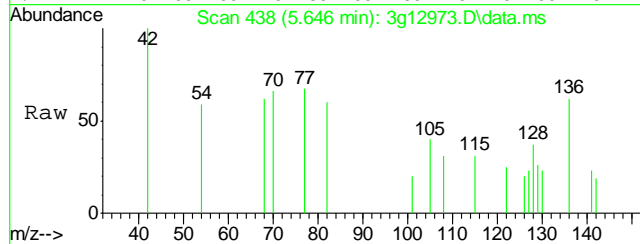
Tgt Ion	70
Sig	Exp Ratio
70	100
101	11.9
42	57.4
130	21.7





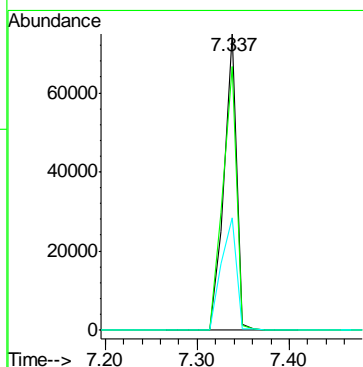
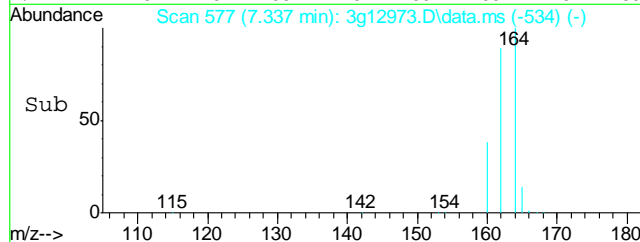
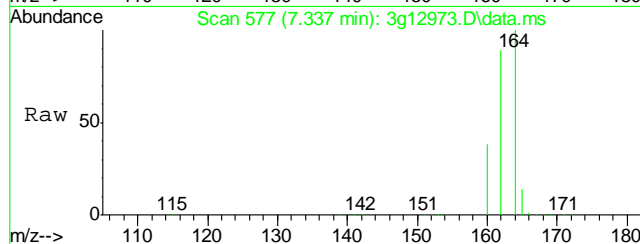
#5  
Naphthalene  
Concen: Below ug/mL  
RT: 5.646 min Scan# 438  
Delta R.T. 0.001 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

Tgt Ion	128	Ratio	100	Resp	183
Ion	128	100			
Ratio	129	21.3	0.0	31.2	
Lower	127	33.9	0.0	32.4#	
Upper	126	37.2	0.0	27.2#	

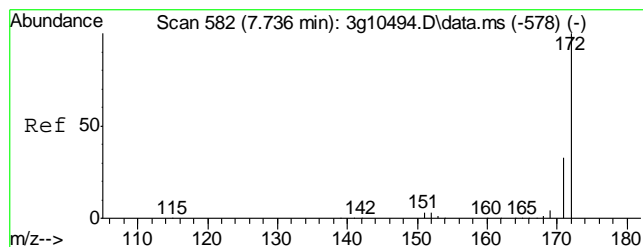


#6  
Acenaphthene-d10  
Concen: 4.0000 ug/mL  
RT: 7.337 min Scan# 577  
Delta R.T. 0.012 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

Tgt Ion	164	Ratio	100	Resp	71901
Ion	164	100			
Ratio	162	96.1	88.1	128.1	
Lower	160	45.1	38.8	78.8	
Upper					

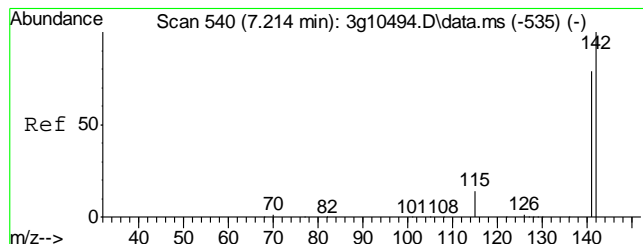
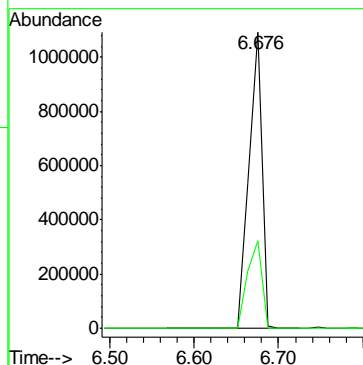
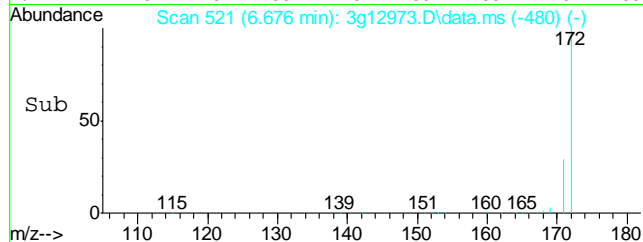
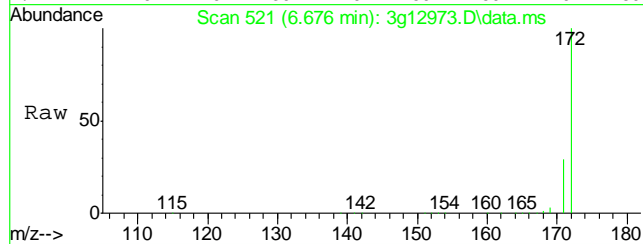






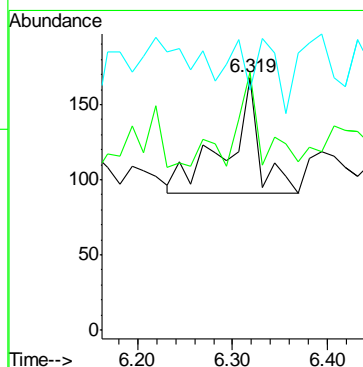
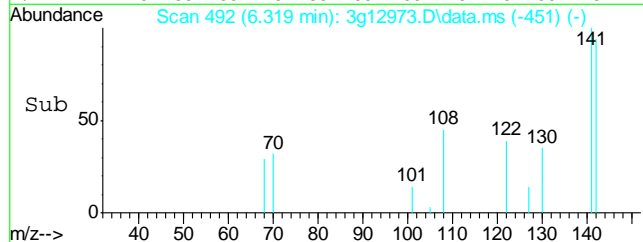
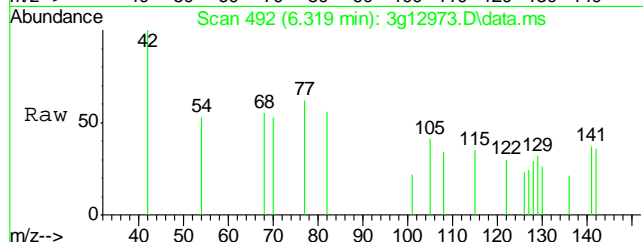
#7  
2-Fluorobiphenyl  
Concen: 42.6075 ug/mL  
RT: 6.676 min Scan# 521  
Delta R.T. 0.010 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

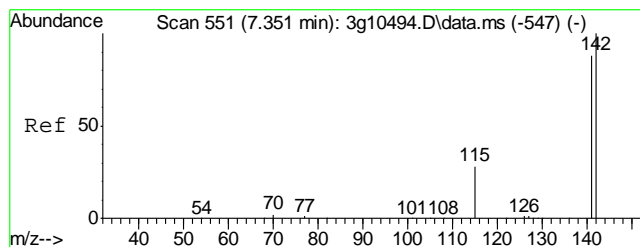
Tgt Ion:172 Resp: 1170373  
Ion Ratio Lower Upper  
172 100  
171 32.8 12.2 52.2



#8  
2-Methylnaphthalene  
Concen: Below ug/mL  
RT: 6.319 min Scan# 492  
Delta R.T. 0.008 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

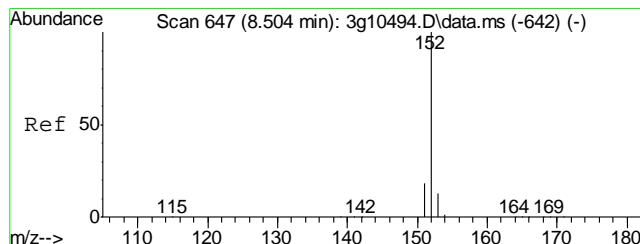
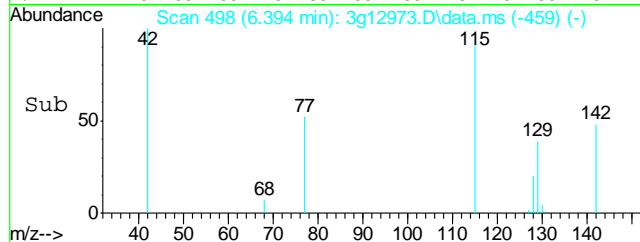
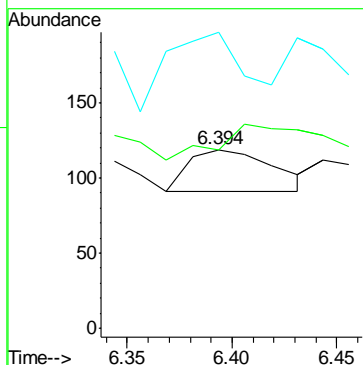
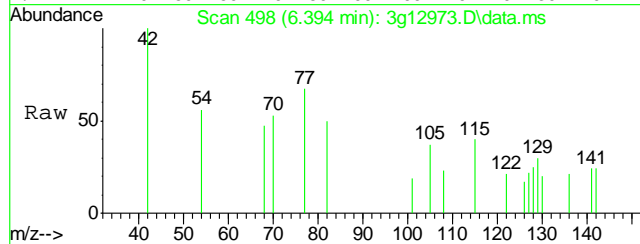
Tgt Ion:142 Resp: 186  
Ion Ratio Lower Upper  
142 100  
141 66.1 62.0 102.0  
115 0.0 11.3 51.3#





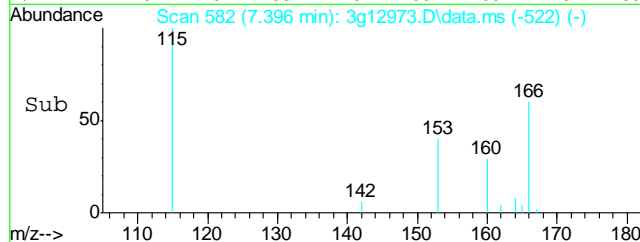
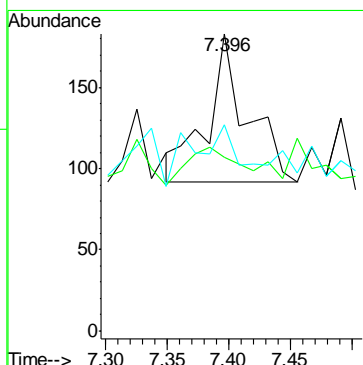
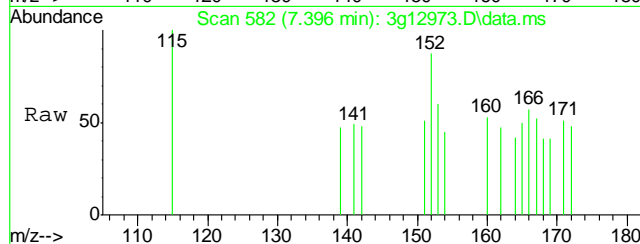
#9  
1-Methylnaphthalene  
Concen: Below ug/mL  
RT: 6.394 min Scan# 498  
Delta R.T. -0.017 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

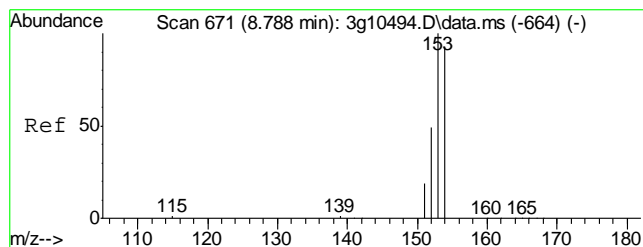
Tgt Ion:	142	Resp:	78
Ion Ratio	Lower	Upper	
142	100		
141	223.1	67.5	107.5#
115	0.0	19.4	59.4#



#10  
Acenaphthylene  
Concen: Below ug/mL  
RT: 7.396 min Scan# 582  
Delta R.T. 0.212 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

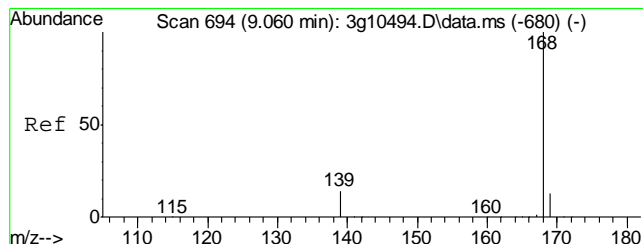
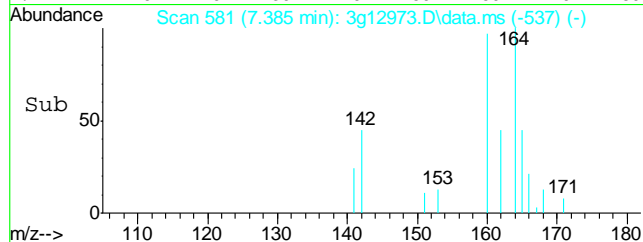
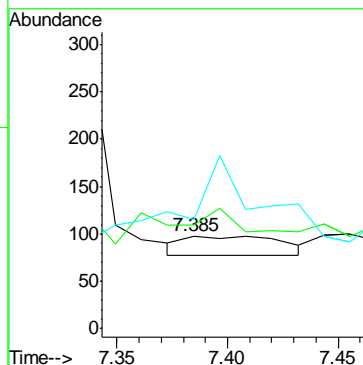
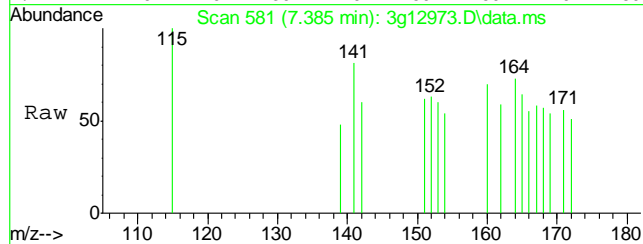
Tgt Ion:	152	Resp:	202
Ion Ratio	Lower	Upper	
152	100		
151	32.2	0.0	39.2
153	25.7	0.0	32.9





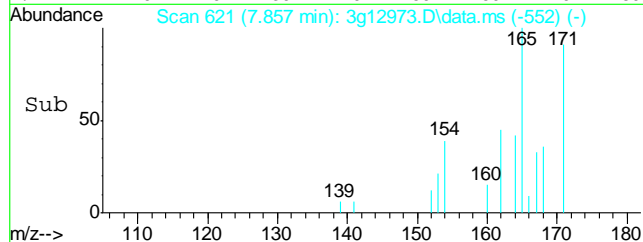
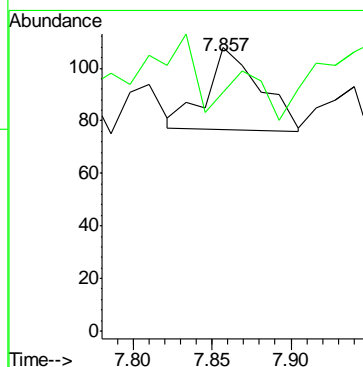
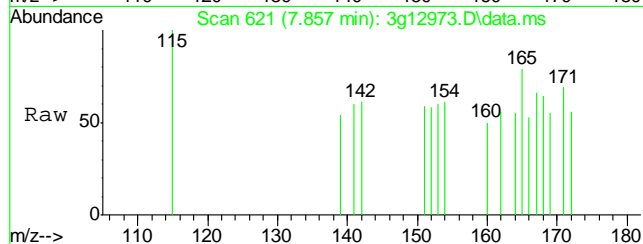
#11  
Acenaphthene  
Concen: Below ug/mL  
RT: 7.385 min Scan# 581  
Delta R.T. 0.024 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

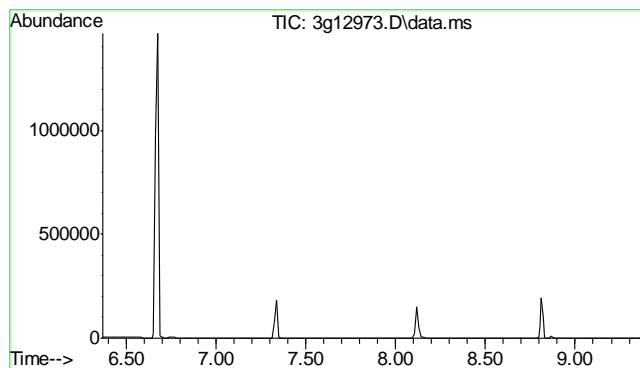
Tgt Ion:	154	Resp:	61
Ion Ratio	Lower	Upper	
154	100		
153	85.2	82.4	122.4
152	331.1	30.0	70.0#



#12  
Dibenzofuran  
Concen: Below ug/mL  
RT: 7.857 min Scan# 621  
Delta R.T. 0.320 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

Tgt Ion:	168	Resp:	73
Ion Ratio	Lower	Upper	
168	100		
139	32.9	13.4	53.4

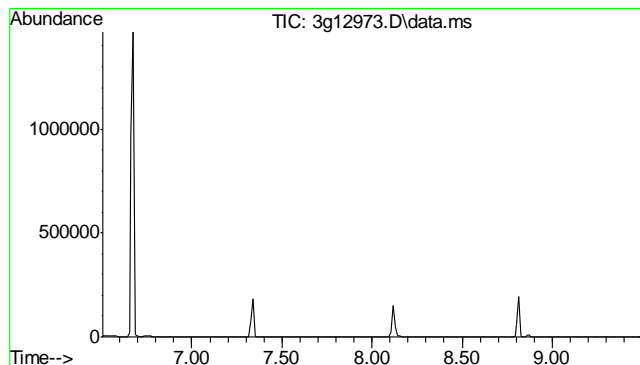
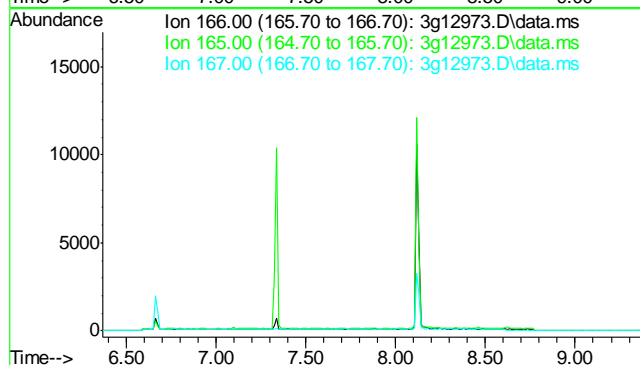




#13  
Fluorene  
Concen: N.D. ug/mL  
Expected RT: 7.87 min

Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

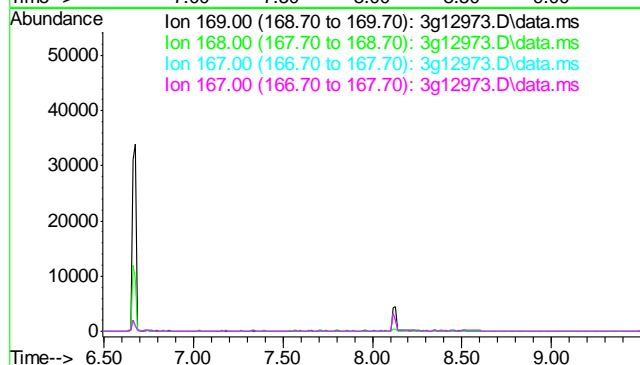
Tgt Ion:	166
Sig	Exp Ratio
166	100
165	92.0
167	13.1

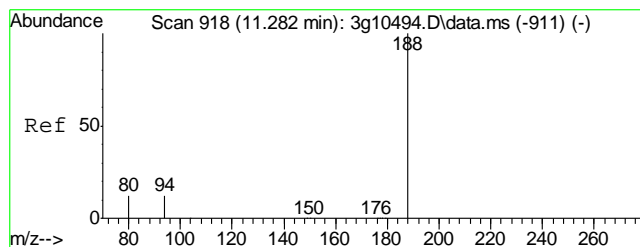


#14  
Diphenylamine  
Concen: N.D. ug/mL  
Expected RT: 8.00 min

Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

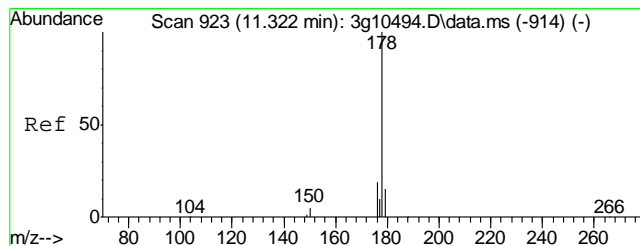
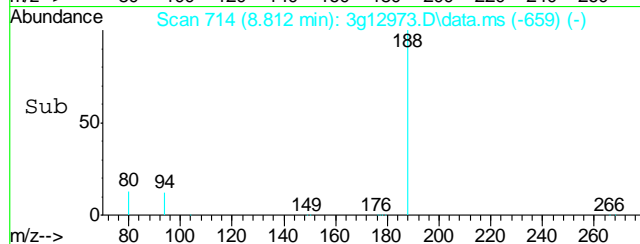
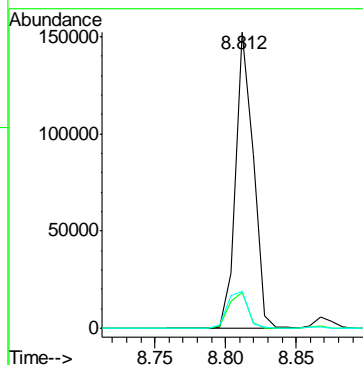
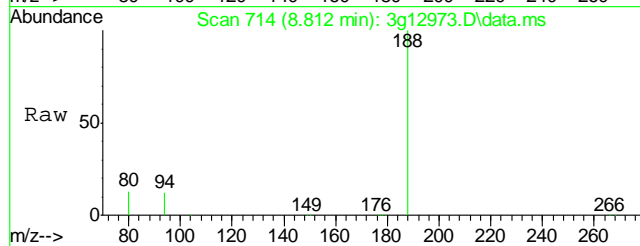
Tgt Ion:	169
Sig	Exp Ratio
169	100
168	61.7
167	34.1
167	34.1





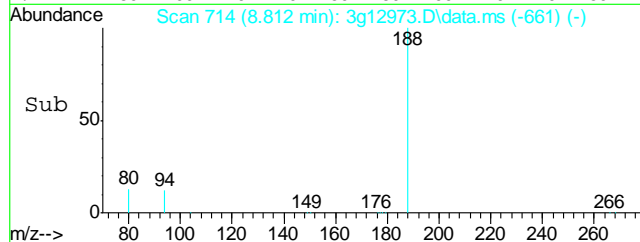
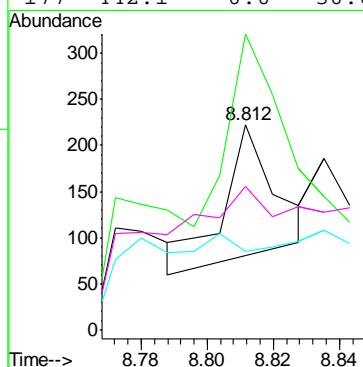
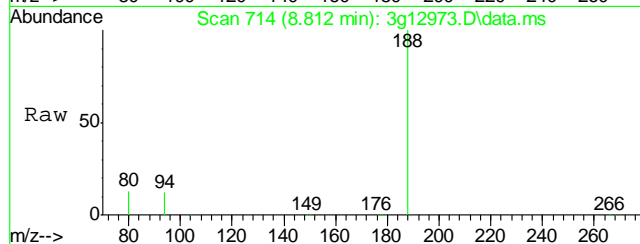
#15  
Phenanthrene-d10  
Concen: 4.0000 ug/mL  
RT: 8.812 min Scan# 714  
Delta R.T. 0.000 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

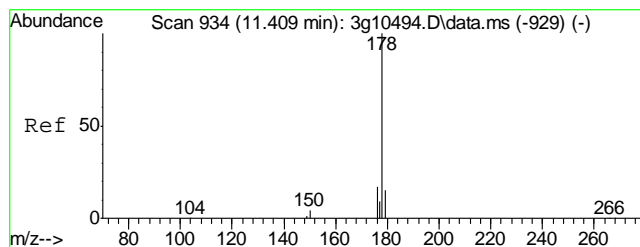
Tgt Ion	188	94	80
Ratio	100	13.6	14.9
Lower	0.0	0.0	0.0
Upper	26.9	26.3	



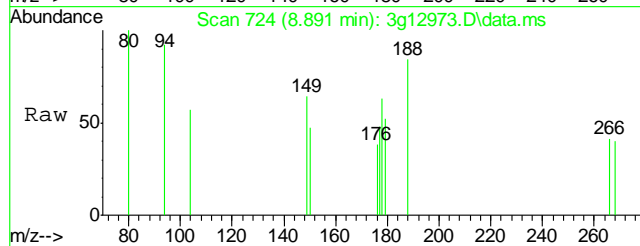
#16  
Phenanthrene  
Concen: Below ug/mL  
RT: 8.812 min Scan# 714  
Delta R.T. -0.024 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

Tgt Ion	178	179	176	177
Ratio	100	213.8	159.2	442.1
Lower	0.0	0.0	0.0	0.0
Upper	152	35.2#	38.6#	30.0#

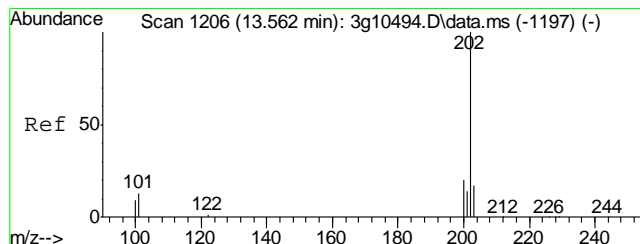
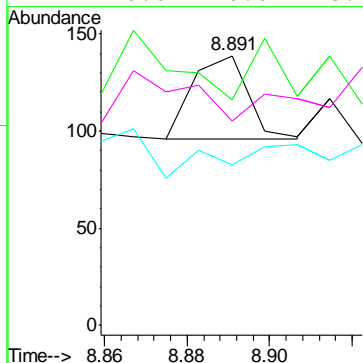
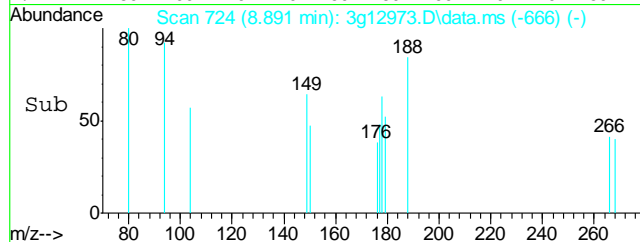




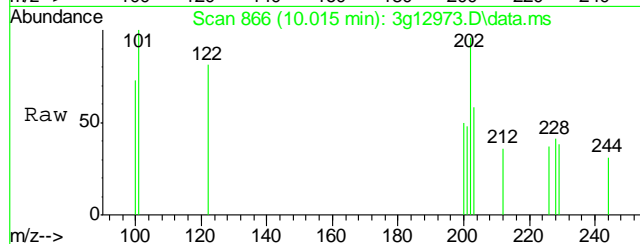
#17  
 Anthracene  
 Concen: Below ug/mL  
 RT: 8.891 min Scan# 724  
 Delta R.T. 0.000 min  
 Lab File: 3g12973.D  
 Acq: 15 Jan 13 10:14 am



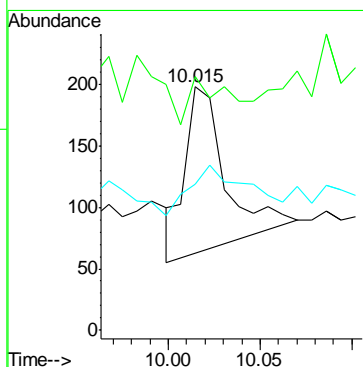
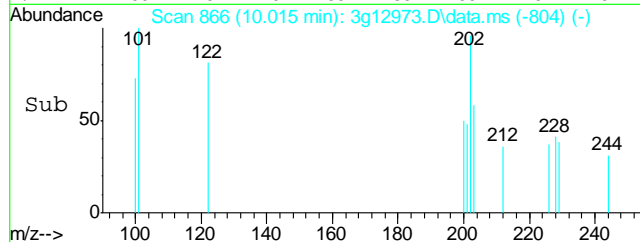
Tgt Ion: 178 Resp: 39  
 Ion Ratio Lower Upper  
 178 100  
 179 0.0 0.0 35.1  
 176 0.0 0.0 38.2  
 177 0.0 0.0 28.7

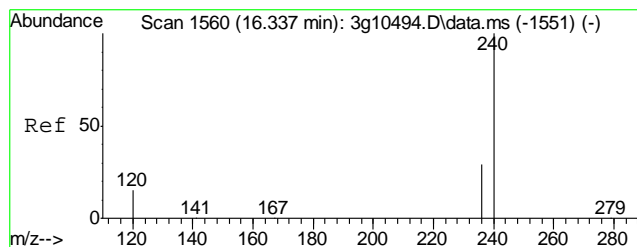


#18  
 Fluoranthene  
 Concen: Below ug/mL  
 RT: 10.015 min Scan# 866  
 Delta R.T. -0.006 min  
 Lab File: 3g12973.D  
 Acq: 15 Jan 13 10:14 am



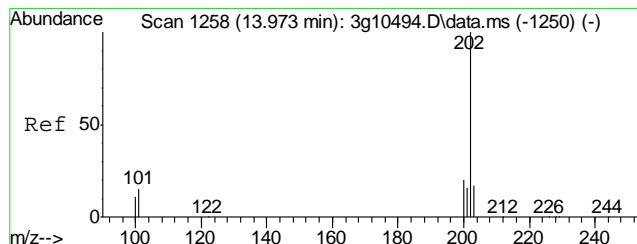
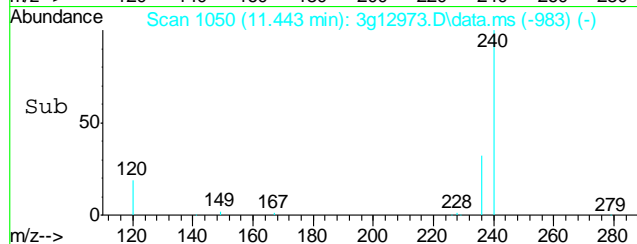
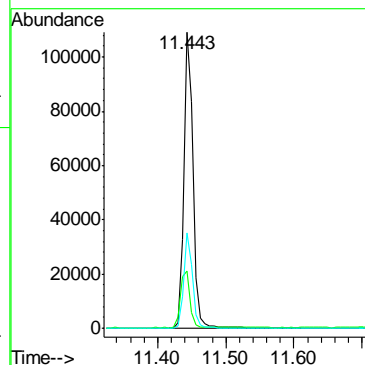
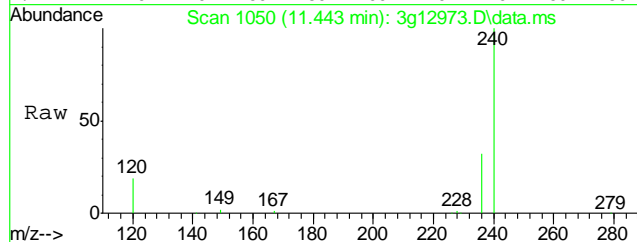
Tgt Ion: 202 Resp: 205  
 Ion Ratio Lower Upper  
 202 100  
 101 0.0 0.0 32.6  
 203 44.9 0.0 37.4#





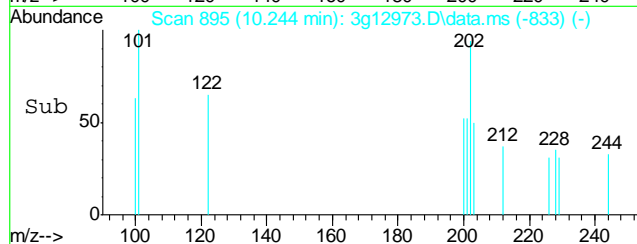
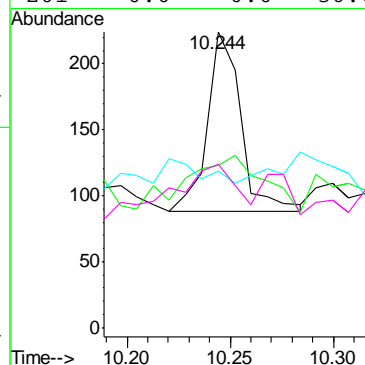
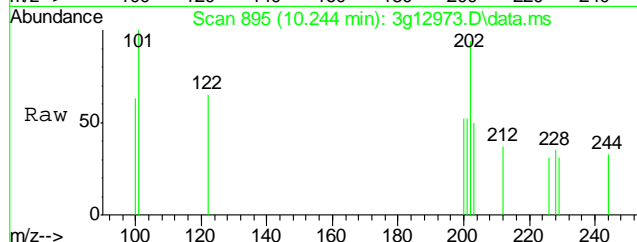
#19  
Chrysene-d12  
Concen: 4.0000 ug/mL  
RT: 11.443 min Scan# 1050  
Delta R.T. 0.000 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

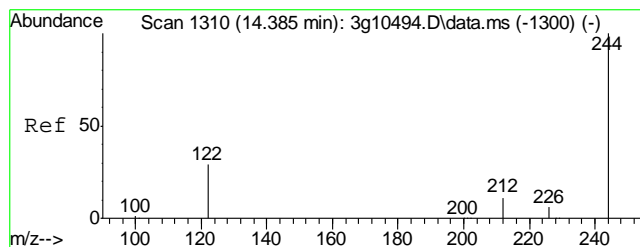
Tgt Ion:	240	Resp:	101544
Ion Ratio	Lower	Upper	
240	100		
120	20.4	0.0	37.3
236	30.7	11.2	51.2



#20  
Pyrene  
Concen: Below ug/mL  
RT: 10.244 min Scan# 895  
Delta R.T. -0.006 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

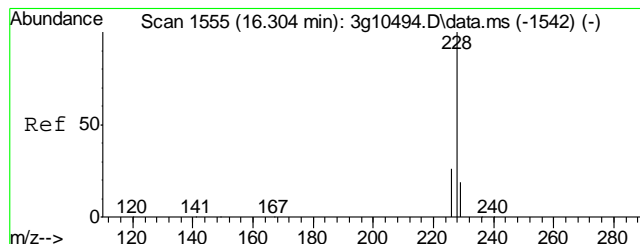
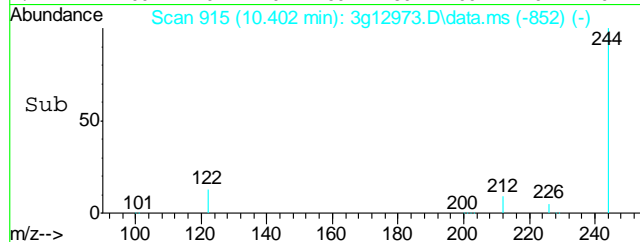
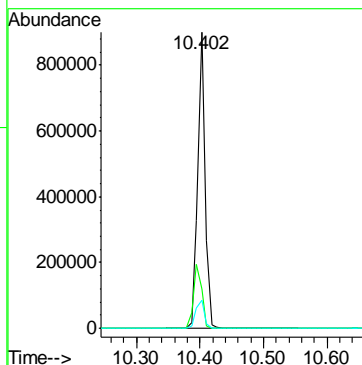
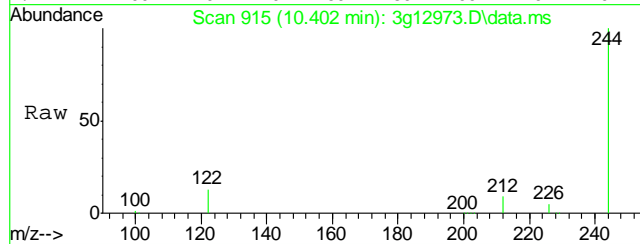
Tgt Ion:	202	Resp:	152
Ion Ratio	Lower	Upper	
202	100		
200	0.0	0.2	40.2#
203	0.0	0.0	37.8
201	0.0	0.0	36.6





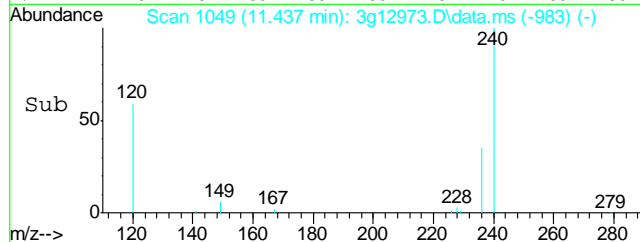
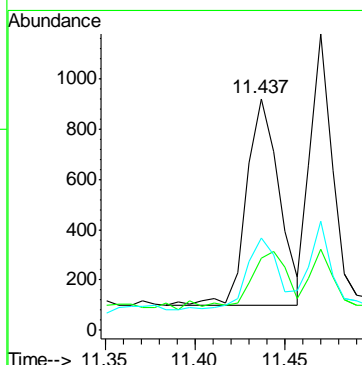
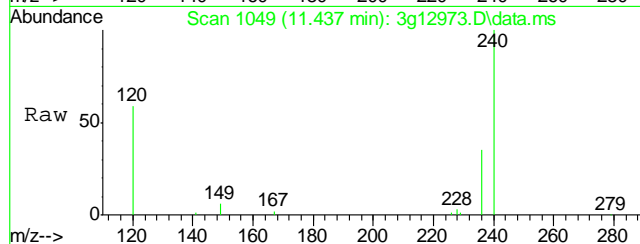
#21  
Terphenyl-d14  
Concen: 52.5073 ug/mL  
RT: 10.402 min Scan# 915  
Delta R.T. 0.002 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

Tgt Ion:	244	Resp:	725496
Ion Ratio	Lower	Upper	
244	100		
122	24.3	7.8	47.8
212	11.0	0.0	32.8

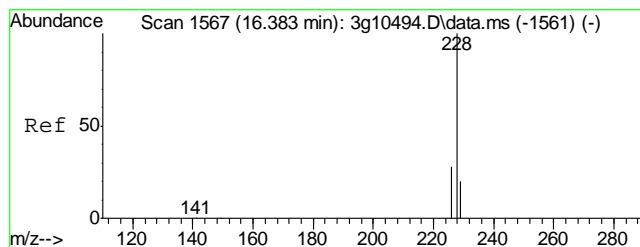


#22  
Benzo(a)anthracene  
Concen: Below ug/mL  
RT: 11.437 min Scan# 1049  
Delta R.T. 0.000 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

Tgt Ion:	228	Resp:	1041
Ion Ratio	Lower	Upper	
228	100		
229	28.4	0.0	39.4
226	34.7	6.6	46.6

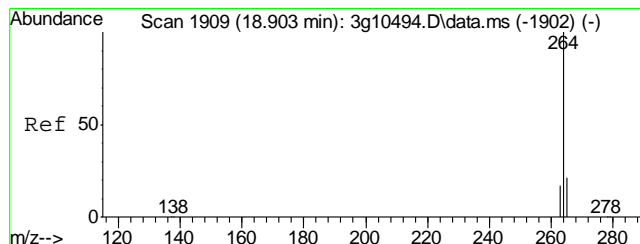
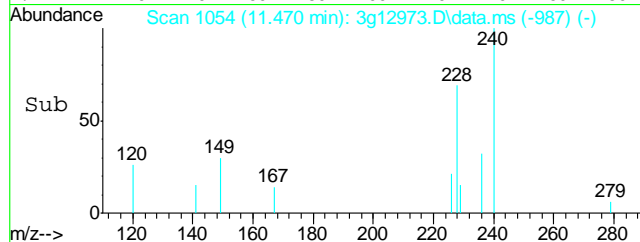
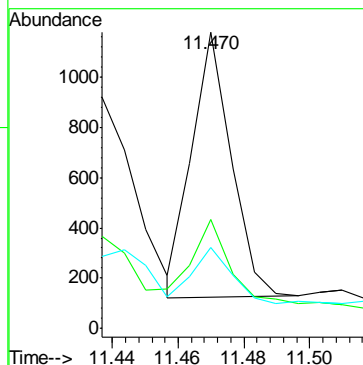
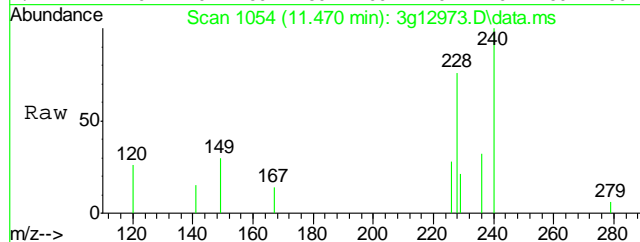






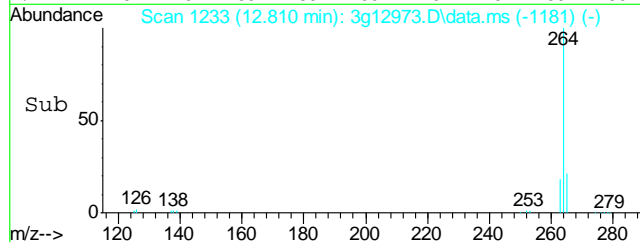
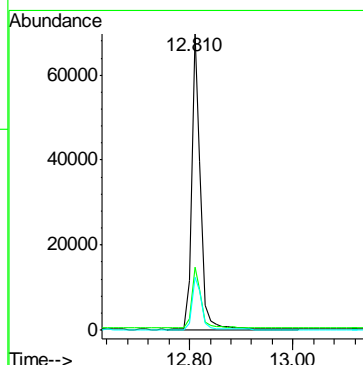
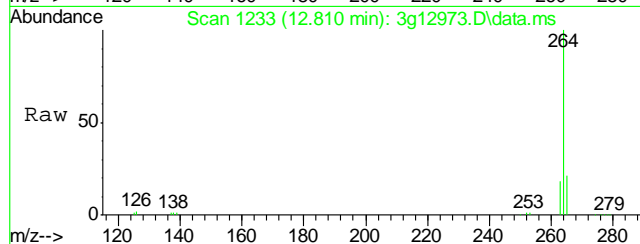
#23  
Chrysene  
Concen: Below ug/mL  
RT: 11.470 min Scan# 1054  
Delta R.T. 0.000 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

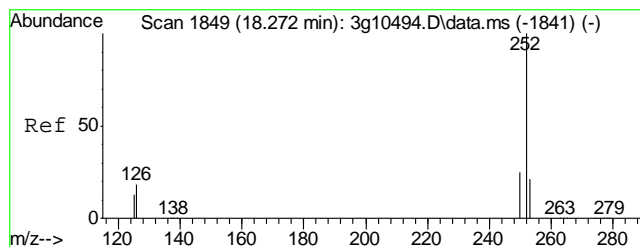
Tgt Ion: 228	Resp: 877
Ion Ratio	Lower Upper
228	100
226	40.8 8.6 48.6
229	27.1 0.0 39.4



#24  
Perylene-d12  
Concen: 4.0000 ug/mL  
RT: 12.810 min Scan# 1233  
Delta R.T. 0.000 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

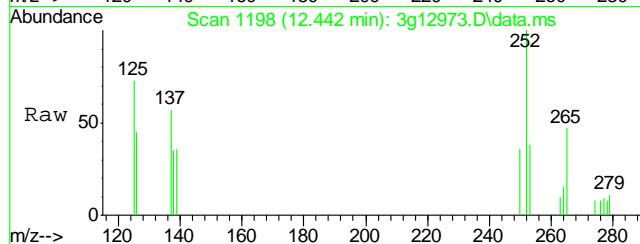
Tgt Ion: 264	Resp: 84293
Ion Ratio	Lower Upper
264	100
265	20.8 0.6 40.6
263	19.5 0.0 38.8



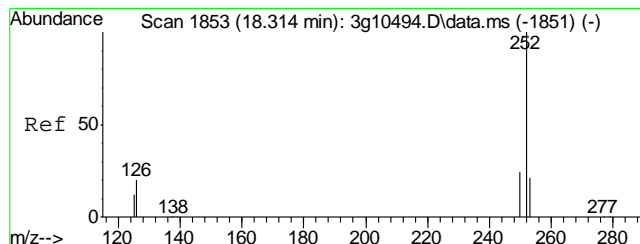
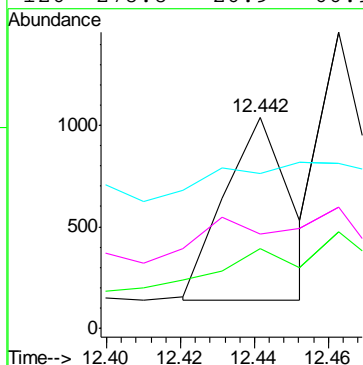
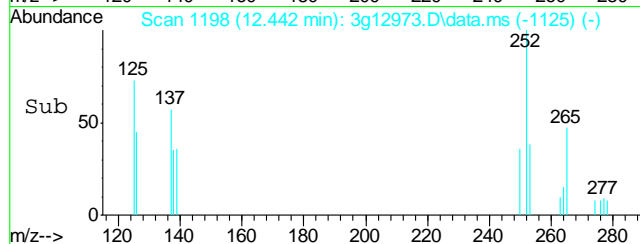


#25

Benzo(b)fluoranthene  
 Concen: 0.0649 ug/mL m  
 RT: 12.442 min Scan# 1198  
 Delta R.T. 0.000 min  
 Lab File: 3g12973.D  
 Acq: 15 Jan 13 10:14 am

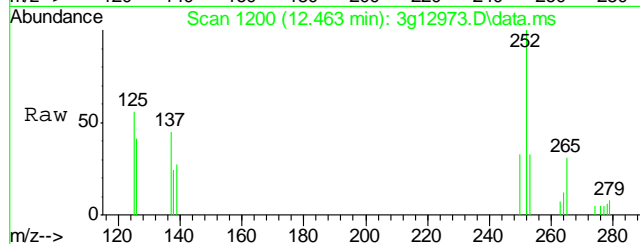


Tgt Ion	Ratio	Lower	Upper
252	100		
253	182.7	31.5	71.5#
125	91.1	0.0	33.2#
126	278.8	26.9	66.9#

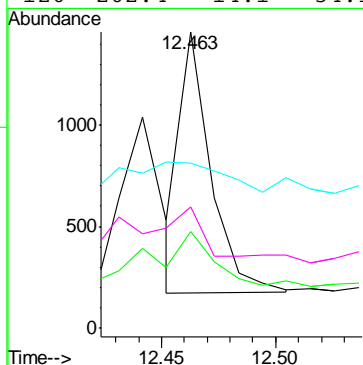
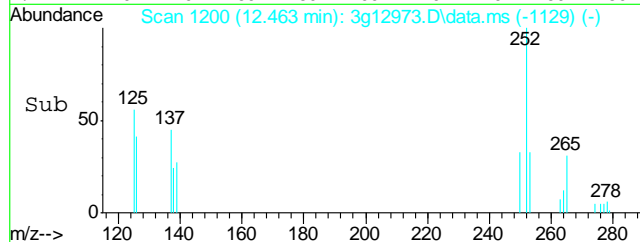


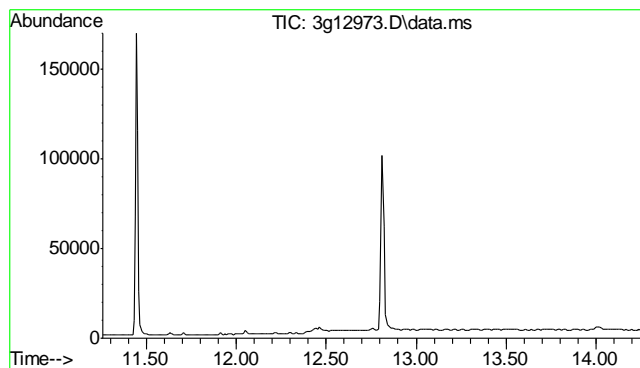
#26

Benzo(k)fluoranthene  
 Concen: Below ug/mL m  
 RT: 12.463 min Scan# 1200  
 Delta R.T. -0.000 min  
 Lab File: 3g12973.D  
 Acq: 15 Jan 13 10:14 am



Tgt Ion	Ratio	Lower	Upper
252	100		
253	172.0	17.3	57.3#
125	85.7	0.0	29.6#
126	262.4	14.1	54.1#

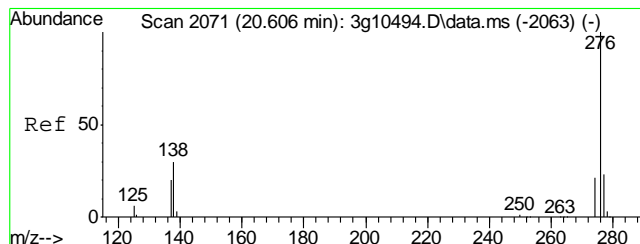
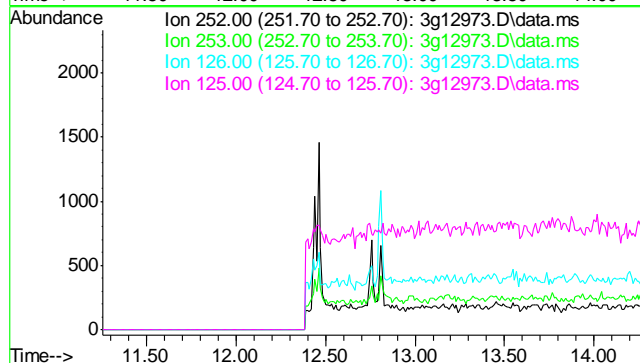




#27  
Benzo(a)pyrene  
Concen: N.D. ug/mL  
Expected RT: 12.76 min

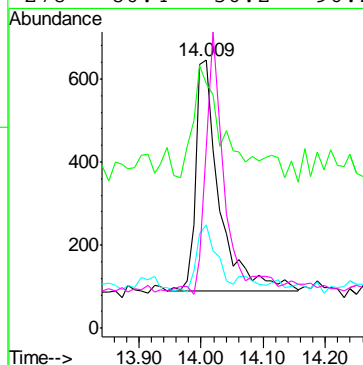
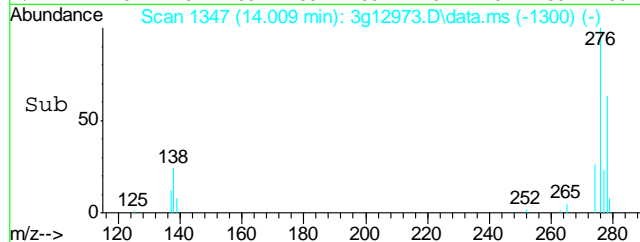
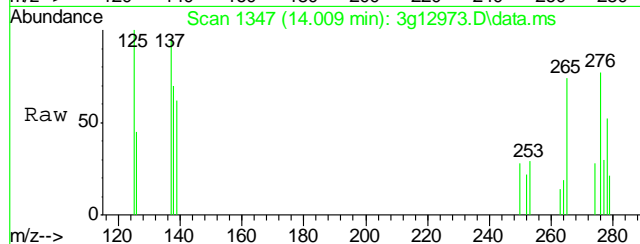
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

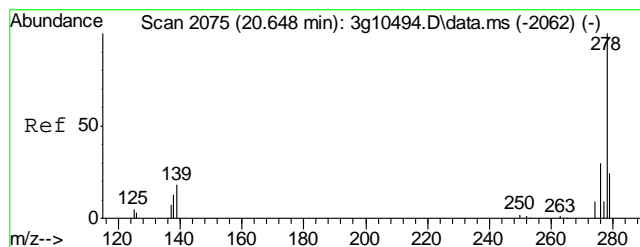
Tgt Ion: 252  
Sig Exp Ratio  
252 100  
253 21.5  
126 20.4  
125 14.5



#28  
Indeno(1,2,3-cd)pyrene  
Concen: 0.0777 ug/mL  
RT: 14.009 min Scan# 1347  
Delta R.T. -0.008 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

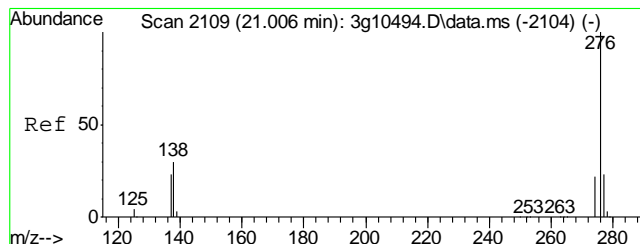
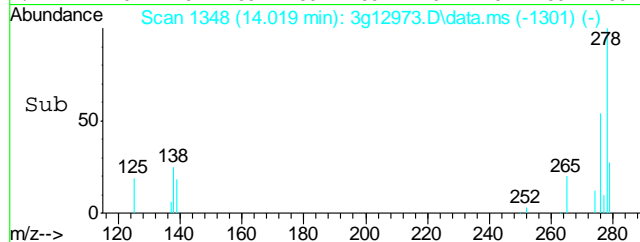
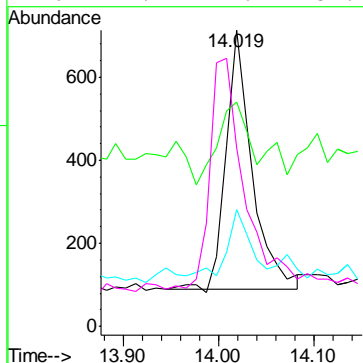
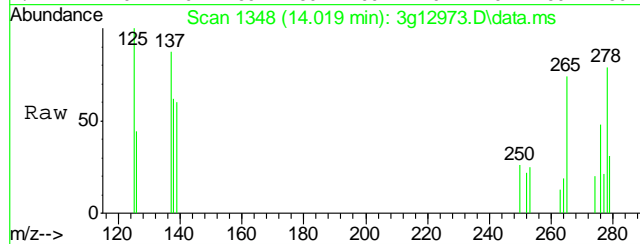
Tgt Ion: 276 Resp: 1461  
Ion Ratio Lower Upper  
276 100  
138 57.9 20.0 60.0  
277 24.3 4.8 44.8  
278 80.4 56.2 96.2





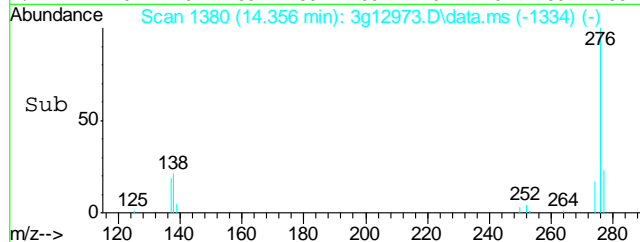
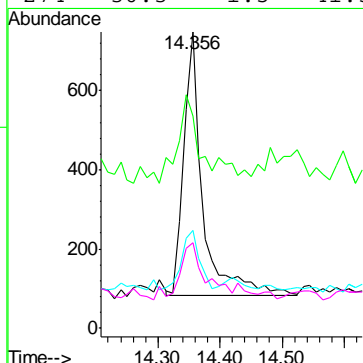
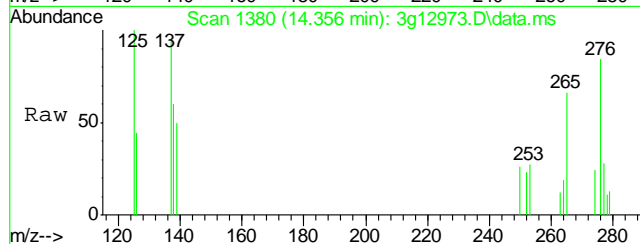
#29  
Dibenzo(a,h)anthracene  
Concen: 0.0897 ug/mL  
RT: 14.019 min Scan# 1348  
Delta R.T. -0.008 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

Tgt Ion	278	Resp	1174
Ion Ratio	100		
Lower			
Upper			
278	100		
139	48.2	10.8	50.8
279	20.9	2.9	42.9
276	127.2	111.2	151.2



#30  
Benzo(g,h,i)perylene  
Concen: Below ug/mL  
RT: 14.356 min Scan# 1380  
Delta R.T. -0.018 min  
Lab File: 3g12973.D  
Acq: 15 Jan 13 10:14 am

Tgt Ion	276	Resp	1418
Ion Ratio <td>100</td> <td></td> <td></td>	100		
Lower <td></td> <td></td> <td></td>			
Upper <td></td> <td></td> <td></td>			
276	100		
138	34.2	15.1	55.1
277	24.0	3.3	43.3
274	30.3	1.5	41.5



## GC Volatiles

### QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D42556  
Account: XTOKRWR XTO Energy  
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1045-MB	GB19116.D	1	01/11/13	SK	n/a	n/a	GGB1045

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

D42556-1, D42556-2

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%

10.1.1  
10

Blank Spike Summary

Job Number: D42556  
Account: XTOKRWR XTO Energy  
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1045-BS	GB19117.D	1	01/11/13	SK	n/a	n/a	GGB1045

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

D42556-1, D42556-2

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	118	107	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	102%	60-140%

\* = Outside of Control Limits.

## Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D42556  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D42466-11MS	GB19119.D	1	01/11/13	SK	n/a	n/a	GGB1045
D42466-11MSD	GB19120.D	1	01/11/13	SK	n/a	n/a	GGB1045
D42466-11	GB19118.D	1	01/11/13	SK	n/a	n/a	GGB1045

The QC reported here applies to the following samples:

Method: SW846 8015B

D42556-1, D42556-2

CAS No.	Compound	D42466-11 mg/kg	Spike Q	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND	152	170	112	167	110	2	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D42466-11	Limits
120-82-1	1,2,4-Trichlorobenzene	109%	100%	84%	60-140%

\* = Outside of Control Limits.





GC Volatiles

Raw Data



Judy Melson  
01/14/13 12:14

## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\011113\GB19132.D\FID1A.CH Vial: 19  
 Signal #2 : Y:\1\DATA\011113\GB19132.D\FID2B.CH  
 Acq On : 11 Jan 2013 9:59 pm Operator: StephK  
 Sample : D42556-1, 50X Inst : GC/MS Ins  
 Misc : GC3352,GGB1045,5.066,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Jan 14 08:43:57 2013 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Fri Jan 11 14:33:28 2013  
 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

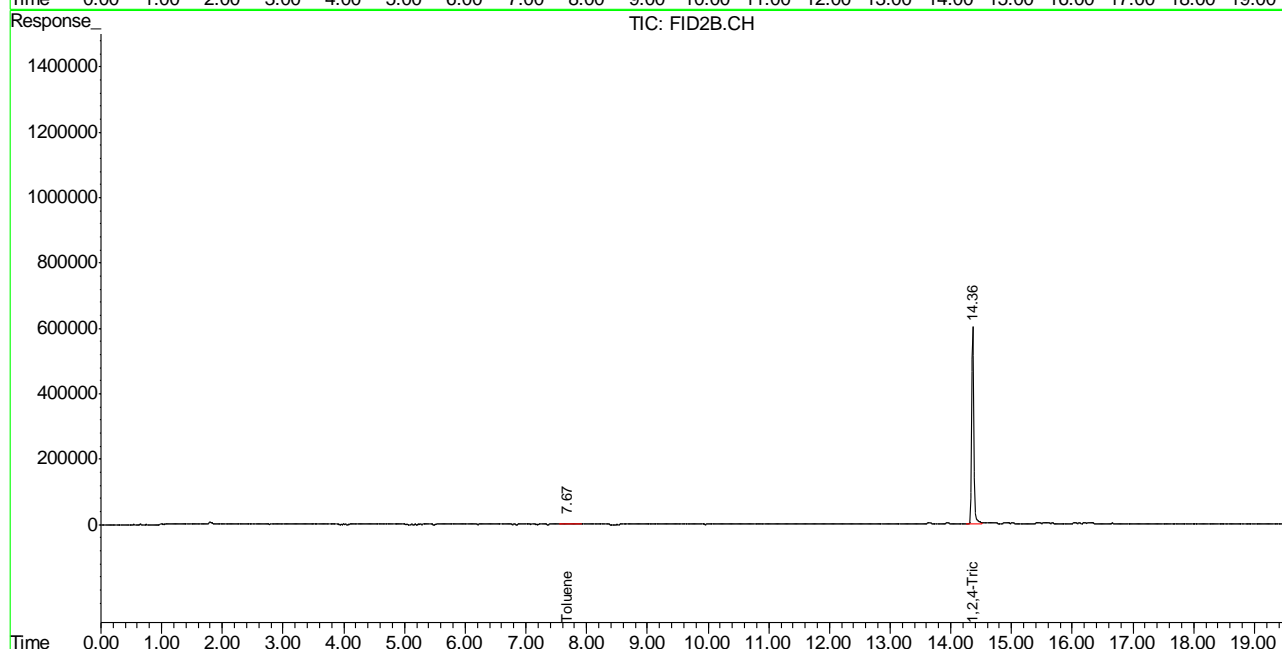
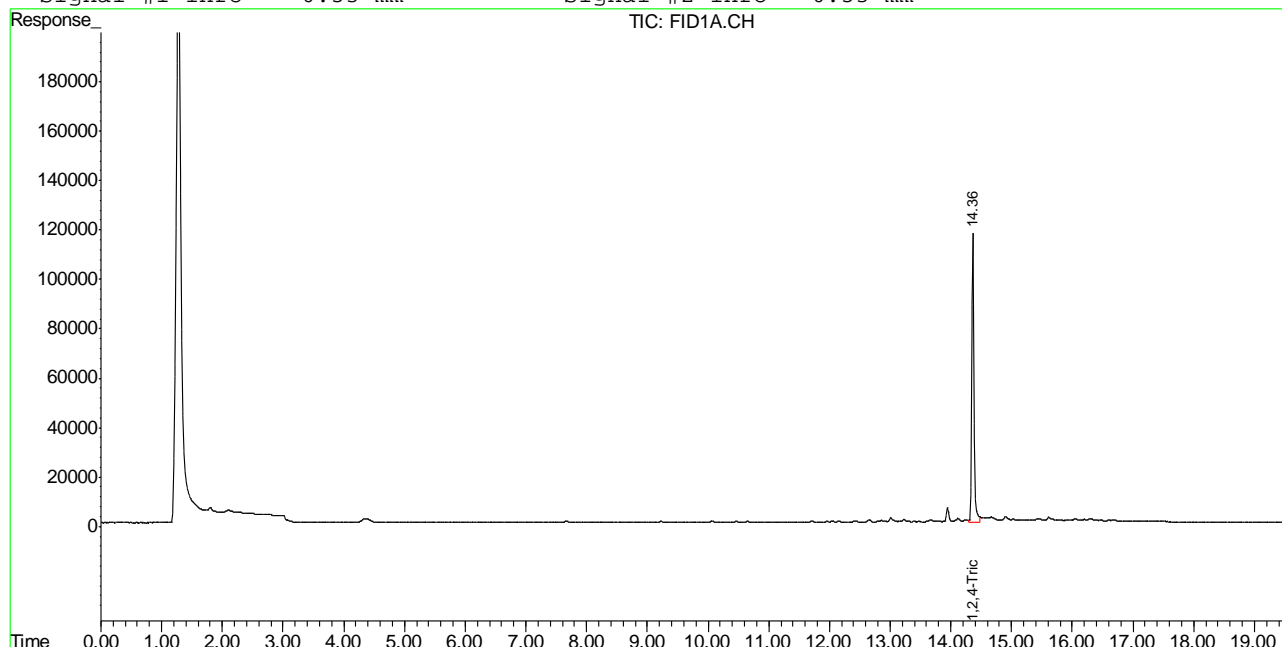
Compound	R.T.	Response	Conc	Units
-----				
System Monitoring Compounds				
2) S 1,2,4-Trichlorobenzene	14.36	2905471	92.726 %	m
10) S 1,2,4-Trichlorobenzene (P)	14.36	14820177	91.186 %	m
Target Compounds				
1) H TVH-Gasoline	7.23	3738403	<MDL	mg/L
4) T Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T Benzene	0.00	0	N.D.	ug/L d
6) T Toluene	7.66	104796	0.264	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	0.00	0	N.D.	ug/L d

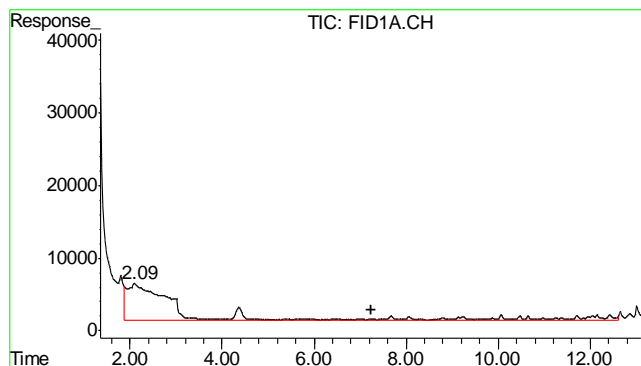
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\011113\GB19132.D\FID1A.CH Vial: 19  
 Signal #2 : Y:\1\DATA\011113\GB19132.D\FID2B.CH  
 Acq On : 11 Jan 2013 9:59 pm Operator: StephK  
 Sample : D42556-1, 50X Inst : GC/MS Ins  
 Misc : GC3352,GGB1045,5.066,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Jan 14 8:56 2013 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Fri Jan 11 14:33:28 2013  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TVB4.M

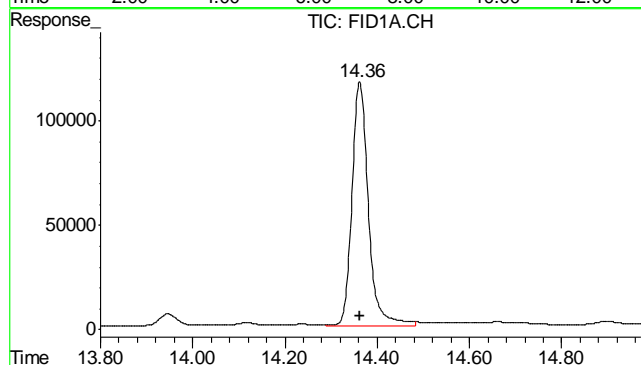
Volume Inj. :  
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





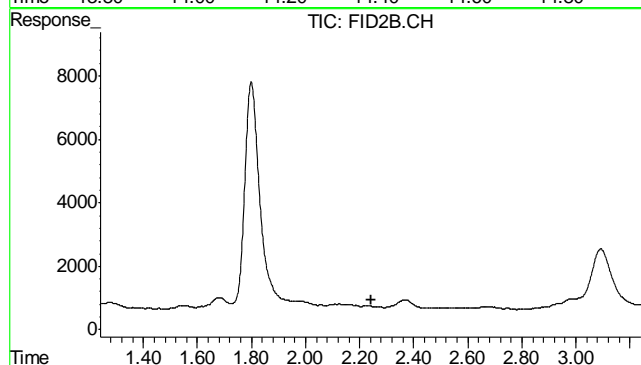
#1 TVH-Gasoline

R.T.: 7.230 min  
Delta R.T.: 0.000 min  
Response: 3738403  
Conc: N.D.



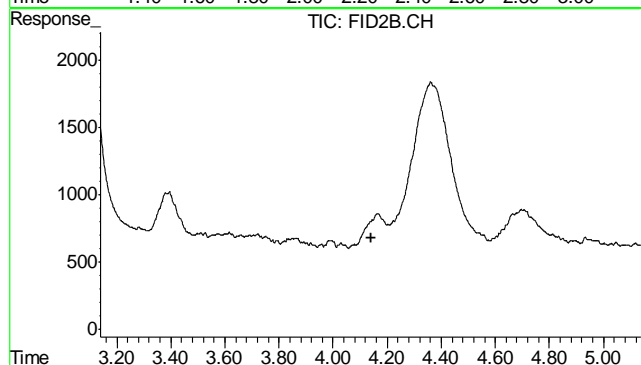
#2 1,2,4-Trichlorobenzene

R.T.: 14.362 min  
Delta R.T.: 0.000 min  
Response: 2905471  
Conc: 92.73 % m



#4 Methyl-t-butyl-ether

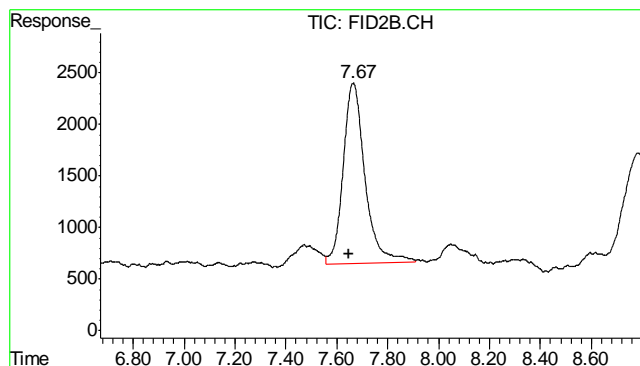
R.T.: 0.000 min  
Exp R.T.: 2.241 min  
Response: 0  
Conc: N.D.



#5 Benzene

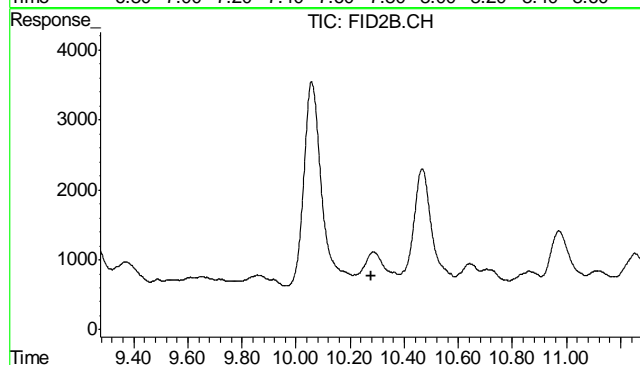
R.T.: 0.000 min  
Exp R.T.: 4.139 min  
Response: 0  
Conc: N.D.

11.1.1



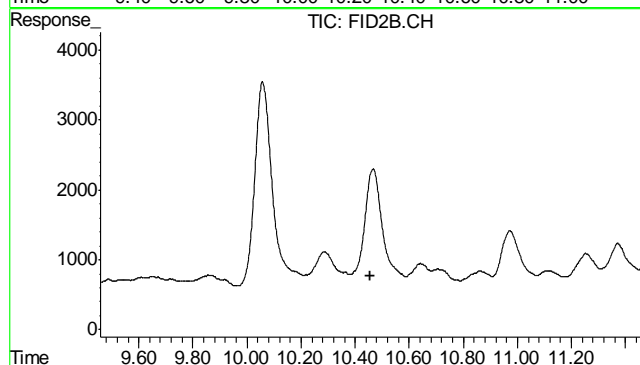
#6 Toluene

R.T.: 7.665 min  
Delta R.T.: 0.017 min  
Response: 104796  
Conc: 0.26 ug/L



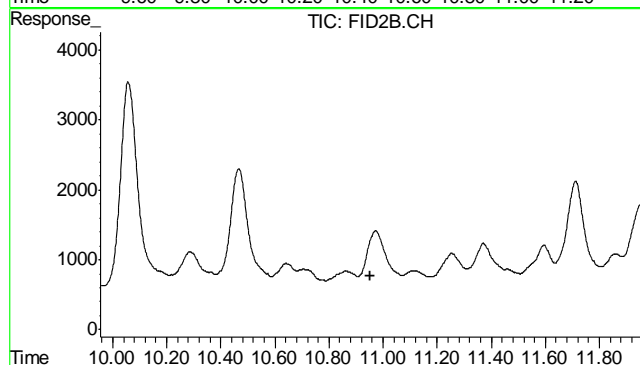
#7 Ethylbenzene

R.T.: 0.000 min  
Exp R.T.: 10.276 min  
Response: 0  
Conc: N.D.



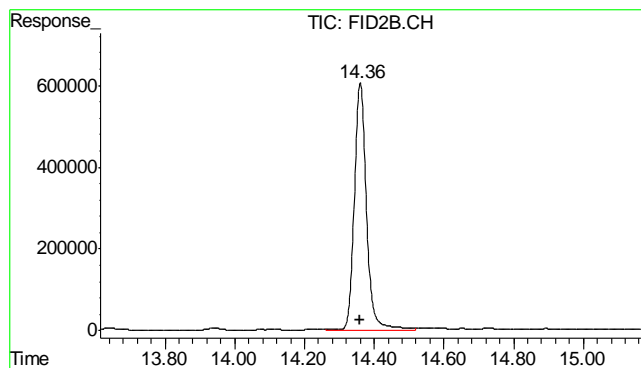
#8 m,p-Xylene

R.T.: 0.000 min  
Exp R.T.: 10.457 min  
Response: 0  
Conc: N.D.



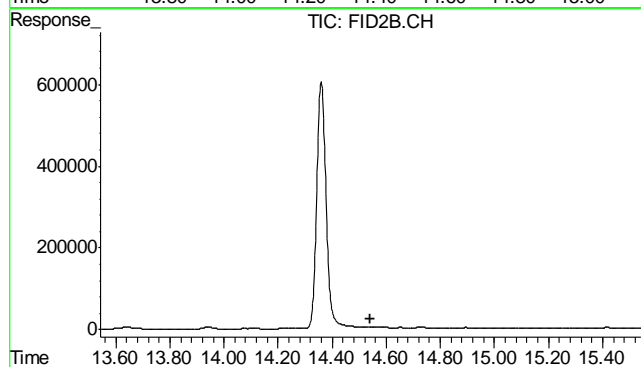
#9 o-Xylene

R.T.: 0.000 min  
Exp R.T.: 10.954 min  
Response: 0  
Conc: N.D.



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

R.T.: 14.359 min  
Delta R.T.: 0.000 min  
Response: 14820177  
Conc: 91.19 % m



#11 Naphthalene

R.T.: 0.000 min  
Exp R.T. : 14.542 min  
Response: 0  
Conc: N.D.

11.1.1  
11

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\011113\GB19133.D\FID1A.CH Vial: 20  
Signal #2 : Y:\1\DATA\011113\GB19133.D\FID2B.CH  
Acq On : 11 Jan 2013 10:35 pm Operator: StephK  
Sample : D42556-2, 50X Inst : GC/MS Ins  
Misc : GC3352,GGB1045,5.060,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Jan 14 08:44:01 2013 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Fri Jan 11 14:33:28 2013  
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

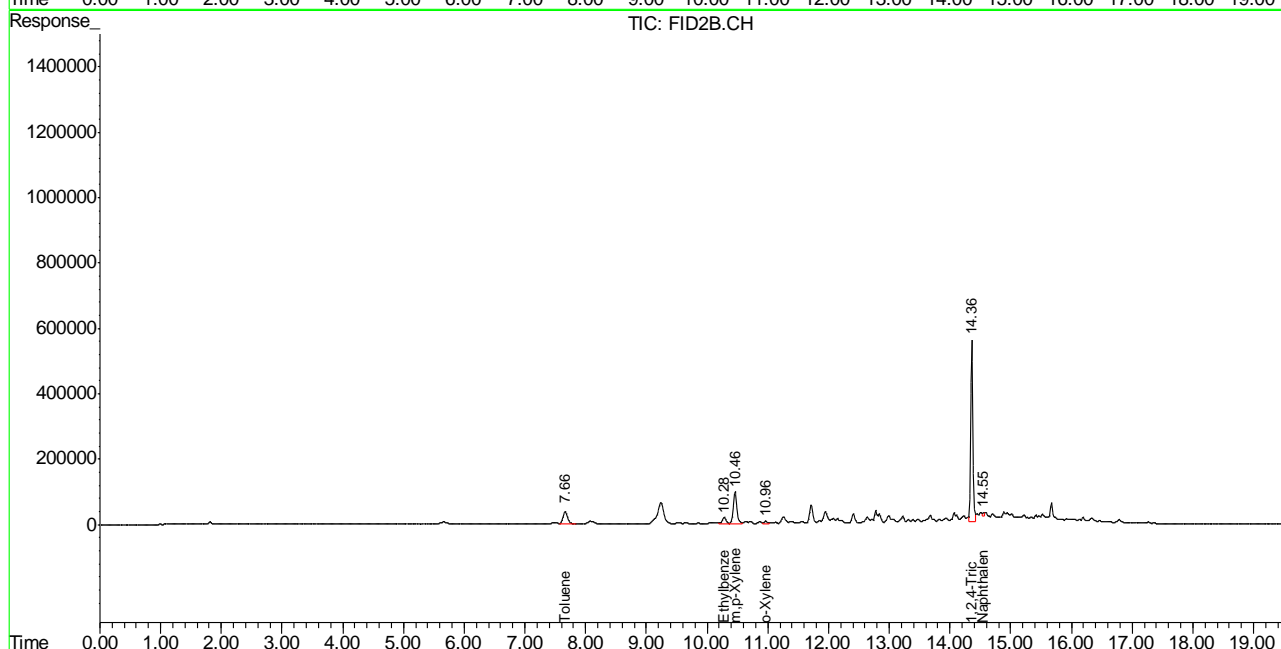
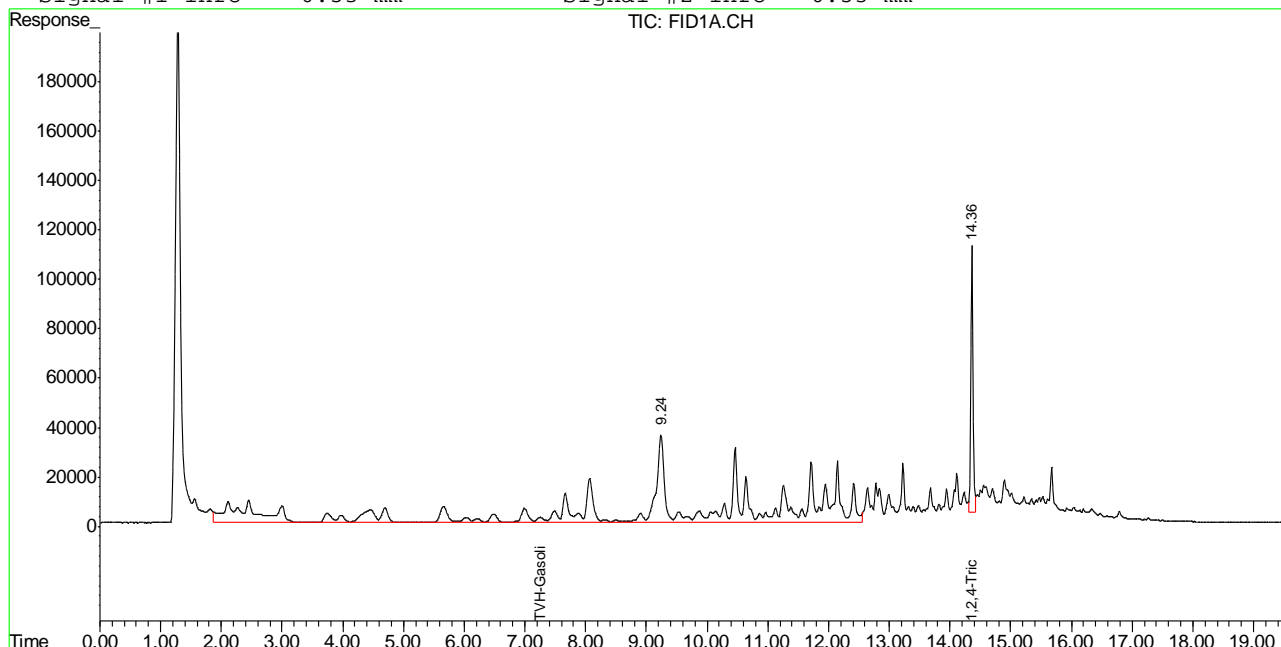
Compound		R.T.	Response	Conc Units	
-----					
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.36	2677351	85.446 %	m
10) S	1,2,4-Trichlorobenzene (P)	14.36	13368492	82.254 %	m
Target Compounds					
1) H	TVH-Gasoline	7.23	23992846	0.348 mg/L	
4) T	Methyl-t-butyl-ether	0.00	0	N.D. ug/L	d
5) T	Benzene	0.00	0	N.D. ug/L	d
6) T	Toluene	7.66	2179890	5.501 ug/L	
7) T	Ethylbenzene	10.28	888680	2.627 ug/L	m
8) T	m,p-Xylene	10.46	4027842	10.662 ug/L	
9) T	o-Xylene	10.96	334429	1.018 ug/L	m
11) T	Naphthalene	14.55	226539	1.148 ug/L	m

Quantitation Report (QT Reviewed)

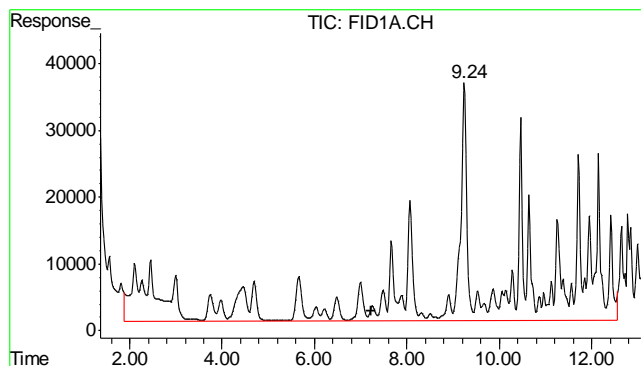
Signal #1 : Y:\1\DATA\011113\GB19133.D\FID1A.CH Vial: 20  
 Signal #2 : Y:\1\DATA\011113\GB19133.D\FID2B.CH  
 Acq On : 11 Jan 2013 10:35 pm Operator: StephK  
 Sample : D42556-2, 50X Inst : GC/MS Ins  
 Misc : GC3352,GGB1045,5.060,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Jan 14 8:57 2013 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Fri Jan 11 14:33:28 2013  
 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

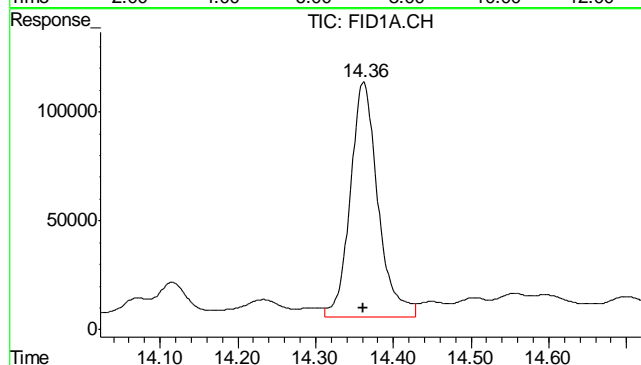






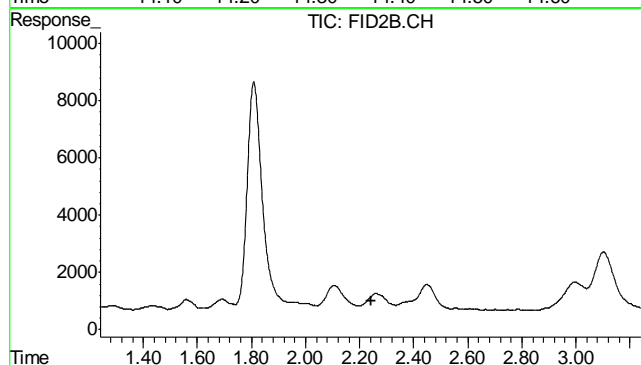
#1 TVH-Gasoline

R.T.: 7.230 min  
Delta R.T.: 0.000 min  
Response: 23992846  
Conc: 0.35 mg/L m



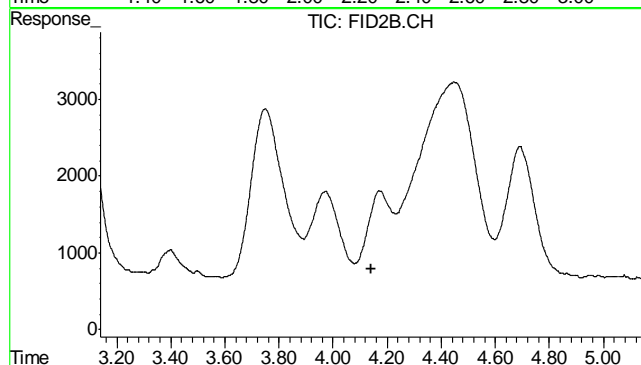
#2 1,2,4-Trichlorobenzene

R.T.: 14.361 min  
Delta R.T.: 0.000 min  
Response: 2677351  
Conc: 85.45 % m



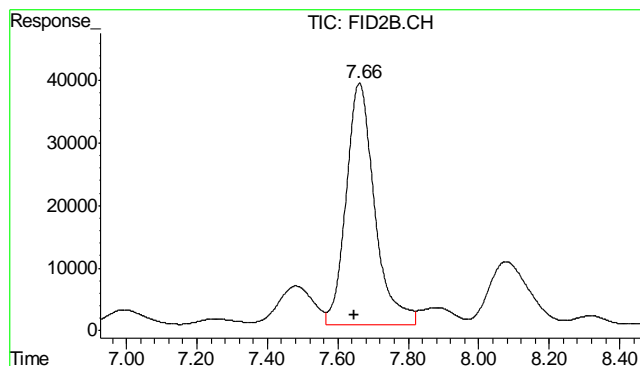
#4 Methyl-t-butyl-ether

R.T.: 0.000 min  
Exp R.T.: 2.241 min  
Response: 0  
Conc: N.D.



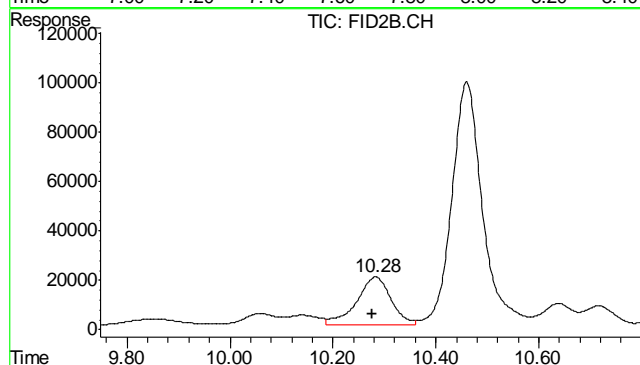
#5 Benzene

R.T.: 0.000 min  
Exp R.T.: 4.139 min  
Response: 0  
Conc: N.D.



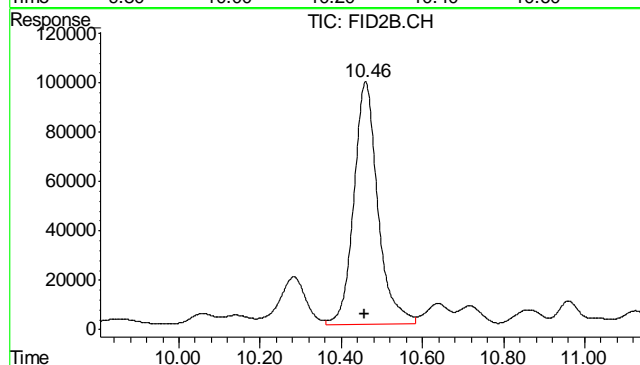
#6 Toluene

R.T.: 7.661 min  
Delta R.T.: 0.013 min  
Response: 2179890  
Conc: 5.50 ug/L



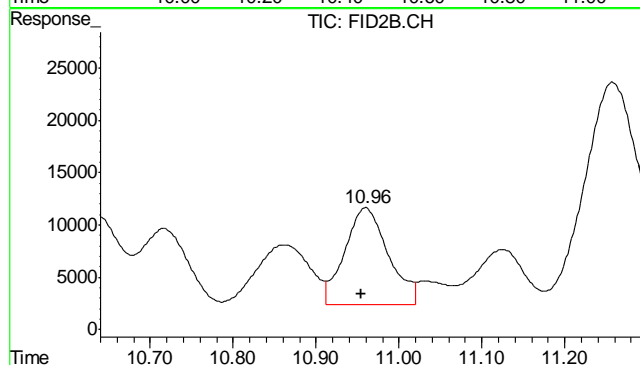
#7 Ethylbenzene

R.T.: 10.282 min  
Delta R.T.: 0.006 min  
Response: 888680  
Conc: 2.63 ug/L m



#8 m,p-Xylene

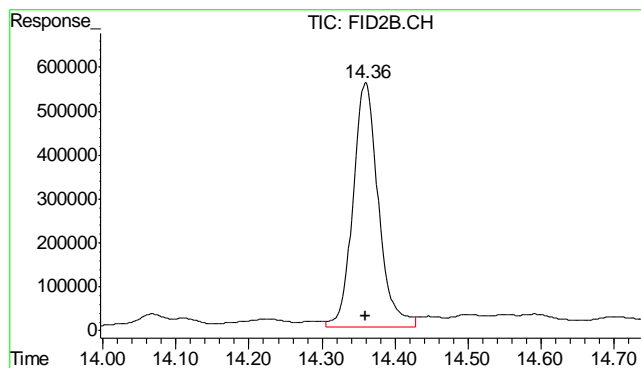
R.T.: 10.460 min  
Delta R.T.: 0.003 min  
Response: 4027842  
Conc: 10.66 ug/L



#9 o-Xylene

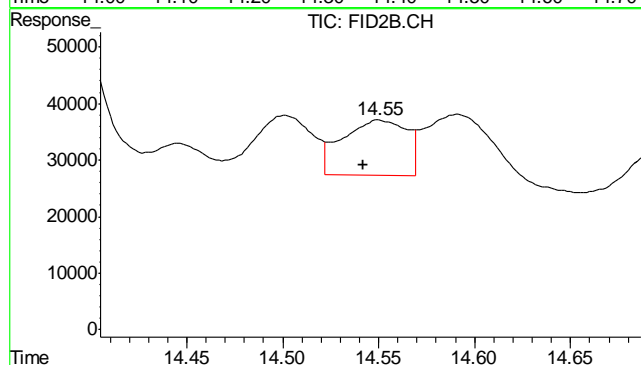
R.T.: 10.960 min  
Delta R.T.: 0.006 min  
Response: 334429  
Conc: 1.02 ug/L m

11.12  
11



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

R.T.: 14.359 min  
 Delta R.T.: 0.000 min  
 Response: 13368492  
 Conc: 82.25 % m



#11 Naphthalene

R.T.: 14.549 min  
 Delta R.T.: 0.008 min  
 Response: 226539  
 Conc: 1.15 ug/L m

11.1.2  
11

Judy Melson  
01/14/13 09:52

## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\011113\GB19116.D\FID1A.CH Vial: 3  
Signal #2 : Y:\1\DATA\011113\GB19116.D\FID2B.CH  
Acq On : 11 Jan 2013 12:29 pm Operator: StephK  
Sample : MB Inst : GC/MS Ins  
Misc : GC3352,GGB1045,5.000,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Jan 11 14:33:44 2013 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Fri Jan 11 14:33:28 2013  
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	14.36	2820685	90.020 %	m
10) S 1,2,4-Trichlorobenzene (P)	14.36	14366912	88.397 %	m
Target Compounds				
1) H TVH-Gasoline	7.23	3021648	<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	7.65	116878	0.295	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	14.55	16454	<MDL	ug/L m

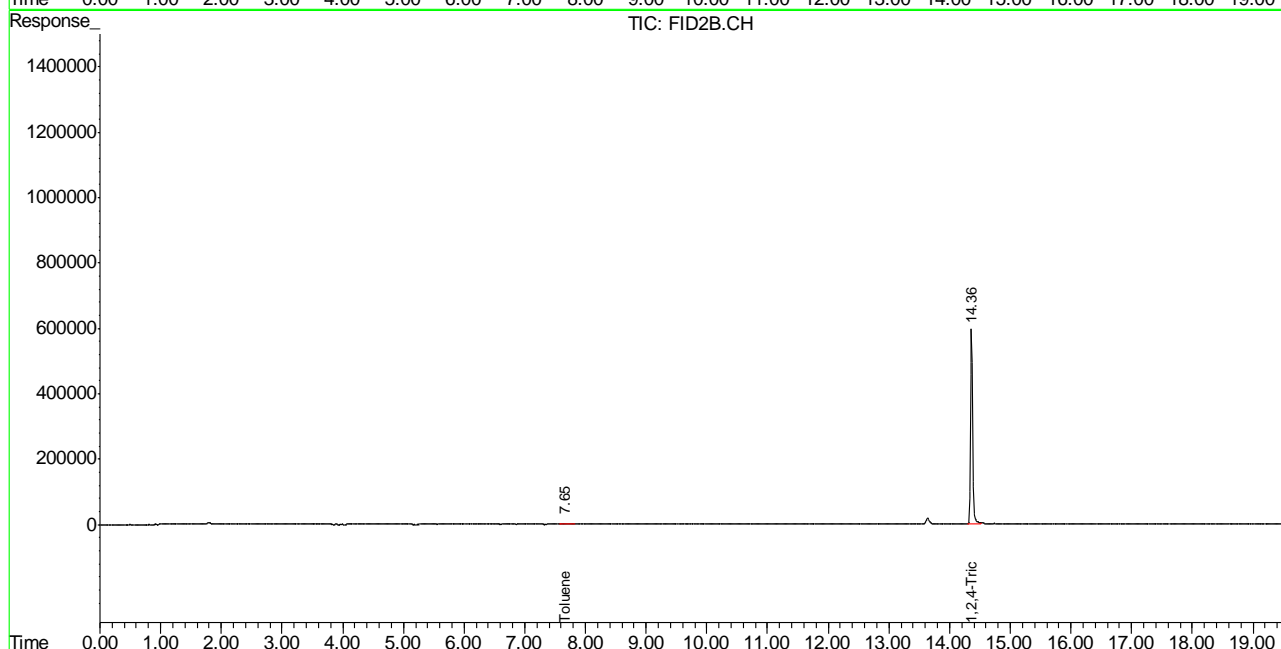
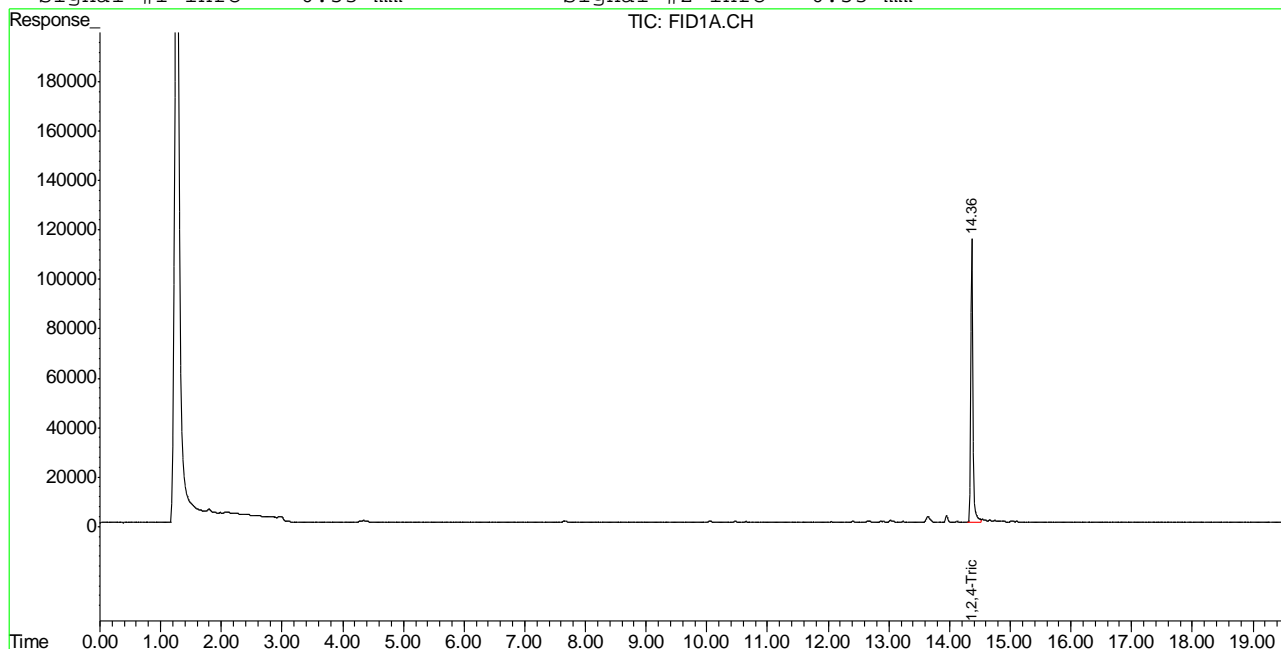
-----  
(f)=RT Delta > 1/2 Window (m)=manual int.  
GB19116.D TB868GB868SOIL.M Mon Jan 14 09:00:37 2013 GC

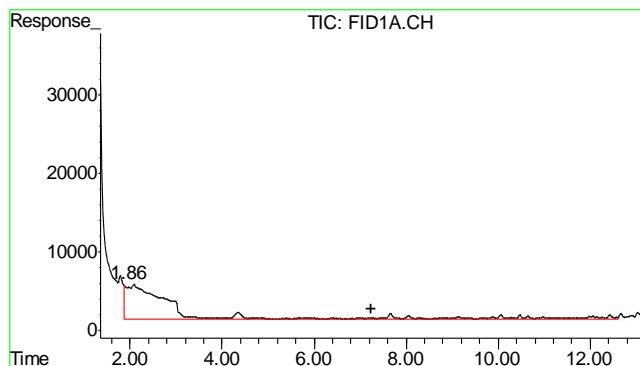
## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\011113\GB19116.D\FID1A.CH Vial: 3  
Signal #2 : Y:\1\DATA\011113\GB19116.D\FID2B.CH  
Acq On : 11 Jan 2013 12:29 pm Operator: StephK  
Sample : MB Inst : GC/MS Ins  
Misc : GC3352,GGB1045,5.000,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Jan 11 14:33 2013 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Fri Jan 11 14:33:28 2013  
Response via : Multiple Level Calibration  
DataAcq Meth : TVB4.M

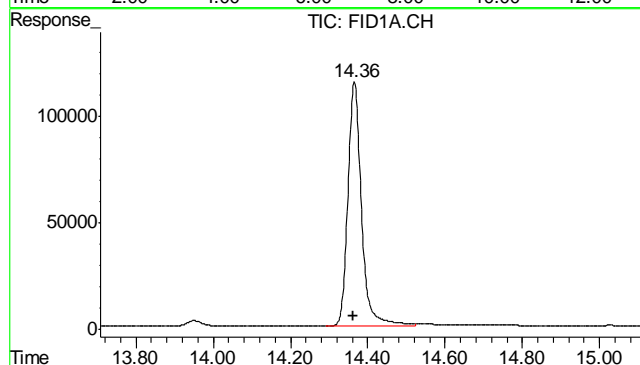
Volume Inj. :  
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





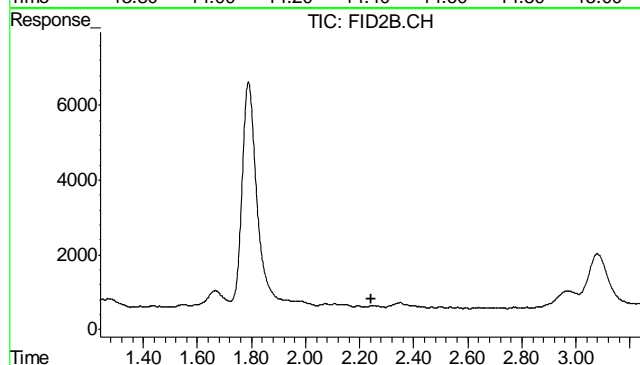
#1 TVH-Gasoline

R.T.: 7.230 min  
Delta R.T.: 0.000 min  
Response: 3021648  
Conc: N.D.



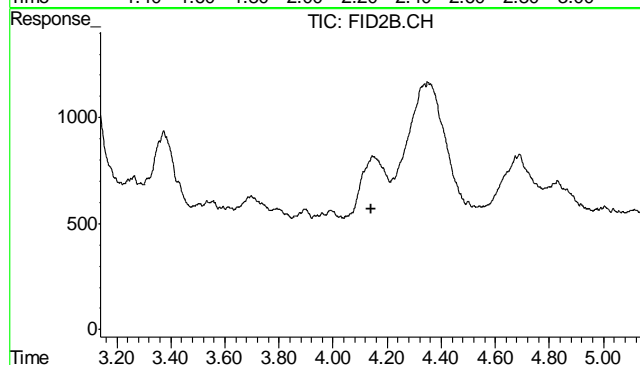
#2 1,2,4-Trichlorobenzene

R.T.: 14.365 min  
Delta R.T.: 0.003 min  
Response: 2820685  
Conc: 90.02 % m



#4 Methyl-t-butyl-ether

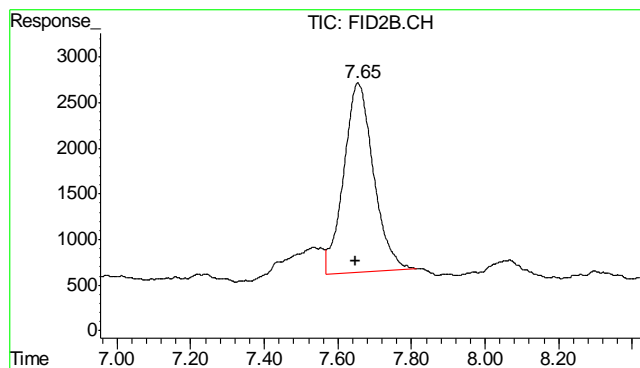
R.T.: 0.000 min  
Exp R.T.: 2.241 min  
Response: 0  
Conc: N.D.



#5 Benzene

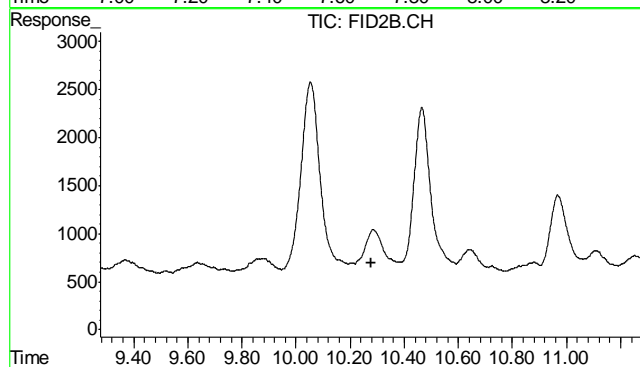
R.T.: 0.000 min  
Exp R.T.: 4.139 min  
Response: 0  
Conc: N.D.

11.21  
11



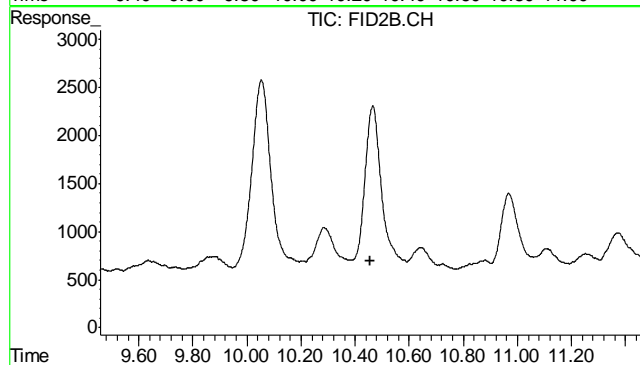
#6 Toluene

R.T.: 7.655 min  
Delta R.T.: 0.006 min  
Response: 116878  
Conc: 0.29 ug/L



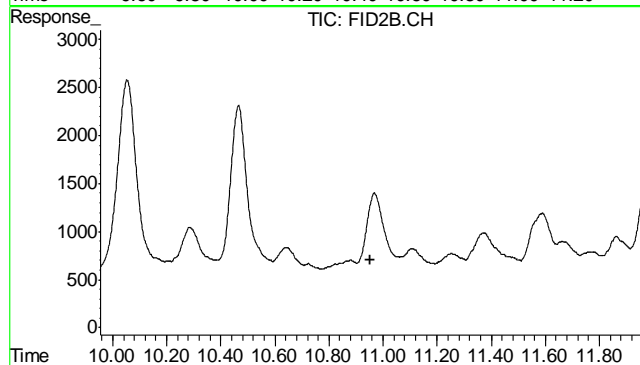
#7 Ethylbenzene

R.T.: 0.000 min  
Exp R.T.: 10.276 min  
Response: 0  
Conc: N.D.



#8 m,p-Xylene

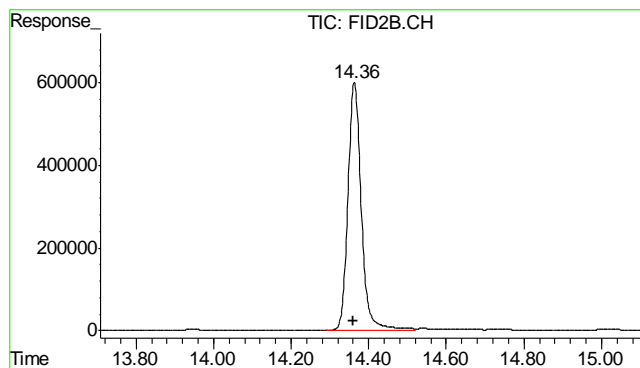
R.T.: 0.000 min  
Exp R.T.: 10.457 min  
Response: 0  
Conc: N.D.



#9 o-Xylene

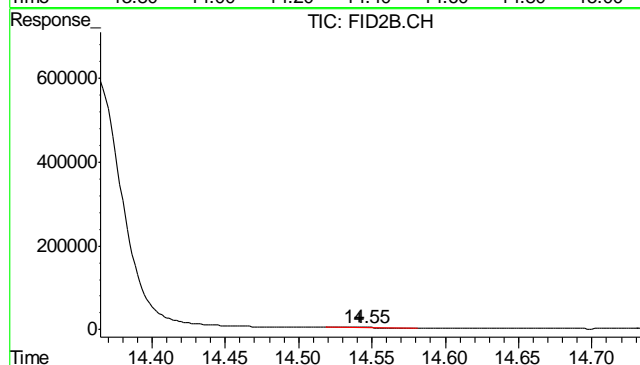
R.T.: 0.000 min  
Exp R.T.: 10.954 min  
Response: 0  
Conc: N.D.

11.21  
11



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

R.T.: 14.362 min  
Delta R.T.: 0.003 min  
Response: 14366912  
Conc: 88.40 % m



#11 Naphthalene

R.T.: 14.545 min  
Delta R.T.: 0.003 min  
Response: 16454  
Conc: N.D.

11.2.1  
11



## GC Semi-volatiles

### QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D42556  
Account: XTOKRWR XTO Energy  
Project: PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7232-MB	FD21147.D	1	01/15/13	AV	01/15/13	OP7232	GFD1064

The QC reported here applies to the following samples: Method: SW846-8015B  
D42556-1, D42556-2

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	6.7	4.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	79% 35-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D42556  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7232-BS	FD21148.D	1	01/15/13	AV	01/15/13	OP7232	GFD1064

The QC reported here applies to the following samples:

Method: SW846-8015B

D42556-1, D42556-2

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	631	95	48-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	83%	35-130%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D42556  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 296-5A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7232-MS	FD21149.D	1	01/15/13	AV	01/15/13	OP7232	GFD1064
OP7232-MSD	FD21150.D	1	01/15/13	AV	01/15/13	OP7232	GFD1064
D42562-1	FD21151.D	1	01/15/13	AV	01/15/13	OP7232	GFD1064

The QC reported here applies to the following samples:

Method: SW846-8015B

D42556-1, D42556-2

CAS No.	Compound	D42562-1 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	313	876	1030	82	1030	82	0	20-168/30

CAS No.	Surrogate Recoveries	MS	MSD	D42562-1	Limits
84-15-1	o-Terphenyl	91%	84%	79%	35-130%

\* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2013\JAN\FD011513\FD21152.D Vial: 8  
 Acq On : 1-15-2013 06:48:18 PM Operator: ashleyv  
 Sample : D42556-1 Inst : FID5  
 Misc : OP7232,GFD1064,30.10,,,1,1 Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 16 08:12:36 2013 Quant Results File: DRO-GFD1044F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD1044F.M (Chemstation Integrator)  
 Title : 8015B TEH  
 Last Update : Tue Jan 15 13:27:58 2013  
 Response via : Initial Calibration  
 DataAcq Meth : DRO\_FR.M

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

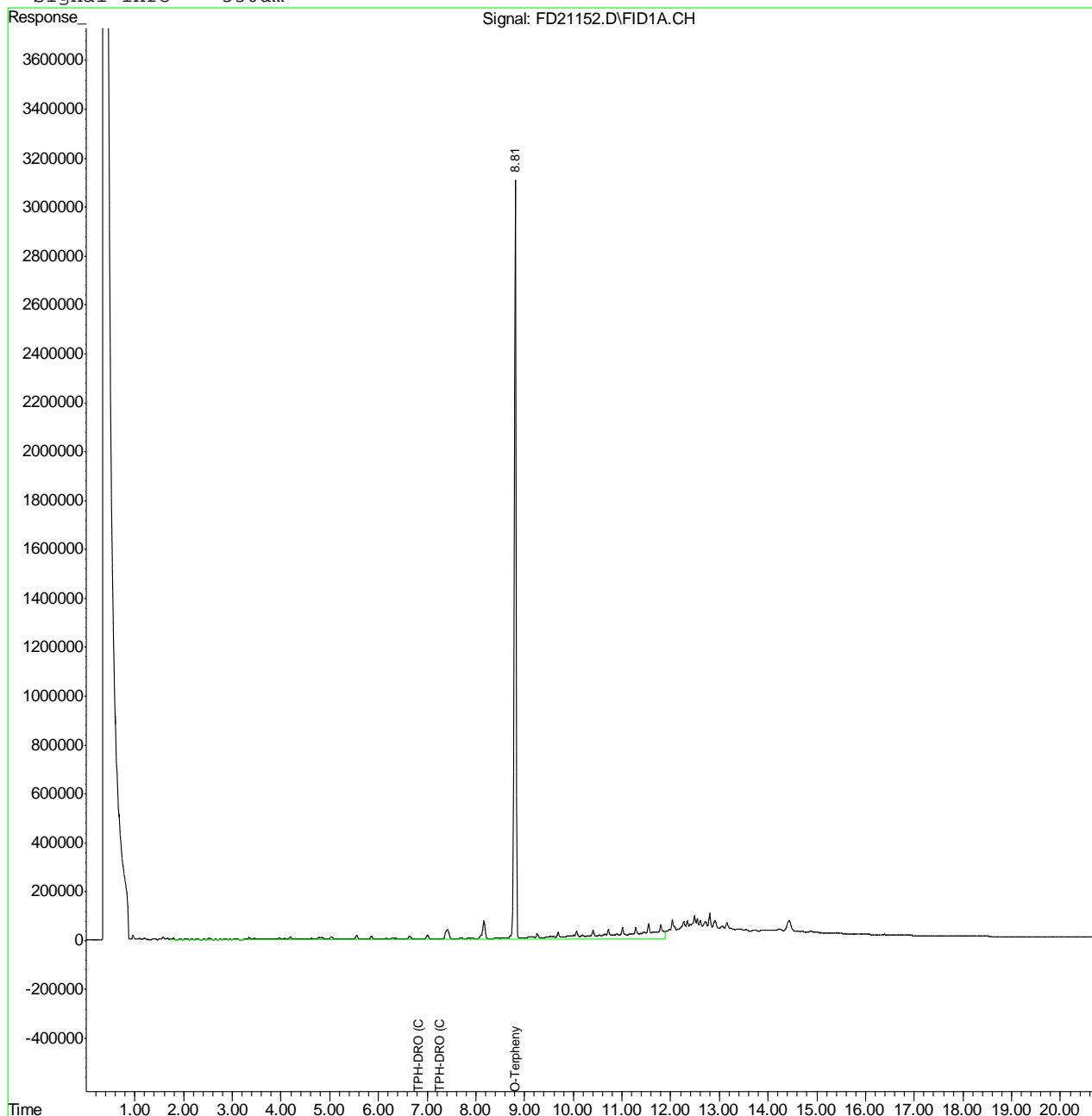
Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	8.81	80055375	1398.956 mg/L
Target Compounds			
2) H TPH-DRO (C10-C32)	7.27	78643979	1918.275 mg/L
3) H TPH-DRO (C10-C28)	6.82	49423214	1210.711 mg/L

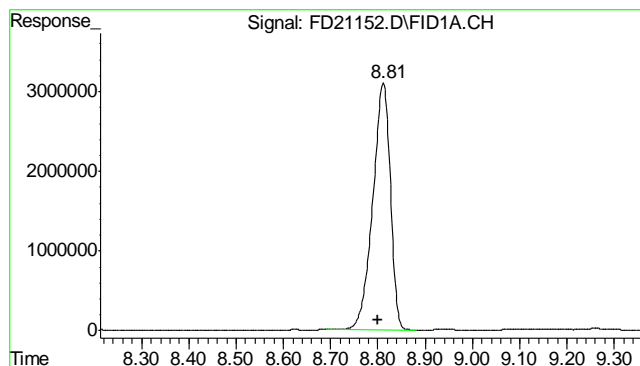
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2013\JAN\FD011513\FD21152.D Vial: 8  
 Acq On : 1-15-2013 06:48:18 PM Operator: ashleyv  
 Sample : D42556-1 Inst : FID5  
 Misc : OP7232,GFD1064,30.10,,,1,1 Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 16 8:12 2013 Quant Results File: DRO-GFD1044F.RES

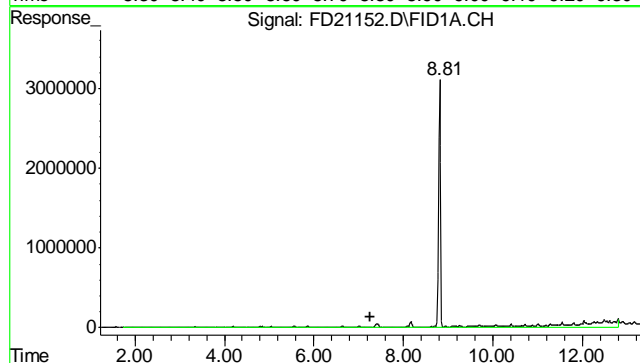
Quant Method : C:\MSDCHEM\2...\DRO-GFD1044F.M (Chemstation Integrator)  
 Title : 8015B TEH  
 Last Update : Tue Jan 15 13:27:58 2013  
 Response via : Multiple Level Calibration  
 DataAcq Meth : DRO\_FR.M

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

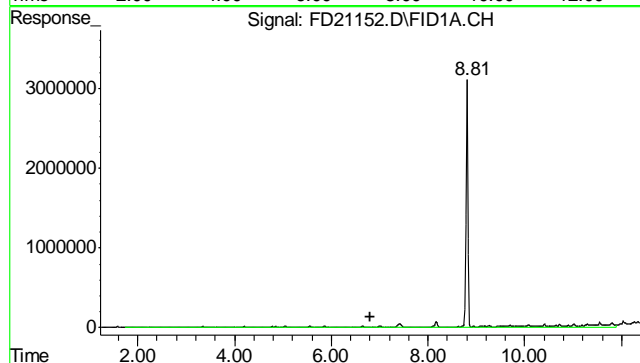




#1 O-Terphenyl  
 R.T.: 8.811 min  
 Delta R.T.: 0.011 min  
 Response: 80055375  
 Conc: 1398.96 mg/L



#2 TPH-DRO (C10-C32)  
 R.T.: 7.270 min  
 Delta R.T.: 0.000 min  
 Response: 78643979  
 Conc: 1918.27 mg/L m



#3 TPH-DRO (C10-C28)  
 R.T.: 6.815 min  
 Delta R.T.: 0.000 min  
 Response: 49423214  
 Conc: 1210.71 mg/L m

13.1.1  
**13**



Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2013\JAN\FD011513\FD21153.D Vial: 9  
 Acq On : 1-15-2013 07:14:50 PM Operator: ashleyv  
 Sample : D42556-2 Inst : FID5  
 Misc : OP7232,GFD1064,30.01,,,1,1 Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Jan 16 08:12:38 2013 Quant Results File: DRO-GFD1044F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD1044F.M (Chemstation Integrator)  
 Title : 8015B TEH  
 Last Update : Tue Jan 15 13:27:58 2013  
 Response via : Initial Calibration  
 DataAcq Meth : DRO\_FR.M

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

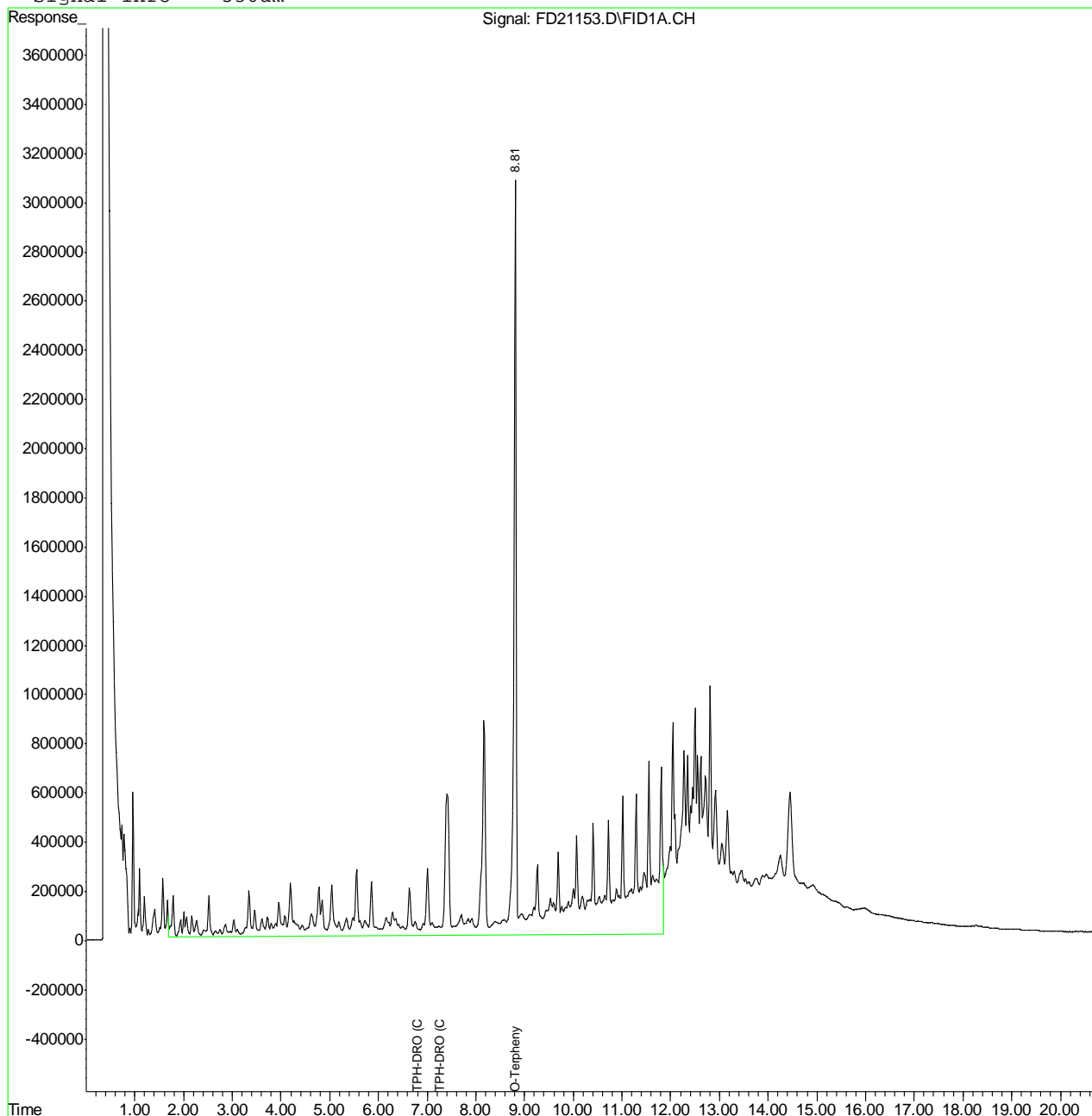
Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	8.81	92144707	1610.215 mg/L
Target Compounds			
2) H TPH-DRO (C10-C32)	7.27	857459850	20915.058 mg/L
3) H TPH-DRO (C10-C28)	6.82	605699620	14837.711 mg/L

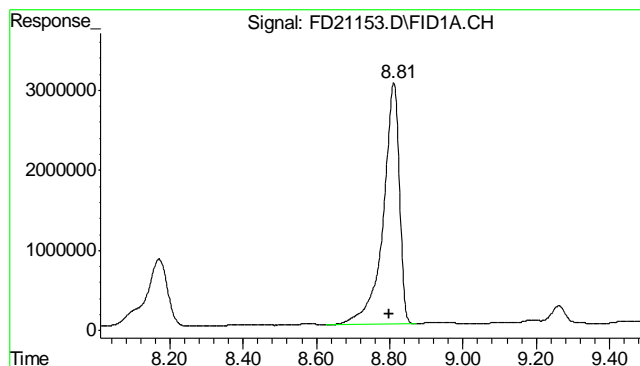
## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2013\JAN\FD011513\FD21153.D Vial: 9  
Acq On : 1-15-2013 07:14:50 PM Operator: ashleyv  
Sample : D42556-2 Inst : FID5  
Misc : OP7232,GFD1064,30.01,,,1,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Jan 16 8:23 2013 Quant Results File: DRO-GFD1044F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD1044F.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Tue Jan 15 13:27:58 2013  
Response via : Multiple Level Calibration  
DataAcq Meth : DRO\_FR.M

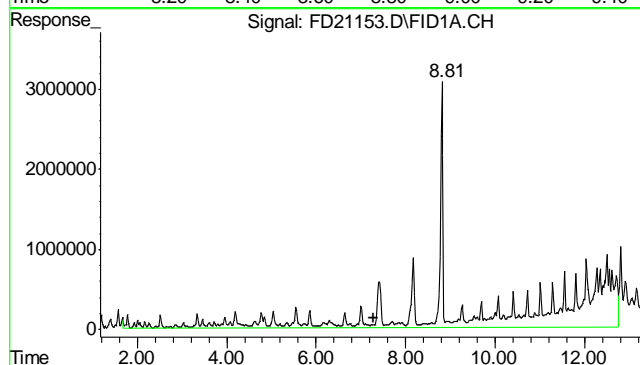
Volume Inj. : 1ul  
Signal Phase : RTX-5  
Signal Info : 530um





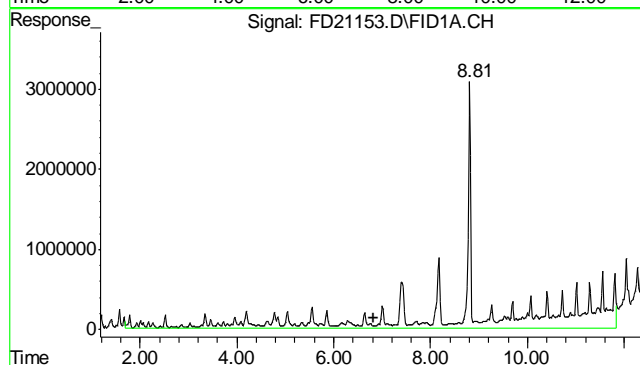
#1 O-Terphenyl

R.T.: 8.811 min  
 Delta R.T.: 0.011 min  
 Response: 92144707  
 Conc: 1610.22 mg/L



#2 TPH-DRO (C10-C32)

R.T.: 7.270 min  
 Delta R.T.: 0.000 min  
 Response: 857459850  
 Conc: 20915.06 mg/L m



#3 TPH-DRO (C10-C28)

R.T.: 6.815 min  
 Delta R.T.: 0.000 min  
 Response: 605699620  
 Conc: 14837.71 mg/L m

13.1.2  
 13

## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2013\JAN\FD011513\FD21147.D Vial: 3  
Acq On : 1-15-2013 04:35:51 PM Operator: ashleyv  
Sample : OP7232-MB Inst : FID5  
Misc : OP7232,GFD1064,30.00,,,1,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Jan 16 08:12:28 2013 Quant Results File: DRO-GFD1044F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD1044F.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Tue Jan 15 13:27:58 2013  
Response via : Initial Calibration  
DataAcq Meth : DRO\_FR.M

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

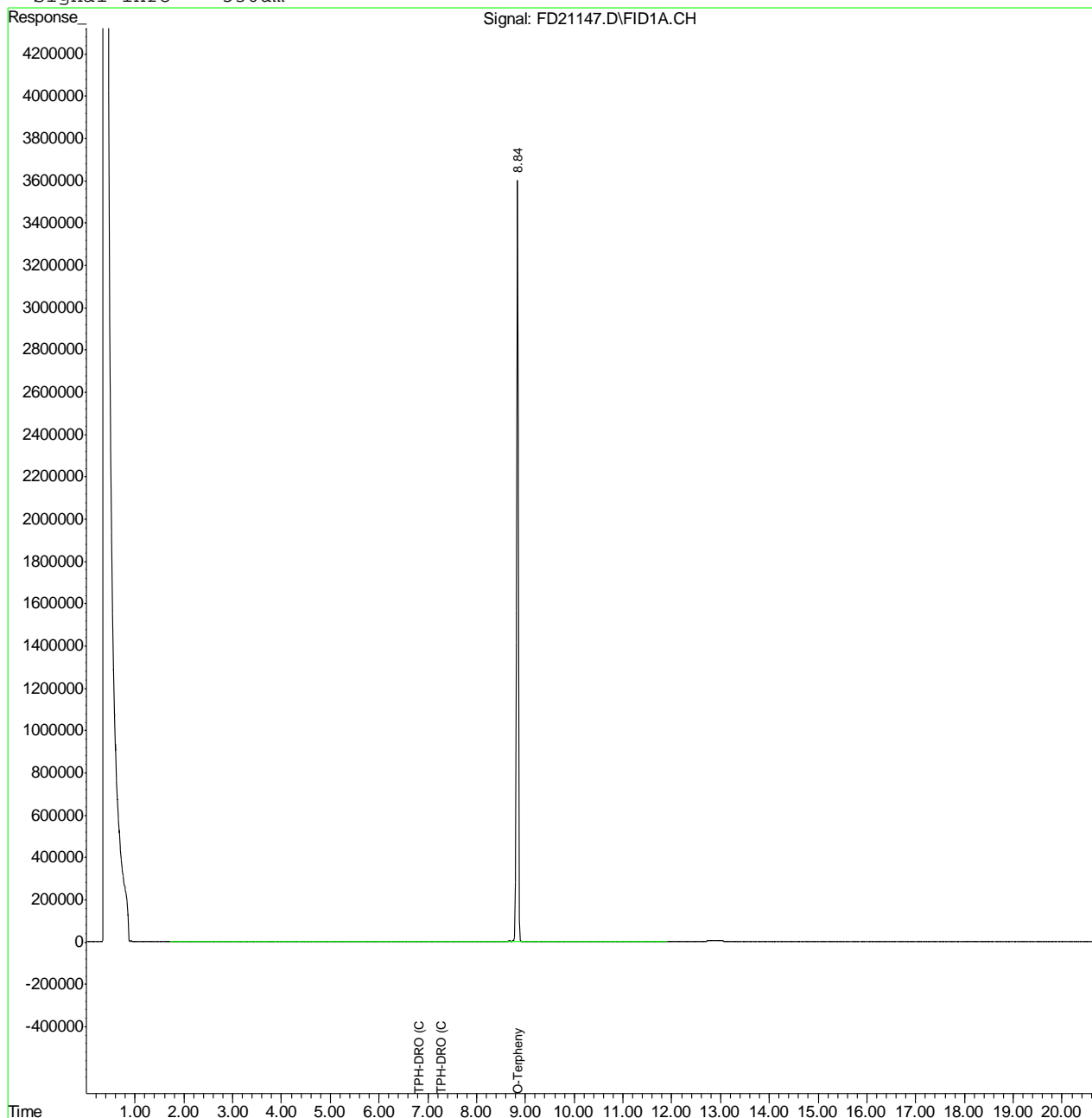
Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	8.84	90567108	1582.647 mg/L
Target Compounds			
2) H TPH-DRO (C10-C32)	7.27	2029145	49.495 mg/L
3) H TPH-DRO (C10-C28)	6.82	1512285	37.046 mg/L

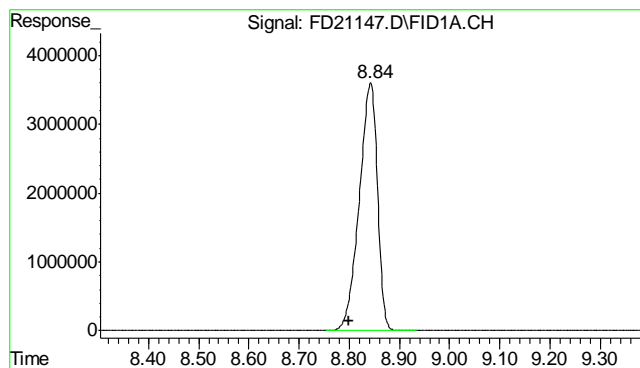
## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2013\JAN\FD011513\FD21147.D Vial: 3  
Acq On : 1-15-2013 04:35:51 PM Operator: ashleyv  
Sample : OP7232-MB Inst : FID5  
Misc : OP7232,GFD1064,30.00,,,1,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Jan 16 8:12 2013 Quant Results File: DRO-GFD1044F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD1044F.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Tue Jan 15 13:27:58 2013  
Response via : Multiple Level Calibration  
DataAcq Meth : DRO\_FR.M

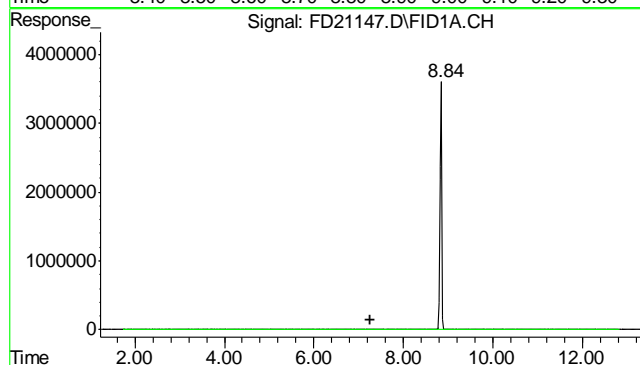
Volume Inj. : 1ul  
Signal Phase : RTX-5  
Signal Info : 530um





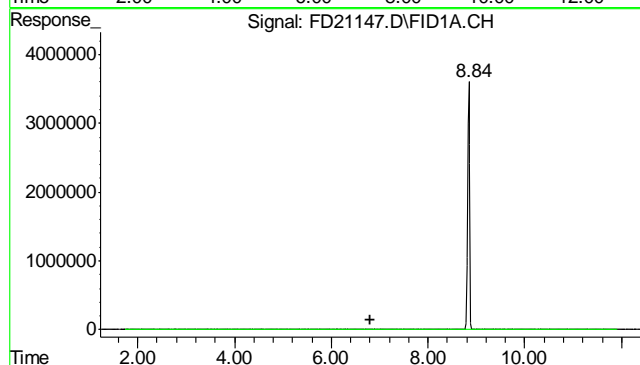
#1 O-Terphenyl

R.T.: 8.842 min  
Delta R.T.: 0.042 min  
Response: 90567108  
Conc: 1582.65 mg/L



#2 TPH-DRO (C10-C32)

R.T.: 7.270 min  
Delta R.T.: 0.000 min  
Response: 2029145  
Conc: 49.49 mg/L m



#3 TPH-DRO (C10-C28)

R.T.: 6.815 min  
Delta R.T.: 0.000 min  
Response: 1512285  
Conc: 37.05 mg/L m

## 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: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9242  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 01/14/13

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	0.25	<1.0
Beryllium	1.0	.13	.15		
Boron	5.0	.1	.06		
Cadmium	1.0	.06	.036	0.020	<1.0
Calcium	40	.54	9		
Chromium	1.0	.03	.03	0.040	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	0.13	<1.0
Iron	7.0	.12	.87		
Lead	5.0	.19	.24	0.020	<5.0
Lithium	0.20	.05	.054		
Magnesium	20	.65	.98		
Manganese	0.50	.12	.022		
Molybdenum	1.0	.21	.08		
Nickel	3.0	.05	.026	-0.020	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	-0.46	<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	0.090	<3.0

Associated samples MP9242: D42556-1, D42556-2

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



BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9242  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9242  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 01/14/13

Metal	D42510-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	4420	4470	235	21.3 (a)	75-125
Beryllium					
Boron					
Cadmium	0.0	49.1	58.7	83.7	75-125
Calcium					
Chromium	28.6	73.0	58.7	83.2	75-125
Cobalt					
Copper	15.4	67.2	58.7	88.3	75-125
Iron					
Lead	12.0	107	117	81.0	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	19.2	77.2	58.7	98.9	75-125
Phosphorus					
Potassium					
Selenium	0.0	105	117	89.5	75-125
Silicon					
Silver	0.0	21.0	23.5	89.5	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	37.6	82.7	58.7	76.9	75-125

Associated samples MP9242: D42556-1, D42556-2

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

14.1.2  
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9242  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9242  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 01/14/13

Metal	D42510-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	4420	4930	232	219.5(a)	9.8	20
Beryllium						
Boron						
Cadmium	0.0	48.6	58.1	83.7	1.0	20
Calcium						
Chromium	28.6	74.5	58.1	86.6	2.0	20
Cobalt						
Copper	15.4	67.2	58.1	89.2	0.0	20
Iron						
Lead	12.0	105	116	80.1	1.9	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	19.2	77.0	58.1	99.5	0.3	20
Phosphorus						
Potassium						
Selenium	0.0	104	116	89.5	1.0	20
Silicon						
Silver	0.0	20.8	23.2	89.5	1.0	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	37.6	81.9	58.1	76.3	1.0	20

Associated samples MP9242: D42556-1, D42556-2

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9242  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

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

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9242  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 01/14/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	198	200	99.0	80-120
Beryllium				
Boron				
Cadmium	46.5	50	93.0	80-120
Calcium				
Chromium	49.9	50	99.8	80-120
Cobalt				
Copper	47.4	50	94.8	80-120
Iron				
Lead	96.0	100	96.0	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	47.5	50	95.0	80-120
Phosphorus				
Potassium				
Selenium	97.5	100	97.5	80-120
Silicon				
Silver	19.8	20	99.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	49.2	50	98.4	80-120

Associated samples MP9242: D42556-1, D42556-2

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9242  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9242  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date: 01/14/13

Metal	D42510-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	32800	36700	2.5	0-10
Beryllium				
Boron				
Cadmium	0.00	0.00	NC	0-10
Calcium				
Chromium	206	243	17.8*(a)	0-10
Cobalt				
Copper	121	142	8.3	0-10
Iron				
Lead	119	122	19.0*(a)	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	135	155	5.2	0-10
Phosphorus				
Potassium				
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	320	412	28.5*(a)	0-10

Associated samples MP9242: D42556-1, D42556-2

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



SERIAL DILUTION RESULTS SUMMARY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9242  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested  
(a) Serial dilution indicates possible matrix interference.

14.1.4  
14

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9243  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 01/14/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.006	.06	0.013	<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 MP9243: D42556-1, D42556-2

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: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9243  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 01/14/13

Metal	D42510-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	11.1	116	117	89.4
Barium	anr			
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper				
Iron				
Lead	anr			
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9243: D42556-1, D42556-2

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

14.2.2  
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9243  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 01/14/13

Metal	D42510-1 Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	11.1	123	116	96.3	5.9	20
Barium						
Beryllium						
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper						
Iron						
Lead	anr					
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium	anr					
Silver	anr					
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP9243: D42556-1, D42556-2

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: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9243  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 01/14/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	101	100	101.0	80-120
Barium	anr			
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper				
Iron				
Lead	anr			
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9243: D42556-1, D42556-2

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

14.2.3  
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D42556  
 Account: XTOKRWR - XTO Energy  
 Project: PCU 296-5A

QC Batch ID: MP9243  
 Matrix Type: SOLID

Methods: SW846 6020A  
 Units: ug/l

Prep Date: 01/14/13

Metal	D42510-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	94.9	94.9	0.0	0-10	
Barium	anr				
Beryllium					
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper					
Iron					
Lead	anr				
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium	anr				
Silver	anr				
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP9243: D42556-1, D42556-2

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

14.2.4  
14

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9244  
Matrix Type: SOLID

Methods: SW846 7471B  
Units: mg/kg

Prep Date: 01/15/13

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.0009	0.0018	<0.10

Associated samples MP9244: D42556-1, D42556-2

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: D42556  
 Account: XTOKRWR - XTO Energy  
 Project: PCU 296-5A

QC Batch ID: MP9244  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 01/15/13

Metal	D42445-1		Spikelot		QC
	Original	MS	HGWSR1	% Rec	Limits
Mercury	0.054	0.45	0.393	100.7	75-125

Associated samples MP9244: D42556-1, D42556-2

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: D42556  
 Account: XTOKRWR - XTO Energy  
 Project: PCU 296-5A

QC Batch ID: MP9244  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 01/15/13

Metal	D42445-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.054	0.45	0.393	100.7	0.0	20

Associated samples MP9244: D42556-1, D42556-2

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: D42556  
 Account: XTOKRWR - XTO Energy  
 Project: PCU 296-5A

QC Batch ID: MP9244  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 01/15/13

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.40	0.4	100.0	80-120

Associated samples MP9244: D42556-1, D42556-2

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9251  
Matrix Type: AQUEOUS

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

Prep Date: 01/15/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	48	130		
Antimony	150	8.5	18		
Arsenic	130	22	42		
Barium	50	.5	9		
Beryllium	50	6.5	16		
Boron	250	5	22		
Cadmium	50	3	3		
Calcium	2000	27	80	2.5	<2000
Chromium	50	1.5	2.8		
Cobalt	25	2	2.1		
Copper	50	6	15		
Iron	350	6	100		
Lead	250	9.5	15		
Lithium	10	2.5			
Magnesium	1000	33	110	24.0	<1000
Manganese	25	6	6		
Molybdenum	50	11	11		
Nickel	150	2.5	2.9		
Phosphorus	500	70	300		
Potassium	5000	310	750		
Selenium	250	24	55		
Silicon	250	15			
Silver	150	2	4.9		
Sodium	2000	30	490	27.5	<2000
Strontium	25	.2	7.5		
Thallium	50	15	43		
Tin	250	60			
Titanium	50	.5			
Uranium	250	11	23		
Vanadium	50	1	2.4		
Zinc	150	2.5	12		

Associated samples MP9251: D42556-1A, D42556-2A

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9251  
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9251  
Matrix Type: AQUEOUS

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

Prep Date: 01/15/13

Metal	D42556-1A Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	92300	231000	125000	111.0	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	26000	155000	125000	103.2	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	107000	239000	125000	105.6	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP9251: D42556-1A, D42556-2A

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

14.4.2  
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9251  
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9251  
Matrix Type: AQUEOUS

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

Prep Date: 01/15/13

Metal	D42556-1A Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	92300	236000	125000	115.0	2.1	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	26000	153000	125000	101.6	1.3	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	107000	235000	125000	102.4	1.7	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP9251: D42556-1A, D42556-2A

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

14.4.2  
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9251  
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



## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9251  
Matrix Type: AQUEOUS

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

Prep Date: 01/15/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	137000	125000	109.6	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	123000	125000	98.4	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	125000	125000	100.0	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9251: D42556-1A, D42556-2A

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

14.4.3  
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9251  
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D42556  
 Account: XTOKRWR - XTO Energy  
 Project: PCU 296-5A

QC Batch ID: MP9251  
 Matrix Type: AQUEOUS

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

Prep Date: 01/15/13

D42556-1A			QC	
Metal	Original	SDL 1:5	%DIF	Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	18500	18600	0.9	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	5190	5270	1.5	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	21500	21600	0.8	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9251: D42556-1A, D42556-2A

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

14.4.4  
 14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

QC Batch ID: MP9251  
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

14.4.4  
14

## 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: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP9086/GN18425	1.0	0.0	mg/kg	92.9	91.5	98.5	80-120%
Specific Conductivity	GP9098/GN18435	1.0	<1.0	umhos/cm	9992	10500	105.2	90-110%
pH	GN18424			su	8.00	7.97	99.8	99.3-100.7%
pH	GN18426			su	8.00	8.00	100.0	99.3-100.7%

Associated Samples:  
Batch GP9086: D42556-1, D42556-2  
Batch GP9098: D42556-1, D42556-2  
Batch GN18424: D42556-1  
Batch GN18426: D42556-2  
(\* ) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP9086/GN18425	D42556-1	mg/kg	0.0	0.0	0.0	0-20%
Redox Potential Vs H2	GN18422	D42337-20	mv	230	227	1.3	0-20%

Associated Samples:

Batch GP9086: D42556-1, D42556-2

Batch GN18422: D42556-1, D42556-2

(\*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP9086/GN18425	D42556-1	mg/kg	0.0	40.0	35.0	87.5	75-125%

Associated Samples:

Batch GP9086: D42556-1, D42556-2

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits



MATRIX SPIKE DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D42556  
Account: XTOKRWR - XTO Energy  
Project: PCU 296-5A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP9086/GN18425	D42556-1	mg/kg	0.0	40.0	33.9	3.1	20%

Associated Samples:  
Batch GP9086: D42556-1, D42556-2  
(\*) Outside of QC limits  
(N) Matrix Spike Rec. outside of QC limits

15.4  
15