



10/11/12

## Technical Report for

**XTO Energy**

**PCU 197-36A**

**1203-02**

**Accutest Job Number: D39442**

**Sampling Date: 10/01/12**

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**Total number of pages in report: 182**



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.

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

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Test results relate only to samples analyzed.

# 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> D39442-1: CUT 2 SUBLINER COMP .....	11
<b>4.2:</b> D39442-1A: CUT 2 SUBLINER COMP .....	17
<b>4.3:</b> D39442-2: CUT 3 SUBLINER COMP .....	19
<b>4.4:</b> D39442-2A: CUT 3 SUBLINER COMP .....	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 .....	51
<b>Section 8: GC/MS Semi-volatiles - QC Data Summaries .....</b>	<b>58</b>
<b>8.1:</b> Method Blank Summary .....	59
<b>8.2:</b> Blank Spike Summary .....	60
<b>8.3:</b> Matrix Spike/Matrix Spike Duplicate Summary .....	61
<b>Section 9: GC/MS Semi-volatiles - Raw Data .....</b>	<b>62</b>
<b>9.1:</b> Samples .....	63
<b>9.2:</b> Method Blanks .....	97
<b>Section 10: GC Volatiles - QC Data Summaries .....</b>	<b>114</b>
<b>10.1:</b> Method Blank Summary .....	115
<b>10.2:</b> Blank Spike Summary .....	116
<b>10.3:</b> Matrix Spike/Matrix Spike Duplicate Summary .....	117
<b>Section 11: GC Volatiles - Raw Data .....</b>	<b>118</b>
<b>11.1:</b> Samples .....	119
<b>11.2:</b> Method Blanks .....	129
<b>Section 12: GC Semi-volatiles - QC Data Summaries .....</b>	<b>134</b>
<b>12.1:</b> Method Blank Summary .....	135
<b>12.2:</b> Blank Spike Summary .....	136
<b>12.3:</b> Matrix Spike/Matrix Spike Duplicate Summary .....	137
<b>Section 13: GC Semi-volatiles - Raw Data .....</b>	<b>138</b>
<b>13.1:</b> Samples .....	139
<b>13.2:</b> Method Blanks .....	145
<b>Section 14: Metals Analysis - QC Data Summaries .....</b>	<b>148</b>
<b>14.1:</b> Prep QC MP8574: Ba,Cd,Cr,Cu,Pb,Ni,Se,Ag,Zn .....	149
<b>14.2:</b> Prep QC MP8575: As .....	159
<b>14.3:</b> Prep QC MP8582: Ca,Mg,Na,Sodium Adsorption Ratio .....	164

# Table of Contents

-2-

<b>14.4:</b> Prep QC MP8583: Hg .....	174
<b>Section 15: General Chemistry - QC Data Summaries .....</b>	<b>178</b>
<b>15.1:</b> Method Blank and Spike Results Summary .....	179
<b>15.2:</b> Duplicate Results Summary .....	180
<b>15.3:</b> Matrix Spike Results Summary .....	181
<b>15.4:</b> Matrix Spike Duplicate Results Summary .....	182

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



Sample Summary

XTO Energy

Job No: D39442

PCU 197-36A  
Project No: 1203-02

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D39442-1	10/01/12	10:20 DS	10/03/12	SO	Soil	CUT 2 SUBLINER COMP
D39442-1A	10/01/12	10:20 DS	10/03/12	SO	Soil	CUT 2 SUBLINER COMP
D39442-2	10/01/12	11:00 DS	10/03/12	SO	Soil	CUT 3 SUBLINER COMP
D39442-2A	10/01/12	11:00 DS	10/03/12	SO	Soil	CUT 3 SUBLINER COMP

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



## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** XTO Energy

**Job No** D39442

**Site:** PCU 197-36A

**Report Date** 10/11/2012 9:55:08 AM

On 10/03/2012, 2 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 3.1 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D39442 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:** V5V1460

- All samples were analyzed within the recommended method holding time.
- Sample(s) D39441-1MS, D39441-1MSD 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:** OP6746

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) D39441-1MS, D39441-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### Volatiles by GC By Method SW846 8015B

**Matrix** SO

**Batch ID:** GGB977

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D39379-1MS, D39379-1MSD were used as the QC samples indicated.

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

**Matrix** SO

**Batch ID:** OP6744

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) D39441-1MS, D39441-1MSD 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:** MP8582

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D39442-1AMS, D39442-1AMSD, D39442-1ASDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Calcium, Magnesium, Sodium are outside control limits for sample MP8582-SD1. Probable cause due to sample homogeneity.
- MP8582-SD1 for Magnesium: Serial dilution indicates possible matrix interference.
- MP8582-SD1 for Calcium: Serial dilution indicates possible matrix interference.
- MP8582-SD1 for Sodium: Serial dilution indicates possible matrix interference.

**Matrix** SO

**Batch ID:** MP8574

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D39440-1MS, D39440-1MSD, D39440-1SDL 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 Cadmium, Barium, Nickel, Zinc are outside control limits for sample MP8574-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP8574-SD1 for Nickel: Serial dilution indicates possible matrix interference.
- MP8574-SD1 for Barium: Serial dilution indicates possible matrix interference.
- MP8574-SD1 for Zinc: Serial dilution indicates possible matrix interference.

## Metals By Method SW846 6020A

**Matrix** SO

**Batch ID:** MP8575

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D39440-1MS, D39440-1MSD, D39440-1SDL were used as the QC samples for the metals analysis.

## Metals By Method SW846 7471B

**Matrix** SO

**Batch ID:** MP8583

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D39311-1MS, D39311-1MSD were used as the QC samples for the metals analysis.

## Wet Chemistry By Method ASTM D1498-76M

**Matrix** SO

**Batch ID:** GN17076

- Sample(s) D39383-3DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

## Wet Chemistry By Method SM19 2540B M

**Matrix** SO

**Batch ID:** GN17049

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

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

<b>Matrix</b> SO	<b>Batch ID:</b> R14750
------------------	-------------------------

- The data for SW846 3060/7196A M meets quality control requirements.
- D39442-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

<b>Matrix</b> SO	<b>Batch ID:</b> R14751
------------------	-------------------------

- The data for SW846 3060/7196A M meets quality control requirements.
- D39442-2 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

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

<b>Matrix</b> SO	<b>Batch ID:</b> GP8341
------------------	-------------------------

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D39441-1MS, D39441-1MSD, D39441-1DUP were used as the QC samples for the Chromium, Hexavalent analysis.
- The duplicate RPD(s) for Chromium, Hexavalent are outside control limits for sample GP8341-D1. RPD acceptable due to low duplicate and sample concentrations.

### Wet Chemistry By Method SW846 9045D

<b>Matrix</b> SO	<b>Batch ID:</b> GN17071
------------------	--------------------------

- The following samples were run outside of holding time for method SW846 9045D: D39442-1, D39442-2

### Wet Chemistry By Method USDA HANDBOOK 60

<b>Matrix</b> SO	<b>Batch ID:</b> MP8582
------------------	-------------------------

- D39442-1A for Sodium Adsorption Ratio: Calculated as:  $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$
- D39442-2A 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:** D39442  
**Account:** XTO Energy  
**Project:** PCU 197-36A  
**Collected:** 10/01/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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### D39442-1 CUT 2 SUBLINER COMP

TPH-DRO (C10-C28)	14.8 J	15	9.8	mg/kg	SW846-8015B
Arsenic	4.9	0.12		mg/kg	SW846 6020A
Barium	230	1.2		mg/kg	SW846 6010C
Chromium	61.1	1.2		mg/kg	SW846 6010C
Copper	11.9	1.2		mg/kg	SW846 6010C
Lead	8.7	5.8		mg/kg	SW846 6010C
Nickel	20.3	3.5		mg/kg	SW846 6010C
Zinc	45.1	3.5		mg/kg	SW846 6010C
Specific Conductivity	2740	1.0		umhos/cm	SM2510B-1997 MOD
Chromium, Trivalent <sup>a</sup>	61.1	2.2		mg/kg	SW846 3060/7196A M
Redox Potential Vs H2	13.5			mv	ASTM D1498-76M
pH	9.37			su	SW846 9045D

### D39442-1A CUT 2 SUBLINER COMP

Calcium	82.9	2.0		mg/l	SW846 6010C
Magnesium	18.0	1.0		mg/l	SW846 6010C
Sodium	455	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio <sup>b</sup>	11.8			ratio	USDA HANDBOOK 60

### D39442-2 CUT 3 SUBLINER COMP

Benzo(a)anthracene	0.0074 J	0.0095	0.0049	mg/kg	SW846 8270C BY SIM
Benzo(a)pyrene	0.0065 J	0.0095	0.0049	mg/kg	SW846 8270C BY SIM
Benzo(b)fluoranthene	0.0058 J	0.0095	0.0049	mg/kg	SW846 8270C BY SIM
Benzo(k)fluoranthene	0.0079 J	0.0095	0.0049	mg/kg	SW846 8270C BY SIM
Chrysene	0.0059 J	0.0095	0.0049	mg/kg	SW846 8270C BY SIM
Dibenzo(a,h)anthracene	0.0069 J	0.0095	0.0049	mg/kg	SW846 8270C BY SIM
Indeno(1,2,3-cd)pyrene	0.0069 J	0.0095	0.0049	mg/kg	SW846 8270C BY SIM
Pyrene	0.0063 J	0.0095	0.0049	mg/kg	SW846 8270C BY SIM
Arsenic	6.4	0.11		mg/kg	SW846 6020A
Barium	902	1.1		mg/kg	SW846 6010C
Chromium	62.5	1.1		mg/kg	SW846 6010C
Copper	12.8	1.1		mg/kg	SW846 6010C
Lead	10	5.7		mg/kg	SW846 6010C
Nickel	20.7	3.4		mg/kg	SW846 6010C
Zinc	46.1	3.4		mg/kg	SW846 6010C
Specific Conductivity	920	1.0		umhos/cm	SM2510B-1997 MOD
Chromium, Trivalent <sup>a</sup>	62.5	2.1		mg/kg	SW846 3060/7196A M
Redox Potential Vs H2	11.3			mv	ASTM D1498-76M
pH	9.61			su	SW846 9045D



Summary of Hits

Job Number: D39442  
Account: XTO Energy  
Project: PCU 197-36A  
Collected: 10/01/12



Lab Sample ID	Client Sample ID	Result/ Analyte	Qual	RL	MDL	Units	Method
D39442-2A	CUT 3 SUBLINER COMP						
		Calcium	31.5	2.0		mg/l	SW846 6010C
		Magnesium	5.42	1.0		mg/l	SW846 6010C
		Sodium	155	2.0		mg/l	SW846 6010C
		Sodium Adsorption Ratio <sup>b</sup>	6.71			ratio	USDA HANDBOOK 60

(a) Calculated as: (Chromium) - (Chromium, Hexavalent)  
(b) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

## Sample Results

## Report of Analysis

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## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUT 2 SUBLINER COMP	<b>Date Sampled:</b>	10/01/12
<b>Lab Sample ID:</b>	D39442-1	<b>Date Received:</b>	10/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	88.6
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	PCU 197-36A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V24012.D	1	10/04/12	BD	n/a	n/a	V5V1460
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	0.062	0.031	mg/kg	
108-88-3	Toluene	ND	0.12	0.062	mg/kg	
100-41-4	Ethylbenzene	ND	0.12	0.024	mg/kg	
1330-20-7	Xylene (total)	ND	0.25	0.12	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	99%		64-130%
460-00-4	4-Bromofluorobenzene	102%		62-131%
17060-07-0	1,2-Dichloroethane-D4	97%		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

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## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUT 2 SUBLINER COMP	<b>Date Sampled:</b>	10/01/12
<b>Lab Sample ID:</b>	D39442-1	<b>Date Received:</b>	10/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	88.6
<b>Method:</b>	SW846 8270C BY SIM SW846 3546		
<b>Project:</b>	PCU 197-36A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G11505.D	1	10/04/12	DC	10/04/12	OP6746	E3G539
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	0.0094	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	
50-32-8	Benzo(a)pyrene	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	
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	87%		10-145%
321-60-8	2-Fluorobiphenyl	75%		10-130%
1718-51-0	Terphenyl-d14	90%		22-130%

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## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUT 2 SUBLINER COMP	<b>Date Sampled:</b>	10/01/12
<b>Lab Sample ID:</b>	D39442-1	<b>Date Received:</b>	10/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	88.6
<b>Method:</b>	SW846 8015B		
<b>Project:</b>	PCU 197-36A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB17843.D	1	10/04/12	SK	n/a	n/a	GGB977
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	12	6.2	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	94%		60-140%		

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

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

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## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUT 2 SUBLINER COMP	<b>Date Sampled:</b>	10/01/12
<b>Lab Sample ID:</b>	D39442-1	<b>Date Received:</b>	10/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	88.6
<b>Method:</b>	SW846-8015B SW846 3546		
<b>Project:</b>	PCU 197-36A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD18212.D	1	10/05/12	AV	10/04/12	OP6744	GFD923
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	14.8	15	9.8	mg/kg	J
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	68%		43-136%		

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

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

## Report of Analysis

**Client Sample ID:** CUT 2 SUBLINER COMP**Lab Sample ID:** D39442-1**Matrix:** SO - Soil**Project:** PCU 197-36A**Date Sampled:** 10/01/12**Date Received:** 10/03/12**Percent Solids:** 88.6**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.9	0.12	mg/kg	5	10/05/12	10/10/12 JB	SW846 6020A <sup>4</sup>	SW846 3050B <sup>6</sup>
Barium	230	1.2	mg/kg	1	10/05/12	10/09/12 JM	SW846 6010C <sup>3</sup>	SW846 3050B <sup>5</sup>
Cadmium	< 1.2	1.2	mg/kg	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Chromium	61.1	1.2	mg/kg	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Copper	11.9	1.2	mg/kg	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Lead	8.7	5.8	mg/kg	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Mercury	< 0.12	0.12	mg/kg	1	10/08/12	10/08/12 JM	SW846 7471B <sup>2</sup>	SW846 7471B <sup>7</sup>
Nickel	20.3	3.5	mg/kg	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Selenium	< 5.8	5.8	mg/kg	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Silver	< 3.5	3.5	mg/kg	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Zinc	45.1	3.5	mg/kg	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>

(1) Instrument QC Batch: MA2871

(2) Instrument QC Batch: MA2872

(3) Instrument QC Batch: MA2876

(4) Instrument QC Batch: MA2877

(5) Prep QC Batch: MP8574

(6) Prep QC Batch: MP8575

(7) Prep QC Batch: MP8583

RL = Reporting Limit

## Report of Analysis

**Client Sample ID:** CUT 2 SUBLINER COMP**Lab Sample ID:** D39442-1**Matrix:** SO - Soil**Project:** PCU 197-36A**Date Sampled:** 10/01/12**Date Received:** 10/03/12**Percent Solids:** 88.6**General Chemistry**

Analyte	Result	RL	Units	DF	Analyzed	By	Method
<b>prep: DEPT.OF AG, BOOK N9</b>							
Specific Conductivity	2740	1.0	umhos/cm	1	10/05/12	JD	SM2510B-1997 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	10/08/12	KB	SW846 3060A/7196A
Chromium, Trivalent <sup>a</sup>	61.1	2.2	mg/kg	1	10/08/12 22:16	JM	SW846 3060/7196A M
Redox Potential Vs H2	13.5		mv	1	10/04/12	JD	ASTM D1498-76M
Solids, Percent	88.6		%	1	10/04/12	SWT	SM19 2540B M
pH	9.37		su	1	10/04/12 14:45	JD	SW846 9045D

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

RL = Reporting Limit



Report of Analysis

<b>Client Sample ID:</b>	CUT 2 SUBLINER COMP	<b>Date Sampled:</b>	10/01/12
<b>Lab Sample ID:</b>	D39442-1A	<b>Date Received:</b>	10/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	88.6
<b>Project:</b>	PCU 197-36A		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	82.9	2.0	mg/l	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Magnesium	18.0	1.0	mg/l	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Sodium	455	2.0	mg/l	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>

(1) Instrument QC Batch: MA2871  
(2) Prep QC Batch: MP8582

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	CUT 2 SUBLINER COMP	<b>Date Sampled:</b>	10/01/12
<b>Lab Sample ID:</b>	D39442-1A	<b>Date Received:</b>	10/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	88.6
<b>Project:</b>	PCU 197-36A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	11.8		ratio	1	10/08/12 10:50	JM	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 3 SUBLINER COMP	<b>Date Sampled:</b>	10/01/12
<b>Lab Sample ID:</b>	D39442-2	<b>Date Received:</b>	10/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.9
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	PCU 197-36A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V24013.D	1	10/04/12	BD	n/a	n/a	V5V1460
Run #2							

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

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.064	0.032	mg/kg	
108-88-3	Toluene	ND	0.13	0.064	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	99%		64-130%
460-00-4	4-Bromofluorobenzene	98%		62-131%
17060-07-0	1,2-Dichloroethane-D4	101%		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 3 SUBLINER COMP	<b>Date Sampled:</b>	10/01/12
<b>Lab Sample ID:</b>	D39442-2	<b>Date Received:</b>	10/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.9
<b>Method:</b>	SW846 8270C BY SIM SW846 3546		
<b>Project:</b>	PCU 197-36A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G11506.D	1	10/04/12	DC	10/04/12	OP6746	E3G539
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	0.0095	0.0049	mg/kg	
120-12-7	Anthracene	ND	0.0095	0.0049	mg/kg	
56-55-3	Benzo(a)anthracene	0.0074	0.0095	0.0049	mg/kg	J
50-32-8	Benzo(a)pyrene	0.0065	0.0095	0.0049	mg/kg	J
205-99-2	Benzo(b)fluoranthene	0.0058	0.0095	0.0049	mg/kg	J
207-08-9	Benzo(k)fluoranthene	0.0079	0.0095	0.0049	mg/kg	J
218-01-9	Chrysene	0.0059	0.0095	0.0049	mg/kg	J
53-70-3	Dibenzo(a,h)anthracene	0.0069	0.0095	0.0049	mg/kg	J
206-44-0	Fluoranthene	ND	0.0095	0.0049	mg/kg	
86-73-7	Fluorene	ND	0.0095	0.0049	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	0.0069	0.0095	0.0049	mg/kg	J
91-20-3	Naphthalene	ND	0.013	0.012	mg/kg	
129-00-0	Pyrene	0.0063	0.0095	0.0049	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	70%		10-145%
321-60-8	2-Fluorobiphenyl	61%		10-130%
1718-51-0	Terphenyl-d14	90%		22-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUT 3 SUBLINER COMP	<b>Date Sampled:</b>	10/01/12
<b>Lab Sample ID:</b>	D39442-2	<b>Date Received:</b>	10/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.9
<b>Method:</b>	SW846 8015B		
<b>Project:</b>	PCU 197-36A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB17844.D	1	10/04/12	SK	n/a	n/a	GGB977
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	13	6.4	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 3 SUBLINER COMP	<b>Date Sampled:</b>	10/01/12
<b>Lab Sample ID:</b>	D39442-2	<b>Date Received:</b>	10/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.9
<b>Method:</b>	SW846-8015B SW846 3546		
<b>Project:</b>	PCU 197-36A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD18216.D	1	10/05/12	AV	10/04/12	OP6744	GFD923
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	15	9.8	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	72%		43-136%		

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

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

## Report of Analysis

<b>Client Sample ID:</b>	CUT 3 SUBLINER COMP	<b>Date Sampled:</b>	10/01/12
<b>Lab Sample ID:</b>	D39442-2	<b>Date Received:</b>	10/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.9
<b>Project:</b>	PCU 197-36A		

## Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	6.4	0.11	mg/kg	5	10/05/12	10/10/12 JB	SW846 6020A <sup>4</sup>	SW846 3050B <sup>6</sup>
Barium	902	1.1	mg/kg	1	10/05/12	10/09/12 JM	SW846 6010C <sup>3</sup>	SW846 3050B <sup>5</sup>
Cadmium	< 1.1	1.1	mg/kg	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Chromium	62.5	1.1	mg/kg	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Copper	12.8	1.1	mg/kg	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Lead	10	5.7	mg/kg	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Mercury	< 0.12	0.12	mg/kg	1	10/08/12	10/08/12 JM	SW846 7471B <sup>2</sup>	SW846 7471B <sup>7</sup>
Nickel	20.7	3.4	mg/kg	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Selenium	< 5.7	5.7	mg/kg	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Silver	< 3.4	3.4	mg/kg	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>
Zinc	46.1	3.4	mg/kg	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3050B <sup>5</sup>

(1) Instrument QC Batch: MA2871

(2) Instrument QC Batch: MA2872

(3) Instrument QC Batch: MA2876

(4) Instrument QC Batch: MA2877

(5) Prep QC Batch: MP8574

(6) Prep QC Batch: MP8575

(7) Prep QC Batch: MP8583

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b>	CUT 3 SUBLINER COMP	<b>Date Sampled:</b>	10/01/12
<b>Lab Sample ID:</b>	D39442-2	<b>Date Received:</b>	10/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.9
<b>Project:</b>	PCU 197-36A		

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
<b>prep: DEPT.OF AG, BOOK N9</b>							
Specific Conductivity	920	1.0	umhos/cm	1	10/05/12	JD	SM2510B-1997 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	10/08/12	KB	SW846 3060A/7196A
Chromium, Trivalent <sup>a</sup>	62.5	2.1	mg/kg	1	10/08/12 22:23	JM	SW846 3060/7196A M
Redox Potential Vs H2	11.3		mv	1	10/04/12	JD	ASTM D1498-76M
Solids, Percent	87.9		%	1	10/04/12	SWT	SM19 2540B M
pH	9.61		su	1	10/04/12 14:45	JD	SW846 9045D

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

RL = Reporting Limit



Report of Analysis

**Client Sample ID:** CUT 3 SUBLINER COMP  
**Lab Sample ID:** D39442-2A  
**Matrix:** SO - Soil  
**Project:** PCU 197-36A

**Date Sampled:** 10/01/12  
**Date Received:** 10/03/12  
**Percent Solids:** 87.9

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	31.5	2.0	mg/l	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Magnesium	5.42	1.0	mg/l	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Sodium	155	2.0	mg/l	1	10/05/12	10/08/12 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>

(1) Instrument QC Batch: MA2871  
(2) Prep QC Batch: MP8582

RL = Reporting Limit

4.4  
4

Report of Analysis

<b>Client Sample ID:</b>	CUT 3 SUBLINER COMP	<b>Date Sampled:</b>	10/01/12
<b>Lab Sample ID:</b>	D39442-2A	<b>Date Received:</b>	10/03/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.9
<b>Project:</b>	PCU 197-36A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	6.71		ratio	1	10/08/12 15:18	JM	USDA HANDBOOK 60

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

RL = Reporting Limit

## Misc. Forms

5

### Custody Documents and Other Forms

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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)

TED-EX Tracking #		Scilla Order Control #	
Account Quote #		Account Job #	
Requested Analysis (see TEST CODE sheet)		Matrix Codes	
<div style="position: relative; height: 100px;"> <span style="position: absolute; left: 10px; top: 10px; font-size: 2em;">T-910</span> </div>		DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquids AIR - Air SOL - Other Solids WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank	
		LAB USE ONLY <div style="position: relative; height: 100px;"> <span style="position: absolute; left: 10px; top: 10px; font-size: 2em;">01</span>  <span style="position: absolute; left: 10px; top: 30px; font-size: 2em;">02</span>  <span style="position: absolute; left: 10px; top: 50px; font-size: 2em;">107</span> </div>	
Comments / Special Instructions			
Required to State: _____ x _____ ONLY _____			
Please Email Results to KRW Piceance Team			
Date Time: 11/3/12 17:20 Date Time: _____ Received By: [Signature] Received By: _____ On Ice: B- Cooler Temp: 3.1			

5.15

## D39442: Chain of Custody

Page 1 of 2

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D39442

Client: KRW CONSULTING

Immediate Client Services Action Required: No

Date / Time Received: 10/3/2012 12:30:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XTO PCU 197-36A

Airbill #'s: HDCO

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

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

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

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

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

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

Comments

Accutest Laboratories  
V:(303) 425-6021

4036 Youngfield Street  
F: (303) 425-6854

Wheat Ridge, CO  
www.accutest.com

## GC/MS Volatiles

### 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:** D39442  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1460-MB	5V24003.D	1	10/04/12	BD	n/a	n/a	V5V1460

The QC reported here applies to the following samples:

Method: SW846 8260B

D39442-1, D39442-2

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	102% 64-130%
460-00-4	4-Bromofluorobenzene	88% 62-131%
17060-07-0	1,2-Dichloroethane-D4	101% 70-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D39442  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1460-BS	5V24004.D	1	10/04/12	BD	n/a	n/a	V5V1460

The QC reported here applies to the following samples:

Method: SW846 8260B

D39442-1, D39442-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	41.6	83	70-130
100-41-4	Ethylbenzene	50	42.9	86	70-130
108-88-3	Toluene	50	41.6	83	70-130
1330-20-7	Xylene (total)	150	135	90	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	103%	64-130%
460-00-4	4-Bromofluorobenzene	97%	62-131%
17060-07-0	1,2-Dichloroethane-D4	99%	70-130%

\* = Outside of Control Limits.



# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D39442  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D39441-1MS	5V24006.D	1	10/04/12	BD	n/a	n/a	V5V1460
D39441-1MSD	5V24007.D	1	10/04/12	BD	n/a	n/a	V5V1460
D39441-1	5V24005.D	1	10/04/12	BD	n/a	n/a	V5V1460

The QC reported here applies to the following samples:

Method: SW846 8260B

D39442-1, D39442-2

CAS No.	Compound	D39441-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		2840	2410	85	2650	93	9	64-139/30
100-41-4	Ethylbenzene	ND		2840	2440	86	2630	93	7	68-136/30
108-88-3	Toluene	105	J	2840	2380	80	2610	88	9	60-130/30
1330-20-7	Xylene (total)	ND		8520	7810	92	8220	96	5	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D39441-1	Limits
2037-26-5	Toluene-D8	100%	100%	100%	64-130%
460-00-4	4-Bromofluorobenzene	107%	106%	97%	62-131%
17060-07-0	1,2-Dichloroethane-D4	102%	101%	101%	70-130%

\* = Outside of Control Limits.

GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5100412.S\  
Data File : 5V24012.D  
Acq On : 4 Oct 2012 3:23 pm  
Operator : BRETD  
Sample : D39442-1  
Misc : MS4754,V5V1460,5.064,,100,5,1  
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Oct 05 08:32:34 2012  
Quant Method : C:\msdchem\1\METHODS\V5AP1442TVH1442.M  
Quant Title : 8260  
QLast Update : Fri Sep 07 10:53:51 2012  
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	202595	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.446	114	273333	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.095	117	268735	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.070	152	195000	50.00	ug/l	0.00

System Monitoring Compounds						
33) 1,2-Dichloroethane-d4	12.024	102	18920	48.69	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	97.38%
61) Toluene-d8	13.851	98	316445	49.65	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	99.30%
69) 4-Bromofluorobenzene	16.043	95	147668	50.87	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	101.74%

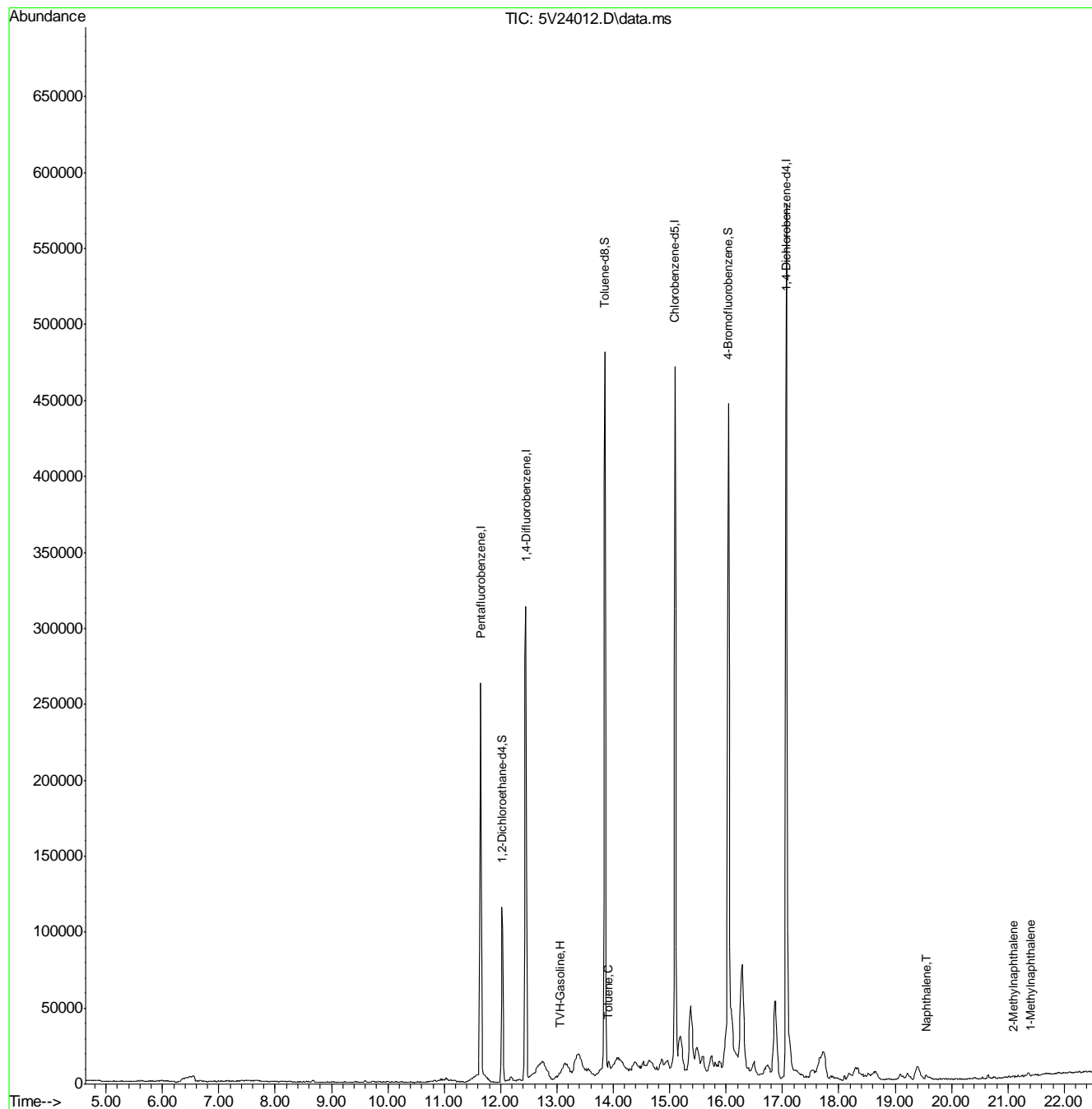
Target Compounds					Qvalue
1) TVH-Gasoline	13.055	TIC	1643203m	139.21	ug/l
62) Toluene	13.908	92	912	0.16	ug/l # 30
91) Naphthalene	19.559	128	1141	0.10	ug/l 100
94) 2-Methylnaphthalene	21.100	142	364	0.97	ug/l # 70
95) 1-Methylnaphthalene	21.397	142	175	0.63	ug/l # 16

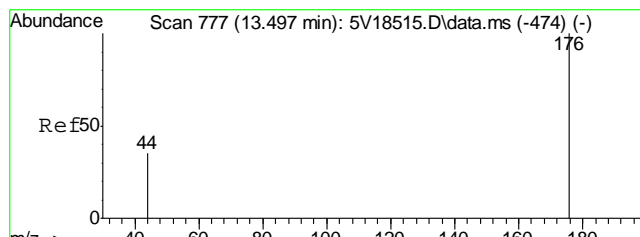
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5100412.S\  
Data File : 5V24012.D  
Acq On : 4 Oct 2012 3:23 pm  
Operator : BRETD  
Sample : D39442-1  
Misc : MS4754,V5V1460,5.064,,100,5,1  
ALS Vial : 12 Sample Multiplier: 1

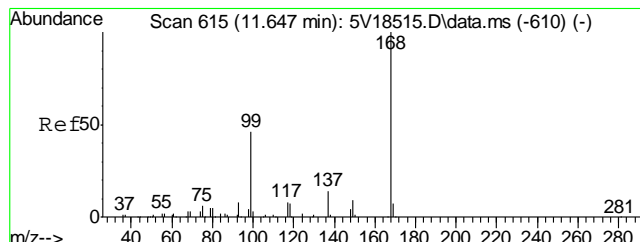
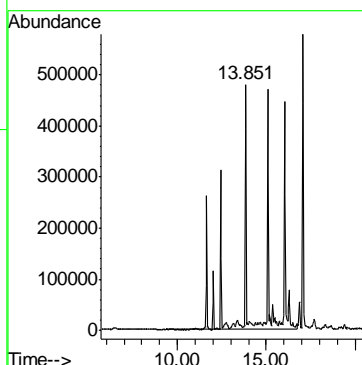
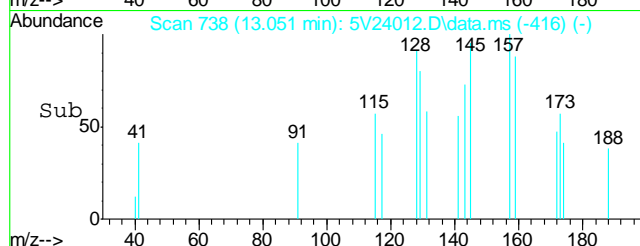
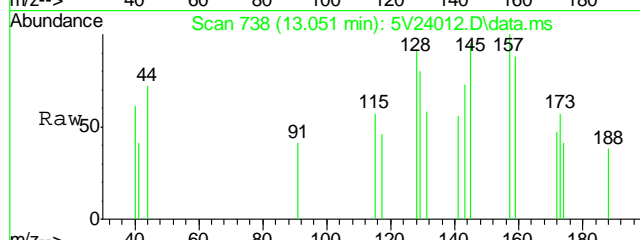
Quant Time: Oct 05 08:32:34 2012  
Quant Method : C:\msdchem\1\METHODS\V5AP1442TVH1442.M  
Quant Title : 8260  
QLast Update : Fri Sep 07 10:53:51 2012  
Response via : Initial Calibration





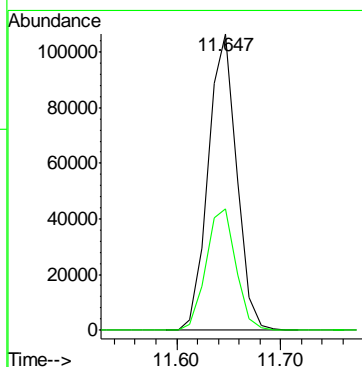
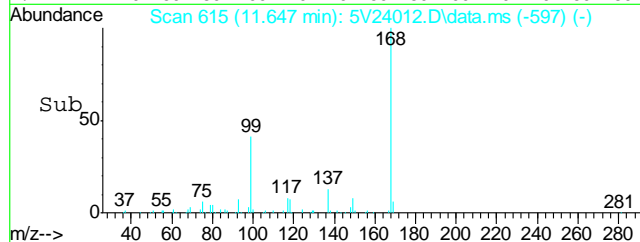
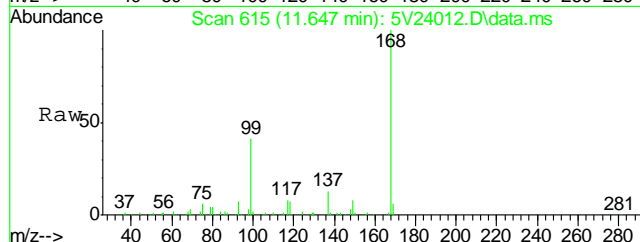
#1  
TVH-Gasoline  
Concen: 139.21 ug/l m  
RT: 13.055 min Scan# 738  
Delta R.T. 0.000 min  
Lab File: 5V24012.D  
Acq: 4 Oct 2012 3:23 pm

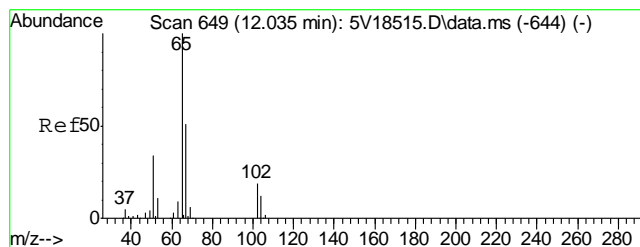
Tgt Ion:TIC Resp: 1643203



#2  
Pentafluorobenzene  
Concen: 50.00 ug/l  
RT: 11.647 min Scan# 615  
Delta R.T. 0.000 min  
Lab File: 5V24012.D  
Acq: 4 Oct 2012 3:23 pm

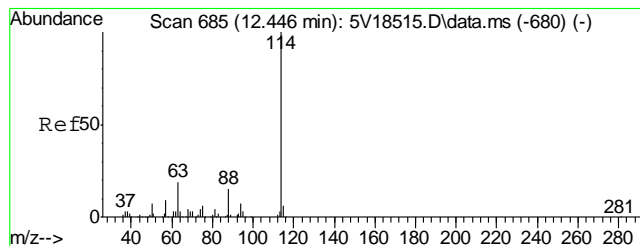
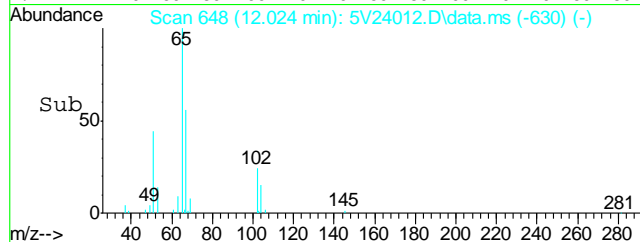
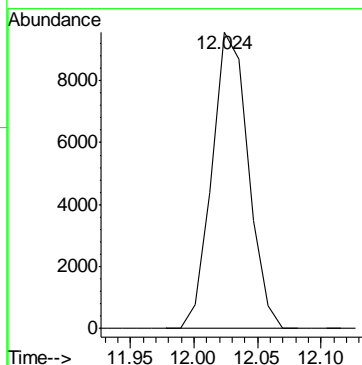
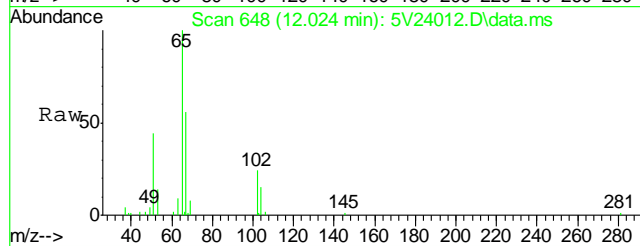
Tgt Ion:168 Resp: 202595  
Ion Ratio Lower Upper  
168 100  
99 42.8 37.4 56.2





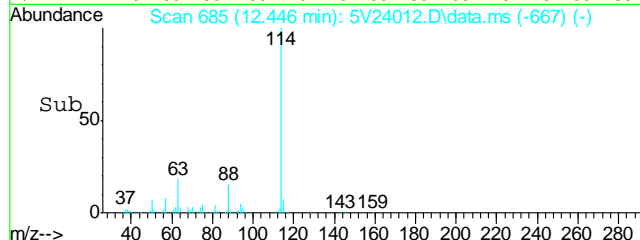
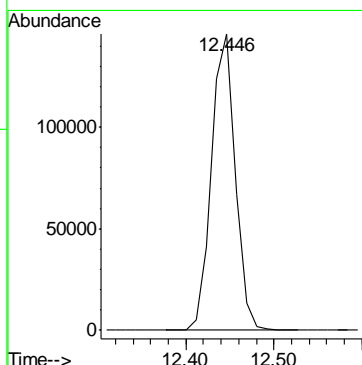
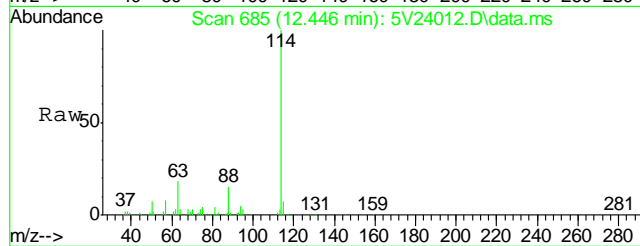
#33  
1,2-Dichloroethane-d4  
Concen: 48.69 ug/l  
RT: 12.024 min Scan# 648  
Delta R.T. 0.000 min  
Lab File: 5V24012.D  
Acq: 4 Oct 2012 3:23 pm

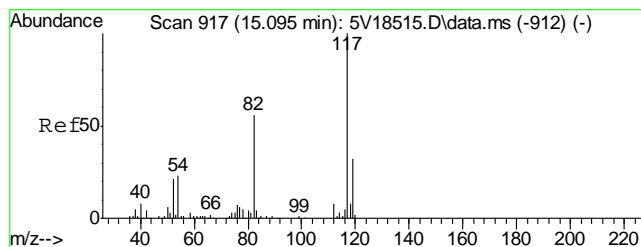
Tgt Ion:102 Resp: 18920



#35  
1,4-Difluorobenzene  
Concen: 50.00 ug/l  
RT: 12.446 min Scan# 685  
Delta R.T. 0.000 min  
Lab File: 5V24012.D  
Acq: 4 Oct 2012 3:23 pm

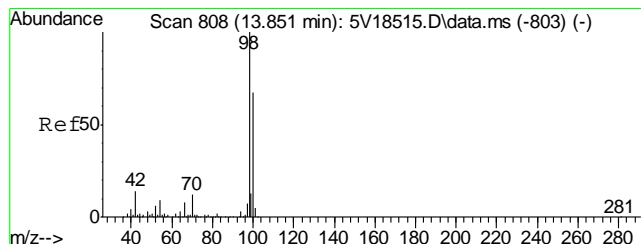
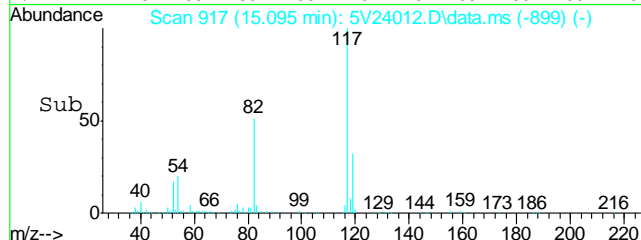
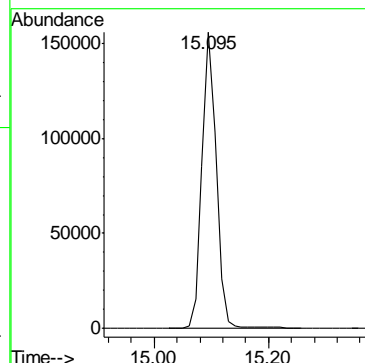
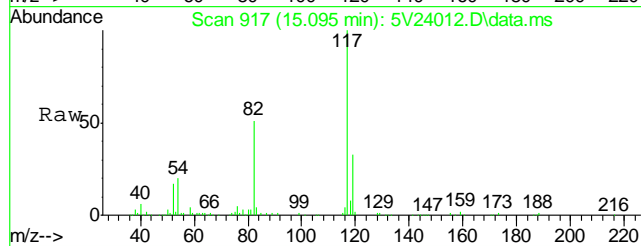
Tgt Ion:114 Resp: 273333





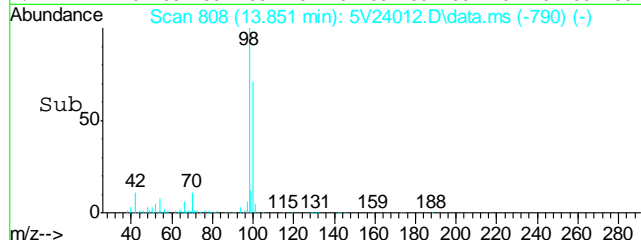
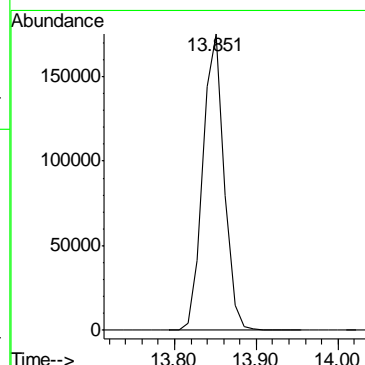
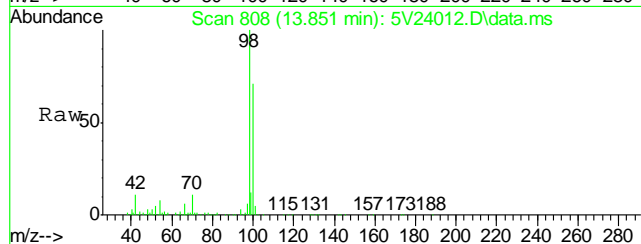
#53  
Chlorobenzene-d5  
Concen: 50.00 ug/l  
RT: 15.095 min Scan# 917  
Delta R.T. 0.000 min  
Lab File: 5V24012.D  
Acq: 4 Oct 2012 3:23 pm

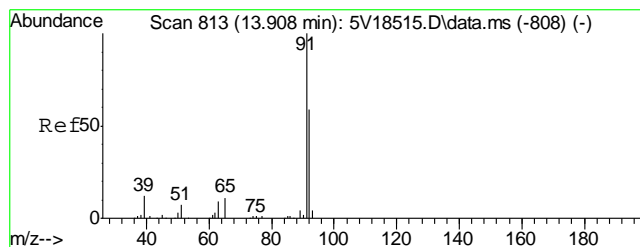
Tgt Ion:117 Resp: 268735



#61  
Toluene-d8  
Concen: 49.65 ug/l  
RT: 13.851 min Scan# 808  
Delta R.T. 0.000 min  
Lab File: 5V24012.D  
Acq: 4 Oct 2012 3:23 pm

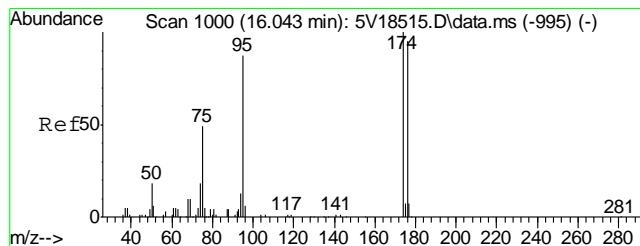
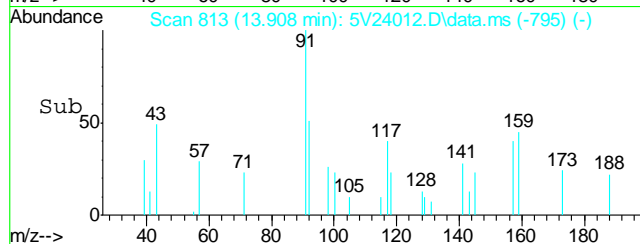
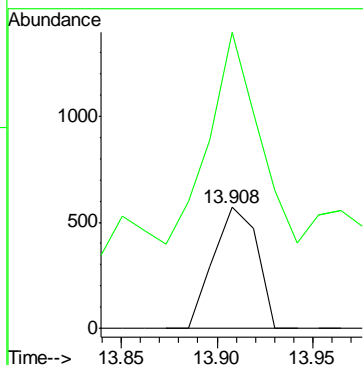
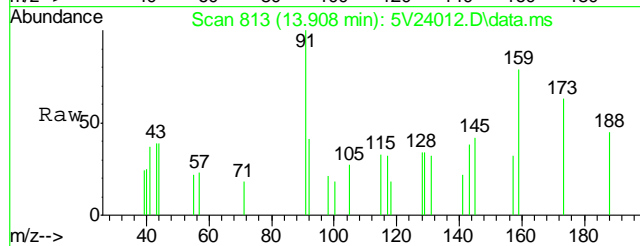
Tgt Ion: 98 Resp: 316445





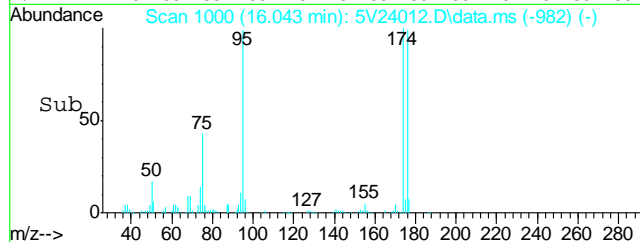
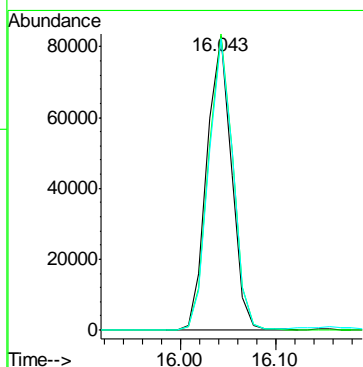
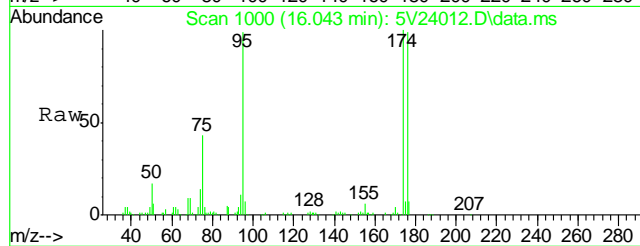
#62  
Toluene  
Concen: 0.16 ug/l  
RT: 13.908 min Scan# 813  
Delta R.T. 0.000 min  
Lab File: 5V24012.D  
Acq: 4 Oct 2012 3:23 pm

Tgt Ion	Ratio	Lower	Upper
92	100		
91	266.0	149.8	189.8#

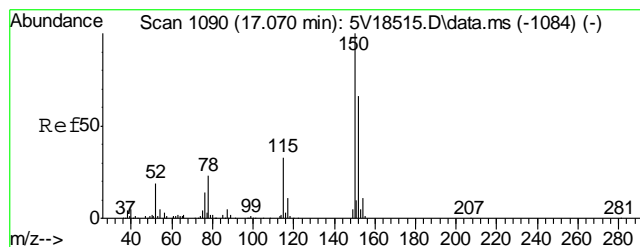


#69  
4-Bromofluorobenzene  
Concen: 50.87 ug/l  
RT: 16.043 min Scan# 1000  
Delta R.T. 0.000 min  
Lab File: 5V24012.D  
Acq: 4 Oct 2012 3:23 pm

Tgt Ion	Ratio	Lower	Upper
95	100		
174	99.1	77.1	117.1
176	97.7	73.4	113.4

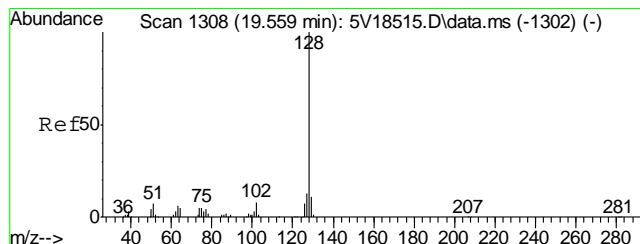
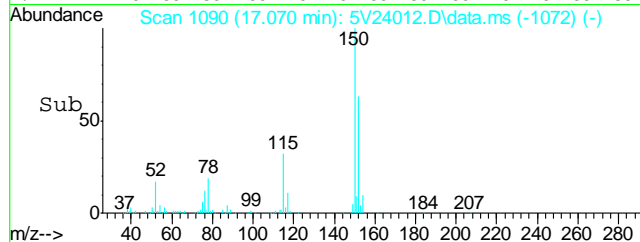
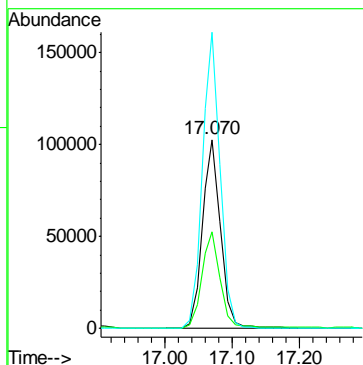
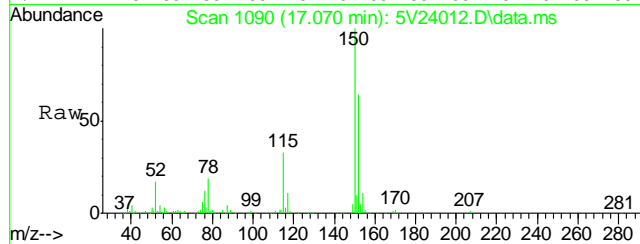






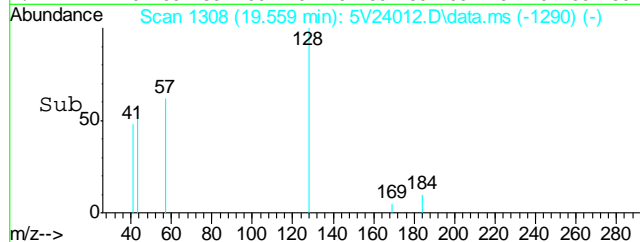
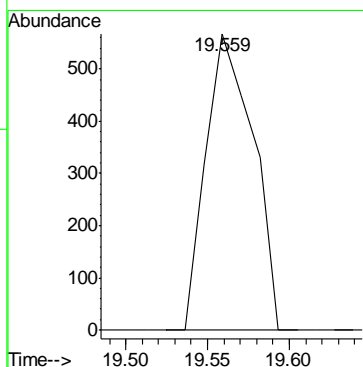
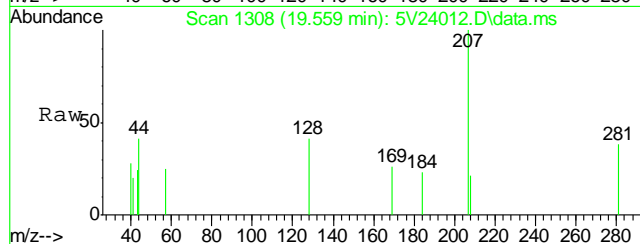
#74  
 1,4-Dichlorobenzene-d4  
 Concen: 50.00 ug/l  
 RT: 17.070 min Scan# 1090  
 Delta R.T. 0.000 min  
 Lab File: 5V24012.D  
 Acq: 4 Oct 2012 3:23 pm

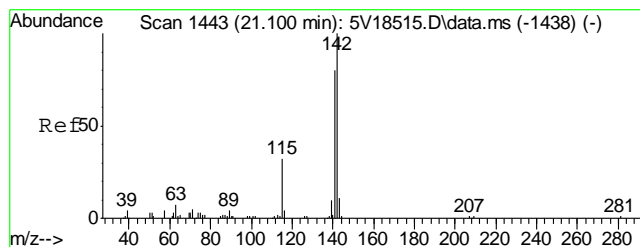
Tgt Ion	Ratio	Lower	Upper
152	100		
115	53.4	41.4	62.0
150	153.0	153.9	230.9#



#91  
 Naphthalene  
 Concen: 0.10 ug/l  
 RT: 19.559 min Scan# 1308  
 Delta R.T. 0.000 min  
 Lab File: 5V24012.D  
 Acq: 4 Oct 2012 3:23 pm

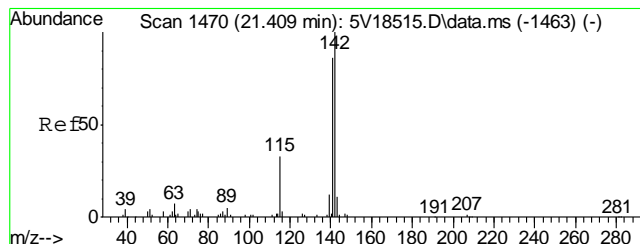
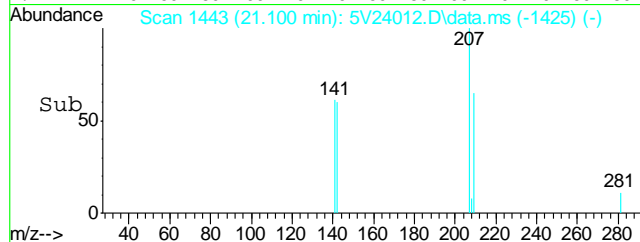
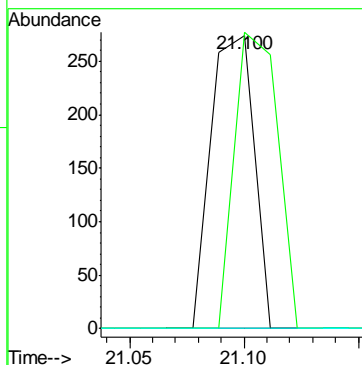
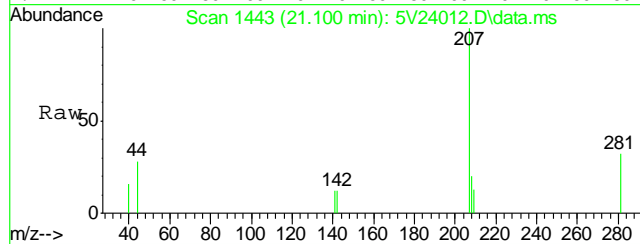
Tgt Ion:128 Resp: 1141





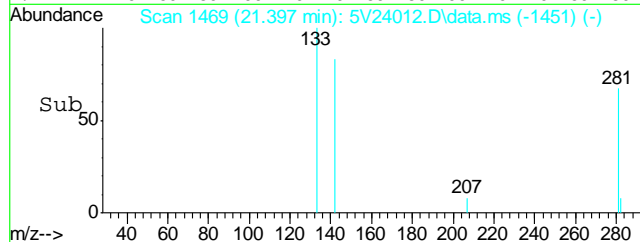
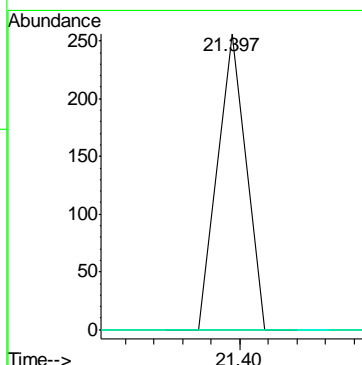
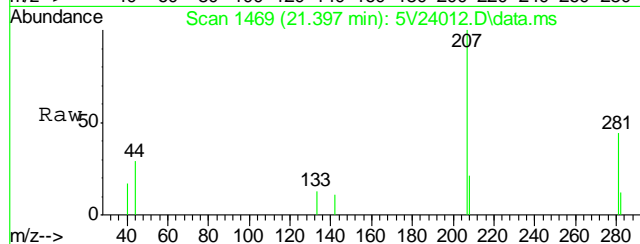
#94  
2-Methylnaphthalene  
Concen: 0.97 ug/l  
RT: 21.100 min Scan# 1443  
Delta R.T. 0.000 min  
Lab File: 5V24012.D  
Acq: 4 Oct 2012 3:23 pm

Tgt Ion	Ratio	Lower	Upper
142	100		
141	100.3	66.2	99.4#
115	0.0	25.9	38.9#



#95  
1-Methylnaphthalene  
Concen: 0.63 ug/l  
RT: 21.397 min Scan# 1469  
Delta R.T. 0.001 min  
Lab File: 5V24012.D  
Acq: 4 Oct 2012 3:23 pm

Tgt Ion	Ratio	Lower	Upper
142	100		
141	0.0	68.9	103.3#
115	0.0	27.3	40.9#



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5100412.S\  
 Data File : 5V24013.D  
 Acq On : 4 Oct 2012 3:56 pm  
 Operator : BRETD  
 Sample : D39442-2  
 Misc : MS4754,V5V1460,5.023,,100,5,1  
 ALS Vial : 13 Sample Multiplier: 1

Quant Time: Oct 05 08:34:01 2012  
 Quant Method : C:\msdchem\1\METHODS\V5AP1442TVH1442.M  
 Quant Title : 8260  
 QLast Update : Fri Sep 07 10:53:51 2012  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	158727	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.446	114	212423	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.095	117	205922	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.070	152	145330	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.024	102	15332	50.36	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	100.72%
61) Toluene-d8	13.851	98	242643	49.68	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	99.36%
69) 4-Bromofluorobenzene	16.043	95	108453	48.76	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	97.52%

Target Compounds

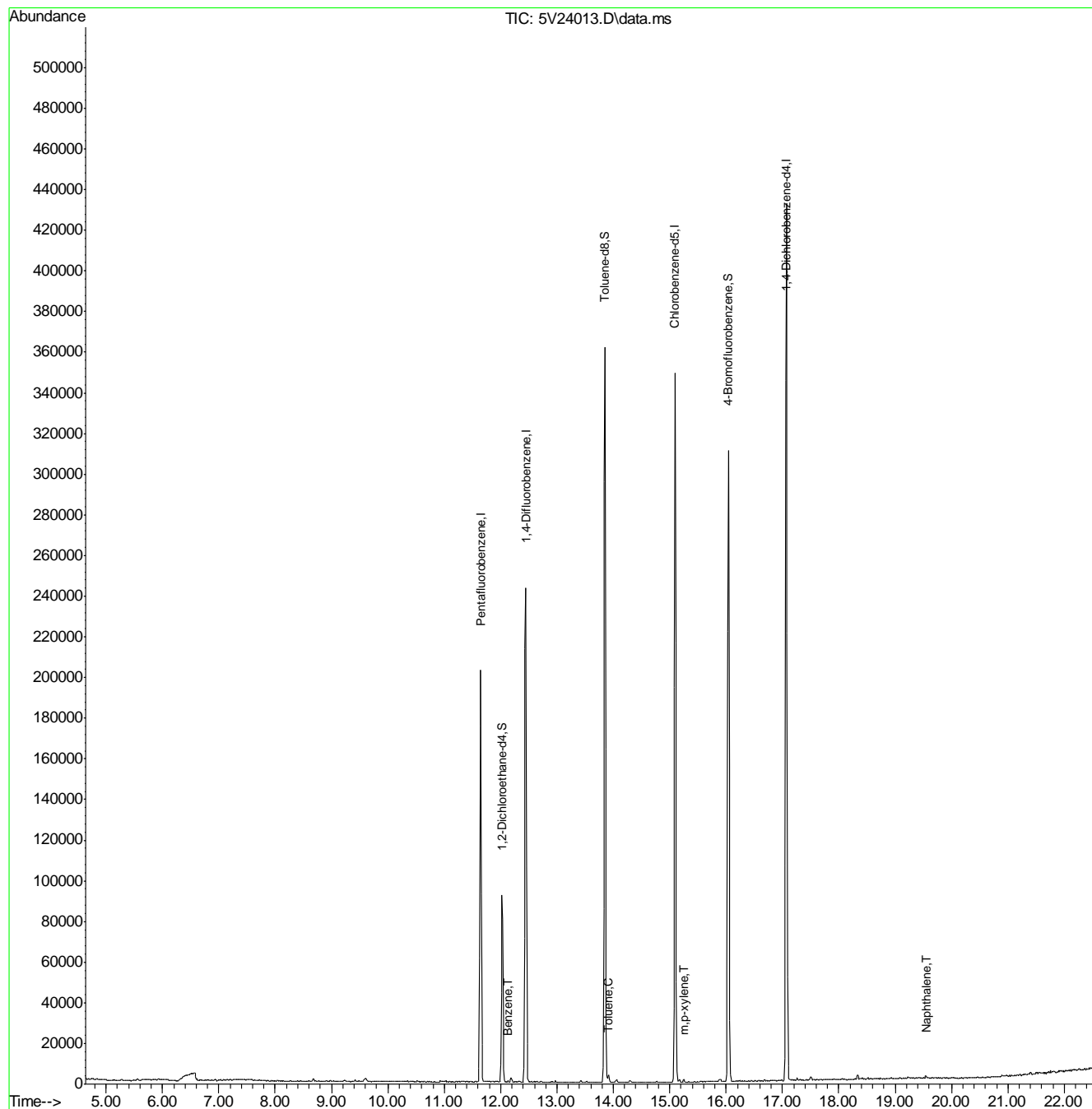
						Qvalue
50) Benzene	12.127	78	531	0.08	ug/l	100
62) Toluene	13.908	92	1091	0.25	ug/l	98
72) m,p-xylene	15.255	106	469	0.14	ug/l #	60
91) Naphthalene	19.559	128	401	0.05	ug/l	100

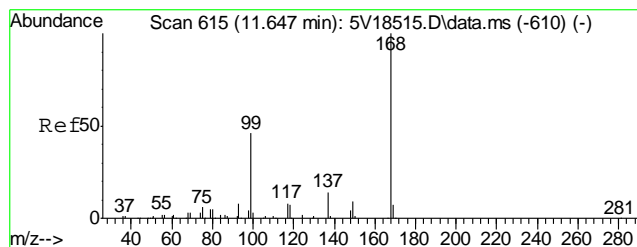
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5100412.S\  
Data File : 5V24013.D  
Acq On : 4 Oct 2012 3:56 pm  
Operator : BRETD  
Sample : D39442-2  
Misc : MS4754,V5V1460,5.023,,100,5,1  
ALS Vial : 13 Sample Multiplier: 1

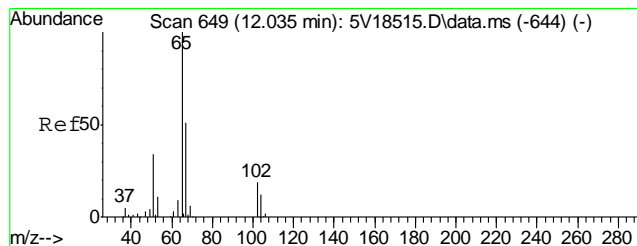
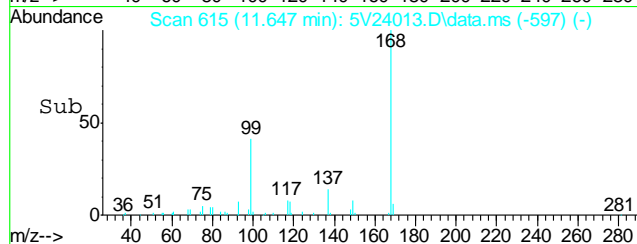
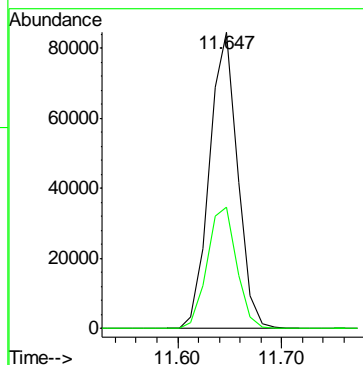
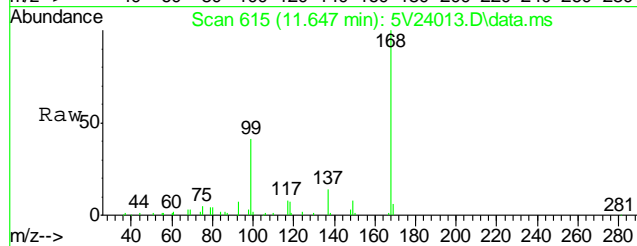
Quant Time: Oct 05 08:34:01 2012  
Quant Method : C:\msdchem\1\METHODS\V5AP1442TVH1442.M  
Quant Title : 8260  
QLast Update : Fri Sep 07 10:53:51 2012  
Response via : Initial Calibration





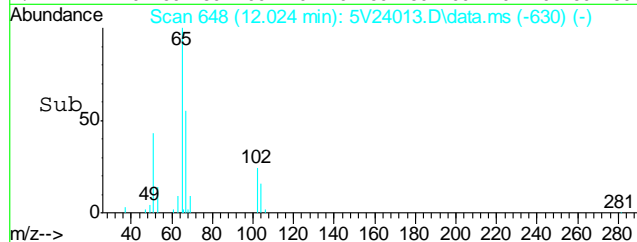
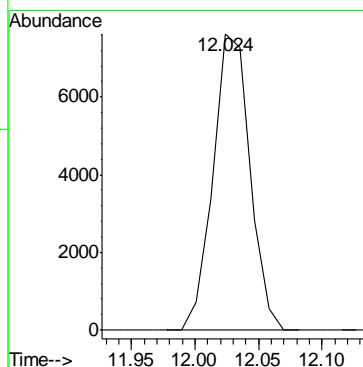
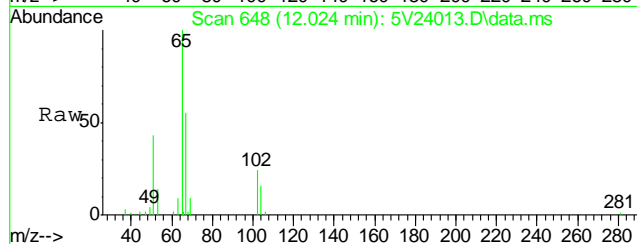
#2  
Pentafluorobenzene  
Concen: 50.00 ug/l  
RT: 11.647 min Scan# 615  
Delta R.T. 0.000 min  
Lab File: 5V24013.D  
Acq: 4 Oct 2012 3:56 pm

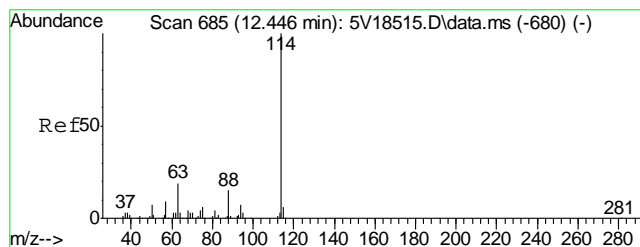
Tgt Ion	Ratio	Lower	Upper
168	100		
99	43.1	37.4	56.2



#33  
1,2-Dichloroethane-d4  
Concen: 50.36 ug/l  
RT: 12.024 min Scan# 648  
Delta R.T. 0.000 min  
Lab File: 5V24013.D  
Acq: 4 Oct 2012 3:56 pm

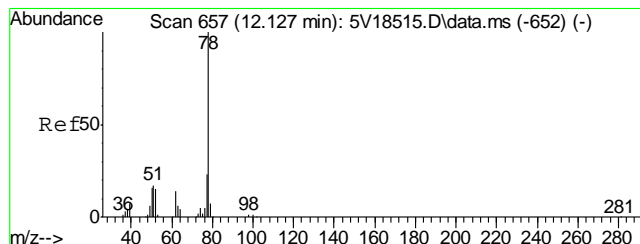
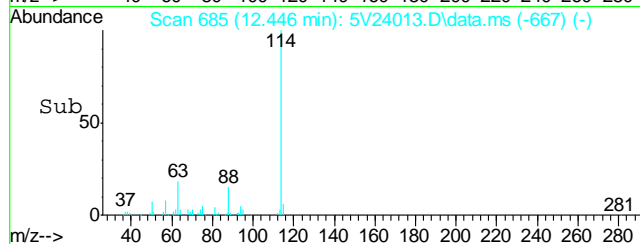
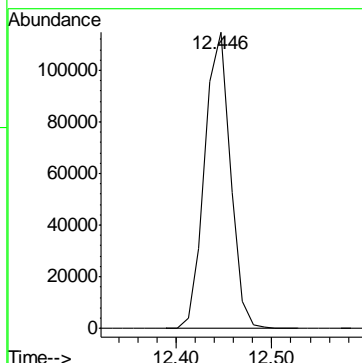
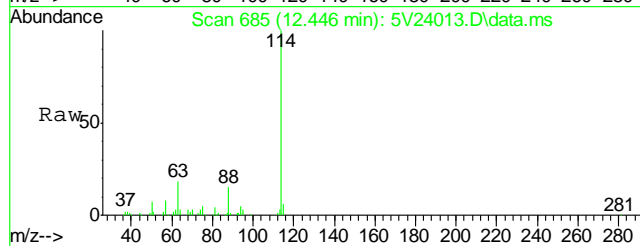
Tgt Ion:102 Resp: 15332





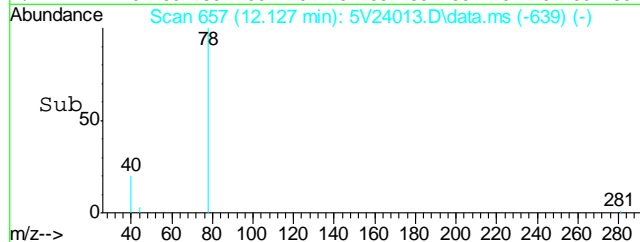
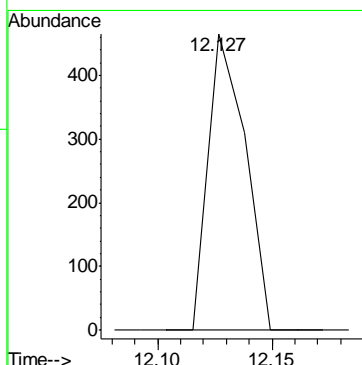
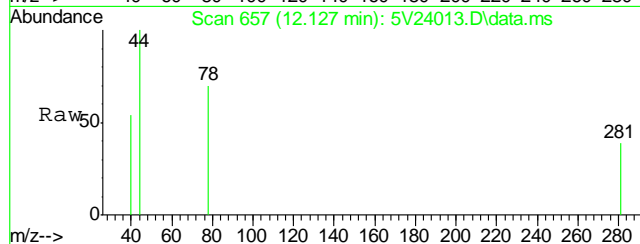
#35  
1,4-Difluorobenzene  
Concen: 50.00 ug/l  
RT: 12.446 min Scan# 685  
Delta R.T. 0.000 min  
Lab File: 5V24013.D  
Acq: 4 Oct 2012 3:56 pm

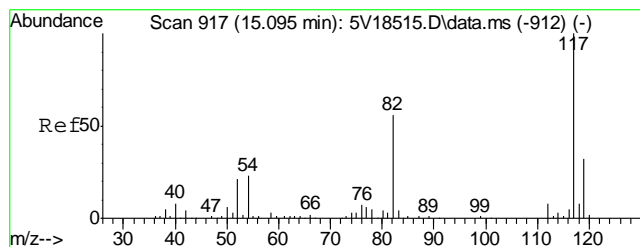
Tgt Ion: 114 Resp: 212423



#50  
Benzene  
Concen: 0.08 ug/l  
RT: 12.127 min Scan# 657  
Delta R.T. 0.000 min  
Lab File: 5V24013.D  
Acq: 4 Oct 2012 3:56 pm

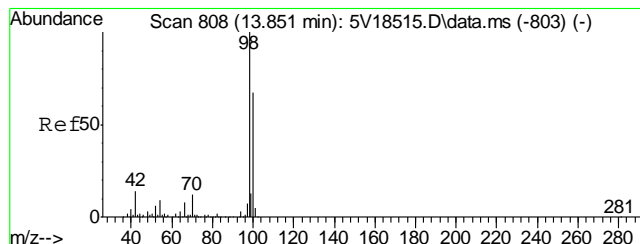
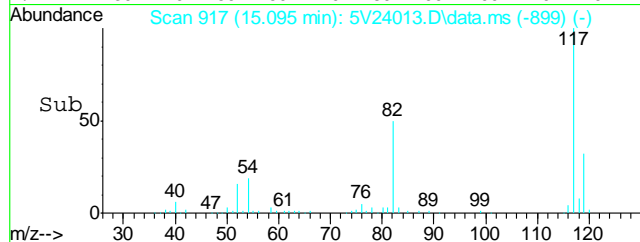
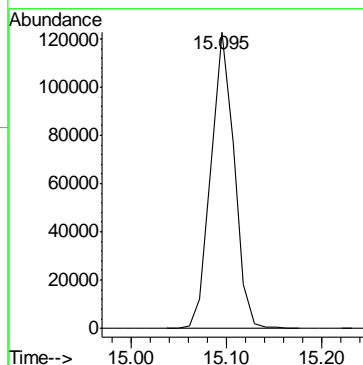
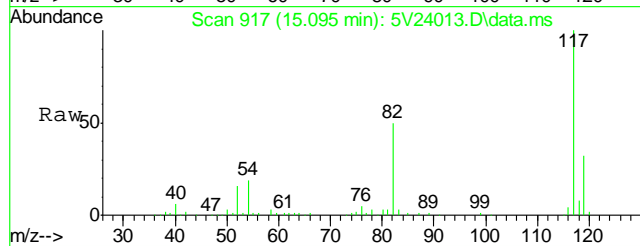
Tgt Ion: 78 Resp: 531





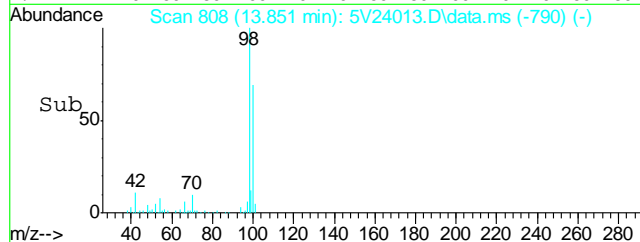
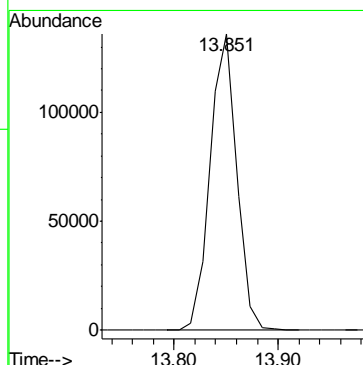
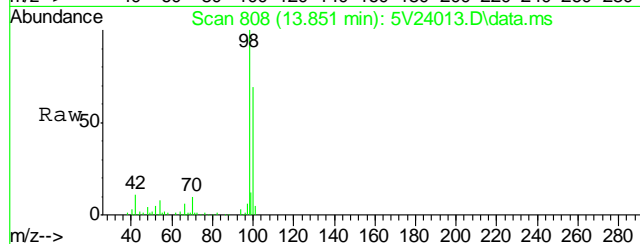
#53  
Chlorobenzene-d5  
Concen: 50.00 ug/l  
RT: 15.095 min Scan# 917  
Delta R.T. 0.000 min  
Lab File: 5V24013.D  
Acq: 4 Oct 2012 3:56 pm

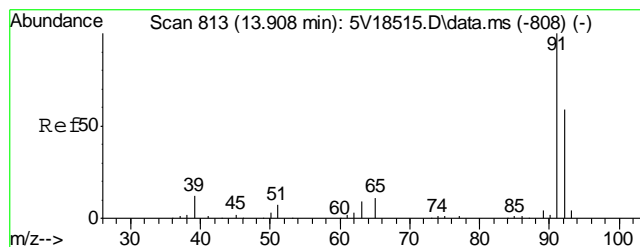
Tgt Ion:117 Resp: 205922



#61  
Toluene-d8  
Concen: 49.68 ug/l  
RT: 13.851 min Scan# 808  
Delta R.T. 0.000 min  
Lab File: 5V24013.D  
Acq: 4 Oct 2012 3:56 pm

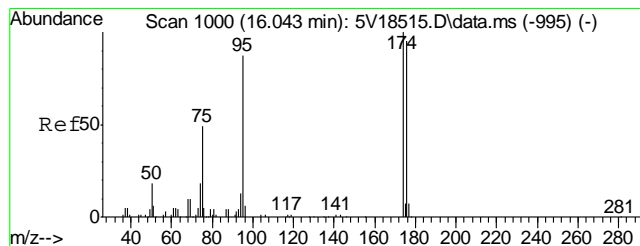
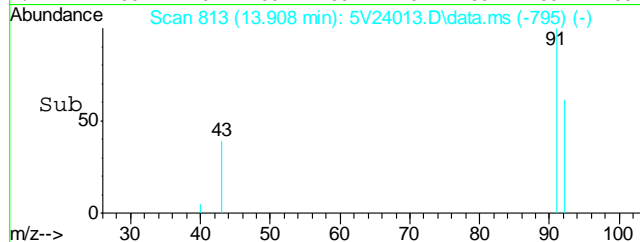
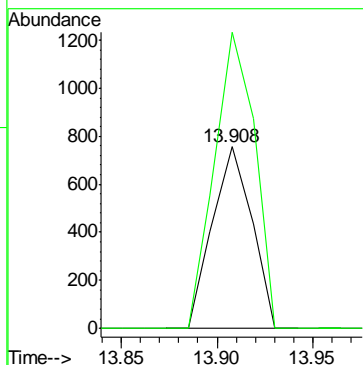
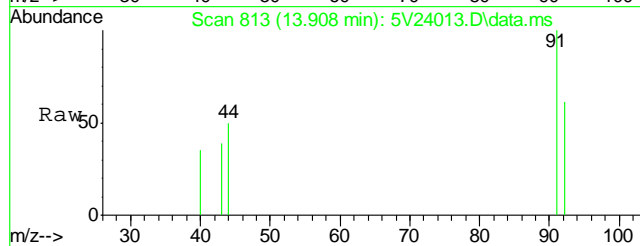
Tgt Ion: 98 Resp: 242643





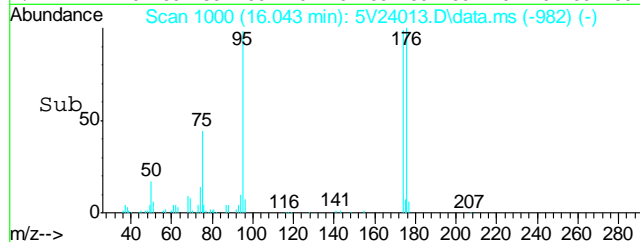
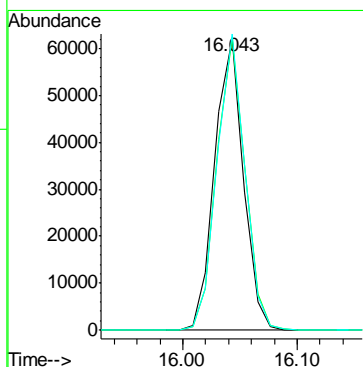
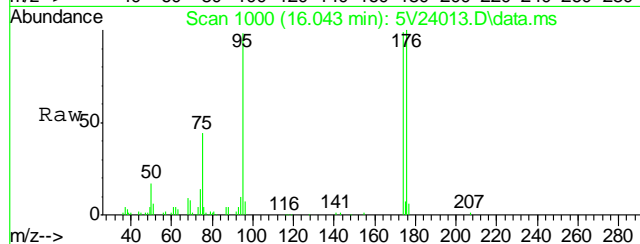
#62  
Toluene  
Concen: 0.25 ug/l  
RT: 13.908 min Scan# 813  
Delta R.T. 0.000 min  
Lab File: 5V24013.D  
Acq: 4 Oct 2012 3:56 pm

Tgt Ion	Ratio	Lower	Upper
92	100		
91	166.7	149.8	189.8

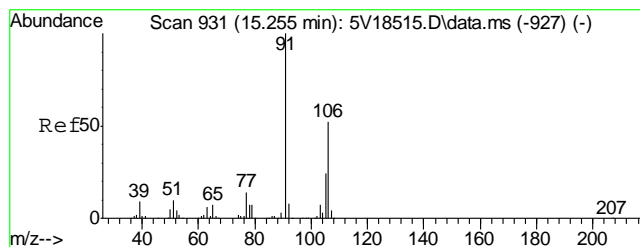


#69  
4-Bromofluorobenzene  
Concen: 48.76 ug/l  
RT: 16.043 min Scan# 1000  
Delta R.T. 0.000 min  
Lab File: 5V24013.D  
Acq: 4 Oct 2012 3:56 pm

Tgt Ion	Ratio	Lower	Upper
95	100		
174	98.8	77.1	117.1
176	98.8	73.4	113.4

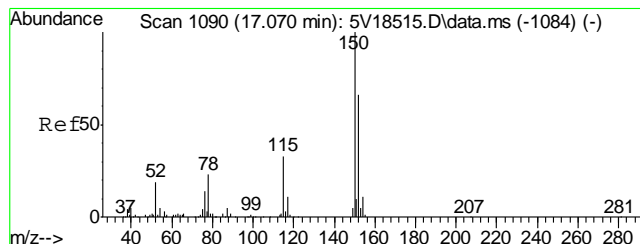
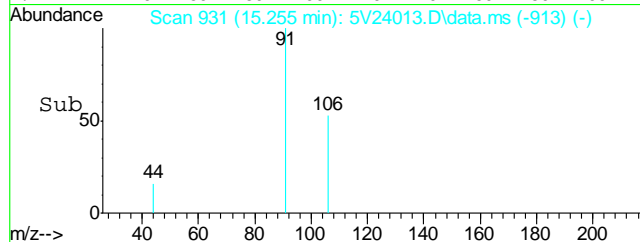
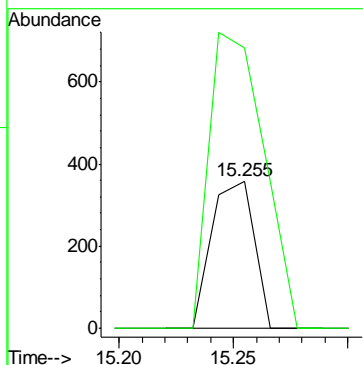
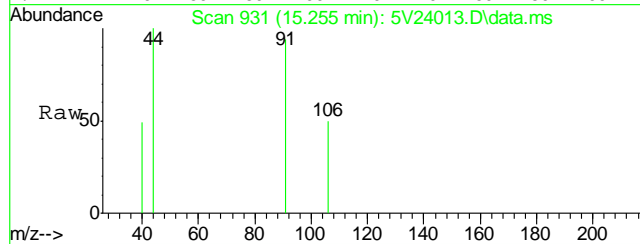






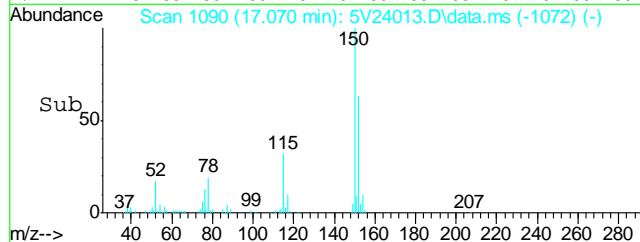
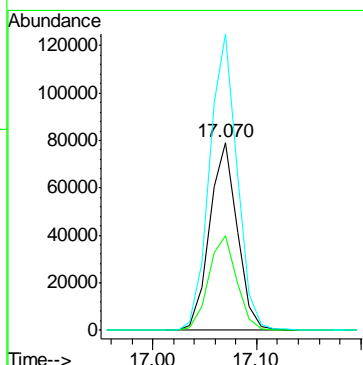
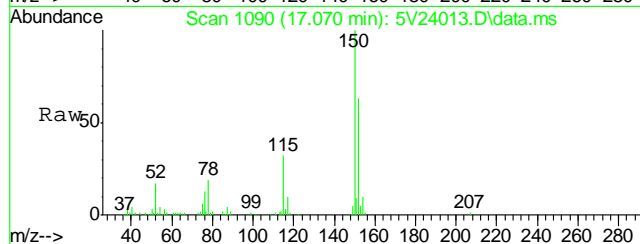
#72  
m,p-xylene  
Concen: 0.14 ug/l  
RT: 15.255 min Scan# 931  
Delta R.T. 0.000 min  
Lab File: 5V24013.D  
Acq: 4 Oct 2012 3:56 pm

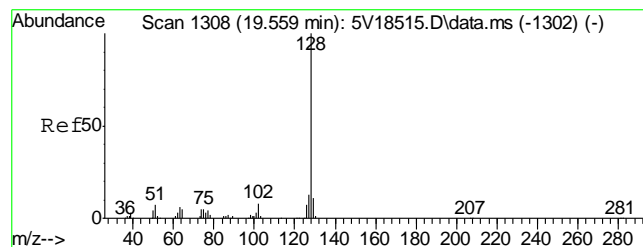
Tgt Ion:106 Resp: 469  
Ion Ratio Lower Upper  
106 100  
91 257.4 177.1 217.1#



#74  
1,4-Dichlorobenzene-d4  
Concen: 50.00 ug/l  
RT: 17.070 min Scan# 1090  
Delta R.T. 0.000 min  
Lab File: 5V24013.D  
Acq: 4 Oct 2012 3:56 pm

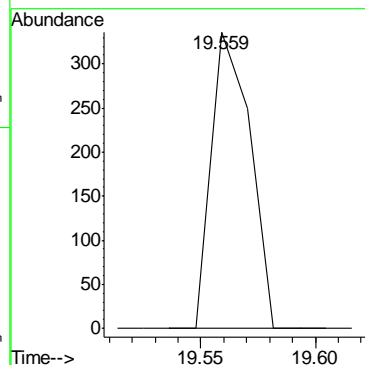
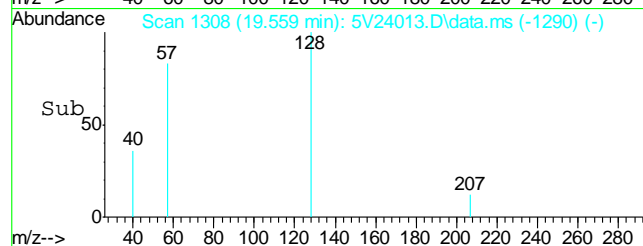
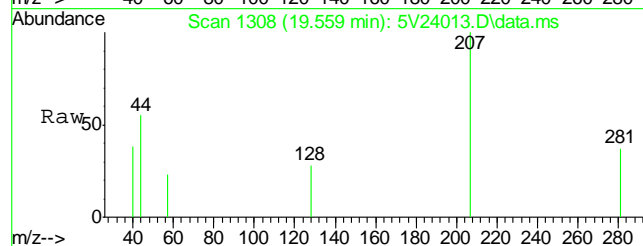
Tgt Ion:152 Resp: 145330  
Ion Ratio Lower Upper  
152 100  
115 51.4 41.4 62.0  
150 158.4 153.9 230.9





#91  
Naphthalene  
Concen: 0.05 ug/l  
RT: 19.559 min Scan# 1308  
Delta R.T. 0.000 min  
Lab File: 5V24013.D  
Acq: 4 Oct 2012 3:56 pm

Tgt Ion:128 Resp: 401



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5100412.S\  
Data File : 5V24003.D  
Acq On : 4 Oct 2012 10:17 am  
Operator : BRETD  
Sample : MB  
Misc : MS4754,V5V1460,5.00,,100,5,1  
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Oct 05 08:11:21 2012  
Quant Method : C:\msdchem\1\METHODS\V5AP1442TVH1442.M  
Quant Title : 8260  
QLast Update : Fri Sep 07 10:53:51 2012  
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	189393	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.446	114	255458	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.095	117	241814	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.070	152	158051	50.00	ug/l	0.00

## System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.035	102	18376	50.59	ug/l	0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	101.18%
61) Toluene-d8	13.850	98	291274	50.78	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	101.56%
69) 4-Bromofluorobenzene	16.042	95	114825	43.96	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	87.92%

## Target Compounds

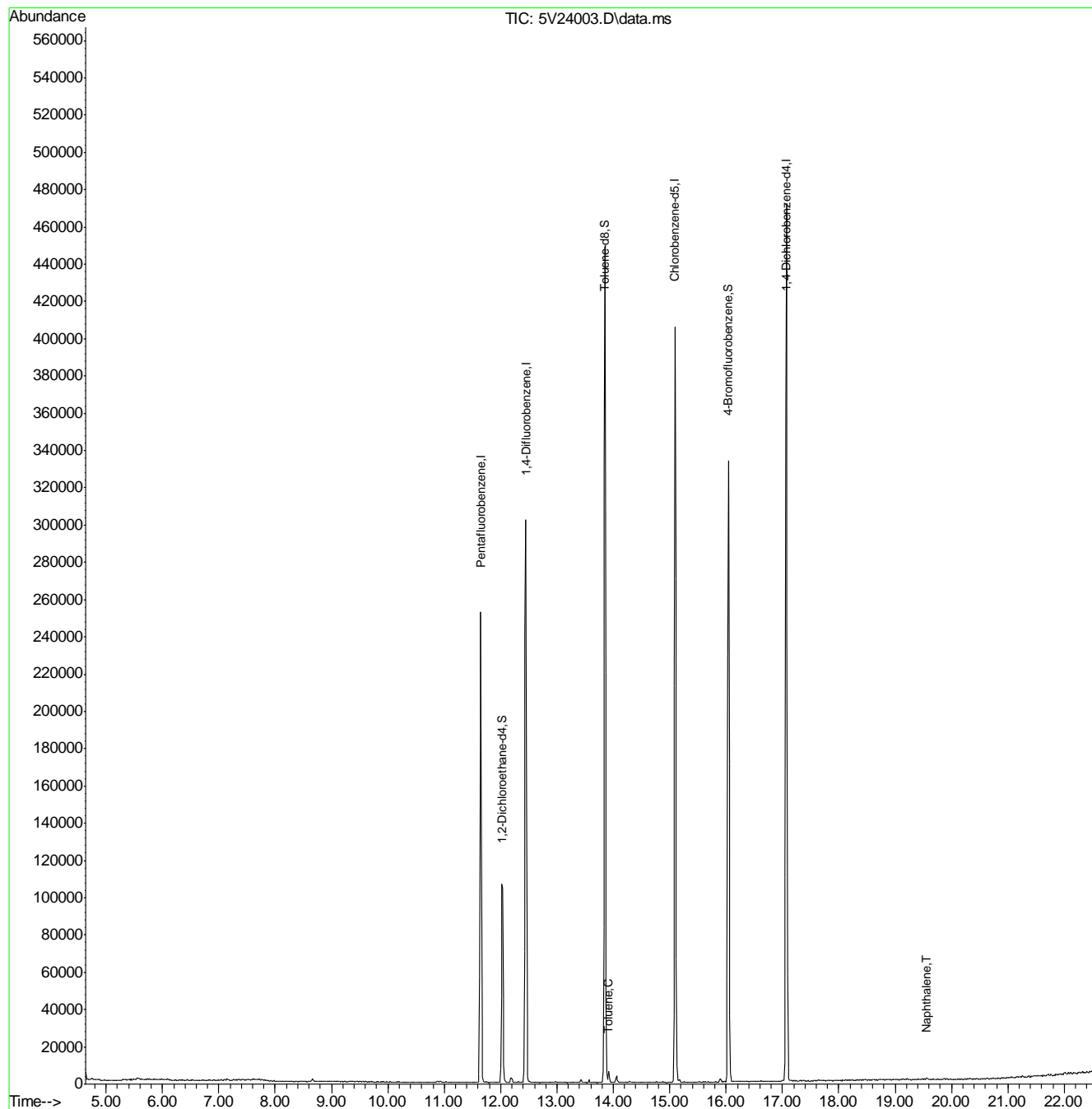
						Qvalue
62) Toluene	13.907	92	264	0.05	ug/l	# 1
91) Naphthalene	19.559	128	1536	0.17	ug/l	100

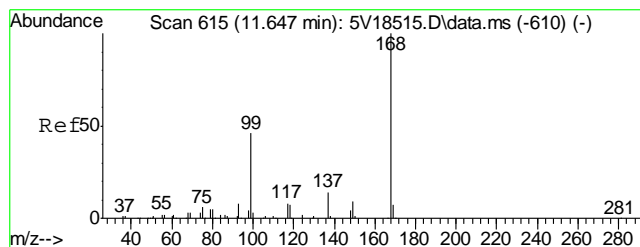
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5100412.S\  
Data File : 5V24003.D  
Acq On : 4 Oct 2012 10:17 am  
Operator : BRETD  
Sample : MB  
Misc : MS4754,V5V1460,5.00,,100,5,1  
ALS Vial : 3 Sample Multiplier: 1

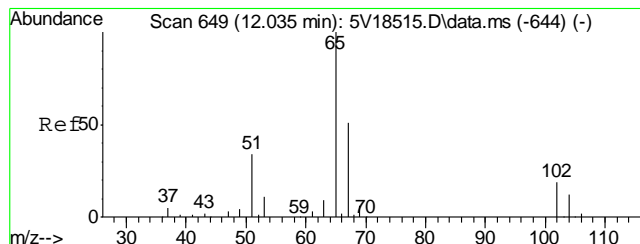
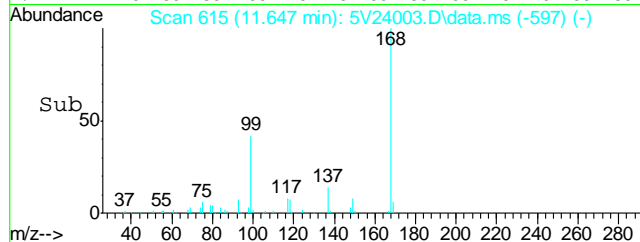
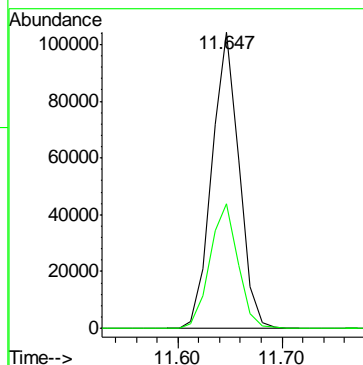
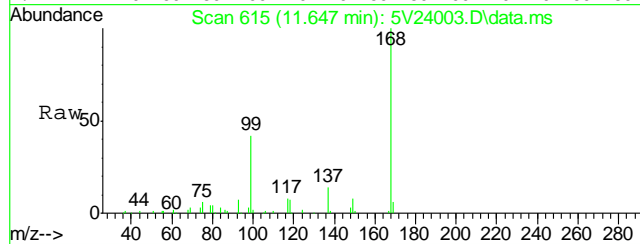
Quant Time: Oct 05 08:11:21 2012  
Quant Method : C:\msdchem\1\METHODS\V5AP1442TVH1442.M  
Quant Title : 8260  
QLast Update : Fri Sep 07 10:53:51 2012  
Response via : Initial Calibration





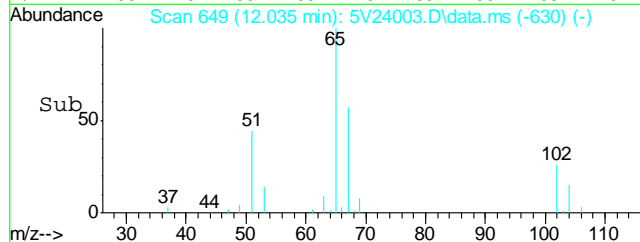
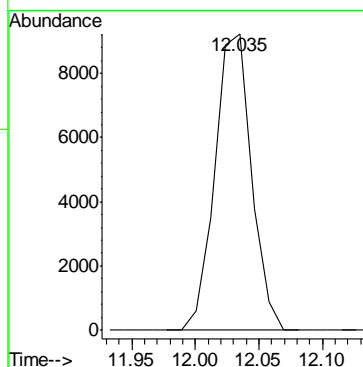
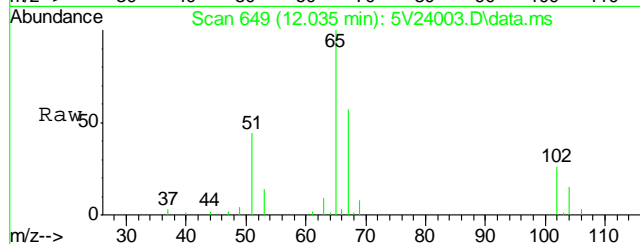
#2  
Pentafluorobenzene  
Concen: 50.00 ug/l  
RT: 11.647 min Scan# 615  
Delta R.T. 0.000 min  
Lab File: 5V24003.D  
Acq: 4 Oct 2012 10:17 am

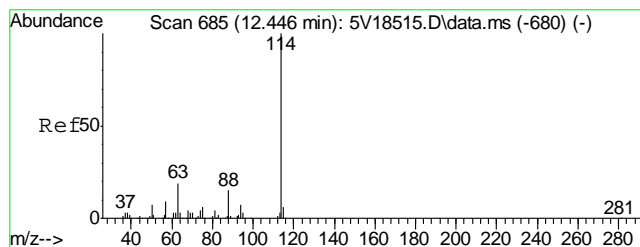
Tgt Ion:168 Resp: 189393  
Ion Ratio Lower Upper  
168 100  
99 43.2 37.4 56.2



#33  
1,2-Dichloroethane-d4  
Concen: 50.59 ug/l  
RT: 12.035 min Scan# 649  
Delta R.T. 0.011 min  
Lab File: 5V24003.D  
Acq: 4 Oct 2012 10:17 am

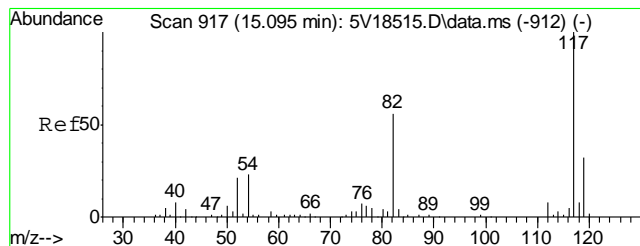
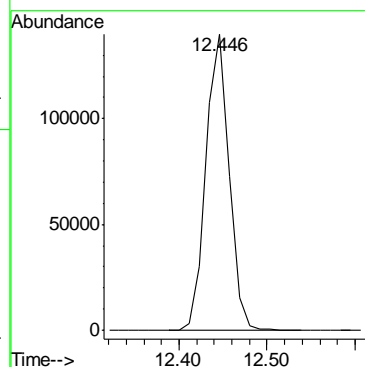
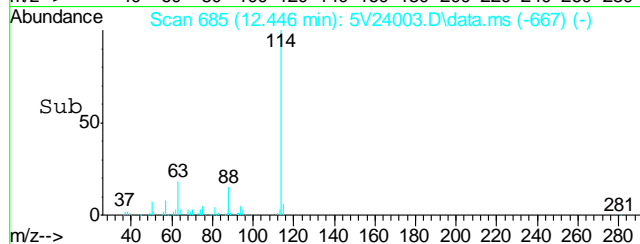
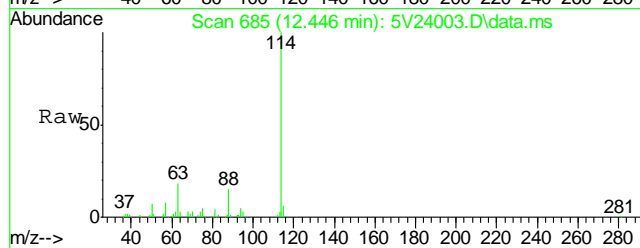
Tgt Ion:102 Resp: 18376





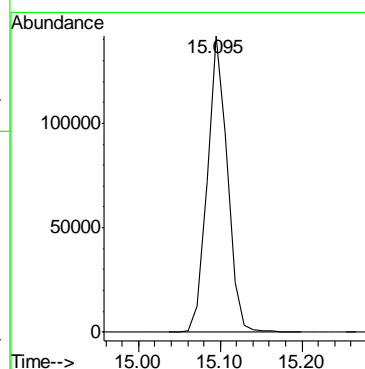
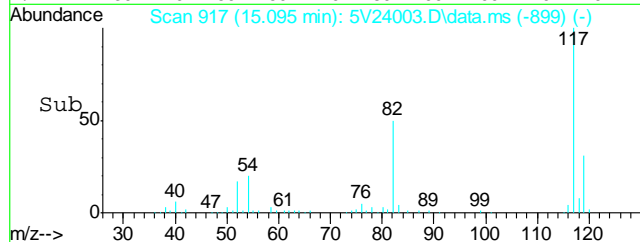
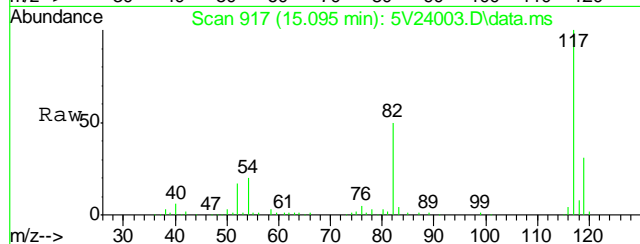
#35  
1,4-Difluorobenzene  
Concen: 50.00 ug/l  
RT: 12.446 min Scan# 685  
Delta R.T. 0.000 min  
Lab File: 5V24003.D  
Acq: 4 Oct 2012 10:17 am

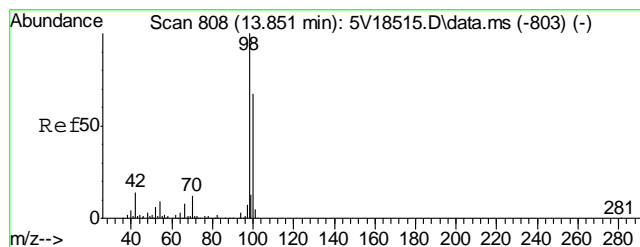
Tgt Ion:114 Resp: 255458



#53  
Chlorobenzene-d5  
Concen: 50.00 ug/l  
RT: 15.095 min Scan# 917  
Delta R.T. 0.000 min  
Lab File: 5V24003.D  
Acq: 4 Oct 2012 10:17 am

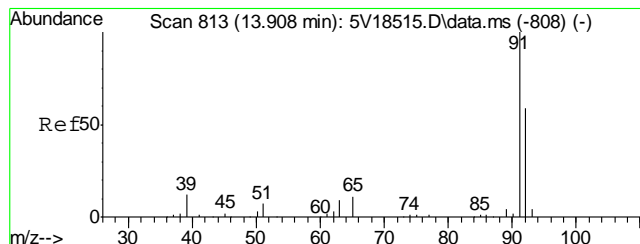
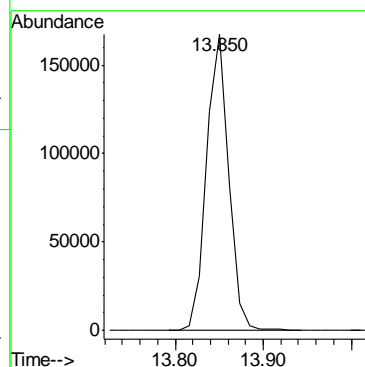
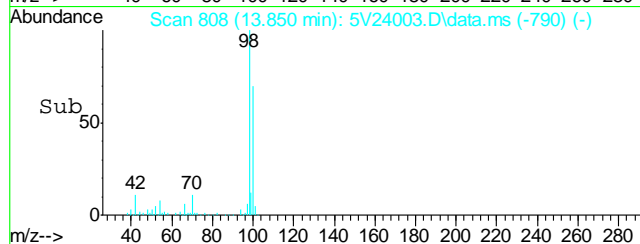
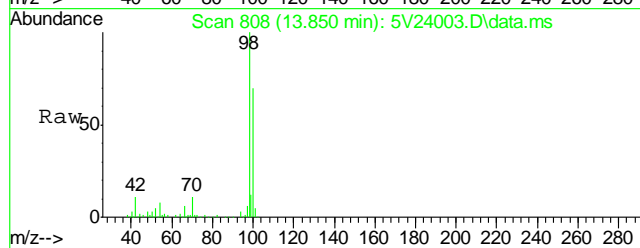
Tgt Ion:117 Resp: 241814





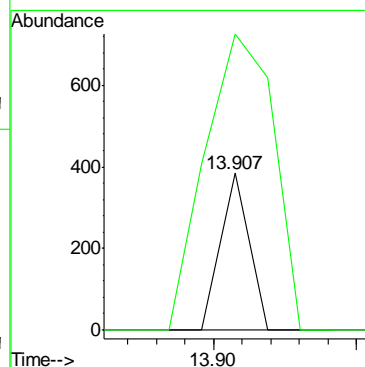
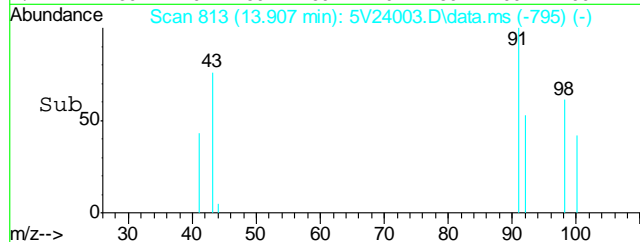
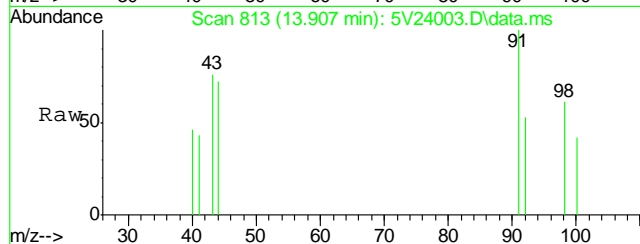
#61  
Toluene-d8  
Concen: 50.78 ug/l  
RT: 13.850 min Scan# 808  
Delta R.T. 0.000 min  
Lab File: 5V24003.D  
Acq: 4 Oct 2012 10:17 am

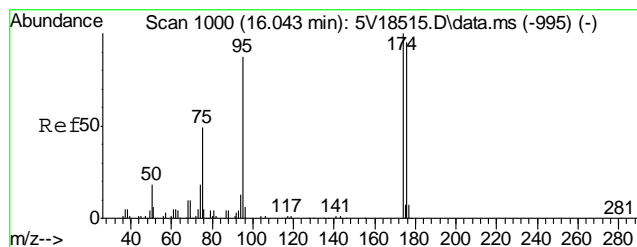
Tgt Ion: 98 Resp: 291274



#62  
Toluene  
Concen: 0.05 ug/l  
RT: 13.907 min Scan# 813  
Delta R.T. 0.000 min  
Lab File: 5V24003.D  
Acq: 4 Oct 2012 10:17 am

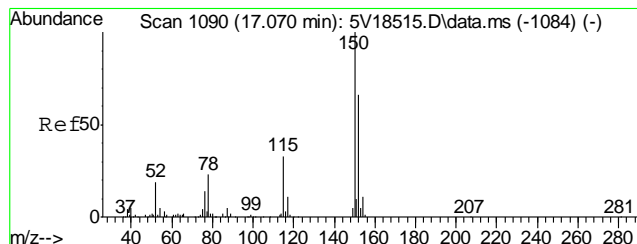
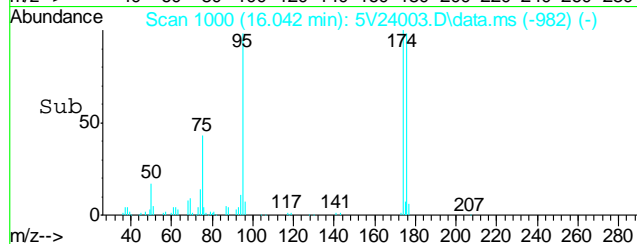
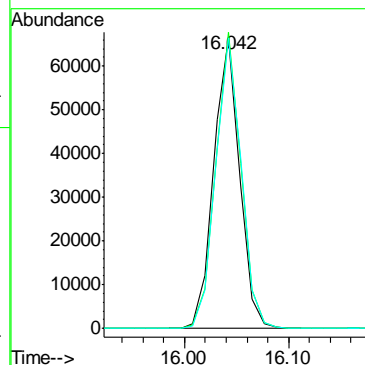
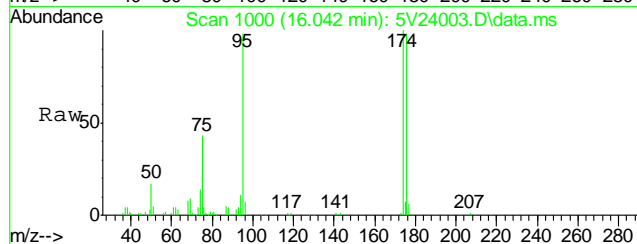
Tgt Ion: 92 Resp: 264  
Ion Ratio Lower Upper  
92 100  
91 454.9 149.8 189.8#





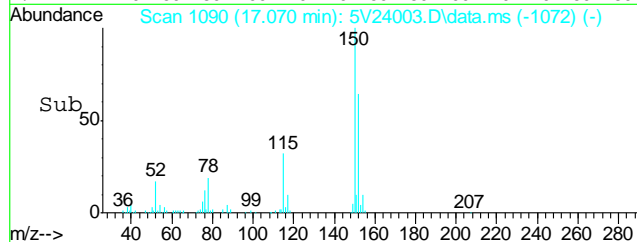
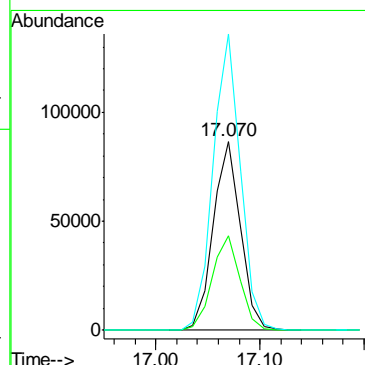
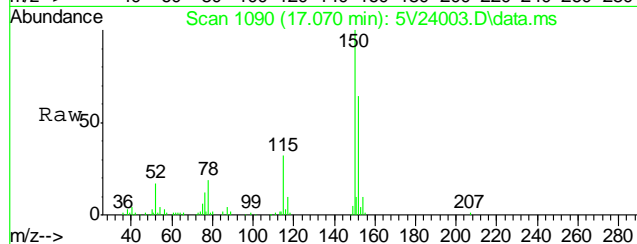
#69  
4-Bromofluorobenzene  
Concen: 43.96 ug/l  
RT: 16.042 min Scan# 1000  
Delta R.T. 0.000 min  
Lab File: 5V24003.D  
Acq: 4 Oct 2012 10:17 am

Tgt Ion	Ratio	Lower	Upper
95	100		
174	99.7	77.1	117.1
176	99.2	73.4	113.4

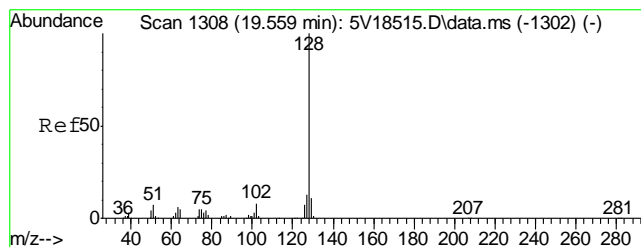


#74  
1,4-Dichlorobenzene-d4  
Concen: 50.00 ug/l  
RT: 17.070 min Scan# 1090  
Delta R.T. 0.000 min  
Lab File: 5V24003.D  
Acq: 4 Oct 2012 10:17 am

Tgt Ion	Ratio	Lower	Upper
152	100		
115	50.6	41.4	62.0
150	157.1	153.9	230.9

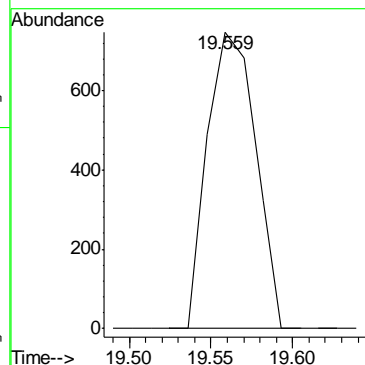
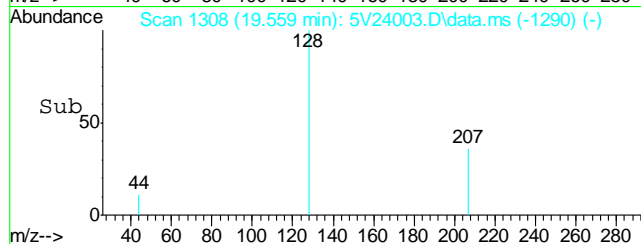
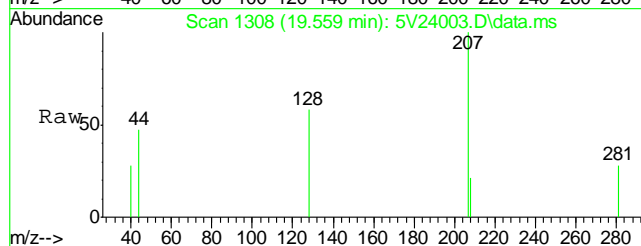






#91  
Naphthalene  
Concen: 0.17 ug/l  
RT: 19.559 min Scan# 1308  
Delta R.T. 0.000 min  
Lab File: 5V24003.D  
Acq: 4 Oct 2012 10:17 am

Tgt Ion:128 Resp: 1536



## GC/MS Semi-volatiles

### QC Data Summaries

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Includes the following where applicable:

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

**Method Blank Summary**

Page 1 of 1

**Job Number:** D39442  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6746-MB	3G11500.D	1	10/04/12	DC	10/04/12	OP6746	E3G539

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

D39442-1, D39442-2

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	
50-32-8	Benzo(a)pyrene	ND	8.3	4.3	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	8.3	4.3	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	8.3	4.3	ug/kg	
218-01-9	Chrysene	ND	8.3	4.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	8.3	4.3	ug/kg	
206-44-0	Fluoranthene	ND	8.3	4.3	ug/kg	
86-73-7	Fluorene	ND	8.3	4.3	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	8.3	4.3	ug/kg	
91-20-3	Naphthalene	ND	12	10	ug/kg	
129-00-0	Pyrene	ND	8.3	4.3	ug/kg	

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	102% 10-145%
321-60-8	2-Fluorobiphenyl	91% 10-130%
1718-51-0	Terphenyl-d14	109% 22-130%

8.1.1

8

## Blank Spike Summary

Page 1 of 1

**Job Number:** D39442  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6746-BS	3G11501.D	1	10/04/12	DC	10/04/12	OP6746	E3G539

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D39442-1, D39442-2

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	73.6	88	34-130
120-12-7	Anthracene	83.3	72.4	87	35-130
56-55-3	Benzo(a)anthracene	83.3	84.2	101	36-130
50-32-8	Benzo(a)pyrene	83.3	78.4	94	36-130
205-99-2	Benzo(b)fluoranthene	83.3	68.2	82	35-130
207-08-9	Benzo(k)fluoranthene	83.3	96.1	115	37-130
218-01-9	Chrysene	83.3	92.4	111	40-130
53-70-3	Dibenzo(a,h)anthracene	83.3	80.4	96	32-130
206-44-0	Fluoranthene	83.3	71.1	85	38-130
86-73-7	Fluorene	83.3	76.0	91	35-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	77.9	93	28-130
91-20-3	Naphthalene	83.3	77.4	93	35-130
129-00-0	Pyrene	83.3	89.7	108	37-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	105%	10-145%
321-60-8	2-Fluorobiphenyl	89%	10-130%
1718-51-0	Terphenyl-d14	107%	22-130%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D39442  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6746-MS	3G11503.D	1	10/04/12	DC	10/04/12	OP6746	E3G539
OP6746-MSD	3G11504.D	1	10/04/12	DC	10/04/12	OP6746	E3G539
D39441-1	3G11502.D	1	10/04/12	DC	10/04/12	OP6746	E3G539

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D39442-1, D39442-2

CAS No.	Compound	D39441-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		89.7	72.6	81	72.3	81	0	10-155/30
120-12-7	Anthracene	ND		89.7	77.8	87	76.3	85	2	10-155/30
56-55-3	Benzo(a)anthracene	ND		89.7	102	114	98.3	110	4	10-175/30
50-32-8	Benzo(a)pyrene	ND		89.7	83.8	93	79.5	89	5	10-164/30
205-99-2	Benzo(b)fluoranthene	ND		89.7	78.8	88	77.0	86	2	10-165/30
207-08-9	Benzo(k)fluoranthene	ND		89.7	98.3	110	96.9	108	1	10-178/30
218-01-9	Chrysene	ND		89.7	95.9	107	93.4	104	3	10-147/30
53-70-3	Dibenzo(a,h)anthracene	ND		89.7	86.3	96	81.3	91	6	10-144/30
206-44-0	Fluoranthene	ND		89.7	82.6	92	78.3	87	5	10-207/30
86-73-7	Fluorene	6.2	J	89.7	85.9	89	84.8	88	1	10-163/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		89.7	84.8	95	80.5	90	5	10-180/30
91-20-3	Naphthalene	35.0		89.7	93.2	65	96.1	68	3	10-198/30
129-00-0	Pyrene	ND		89.7	109	122	102	114	7	10-189/30

CAS No.	Surrogate Recoveries	MS	MSD	D39441-1	Limits
4165-60-0	Nitrobenzene-d5	74%	70%	68%	10-145%
321-60-8	2-Fluorobiphenyl	69%	67%	61%	10-130%
1718-51-0	Terphenyl-d14	92%	91%	88%	22-130%

\* = Outside of Control Limits.

GC/MS Semi-volatiles

Raw Data

6

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\100412\  
 Data File : 3g11505.D  
 Acq On : 4 Oct 2012 2:35 pm  
 Operator : DONC  
 Sample : D39442-1  
 Misc : OP6746,E3G539,30.03,,,1,1  
 ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 04 16:40:34 2012  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G533.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Wed Sep 26 13:36:23 2012  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.909	136	275125	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.628	164	158696	4.0000	ug/mL	0.00
15) Phenanthrene-d10	9.113	188	242229	4.0000	ug/mL	0.00
19) Chrysene-d12	11.746	240	195371	4.0000	ug/mL	0.00
24) Perylene-d12	13.178	264	128457	4.0000	ug/mL	0.01

## System Monitoring Compounds

2) Nitrobenzene-d5	5.223	82	1043294	43.4407	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	86.88%		
7) 2-Fluorobiphenyl	6.954	172	2556715	37.6935	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	75.38%		
21) Terphenyl-d14	10.696	244	1294690	45.2294	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	90.46%		

## Target Compounds

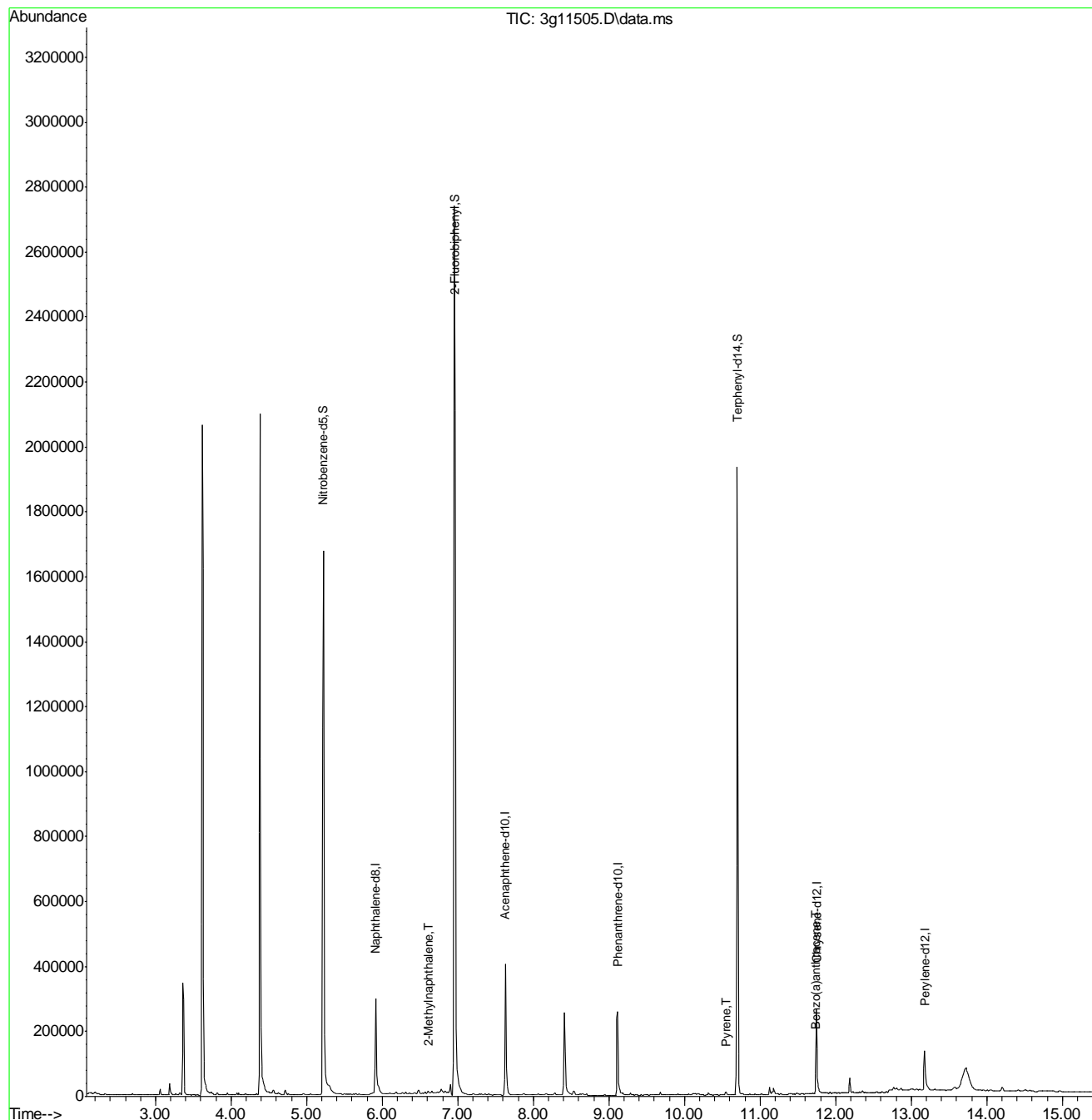
					Qvalue	
3) N-Nitrosodimethylamine	2.588	74	51	N.D.		
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d	
5) Naphthalene	5.934	128	3194	N.D.		
8) 2-Methylnaphthalene	6.607	142	4154	0.0817	ug/mL	95
9) 1-Methylnaphthalene	0.000	142	0	N.D.	d	
10) Acenaphthylene	7.486	152	244	N.D.		
11) Acenaphthene	7.628	154	851	N.D.		
12) Dibenzofuran	7.829	168	623	N.D.		
13) Fluorene	0.000	166	0	N.D.	d	
14) Diphenylamine	0.000	169	0	N.D.	d	
16) Phenanthrene	9.184	178	3288	N.D.		
17) Anthracene	9.184	178	3288	N.D.		
18) Fluoranthene	0.000	202	0	N.D.	d	
20) Pyrene	10.545	202	5121	0.0596	ug/mL	91
22) Benzo(a)anthracene	11.733	228	3719	0.0508	ug/mL#	82
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	13.115	252	2529	N.D.		
28) Indeno(1,2,3-cd)pyrene	14.503	276	3472	N.D.		
29) Dibenz(a,h)anthracene	14.514	278	2757	N.D.		
30) Benzo(g,h,i)perylene	14.871	276	2531	N.D.		

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

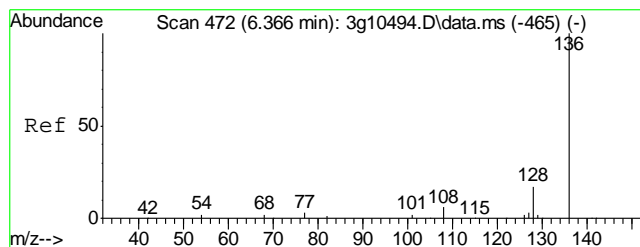
Quantitation Report (QT Reviewed)

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 Acq On : 4 Oct 2012 2:35 pm  
 Operator : DONC  
 Sample : D39442-1  
 Misc : OP6746,E3G539,30.03,,,1,1  
 ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 04 16:40:34 2012  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G533.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Wed Sep 26 13:36:23 2012  
 Response via : Initial Calibration

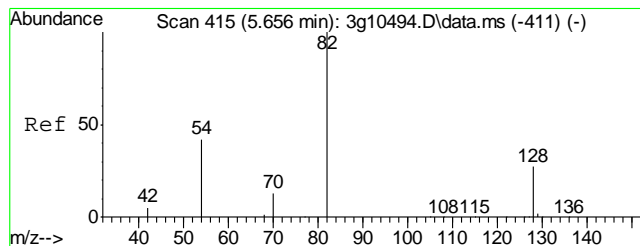
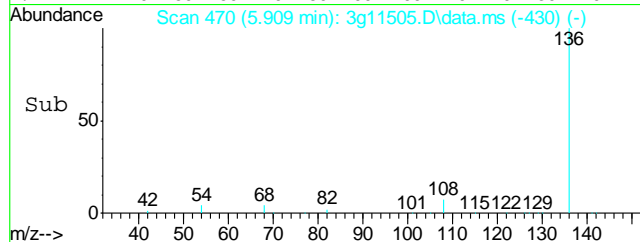
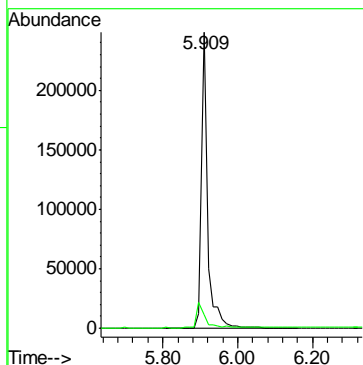
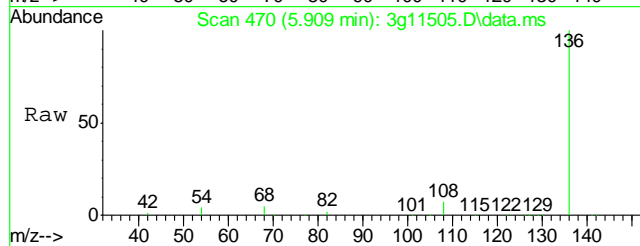






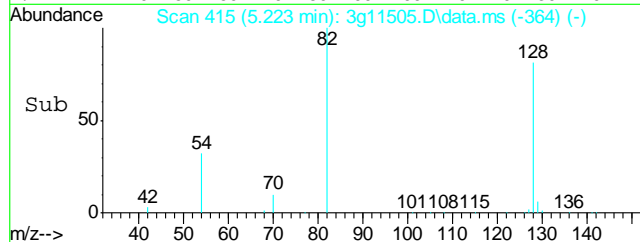
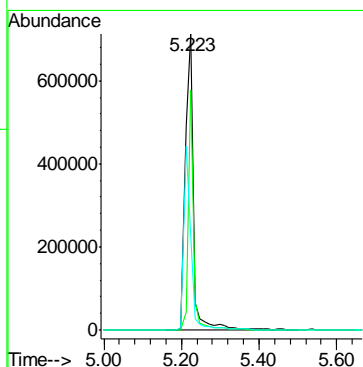
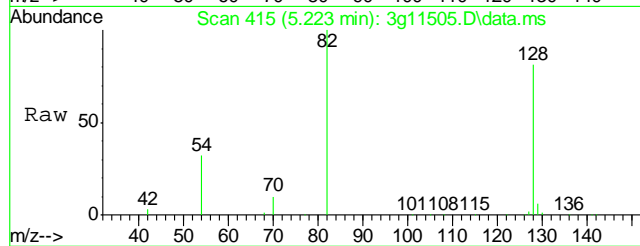
#1  
Naphthalene-d8  
Concen: 4.0000 ug/mL  
RT: 5.909 min Scan# 470  
Delta R.T. -0.000 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

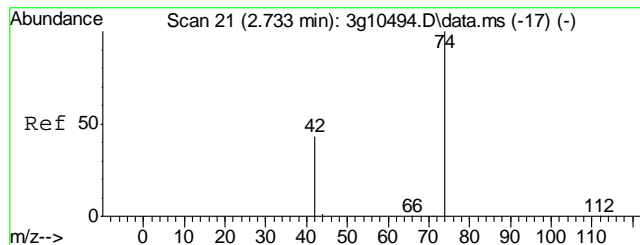
Tgt Ion	Ratio	Lower	Upper
136	100		
68	12.1	0.0	30.7



#2  
Nitrobenzene-d5  
Concen: 43.4407 ug/mL  
RT: 5.223 min Scan# 415  
Delta R.T. -0.000 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

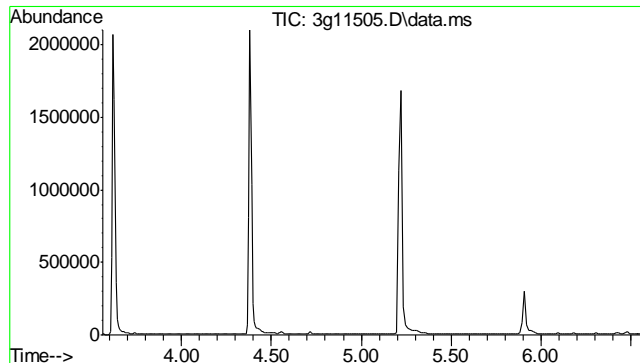
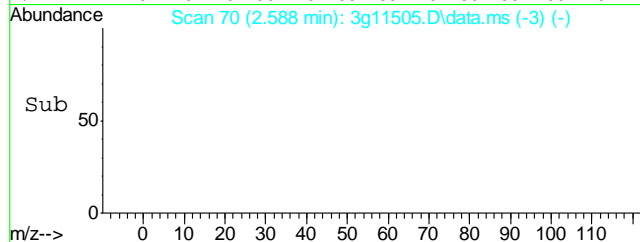
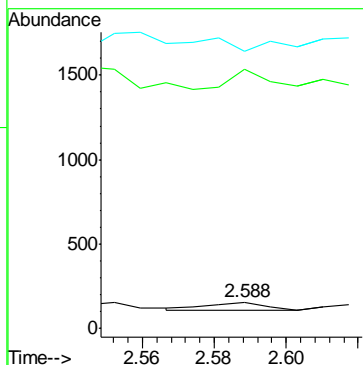
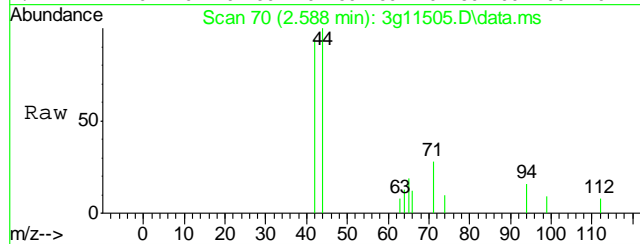
Tgt Ion	Ratio	Lower	Upper
82	100		
128	54.7	33.7	73.7
54	55.0	34.2	74.2





#3  
N-Nitrosodimethylamine  
Concen: Below ug/mL  
RT: 2.588 min Scan# 70  
Delta R.T. -0.015 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

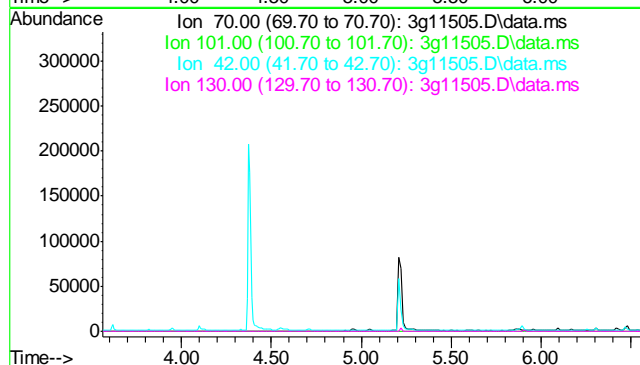
Tgt Ion	Ratio	Lower	Upper
74	100		
42	0.0	39.5	79.5#
44	0.0	0.0	24.1

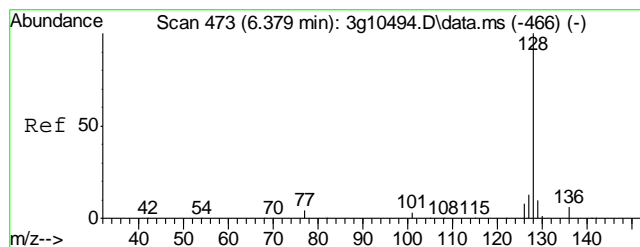


#4  
N-Nitrosodi-propylamine  
Concen: N.D. ug/mL  
Expected RT: 5.06 min

Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

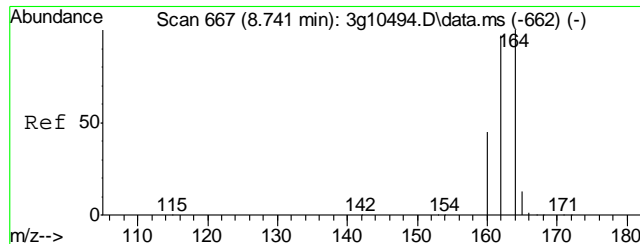
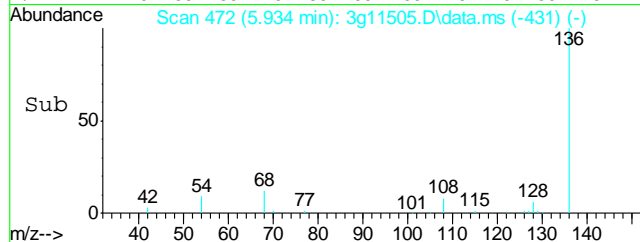
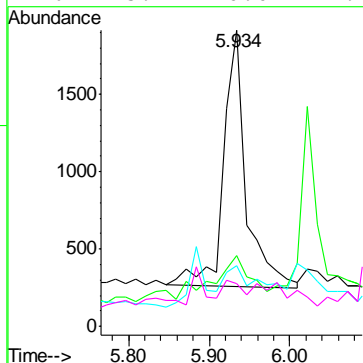
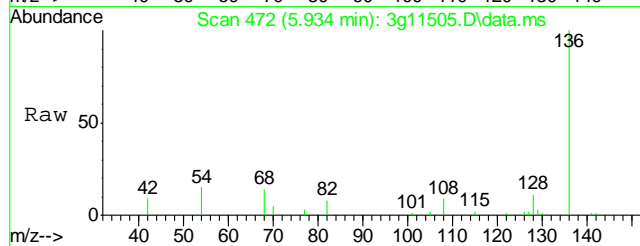
Tgt Ion	Sig	Exp Ratio
70	100	
101	10.8	
42	54.8	
130	21.8	





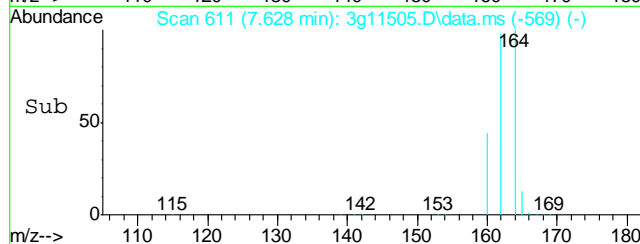
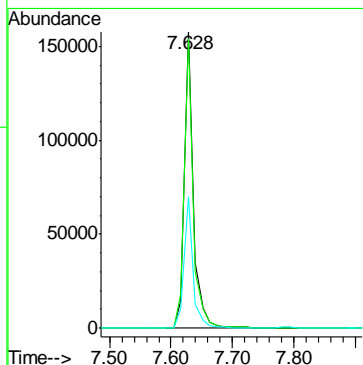
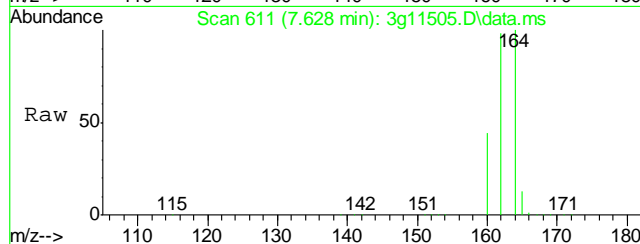
#5  
Naphthalene  
Concen: Below ug/mL  
RT: 5.934 min Scan# 472  
Delta R.T. 0.012 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

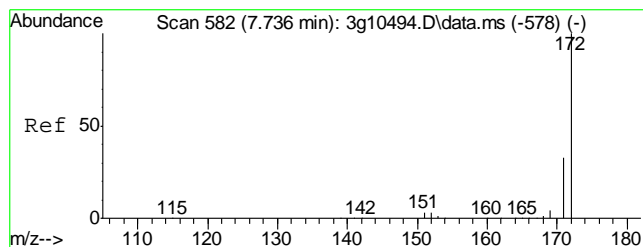
Tgt Ion:	128	Resp:	3194
Ion Ratio	Lower	Upper	
128	100		
129	39.7	0.0	30.8#
127	15.9	0.0	33.4
126	5.4	0.0	27.4



#6  
Acenaphthene-d10  
Concen: 4.0000 ug/mL  
RT: 7.628 min Scan# 611  
Delta R.T. -0.000 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

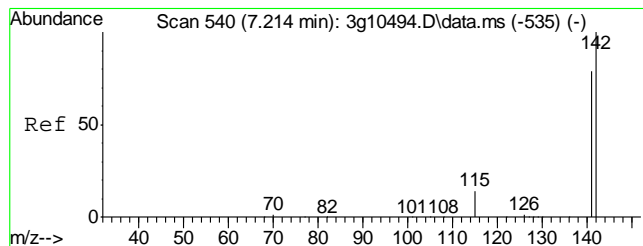
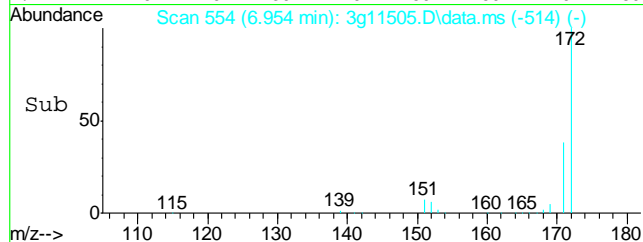
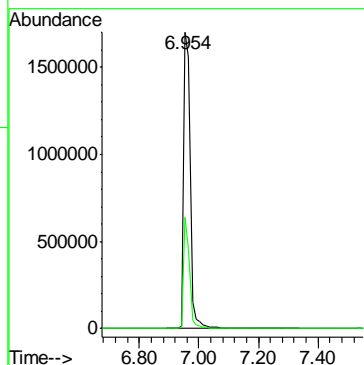
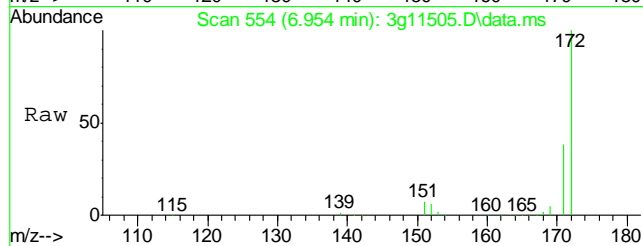
Tgt Ion:	164	Resp:	158696
Ion Ratio	Lower	Upper	
164	100		
162	97.7	74.6	114.6
160	44.5	22.4	62.4





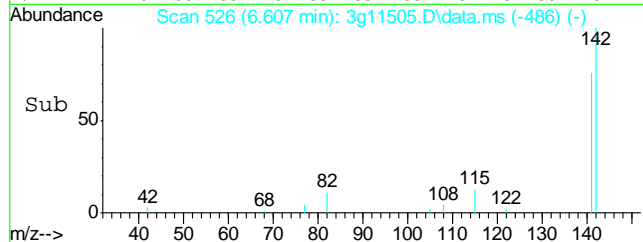
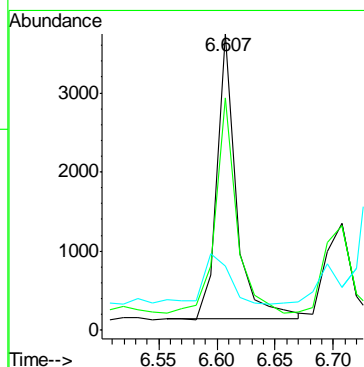
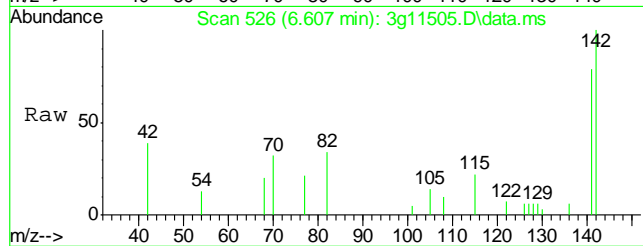
#7  
2-Fluorobiphenyl  
Concen: 37.6935 ug/mL  
RT: 6.954 min Scan# 554  
Delta R.T. -0.000 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

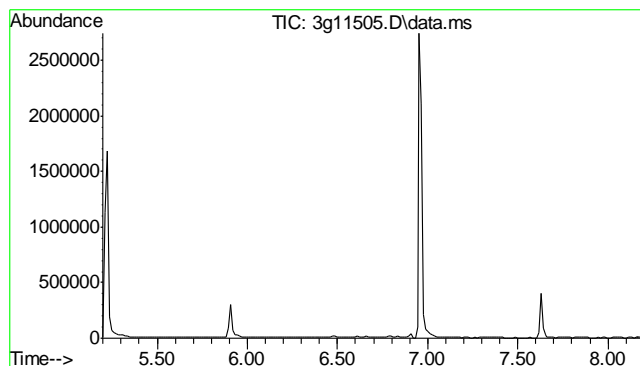
Tgt Ion	Ratio	Lower	Upper
172	100		
171	33.8	14.1	54.1



#8  
2-Methylnaphthalene  
Concen: 0.0817 ug/mL  
RT: 6.607 min Scan# 526  
Delta R.T. -0.000 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

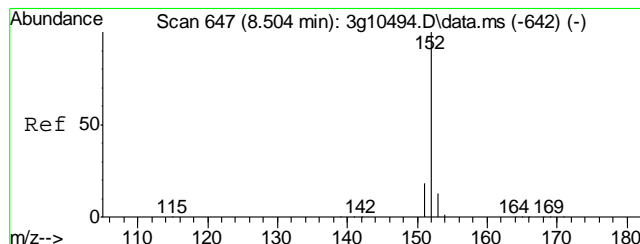
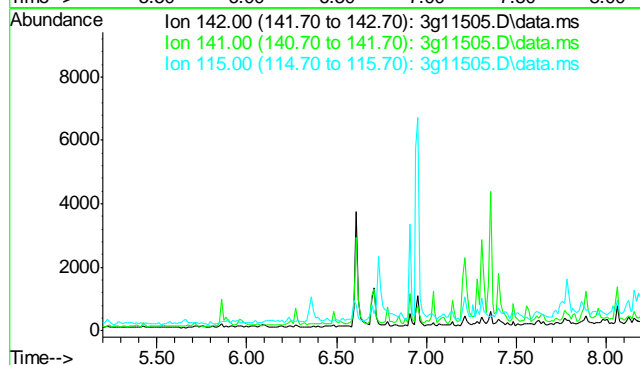
Tgt Ion	Ratio	Lower	Upper
142	100		
141	81.8	65.0	105.0
115	23.6	7.8	47.8



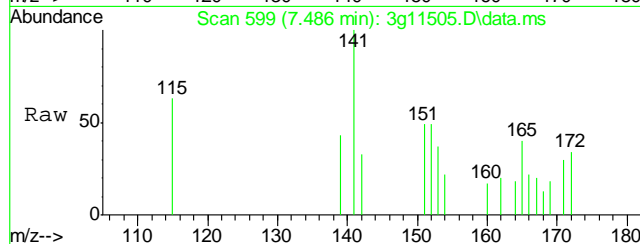


#9  
 1-Methylnaphthalene  
 Concen: N.D. ug/mL  
 Expected RT: 6.69 min  
  
 Lab File: 3g11505.D  
 Acq: 4 Oct 12 2:35 pm

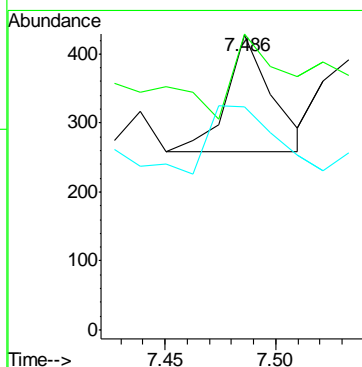
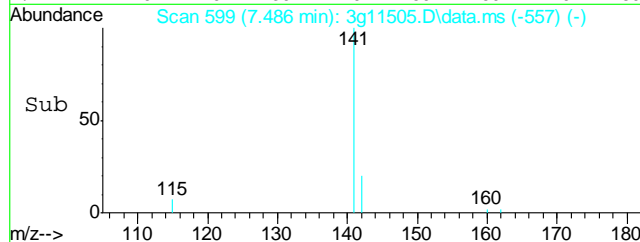
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 Sig Exp Ratio  
 142 100  
 141 88.0  
 115 28.9

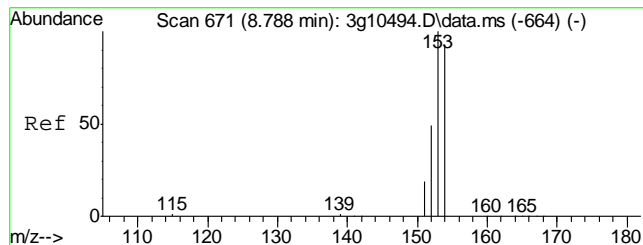


#10  
 Acenaphthylene  
 Concen: Below ug/mL  
 RT: 7.486 min Scan# 599  
 Delta R.T. -0.000 min  
 Lab File: 3g11505.D  
 Acq: 4 Oct 12 2:35 pm



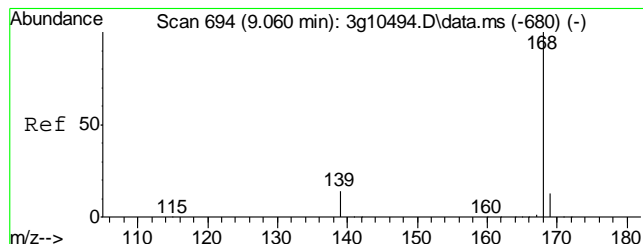
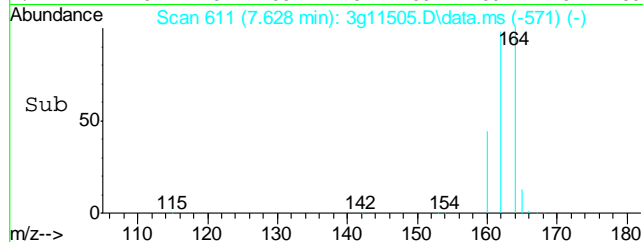
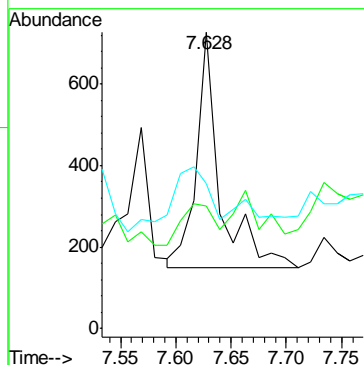
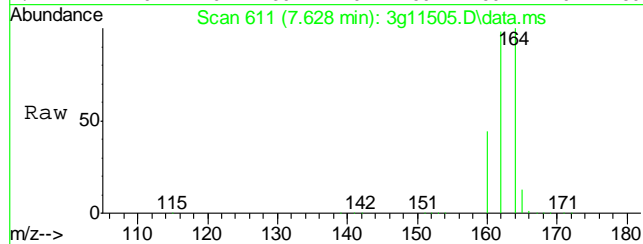
Tgt Ion: 152 Resp: 244  
 Ion Ratio Lower Upper  
 152 100  
 151 77.5 0.0 39.3#  
 153 83.6 0.0 33.0#





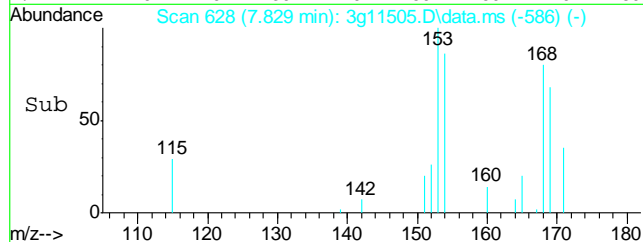
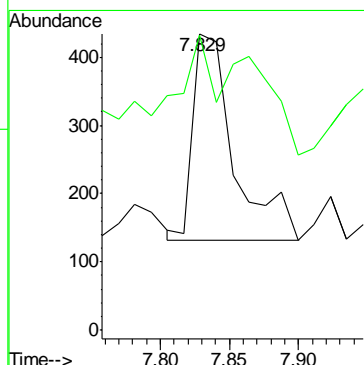
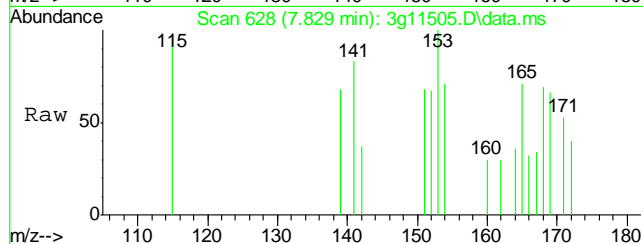
#11  
Acenaphthene  
Concen: Below ug/mL  
RT: 7.628 min Scan# 611  
Delta R.T. -0.024 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

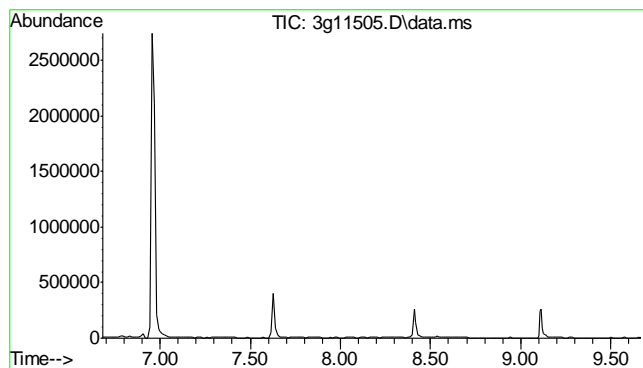
Tgt Ion	Ratio	Lower	Upper
154	100		
153	24.8	85.2	125.2#
152	49.5	29.7	69.7



#12  
Dibenzofuran  
Concen: Below ug/mL  
RT: 7.829 min Scan# 628  
Delta R.T. -0.000 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

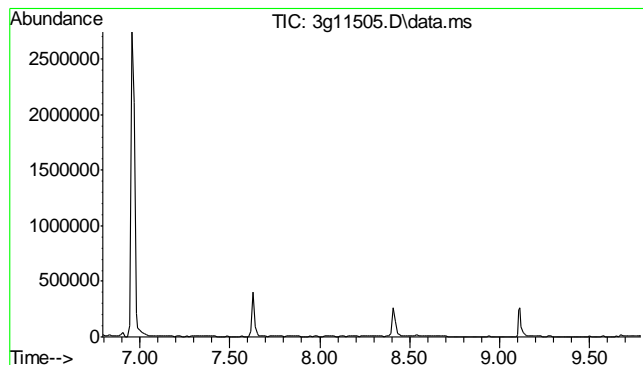
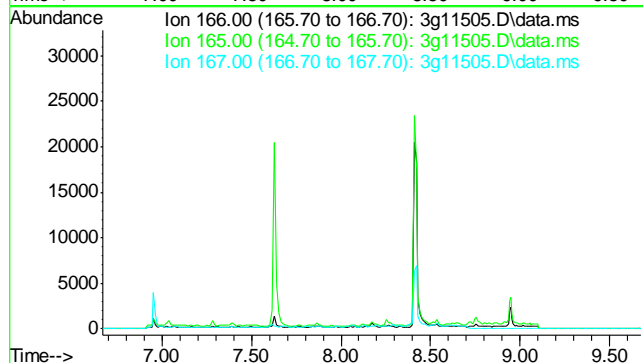
Tgt Ion	Ratio	Lower	Upper
168	100		
139	33.7	6.7	46.7





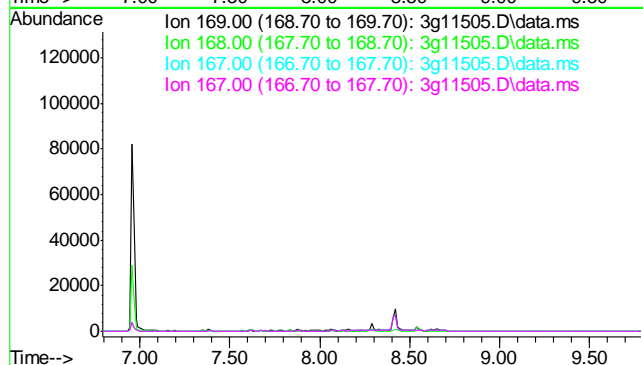
#13  
 Fluorene  
 Concen: N.D. ug/mL  
 Expected RT: 8.17 min  
  
 Lab File: 3g11505.D  
 Acq: 4 Oct 12 2:35 pm

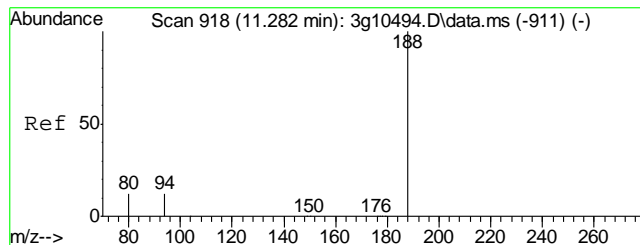
Tgt Ion	Exp Ratio
166	100
165	90.2
167	13.2



#14  
 Diphenylamine  
 Concen: N.D. ug/mL  
 Expected RT: 8.29 min  
  
 Lab File: 3g11505.D  
 Acq: 4 Oct 12 2:35 pm

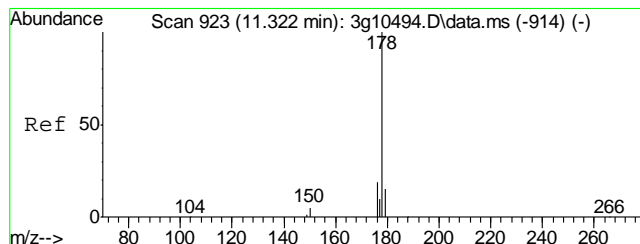
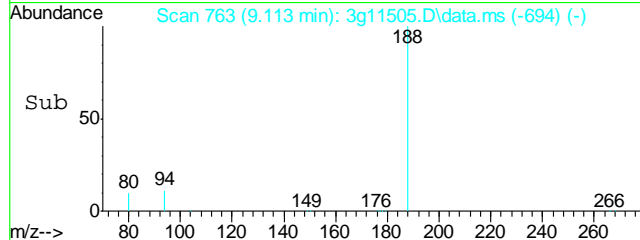
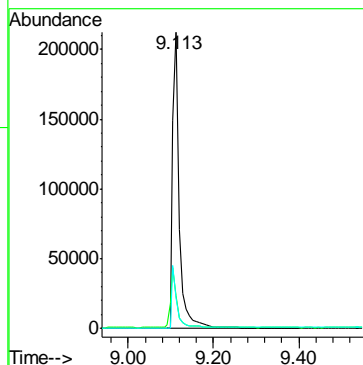
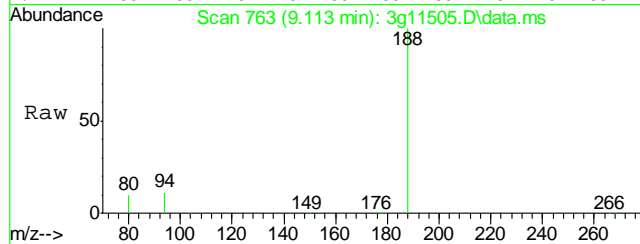
Tgt Ion	Exp Ratio
169	100
168	60.8
167	33.1
167	33.1





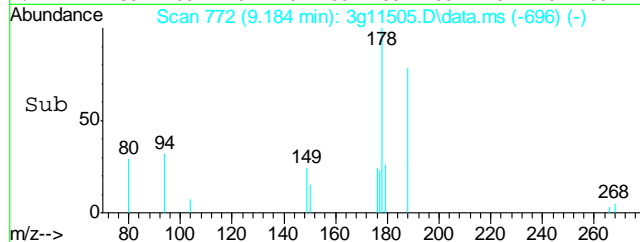
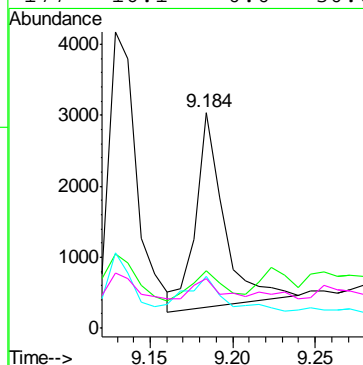
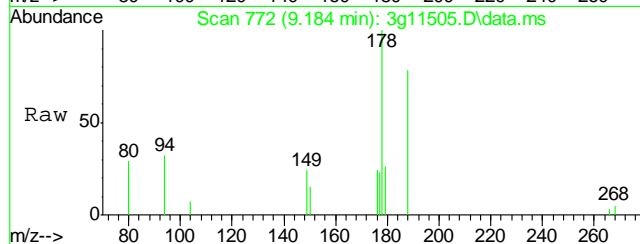
#15  
Phenanthrene-d10  
Concen: 4.0000 ug/mL  
RT: 9.113 min Scan# 763  
Delta R.T. 0.008 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

Tgt Ion	Ratio	Lower	Upper
188	100		
94	19.4	0.8	40.8
80	18.0	0.0	32.1

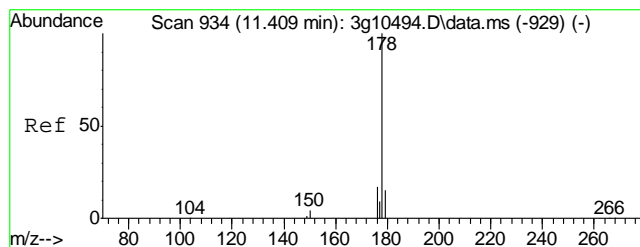


#16  
Phenanthrene  
Concen: Below ug/mL  
RT: 9.184 min Scan# 772  
Delta R.T. 0.055 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

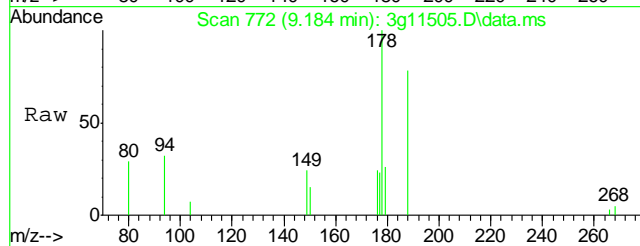
Tgt Ion	Ratio	Lower	Upper
178	100		
179	22.7	0.0	35.2
176	33.8	0.0	38.4
177	16.1	0.0	30.6



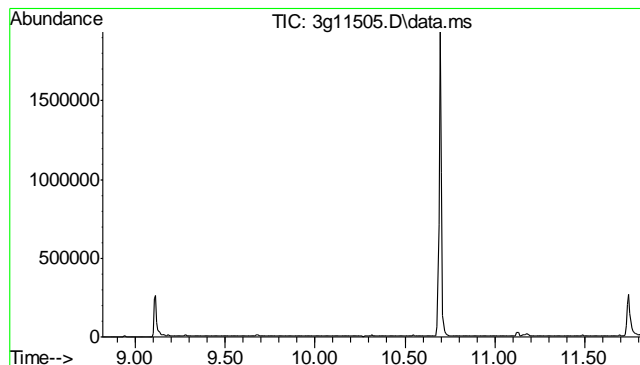
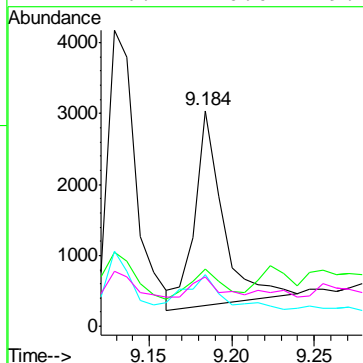
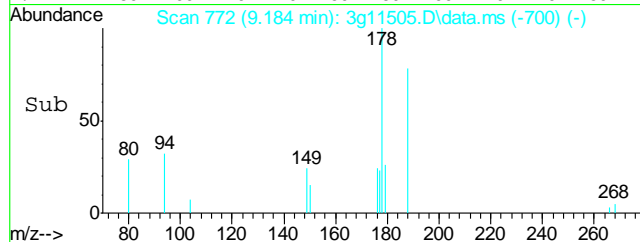




#17  
 Anthracene  
 Concen: Below ug/mL  
 RT: 9.184 min Scan# 772  
 Delta R.T. -0.000 min  
 Lab File: 3g11505.D  
 Acq: 4 Oct 12 2:35 pm

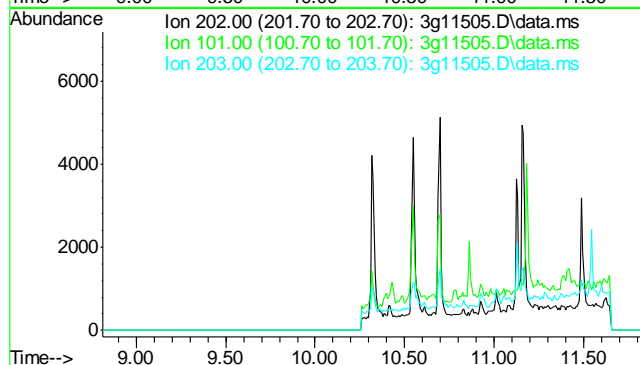


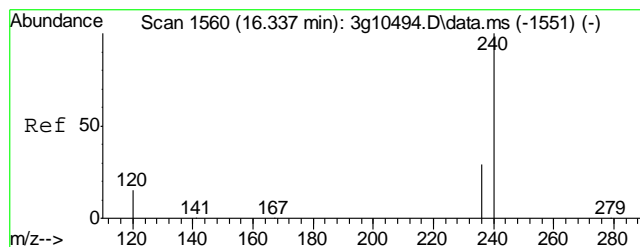
Tgt Ion:	178	Resp:	3288
Ion Ratio	Lower	Upper	
178	100		
179	22.7	0.0	35.0
176	33.8	0.0	37.4
177	16.1	0.0	29.0



#18  
 Fluoranthene  
 Concen: N.D. ug/mL  
 Expected RT: 10.32 min  
 Lab File: 3g11505.D  
 Acq: 4 Oct 12 2:35 pm

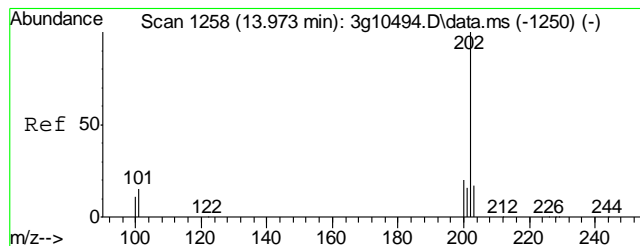
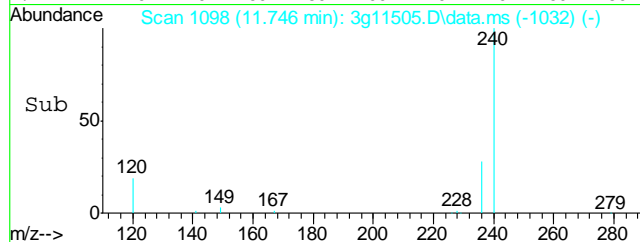
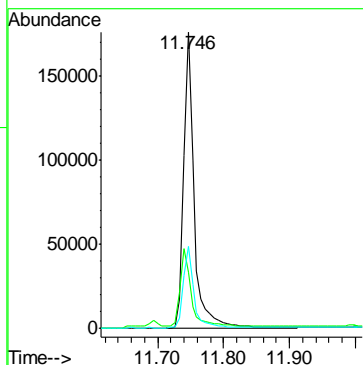
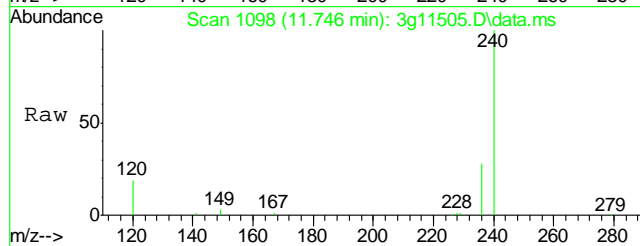
Tgt Ion:	202
Sig	Exp Ratio
202	100
101	18.1
203	17.4





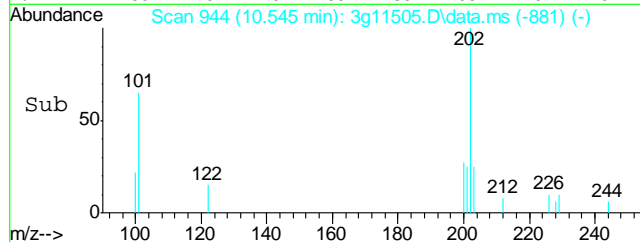
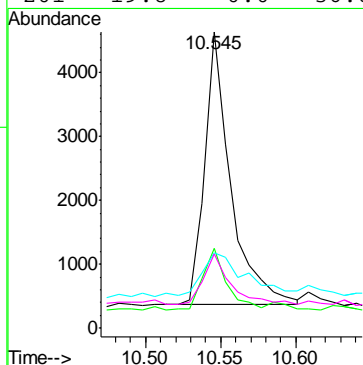
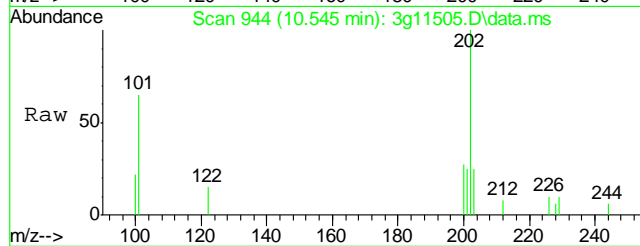
#19  
Chrysene-d12  
Concen: 4.0000 ug/mL  
RT: 11.746 min Scan# 1098  
Delta R.T. 0.007 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

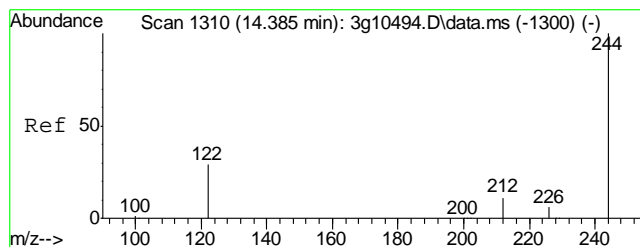
Tgt Ion	Ratio	Lower	Upper
240	100		
120	29.8	4.3	44.3
236	27.9	7.2	47.2



#20  
Pyrene  
Concen: 0.0596 ug/mL  
RT: 10.545 min Scan# 944  
Delta R.T. -0.000 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

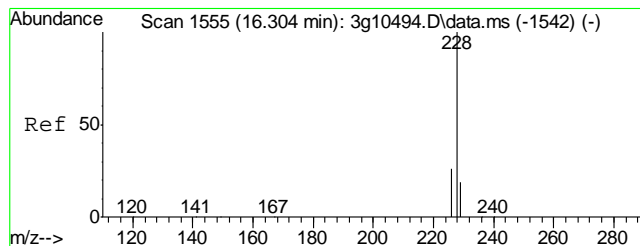
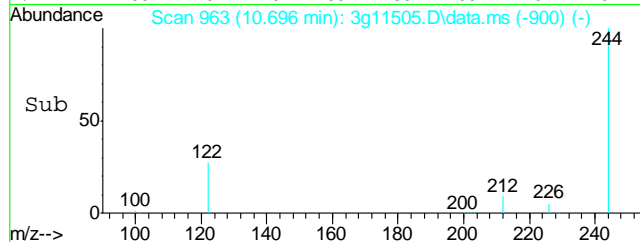
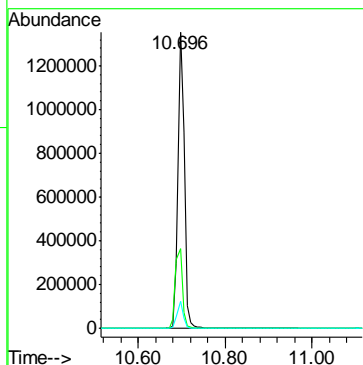
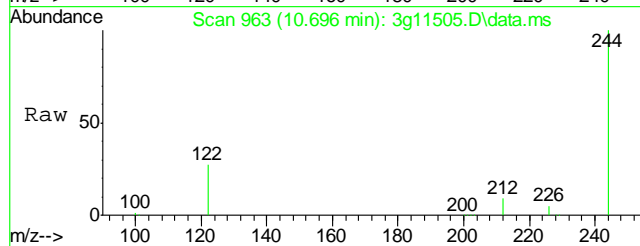
Tgt Ion	Ratio	Lower	Upper
202	100		
200	21.6	0.0	39.9
203	25.0	0.0	37.9
201	19.8	0.0	36.8





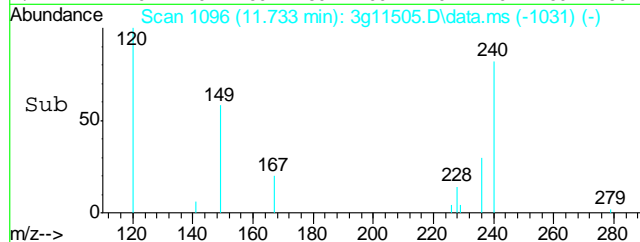
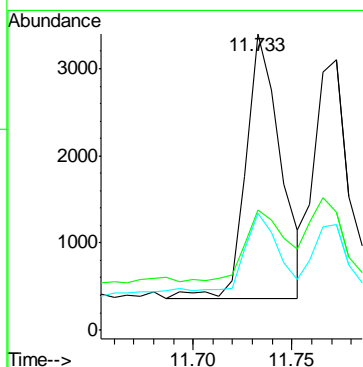
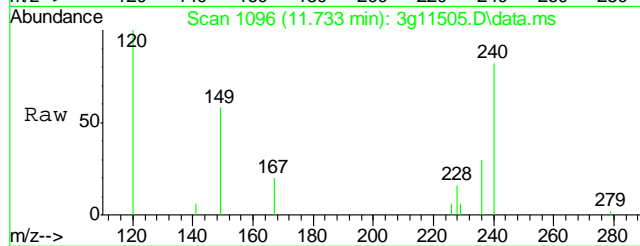
#21  
Terphenyl-d14  
Concen: 45.2294 ug/mL  
RT: 10.696 min Scan# 963  
Delta R.T. -0.000 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

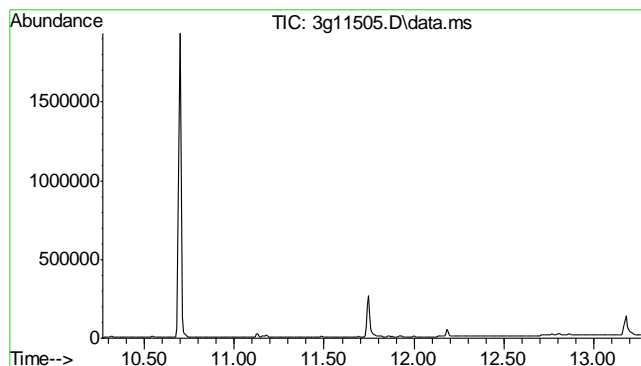
Tgt Ion	Ratio	Lower	Upper
244	100		
122	29.6	9.3	49.3
212	8.4	0.0	28.2



#22  
Benzo(a)anthracene  
Concen: 0.0508 ug/mL  
RT: 11.733 min Scan# 1096  
Delta R.T. -0.000 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

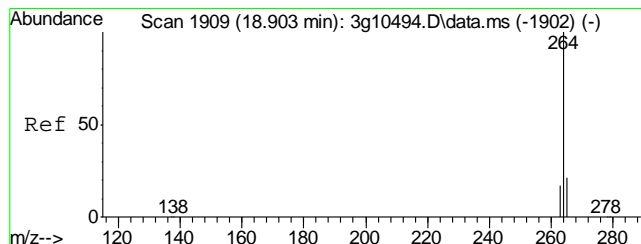
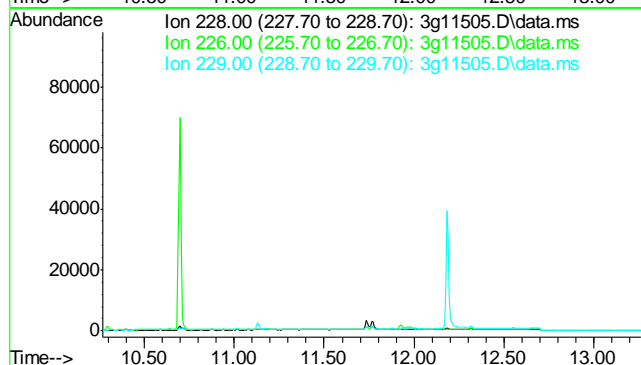
Tgt Ion	Ratio	Lower	Upper
228	100		
229	0.0	0.0	39.4
226	26.0	6.3	46.3





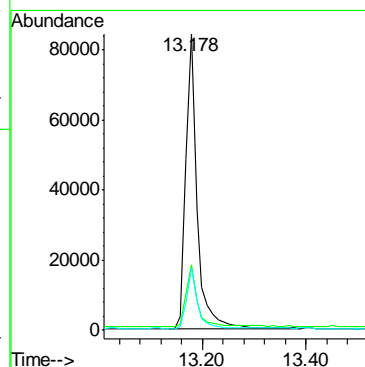
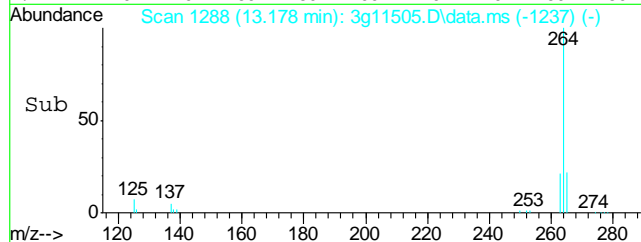
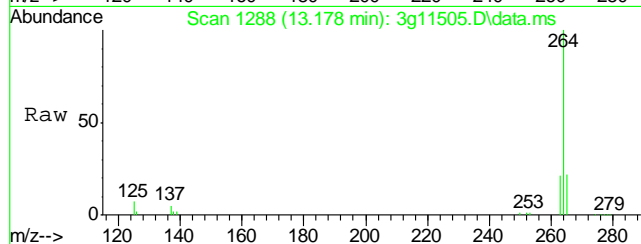
#23  
 Chrysene  
 Concen: N.D. ug/mL  
 Expected RT: 11.77 min  
  
 Lab File: 3g11505.D  
 Acq: 4 Oct 12 2:35 pm

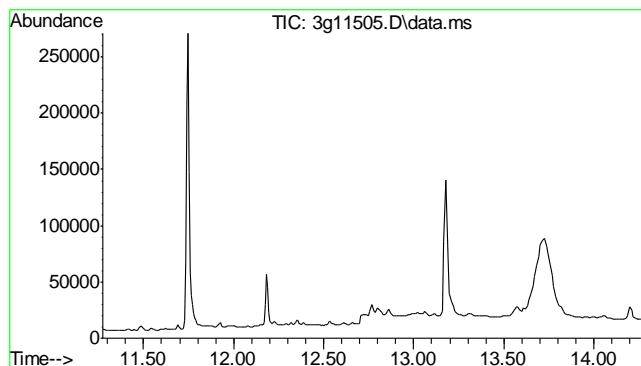
Tgt Ion: 228  
 Sig Exp Ratio  
 228 100  
 226 28.0  
 229 19.4



#24  
 Perylene-d12  
 Concen: 4.0000 ug/mL  
 RT: 13.178 min Scan# 1288  
 Delta R.T. 0.010 min  
 Lab File: 3g11505.D  
 Acq: 4 Oct 12 2:35 pm

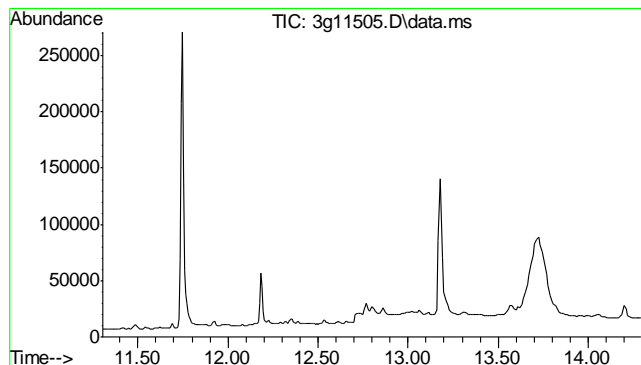
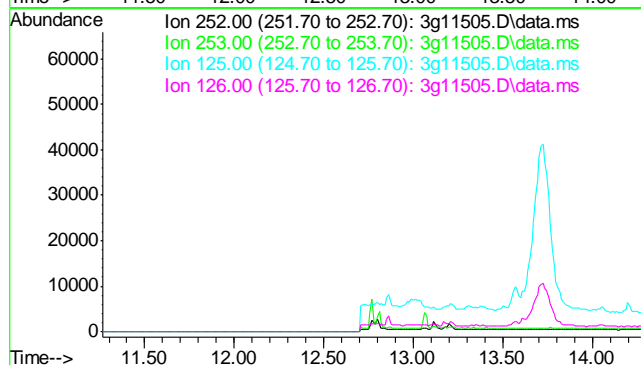
Tgt Ion: 264 Resp: 128457  
 Ion Ratio Lower Upper  
 264 100  
 265 21.1 0.7 40.7  
 263 19.8 0.0 39.2





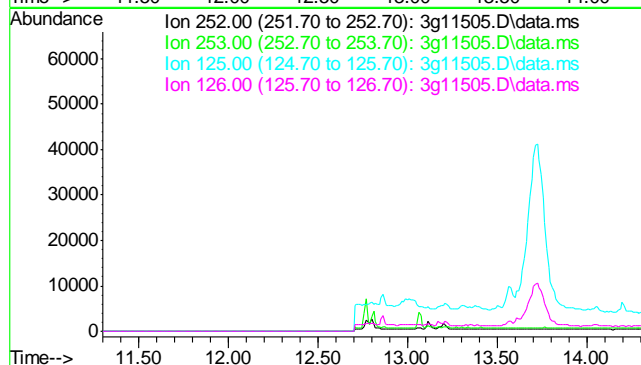
#25  
Benzo(b)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 12.77 min  
  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

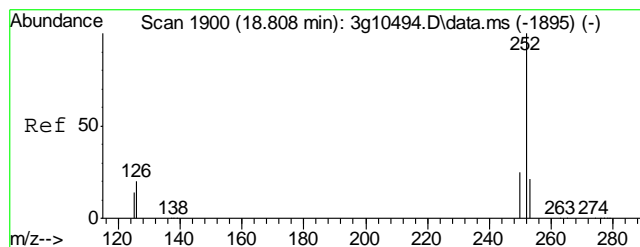
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	19.9
125	16.8
126	21.2



#26  
Benzo(k)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 12.80 min  
  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

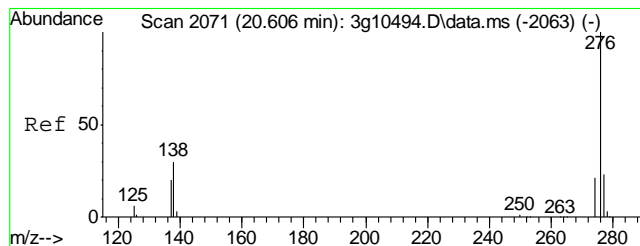
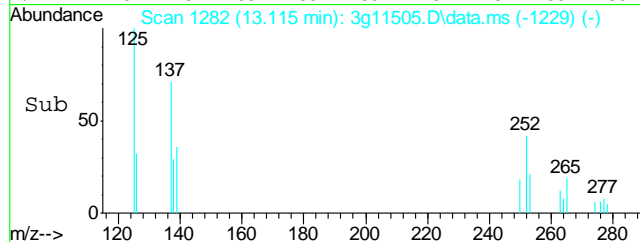
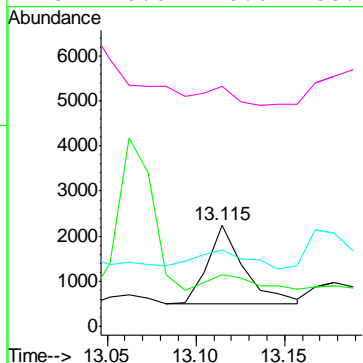
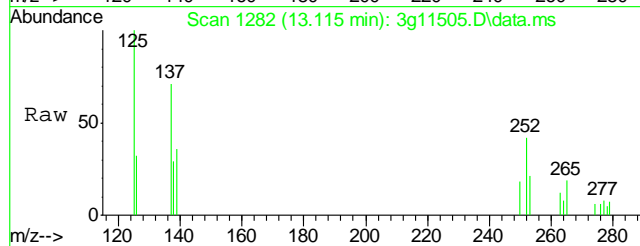
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	24.3
125	20.6
126	25.9





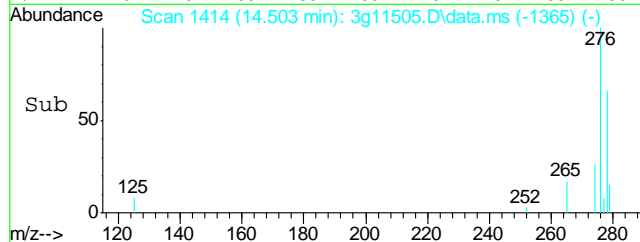
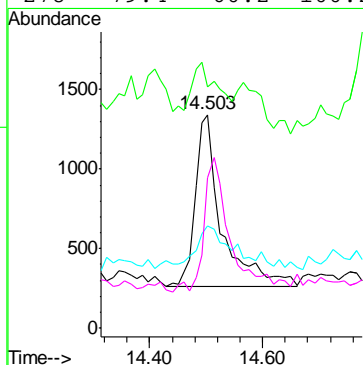
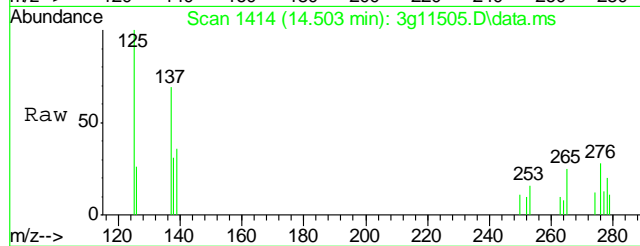
#27  
Benzo(a)pyrene  
Concen: Below ug/mL  
RT: 13.115 min Scan# 1282  
Delta R.T. -0.000 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

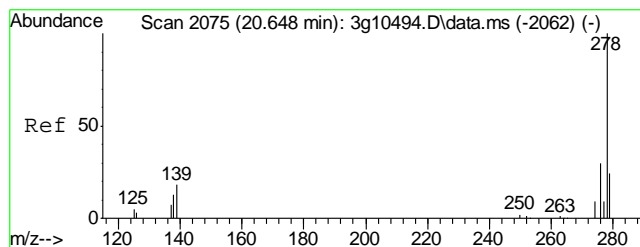
Tgt Ion	Ratio	Lower	Upper
252	100		
253	178.6	1.4	41.4#
126	0.0	2.9	42.9#
125	0.0	0.0	38.1



#28  
Indeno(1,2,3-cd)pyrene  
Concen: Below ug/mL  
RT: 14.503 min Scan# 1414  
Delta R.T. 0.010 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

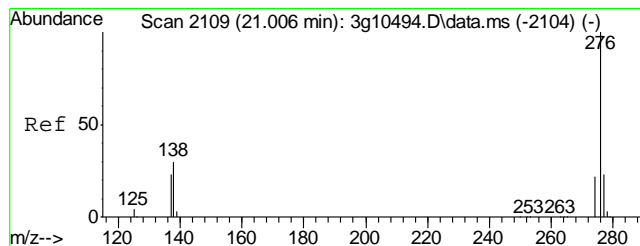
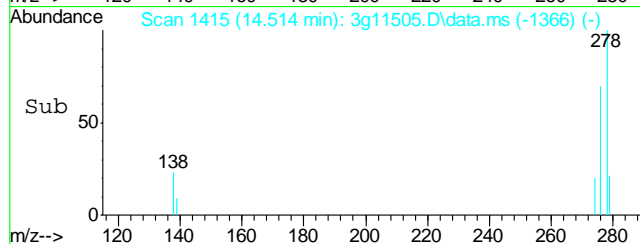
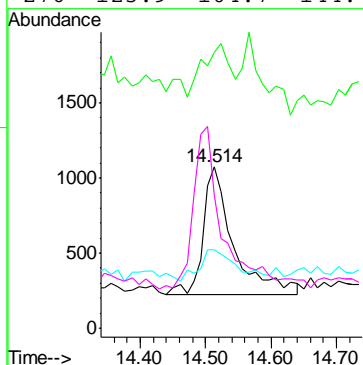
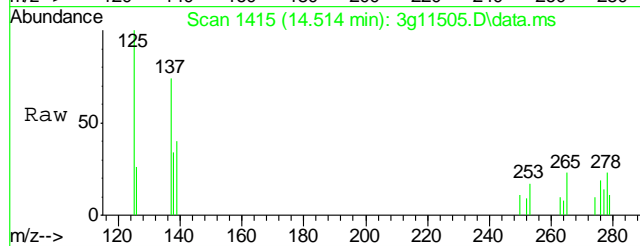
Tgt Ion	Ratio	Lower	Upper
276	100		
138	37.6	22.1	62.1
277	24.3	5.2	45.2
278	79.4	60.2	100.2





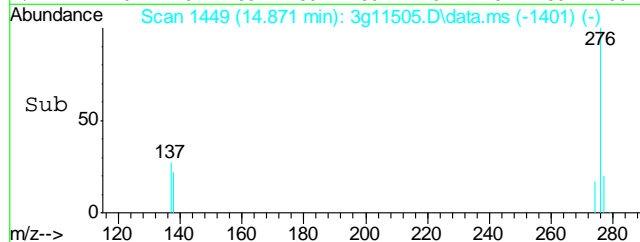
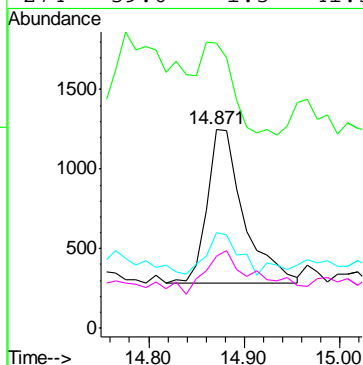
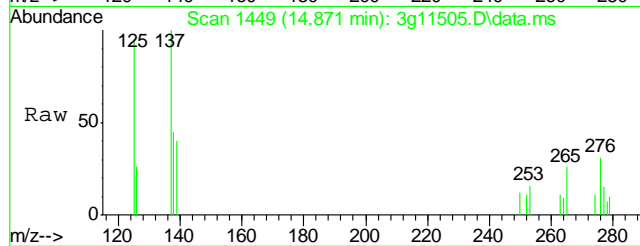
#29  
Dibenz(a,h)anthracene  
Concen: Below ug/mL  
RT: 14.514 min Scan# 1415  
Delta R.T. 0.010 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

Tgt Ion	Ratio	Lower	Upper
278	100		
139	38.6	10.1	50.1
279	31.5	3.3	43.3
276	125.9	104.7	144.7



#30  
Benzo(g,h,i)perylene  
Concen: Below ug/mL  
RT: 14.871 min Scan# 1449  
Delta R.T. -0.000 min  
Lab File: 3g11505.D  
Acq: 4 Oct 12 2:35 pm

Tgt Ion	Ratio	Lower	Upper
276	100		
138	48.9	15.2	55.2
277	24.0	3.3	43.3
274	39.0	1.3	41.3



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\100412\  
 Data File : 3g11506.D  
 Acq On : 4 Oct 2012 2:59 pm  
 Operator : DONC  
 Sample : D39442-2  
 Misc : OP6746,E3G539,30.08,,,1,1  
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 04 16:41:31 2012  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G533.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Wed Sep 26 13:36:23 2012  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.909	136	240765	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.628	164	139796	4.0000	ug/mL	0.00
15) Phenanthrene-d10	9.113	188	211291	4.0000	ug/mL	0.00
19) Chrysene-d12	11.746	240	185473	4.0000	ug/mL	0.00
24) Perylene-d12	13.178	264	120361	4.0000	ug/mL	0.01

## System Monitoring Compounds

2) Nitrobenzene-d5	5.223	82	736176	35.0274	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	70.06%		
7) 2-Fluorobiphenyl	6.954	172	1826464	30.5680	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	61.14%		
21) Terphenyl-d14	10.696	244	1225168	45.0848	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	90.16%		

## Target Compounds

					Qvalue
3) N-Nitrosodimethylamine	2.588	74	42	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D. d	
5) Naphthalene	5.934	128	17037	0.2395	ug/mL 89
8) 2-Methylnaphthalene	6.607	142	20447	0.4566	ug/mL 98
9) 1-Methylnaphthalene	6.707	142	13169	0.2634	ug/mL 90
10) Acenaphthylene	7.486	152	745	N.D.	
11) Acenaphthene	7.628	154	925	N.D.	
12) Dibenzofuran	7.840	168	2563	N.D.	
13) Fluorene	8.171	166	3528	0.0609	ug/mL 88
14) Diphenylamine	8.230	169	687	N.D.	
16) Phenanthrene	9.137	178	12322	0.1525	ug/mL 86
17) Anthracene	0.000	178	0	N.D. d	
18) Fluoranthene	10.316	202	11660	0.1188	ug/mL 93
20) Pyrene	10.545	202	13663	0.1676	ug/mL 99
22) Benzo(a)anthracene	11.733	228	13536	0.1946	ug/mL 96
23) Chrysene	11.766	228	16240	0.1564	ug/mL 94
25) Benzo(b)fluoranthene	12.768	252	12204m	0.1543	ug/mL
26) Benzo(k)fluoranthene	12.799	252	16114m	0.2101	ug/mL
27) Benzo(a)pyrene	13.115	252	13598	0.1709	ug/mL 93
28) Indeno(1,2,3-cd)pyrene	14.492	276	15823	0.1820	ug/mL 96
29) Dibenz(a,h)anthracene	14.513	278	12453	0.1830	ug/mL 96
30) Benzo(g,h,i)perylene	14.871	276	14387	0.1930	ug/mL 96

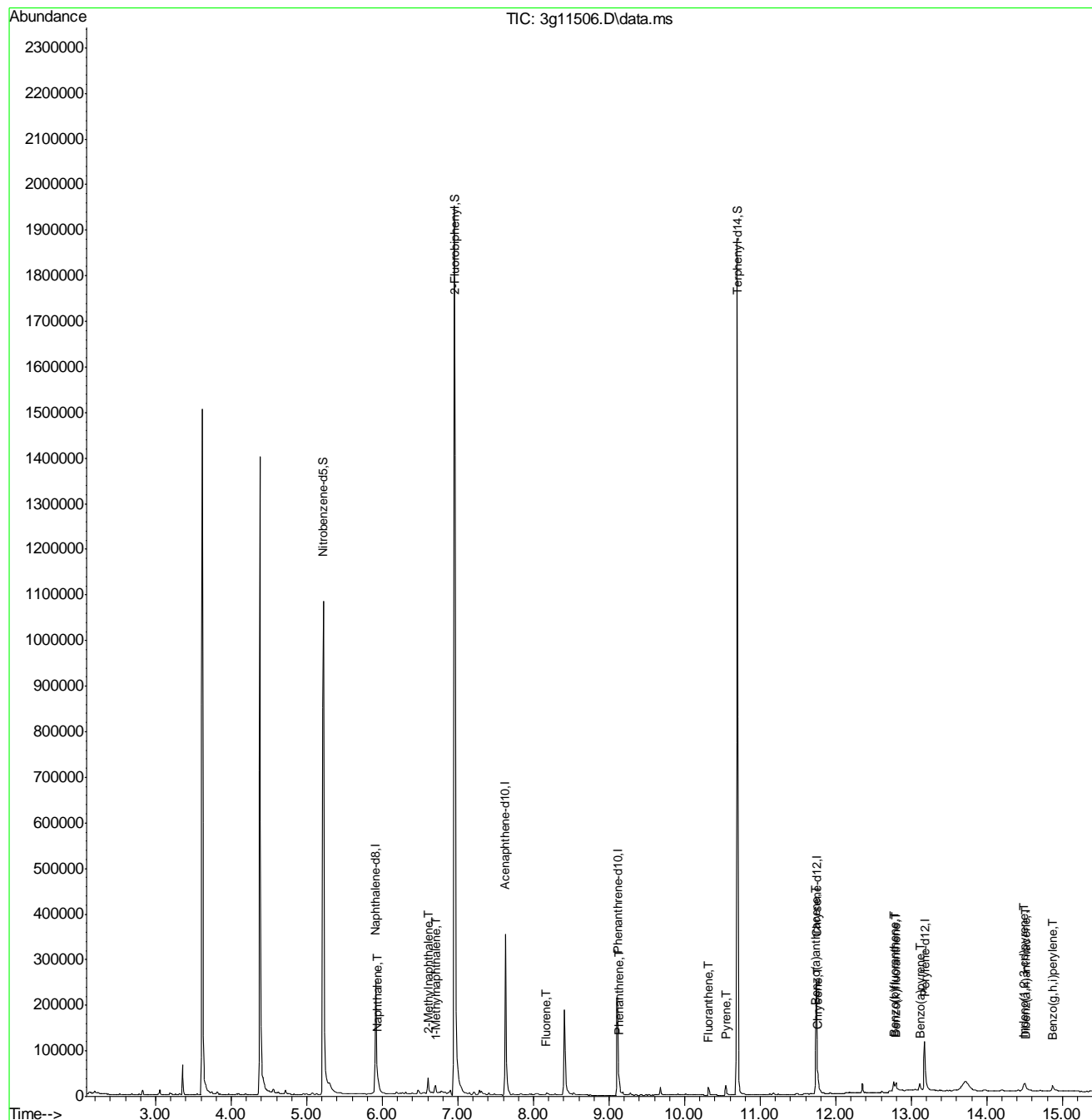
(#) = qualifier out of range (m) = manual integration (+) = signals summed

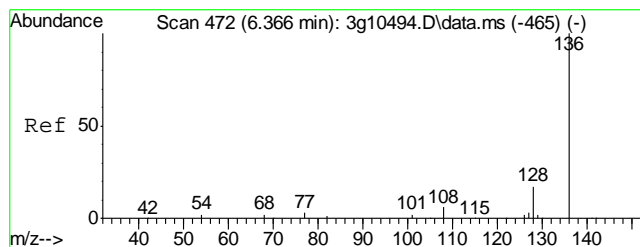


## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\100412\  
Data File : 3g11506.D  
Acq On : 4 Oct 2012 2:59 pm  
Operator : DONC  
Sample : D39442-2  
Misc : OP6746,E3G539,30.08,,,1,1  
ALS Vial : 10 Sample Multiplier: 1

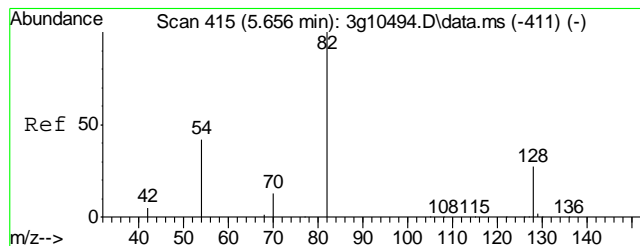
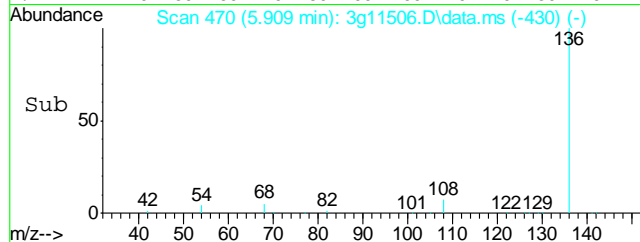
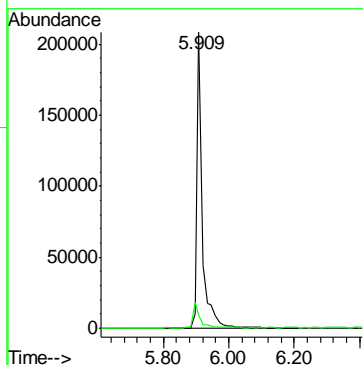
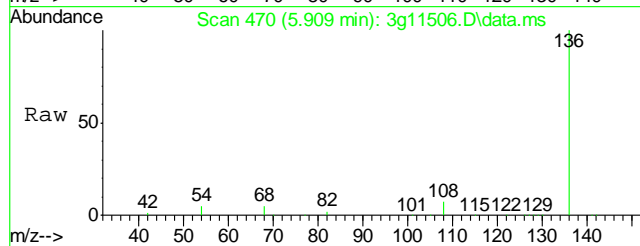
Quant Time: Oct 04 16:41:31 2012  
Quant Method : C:\msdchem\1\METHODS\SIMPE3G533.M  
Quant Title : PAHSIM BASE  
QLast Update : Wed Sep 26 13:36:23 2012  
Response via : Initial Calibration





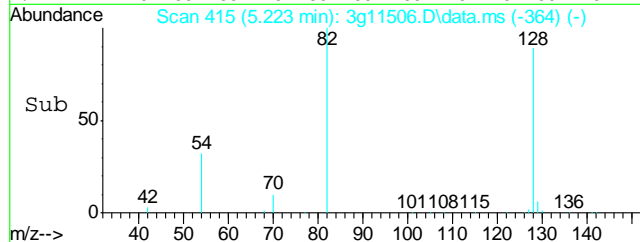
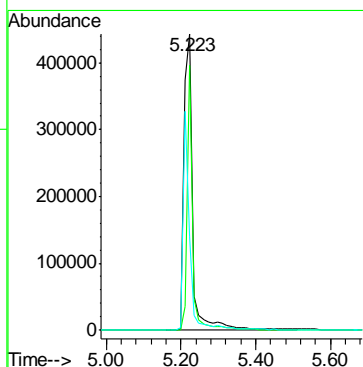
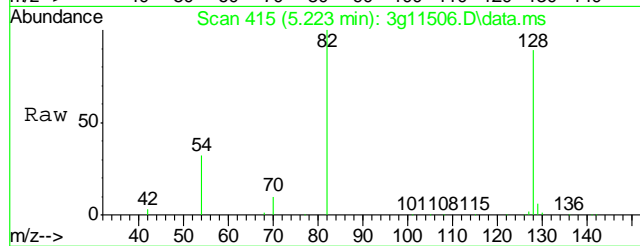
#1  
Naphthalene-d8  
Concen: 4.0000 ug/mL  
RT: 5.909 min Scan# 470  
Delta R.T. -0.000 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

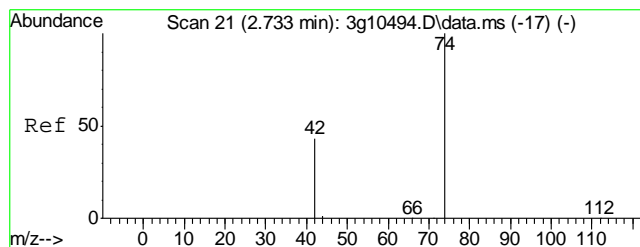
Tgt Ion	Ratio	Lower	Upper
136	100		
68	11.6	0.0	30.7



#2  
Nitrobenzene-d5  
Concen: 35.0274 ug/mL  
RT: 5.223 min Scan# 415  
Delta R.T. -0.000 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

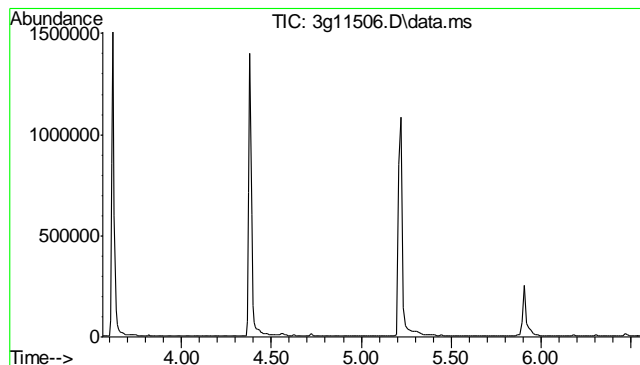
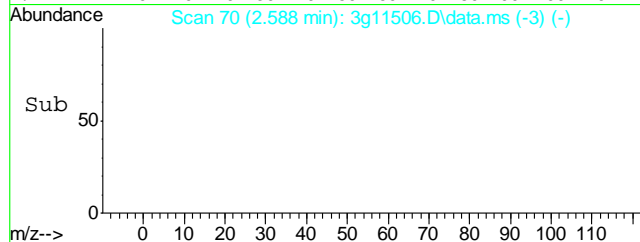
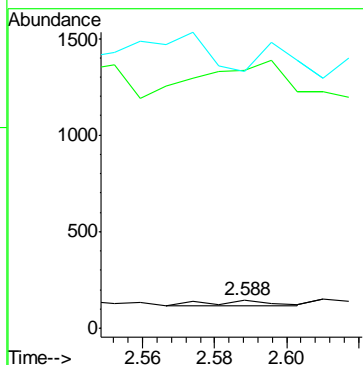
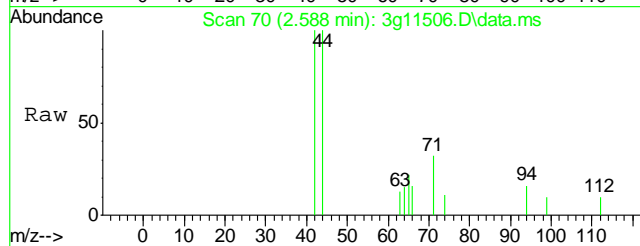
Tgt Ion	Ratio	Lower	Upper
82	100		
128	55.5	33.7	73.7
54	56.1	34.2	74.2





#3  
N-Nitrosodimethylamine  
Concen: Below ug/mL  
RT: 2.588 min Scan# 70  
Delta R.T. -0.015 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

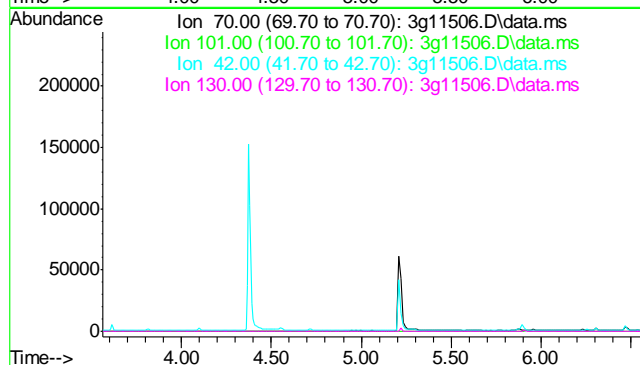
Tgt Ion: 74 Resp: 42  
Ion Ratio Lower Upper  
74 100  
42 0.0 39.5 79.5#  
44 285.7 0.0 24.1#

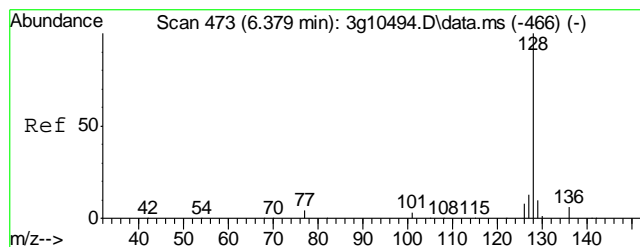


#4  
N-Nitrosodi-propylamine  
Concen: N.D. ug/mL  
Expected RT: 5.06 min

Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

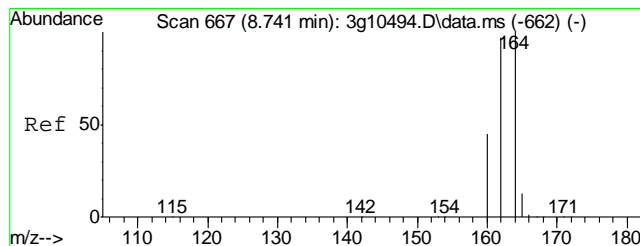
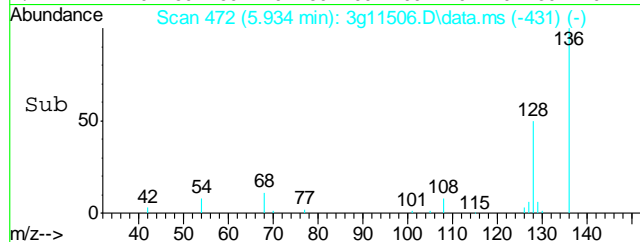
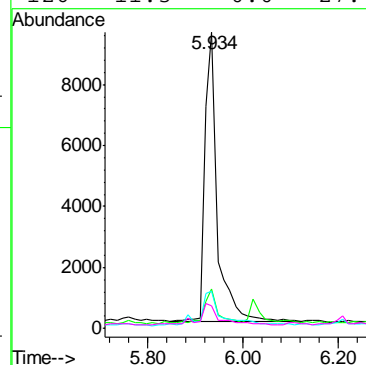
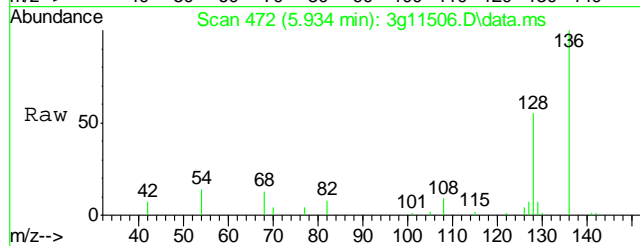
Tgt Ion: 70  
Sig Exp Ratio  
70 100  
101 10.8  
42 54.8  
130 21.8





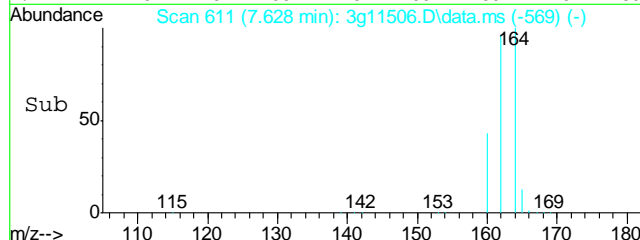
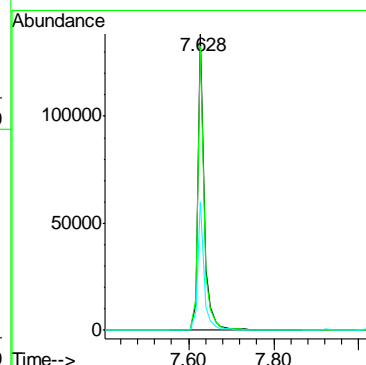
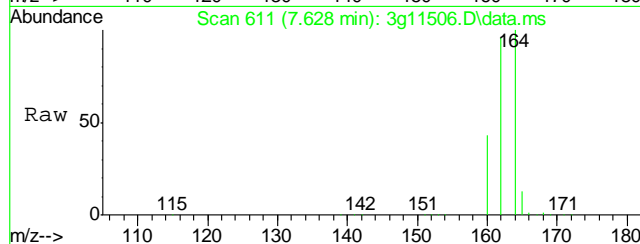
#5  
Naphthalene  
Concen: 0.2395 ug/mL  
RT: 5.934 min Scan# 472  
Delta R.T. 0.012 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

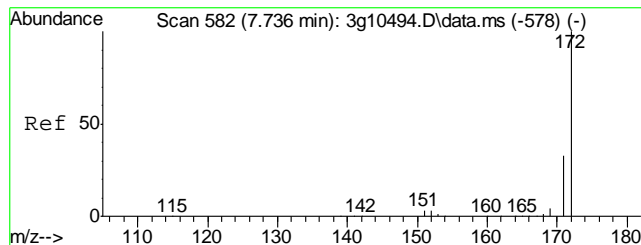
Tgt Ion:	128	Resp:	17037
Ion Ratio	Lower	Upper	
128	100		
129	11.5	0.0	30.8
127	20.6	0.0	33.4
126	11.3	0.0	27.4



#6  
Acenaphthene-d10  
Concen: 4.0000 ug/mL  
RT: 7.628 min Scan# 611  
Delta R.T. -0.000 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

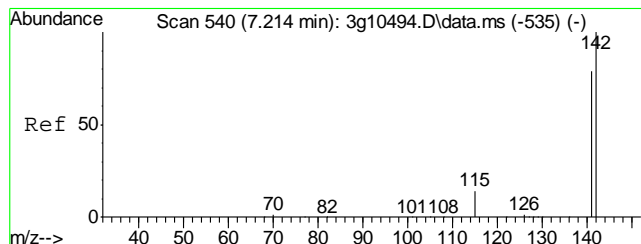
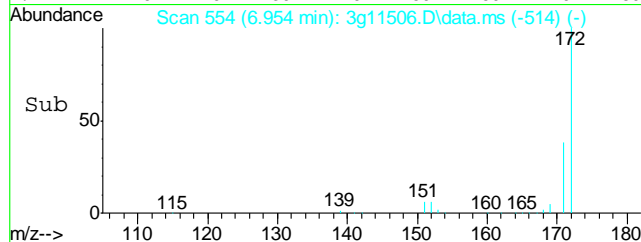
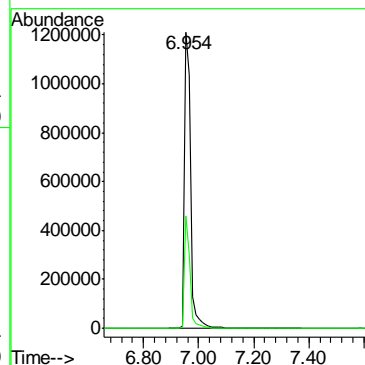
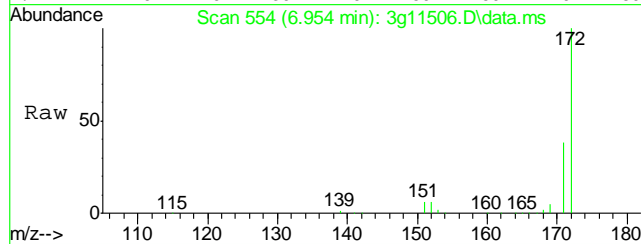
Tgt Ion:	164	Resp:	139796
Ion Ratio	Lower	Upper	
164	100		
162	96.1	74.6	114.6
160	43.8	22.4	62.4





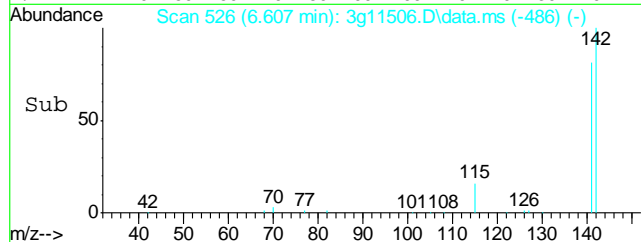
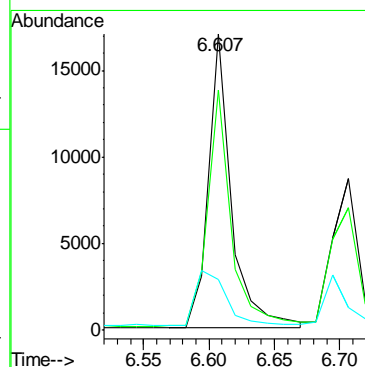
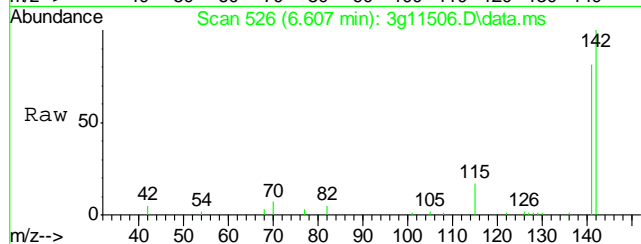
#7  
2-Fluorobiphenyl  
Concen: 30.5680 ug/mL  
RT: 6.954 min Scan# 554  
Delta R.T. -0.000 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

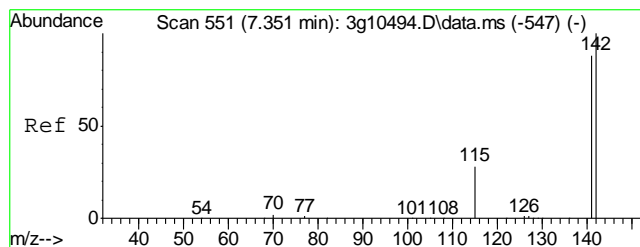
Tgt Ion: 172 Resp: 1826464  
Ion Ratio Lower Upper  
172 100  
171 33.8 14.1 54.1



#8  
2-Methylnaphthalene  
Concen: 0.4566 ug/mL  
RT: 6.607 min Scan# 526  
Delta R.T. -0.000 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

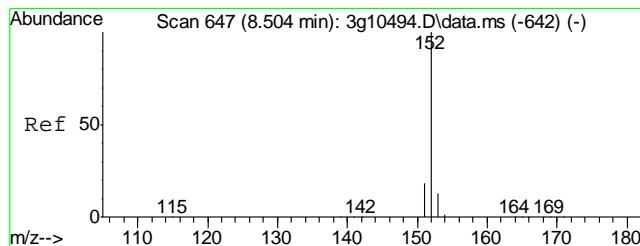
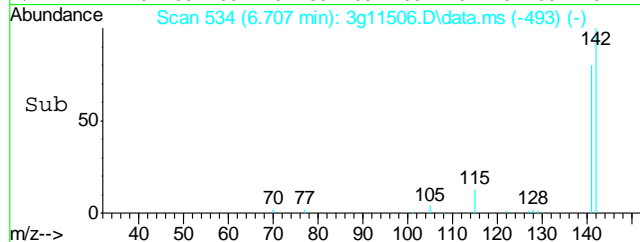
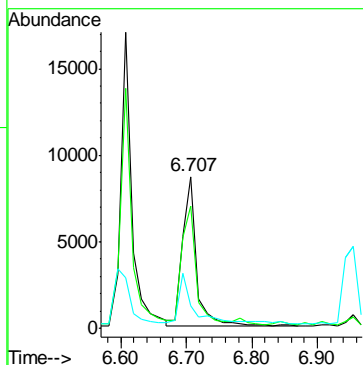
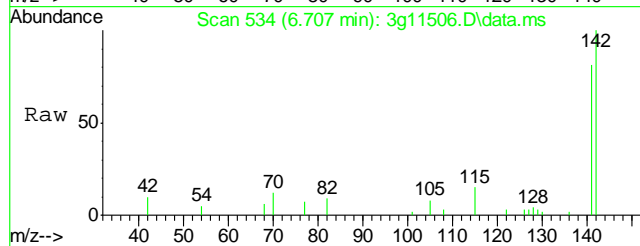
Tgt Ion: 142 Resp: 20447  
Ion Ratio Lower Upper  
142 100  
141 83.5 65.0 105.0  
115 25.2 7.8 47.8





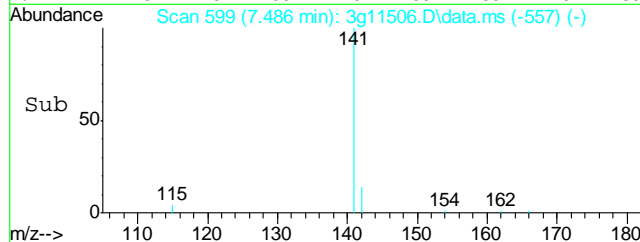
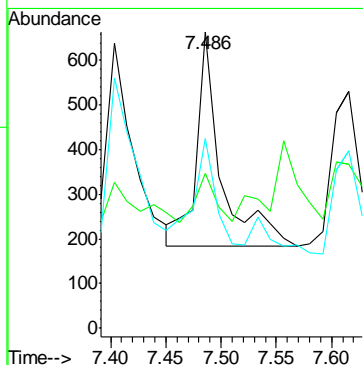
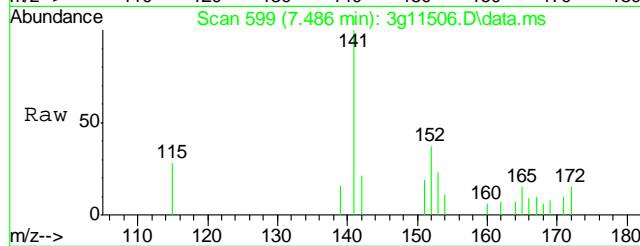
#9  
1-Methylnaphthalene  
Concen: 0.2634 ug/mL  
RT: 6.707 min Scan# 534  
Delta R.T. 0.012 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

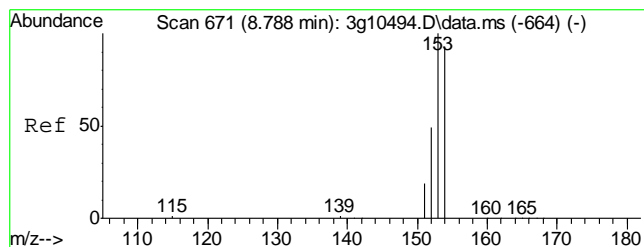
Tgt Ion:	142	Resp:	13169
Ion Ratio	Lower	Upper	
142	100		
141	75.8	68.0	108.0
115	28.8	8.9	48.9



#10  
Acenaphthylene  
Concen: Below ug/mL  
RT: 7.486 min Scan# 599  
Delta R.T. -0.000 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

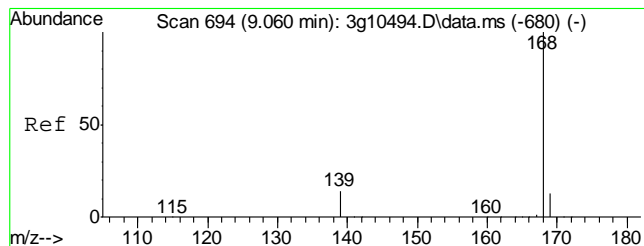
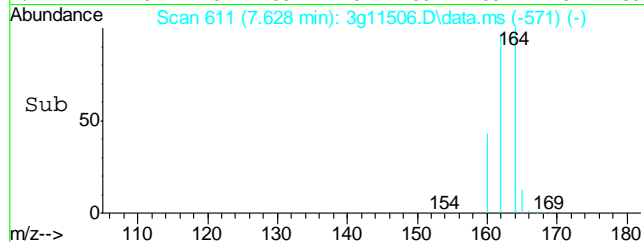
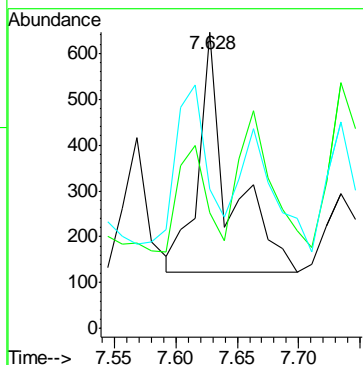
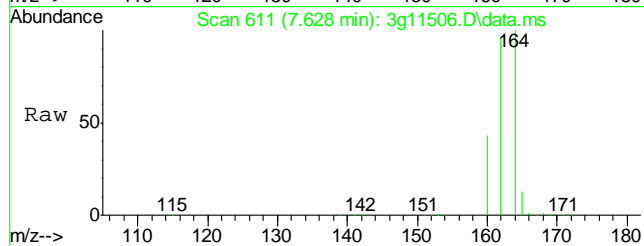
Tgt Ion:	152	Resp:	745
Ion Ratio	Lower	Upper	
152	100		
151	17.9	0.0	39.3
153	42.0	0.0	33.0#





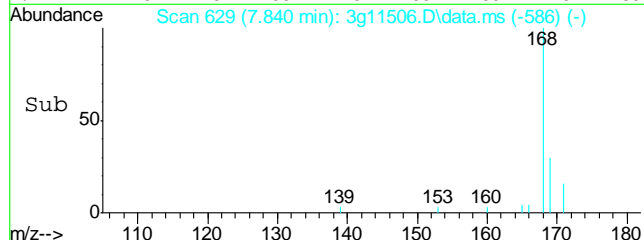
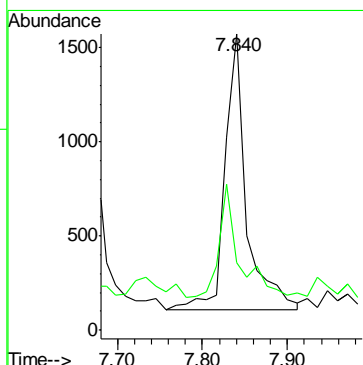
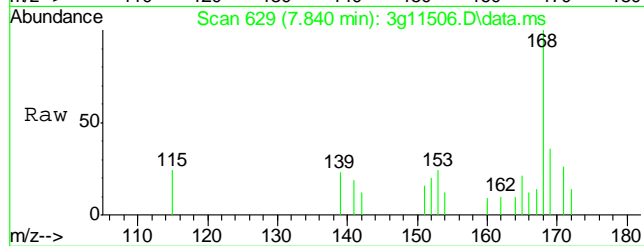
#11  
Acenaphthene  
Concen: Below ug/mL  
RT: 7.628 min Scan# 611  
Delta R.T. -0.024 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

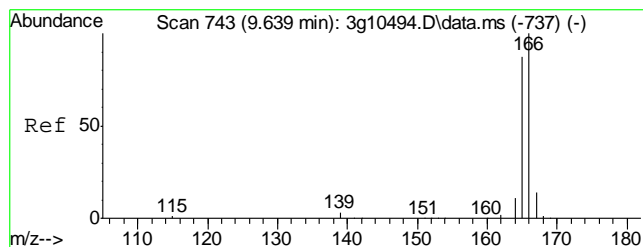
Tgt Ion:154 Resp: 925  
Ion Ratio Lower Upper  
154 100  
153 39.6 85.2 125.2#  
152 66.1 29.7 69.7



#12  
Dibenzofuran  
Concen: Below ug/mL  
RT: 7.840 min Scan# 629  
Delta R.T. 0.012 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

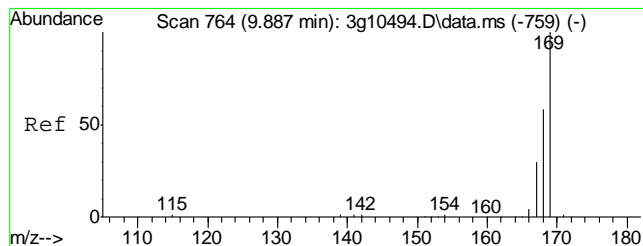
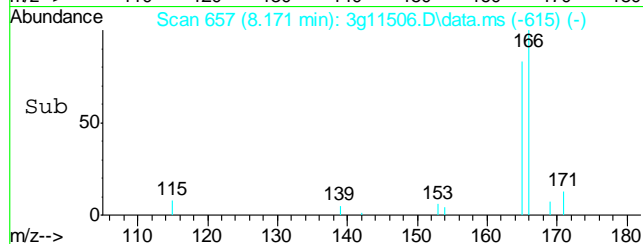
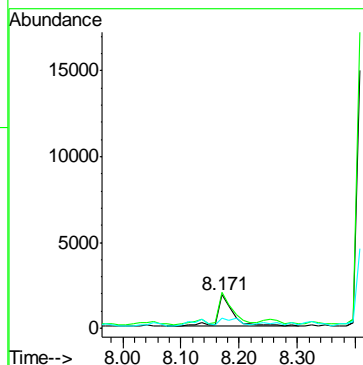
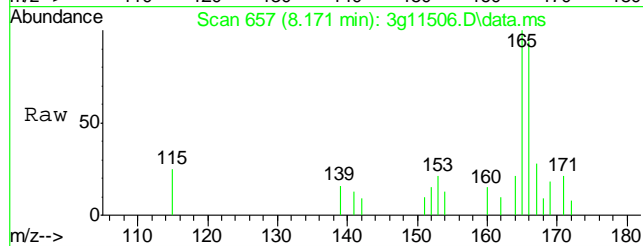
Tgt Ion:168 Resp: 2563  
Ion Ratio Lower Upper  
168 100  
139 37.1 6.7 46.7





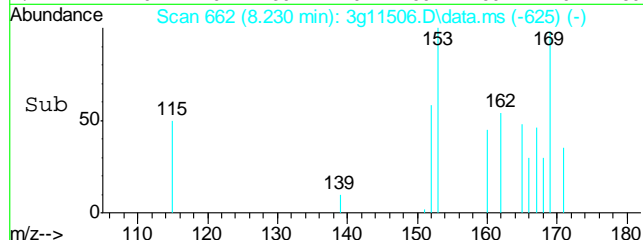
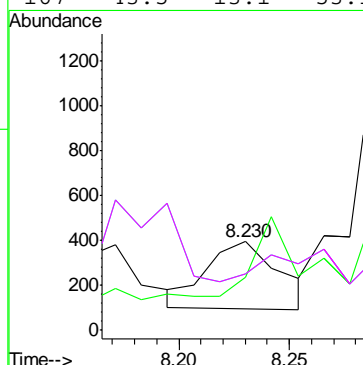
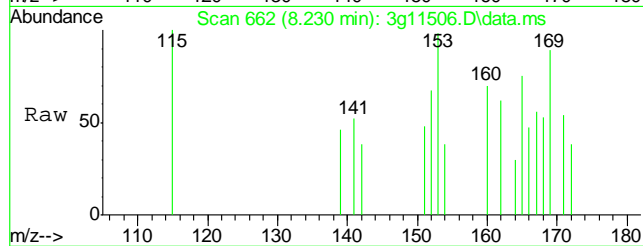
#13  
Fluorene  
Concen: 0.0609 ug/mL  
RT: 8.171 min Scan# 657  
Delta R.T. -0.000 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

Tgt Ion	Ratio	Lower	Upper
166	100		
165	100.8	70.2	110.2
167	21.5	0.0	33.2

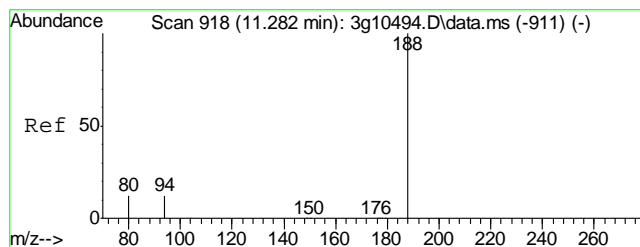


#14  
Diphenylamine  
Concen: Below ug/mL  
RT: 8.230 min Scan# 662  
Delta R.T. -0.059 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

Tgt Ion	Ratio	Lower	Upper
169	100		
168	78.7	40.8	80.8
167	43.5	13.1	53.1
167	43.5	13.1	53.1

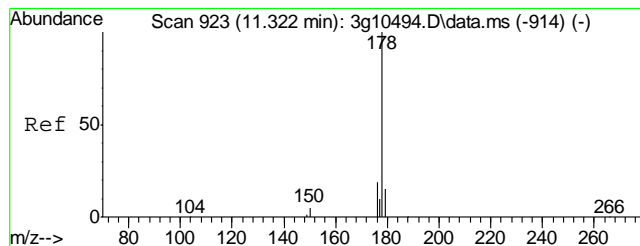
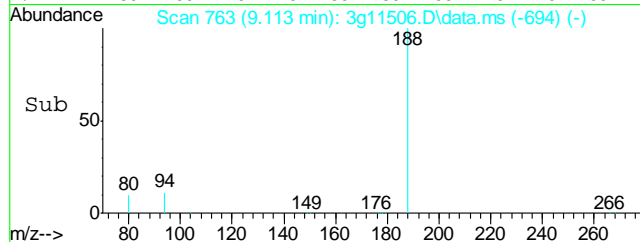
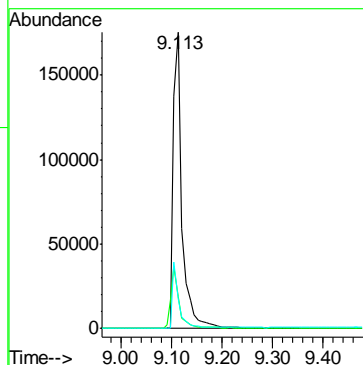
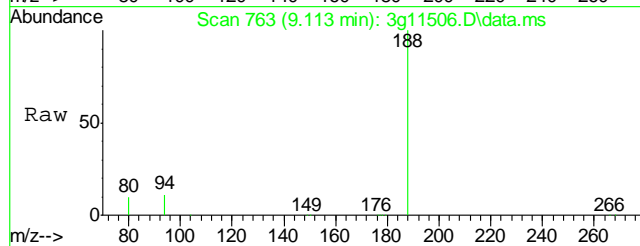






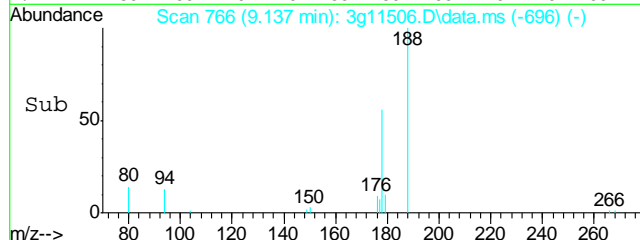
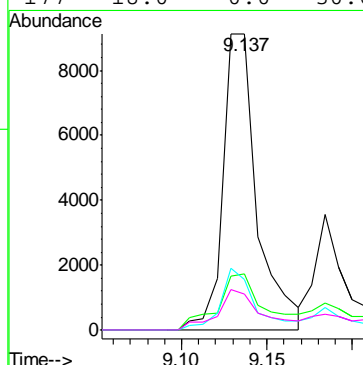
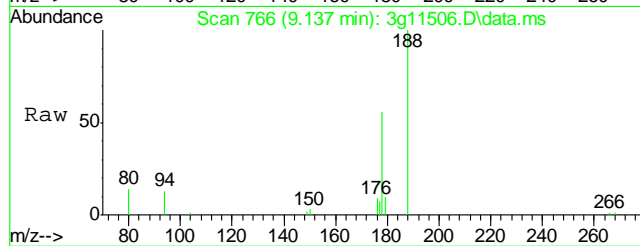
#15  
Phenanthrene-d10  
Concen: 4.0000 ug/mL  
RT: 9.113 min Scan# 763  
Delta R.T. 0.008 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

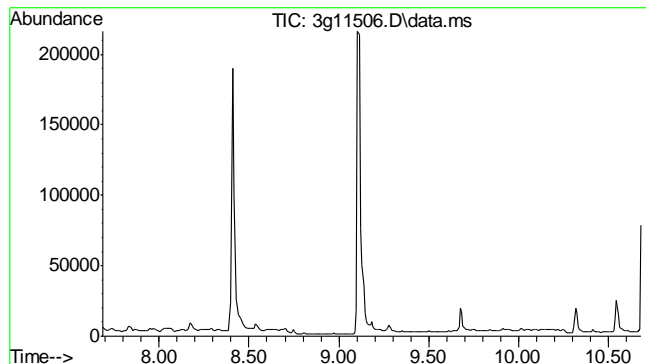
Tgt Ion	Ratio	Lower	Upper
188	100		
94	19.2	0.8	40.8
80	17.1	0.0	32.1



#16  
Phenanthrene  
Concen: 0.1525 ug/mL  
RT: 9.137 min Scan# 766  
Delta R.T. 0.008 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

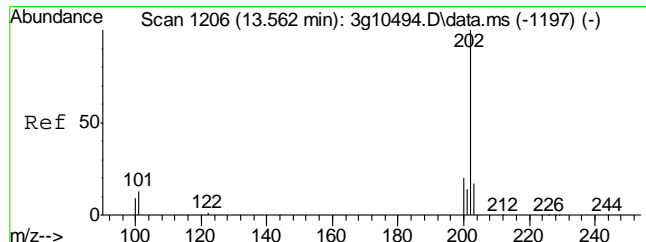
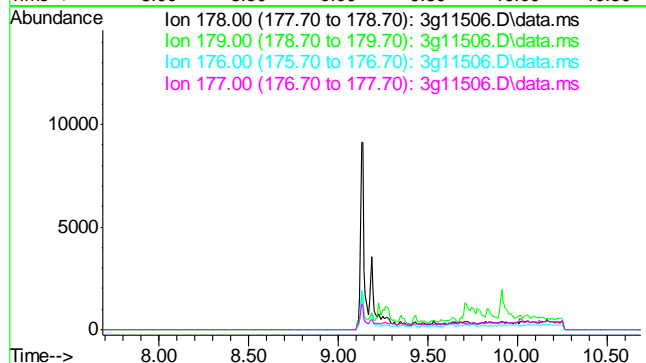
Tgt Ion	Ratio	Lower	Upper
178	100		
179	24.5	0.0	35.2
176	20.2	0.0	38.4
177	18.0	0.0	30.6





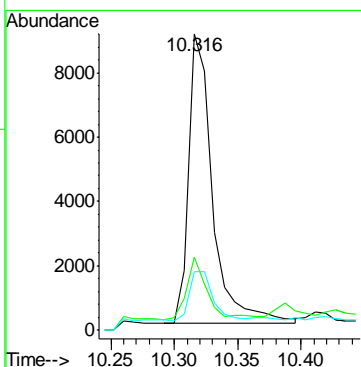
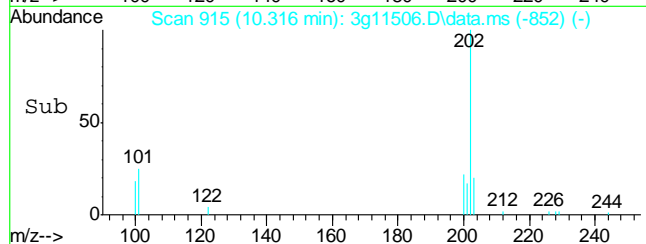
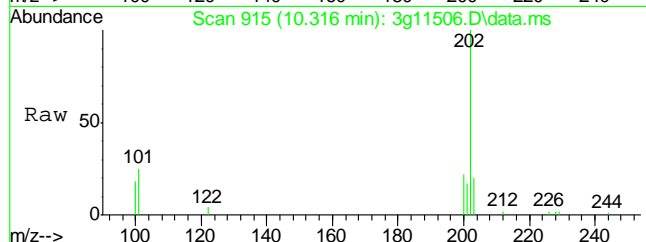
#17  
Anthracene  
Concen: N.D. ug/mL  
Expected RT: 9.18 min  
  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

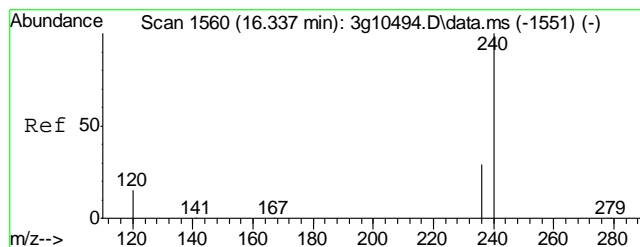
Tgt Ion: 178  
Sig Exp Ratio  
178 100  
179 15.0  
176 17.4  
177 9.0



#18  
Fluoranthene  
Concen: 0.1188 ug/mL  
RT: 10.316 min Scan# 915  
Delta R.T. -0.000 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

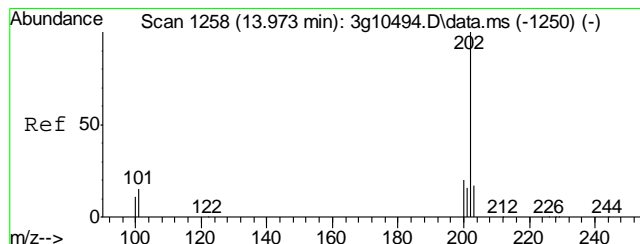
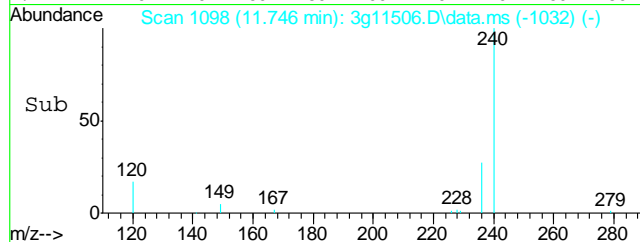
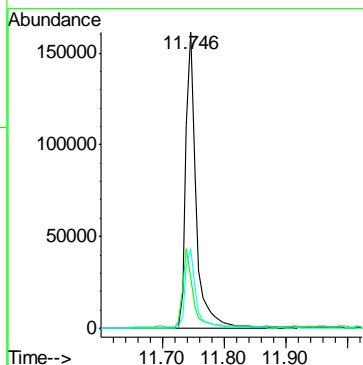
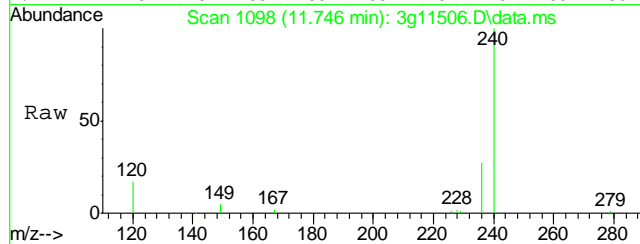
Tgt Ion: 202 Resp: 11660  
Ion Ratio Lower Upper  
202 100  
101 22.4 0.0 38.1  
203 18.8 0.0 37.4





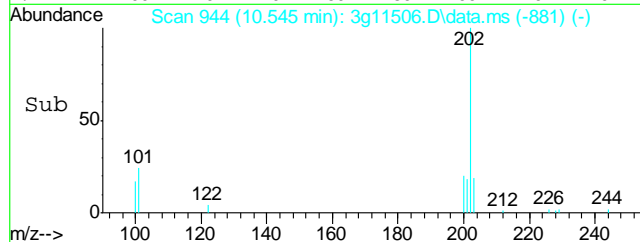
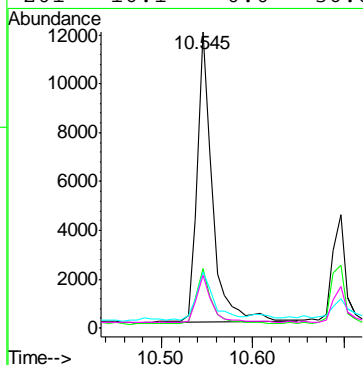
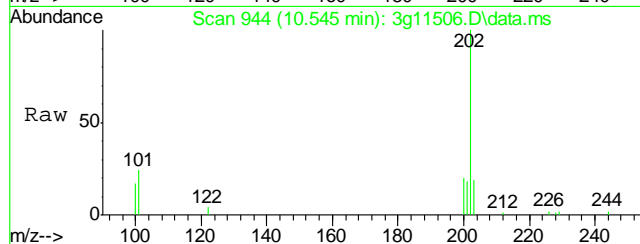
#19  
Chrysene-d12  
Concen: 4.0000 ug/mL  
RT: 11.746 min Scan# 1098  
Delta R.T. 0.006 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

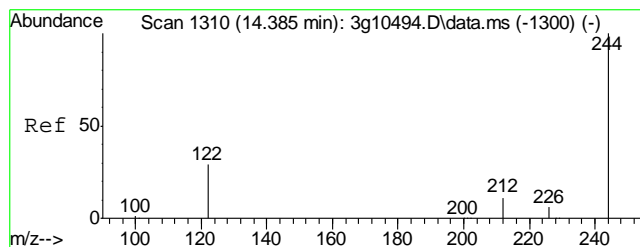
Tgt Ion:	240	Resp:	185473
Ion Ratio	Lower	Upper	
240	100		
120	27.3	4.3	44.3
236	27.6	7.2	47.2



#20  
Pyrene  
Concen: 0.1676 ug/mL  
RT: 10.545 min Scan# 944  
Delta R.T. -0.000 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

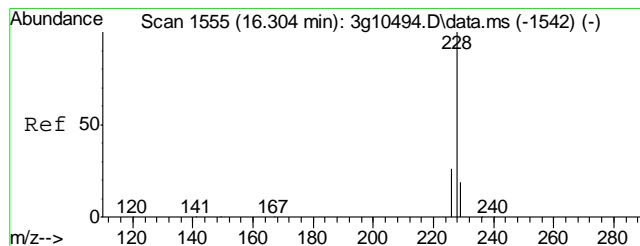
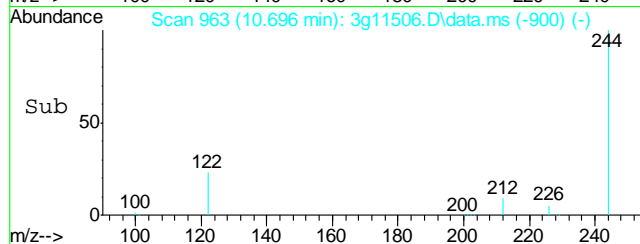
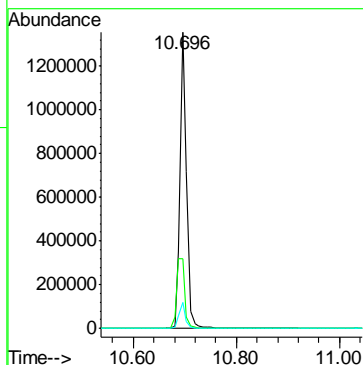
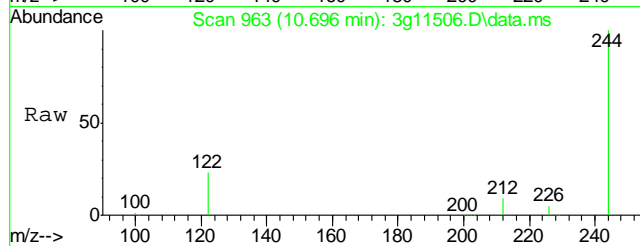
Tgt Ion:	202	Resp:	13663
Ion Ratio	Lower	Upper	
202	100		
200	19.5	0.0	39.9
203	18.7	0.0	37.9
201	16.1	0.0	36.8





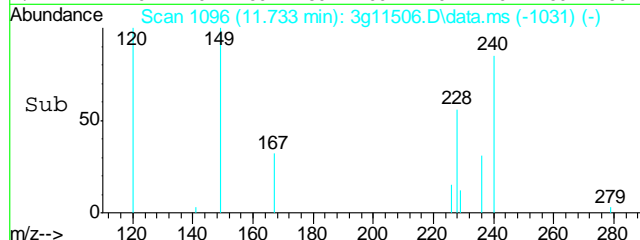
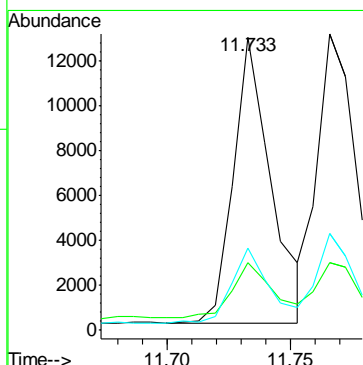
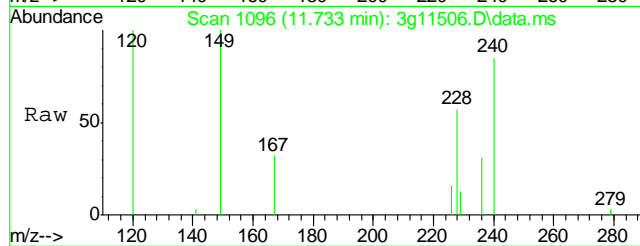
#21  
Terphenyl-d14  
Concen: 45.0848 ug/mL  
RT: 10.696 min Scan# 963  
Delta R.T. -0.000 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

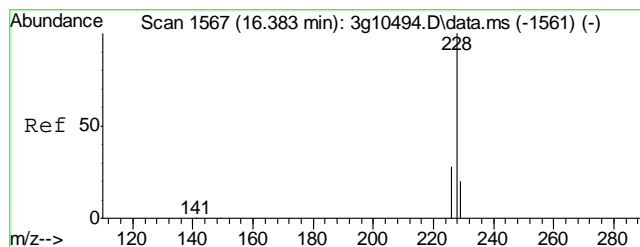
Tgt Ion:244 Resp: 1225168  
Ion Ratio Lower Upper  
244 100  
122 29.5 9.3 49.3  
212 8.5 0.0 28.2



#22  
Benzo(a)anthracene  
Concen: 0.1946 ug/mL  
RT: 11.733 min Scan# 1096  
Delta R.T. -0.000 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

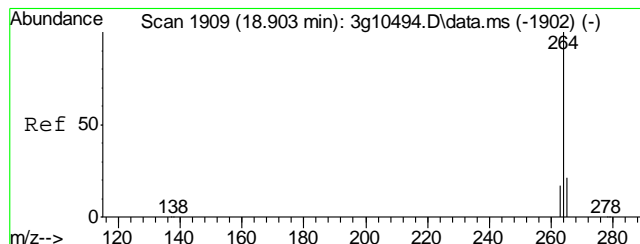
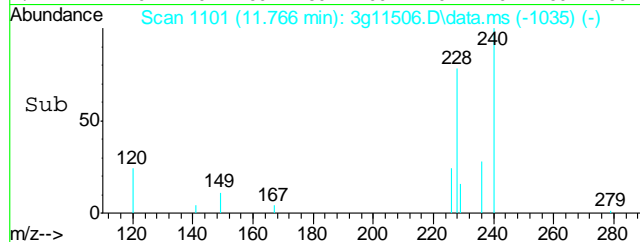
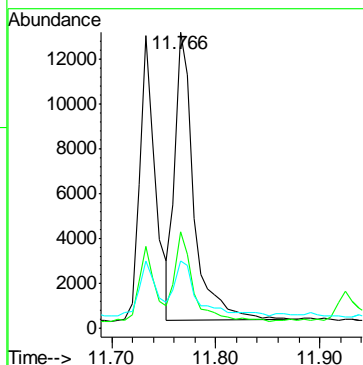
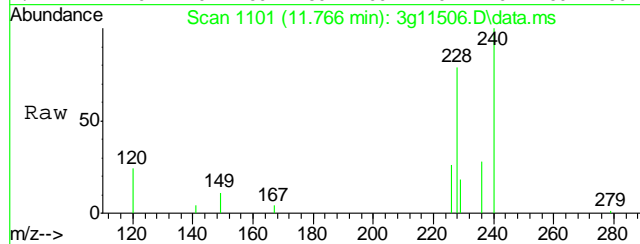
Tgt Ion:228 Resp: 13536  
Ion Ratio Lower Upper  
228 100  
229 22.6 0.0 39.4  
226 27.1 6.3 46.3





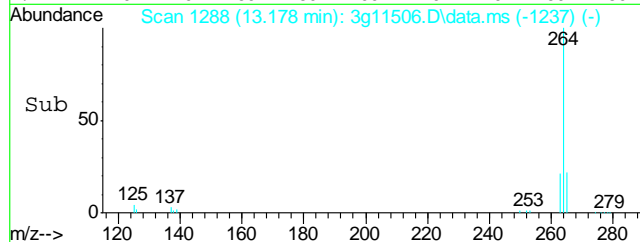
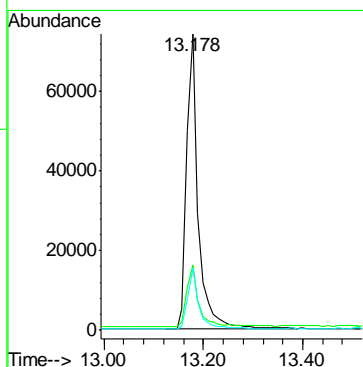
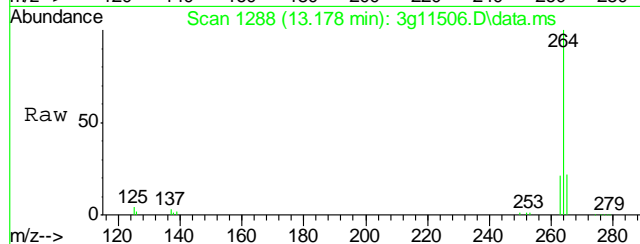
#23  
Chrysene  
Concen: 0.1564 ug/mL  
RT: 11.766 min Scan# 1101  
Delta R.T. 0.001 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

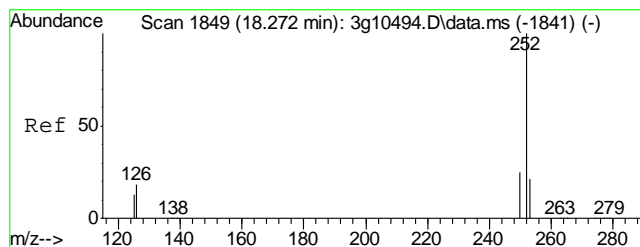
Tgt Ion:	228	Resp:	16240
Ion Ratio	100	Lower	Upper
228	100		
226	29.8	8.0	48.0
229	23.6	0.0	39.4



#24  
Perylene-d12  
Concen: 4.0000 ug/mL  
RT: 13.178 min Scan# 1288  
Delta R.T. 0.010 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

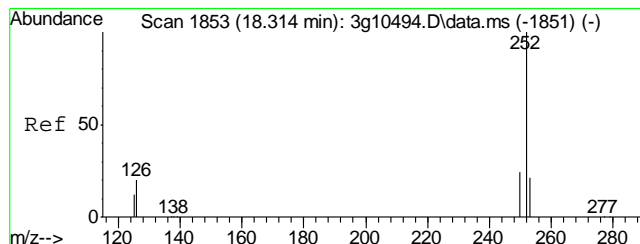
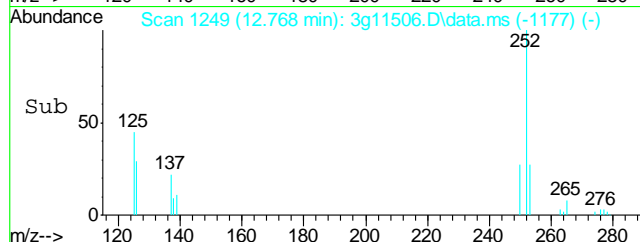
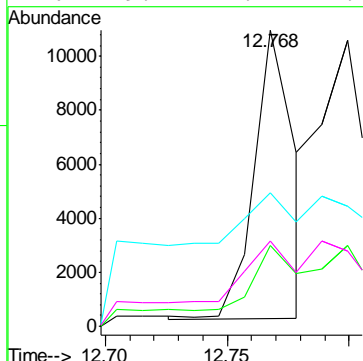
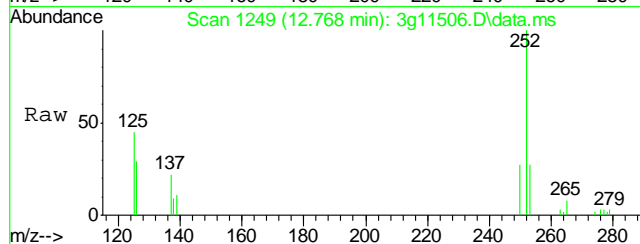
Tgt Ion:	264	Resp:	120361
Ion Ratio	100	Lower	Upper
264	100		
265	21.0	0.7	40.7
263	19.7	0.0	39.2





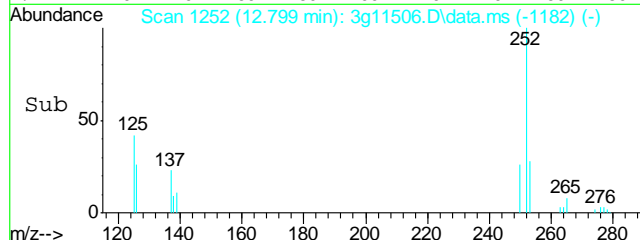
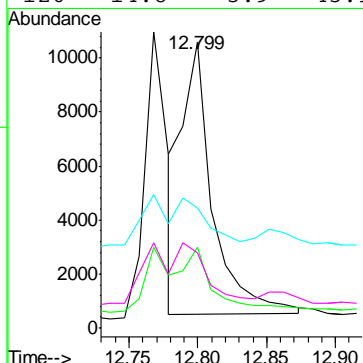
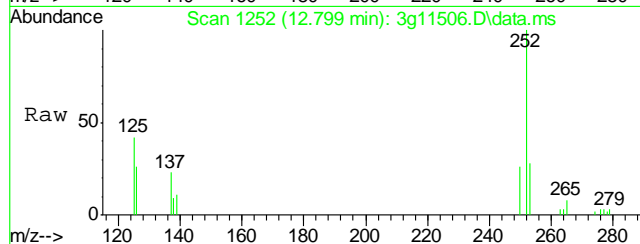
#25  
Benzo(b)fluoranthene  
Concen: 0.1543 ug/mL m  
RT: 12.768 min Scan# 1249  
Delta R.T. -0.000 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

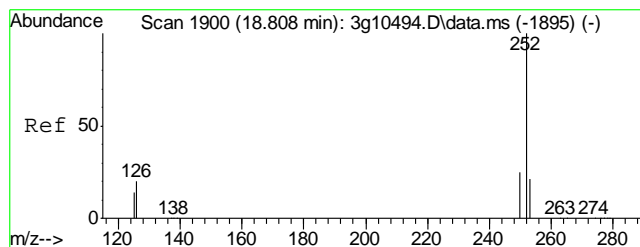
Tgt Ion:	252	Resp:	12204
Ion Ratio	Lower	Upper	
252	100		
253	19.9	0.0	39.9
125	20.2	0.0	36.8
126	19.7	1.2	41.2



#26  
Benzo(k)fluoranthene  
Concen: 0.2101 ug/mL m  
RT: 12.799 min Scan# 1252  
Delta R.T. -0.000 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

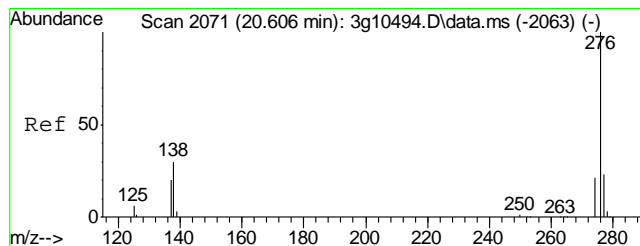
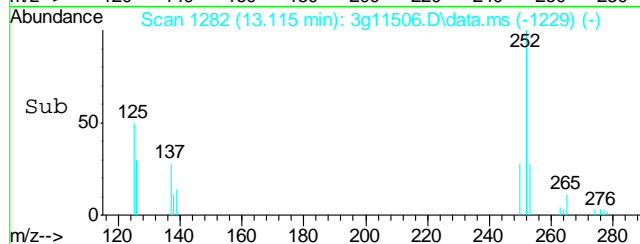
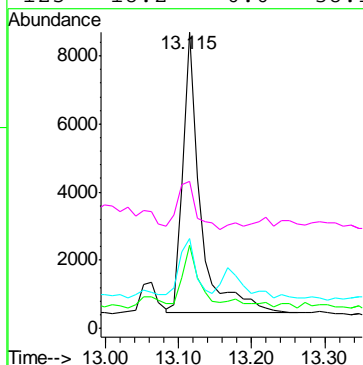
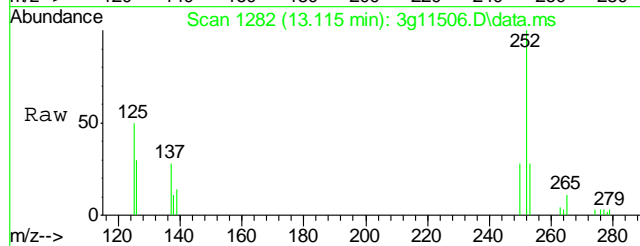
Tgt Ion:	252	Resp:	16114
Ion Ratio	Lower	Upper	
252	100		
253	15.1	4.3	44.3
125	15.3	0.6	40.6
126	14.8	5.9	45.9





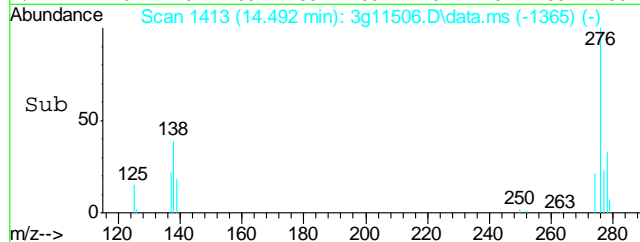
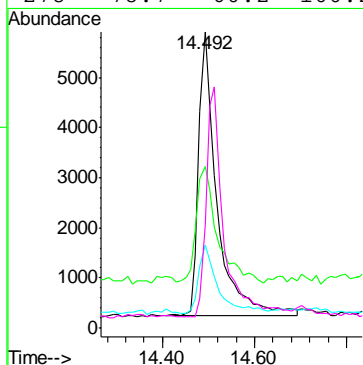
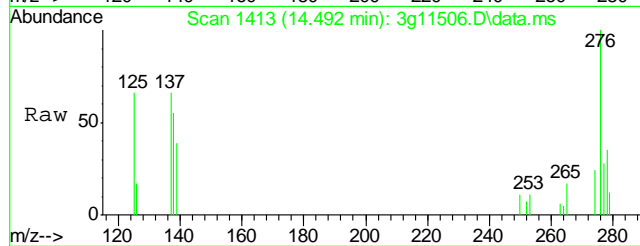
#27  
Benzo(a)pyrene  
Concen: 0.1709 ug/mL  
RT: 13.115 min Scan# 1282  
Delta R.T. -0.000 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

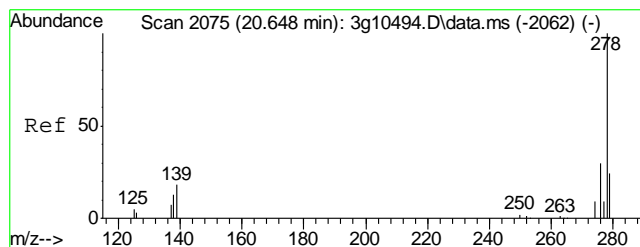
Tgt Ion	Ratio	Lower	Upper
252	100		
253	17.8	1.4	41.4
126	17.6	2.9	42.9
125	18.2	0.0	38.1



#28  
Indeno(1,2,3-cd)pyrene  
Concen: 0.1820 ug/mL  
RT: 14.492 min Scan# 1413  
Delta R.T. -0.000 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

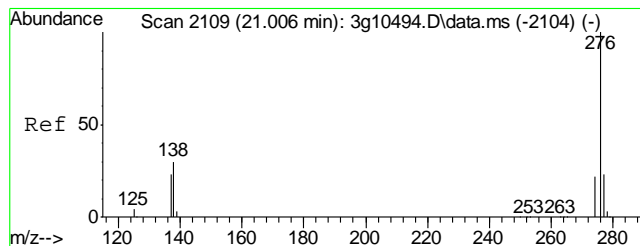
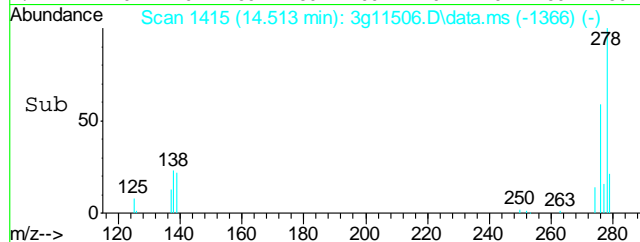
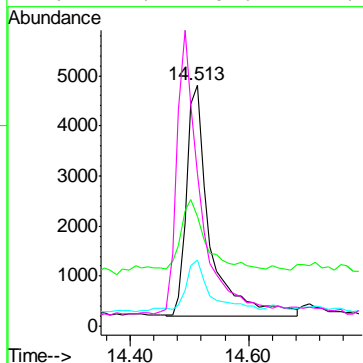
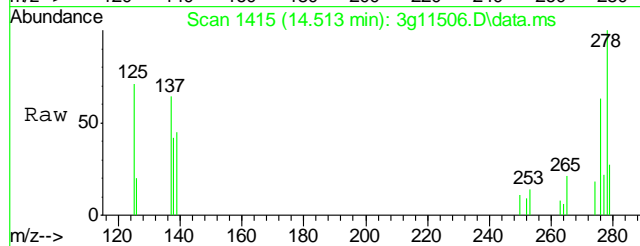
Tgt Ion	Ratio	Lower	Upper
276	100		
138	47.5	22.1	62.1
277	25.6	5.2	45.2
278	78.7	60.2	100.2





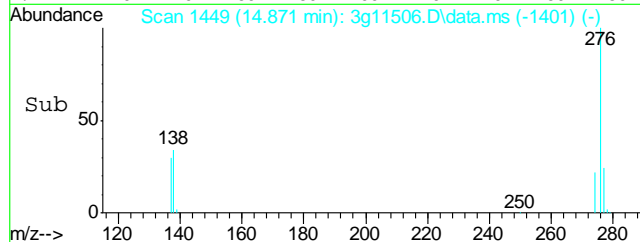
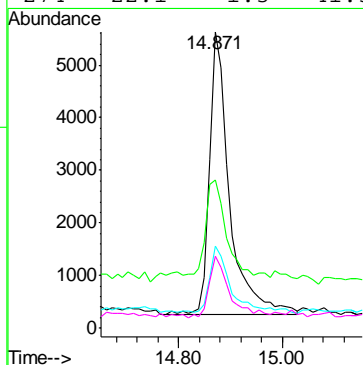
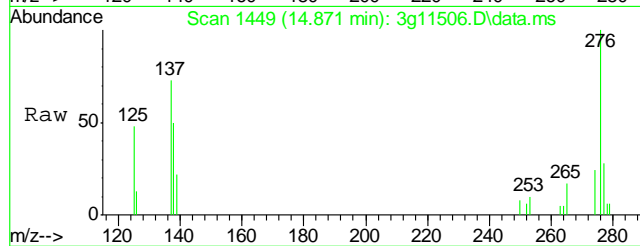
#29  
Dibenz(a,h)anthracene  
Concen: 0.1830 ug/mL  
RT: 14.513 min Scan# 1415  
Delta R.T. 0.010 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

Tgt Ion	Ratio	Lower	Upper
278	100		
139	35.2	10.1	50.1
279	25.9	3.3	43.3
276	127.1	104.7	144.7



#30  
Benzo(g,h,i)perylene  
Concen: 0.1930 ug/mL  
RT: 14.871 min Scan# 1449  
Delta R.T. -0.000 min  
Lab File: 3g11506.D  
Acq: 4 Oct 12 2:59 pm

Tgt Ion	Ratio	Lower	Upper
276	100		
138	37.8	15.2	55.2
277	25.2	3.3	43.3
274	22.1	1.3	41.3





## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\100412\  
 Data File : 3g11500.D  
 Acq On : 4 Oct 2012 12:36 pm  
 Operator : DONC  
 Sample : OP6746-MB  
 Misc : OP6746,E3G539,30.00,,,1,1  
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Oct 04 16:31:47 2012  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G533.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Wed Sep 26 13:36:23 2012  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.909	136	253979	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.628	164	141485	4.0000	ug/mL	0.00
15) Phenanthrene-d10	9.113	188	193738	4.0000	ug/mL	0.00
19) Chrysene-d12	11.746	240	194097	4.0000	ug/mL	0.00
24) Perylene-d12	13.178	264	121808	4.0000	ug/mL	0.01

## System Monitoring Compounds

2) Nitrobenzene-d5	5.223	82	1132947	51.1013	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 102.20%			
7) 2-Fluorobiphenyl	6.966	172	2755315	45.5629	ug/mL	0.01
Spiked Amount 50.000	Range 25 - 135		Recovery = 91.12%			
21) Terphenyl-d14	10.696	244	1544464	54.3093	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery = 108.62%			

## Target Compounds

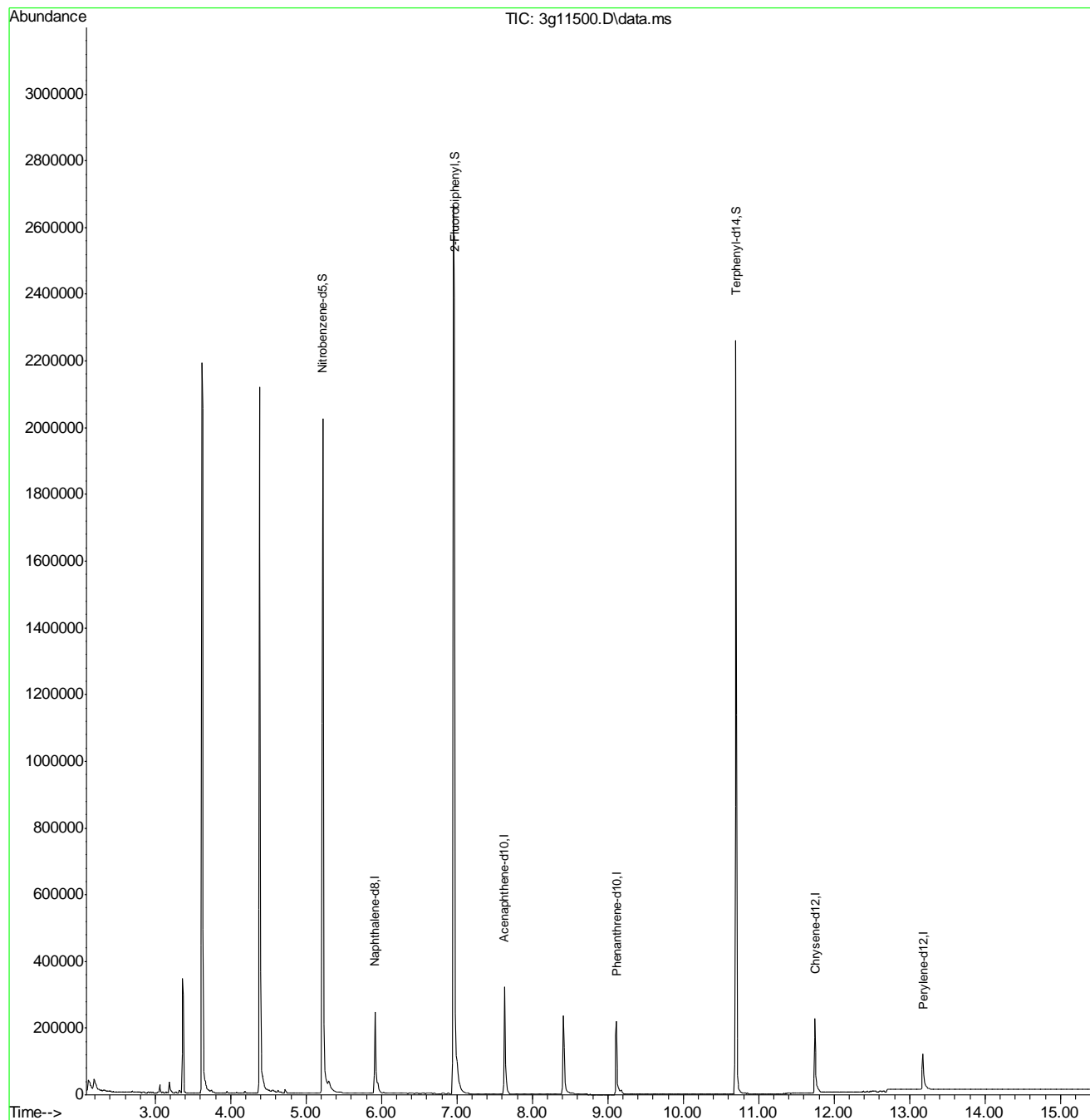
					Qvalue
3) N-Nitrosodimethylamine	2.552	74	96	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.934	128	807	N.D.	
8) 2-Methylnaphthalene	6.607	142	571	N.D.	
9) 1-Methylnaphthalene	6.707	142	248	N.D.	
10) Acenaphthylene	7.486	152	250	N.D.	
11) Acenaphthene	7.628	154	726	N.D.	
12) Dibenzofuran	7.840	168	224	N.D.	
13) Fluorene	0.000	166	0	N.D.	d
14) Diphenylamine	0.000	169	0	N.D.	d
16) Phenanthrene	9.137	178	995	N.D.	
17) Anthracene	9.184	178	227	N.D.	
18) Fluoranthene	10.324	202	1243	N.D.	
20) Pyrene	10.546	202	339	N.D.	
22) Benzo(a)anthracene	11.746	228	721	N.D.	
23) Chrysene	11.746	228	721	Below	Cal # 29
25) Benzo(b)fluoranthene	12.736	252	1610	N.D.	
26) Benzo(k)fluoranthene	12.736	252	1610	N.D.	
27) Benzo(a)pyrene	13.178	252	1398	N.D.	
28) Indeno(1,2,3-cd)pyrene	14.493	276	350	N.D.	
29) Dibenz(a,h)anthracene	14.535	278	310	N.D.	
30) Benzo(g,h,i)perylene	14.840	276	133	N.D.	

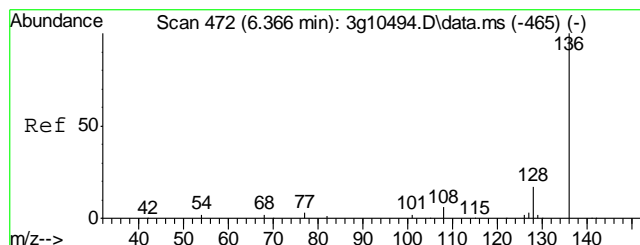
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\100412\  
Data File : 3g11500.D  
Acq On : 4 Oct 2012 12:36 pm  
Operator : DONC  
Sample : OP6746-MB  
Misc : OP6746,E3G539,30.00,,,1,1  
ALS Vial : 4 Sample Multiplier: 1

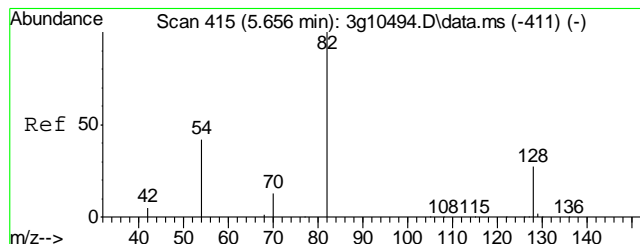
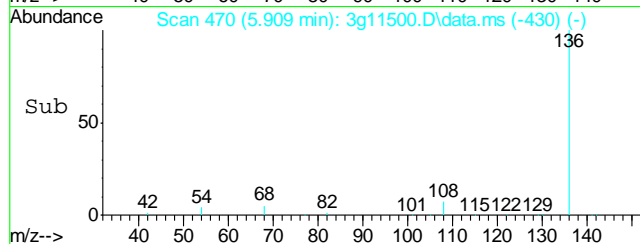
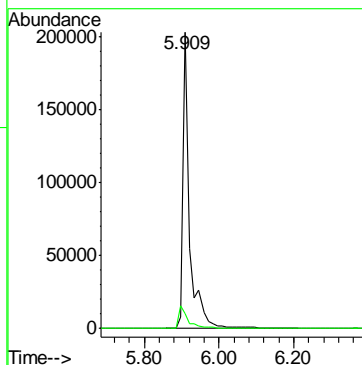
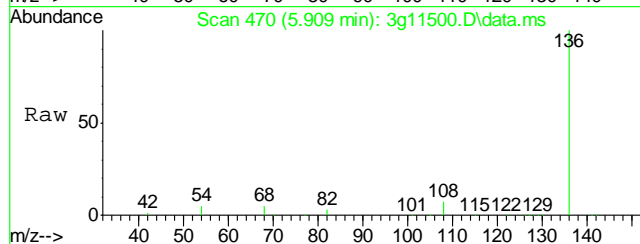
Quant Time: Oct 04 16:31:47 2012  
Quant Method : C:\msdchem\1\METHODS\SIMPE3G533.M  
Quant Title : PAHSIM BASE  
QLast Update : Wed Sep 26 13:36:23 2012  
Response via : Initial Calibration





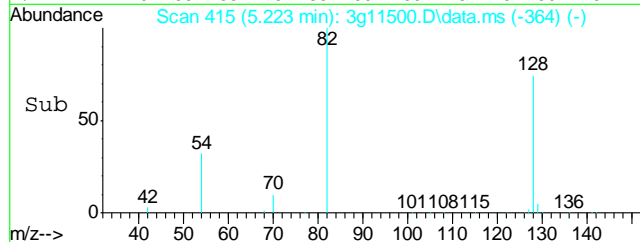
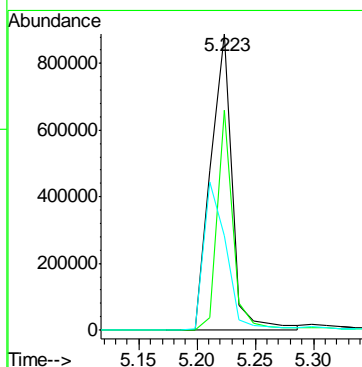
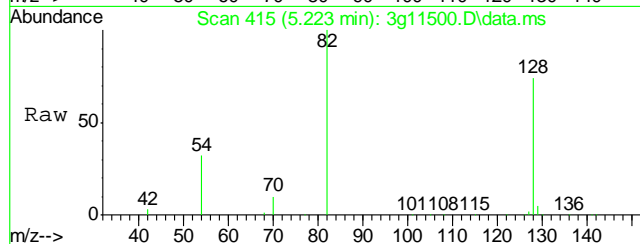
#1  
Naphthalene-d8  
Concen: 4.0000 ug/mL  
RT: 5.909 min Scan# 470  
Delta R.T. 0.000 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

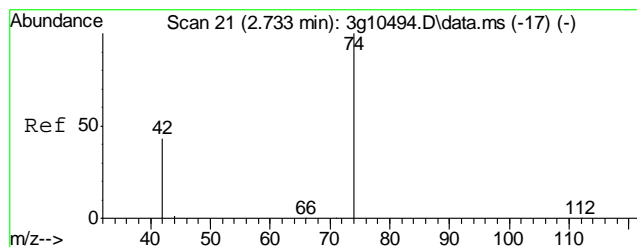
Tgt Ion:	136	Resp:	253979
Ion Ratio	Lower	Upper	
136	100		
68	10.1	0.0	30.7



#2  
Nitrobenzene-d5  
Concen: 51.1013 ug/mL  
RT: 5.223 min Scan# 415  
Delta R.T. 0.000 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

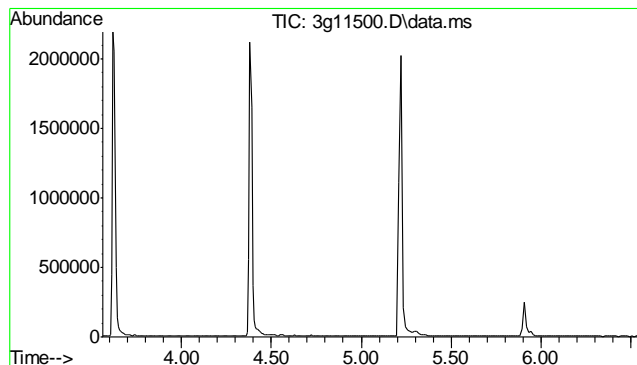
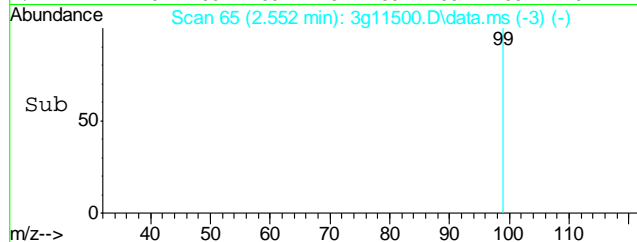
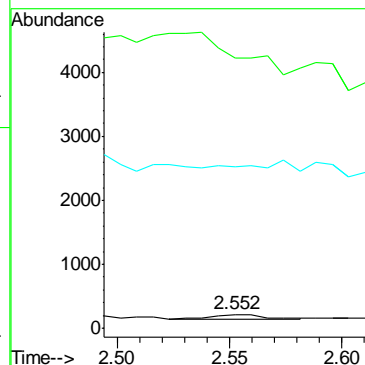
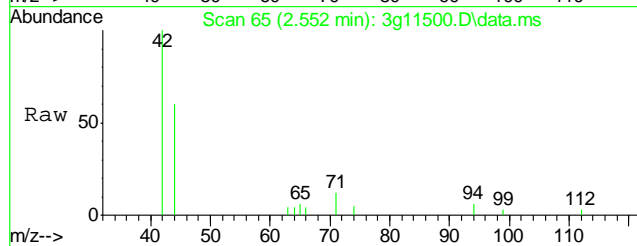
Tgt Ion:	82	Resp:	1132947
Ion Ratio	Lower	Upper	
82	100		
128	57.1	33.7	73.7
54	55.3	34.2	74.2





#3  
N-Nitrosodimethylamine  
Concen: Below ug/mL  
RT: 2.552 min Scan# 65  
Delta R.T. -0.051 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

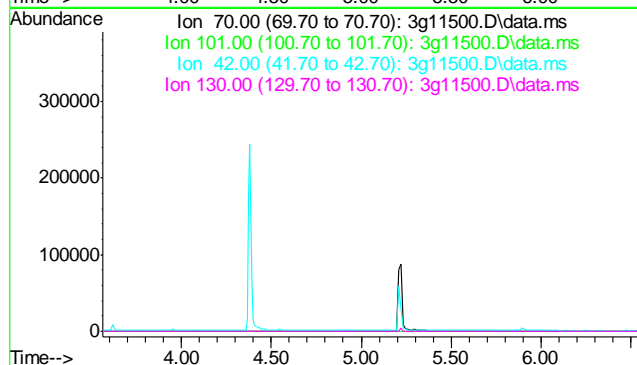
Tgt Ion: 74 Resp: 96  
Ion Ratio Lower Upper  
74 100  
42 0.0 39.5 79.5#  
44 0.0 0.0 24.1

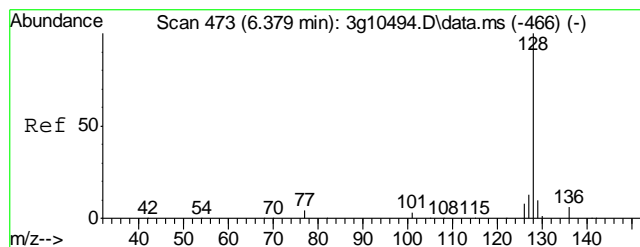


#4  
N-Nitrosodi-propylamine  
Concen: N.D. ug/mL  
Expected RT: 5.06 min

Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

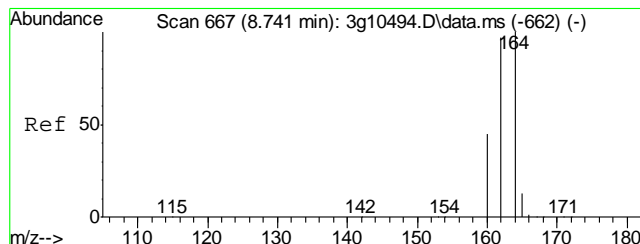
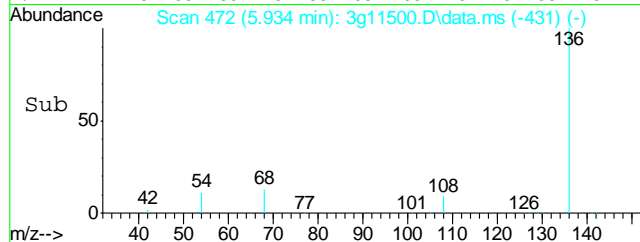
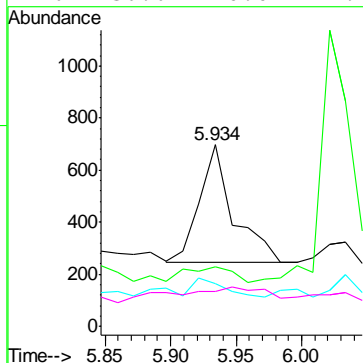
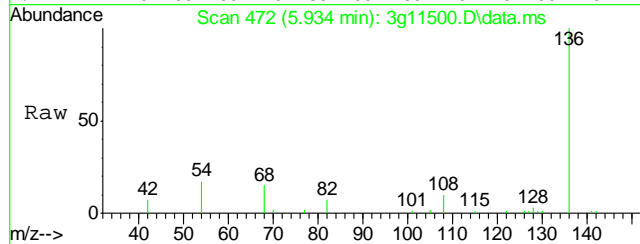
Tgt Ion: 70  
Sig Exp Ratio  
70 100  
101 10.8  
42 54.8  
130 21.8





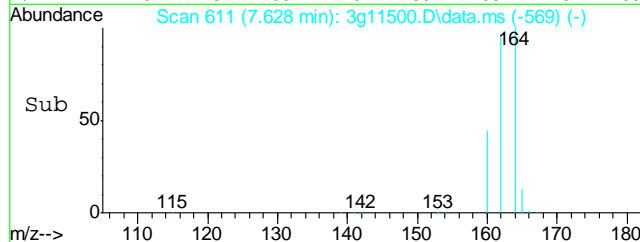
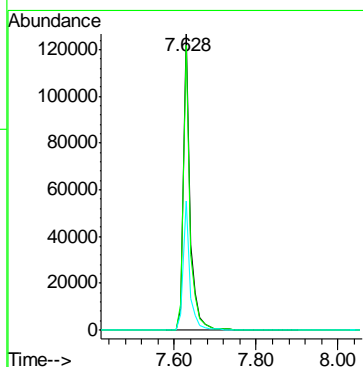
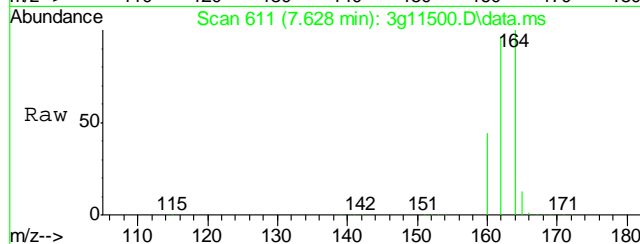
#5  
Naphthalene  
Concen: Below ug/mL  
RT: 5.934 min Scan# 472  
Delta R.T. 0.012 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

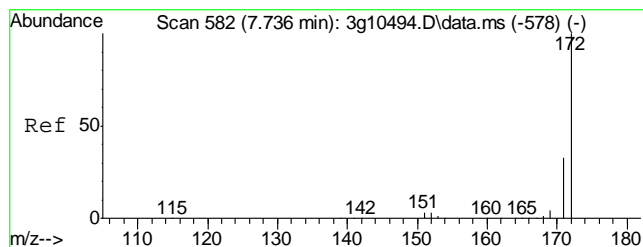
Tgt Ion	128	129	127	126
Resp	807	20.0	35.8	36.6
Ratio	100			
Lower		0.0	0.0	0.0
Upper		30.8	33.4#	27.4#



#6  
Acenaphthene-d10  
Concen: 4.0000 ug/mL  
RT: 7.628 min Scan# 611  
Delta R.T. -0.000 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

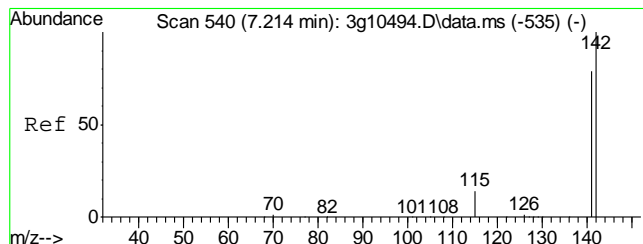
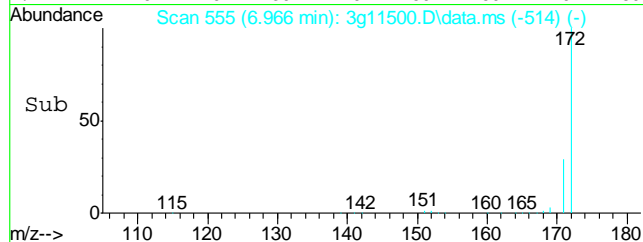
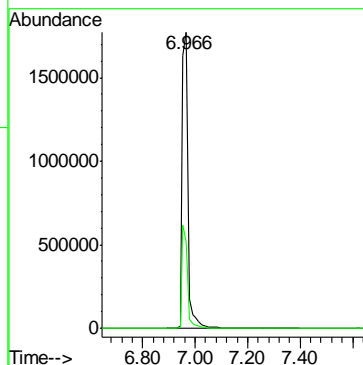
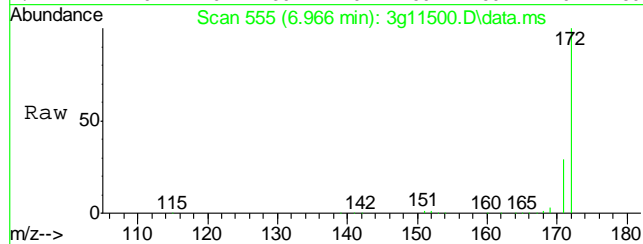
Tgt Ion	164	162	160
Resp	141485	95.7	43.3
Ratio	100		
Lower		74.6	22.4
Upper		114.6	62.4





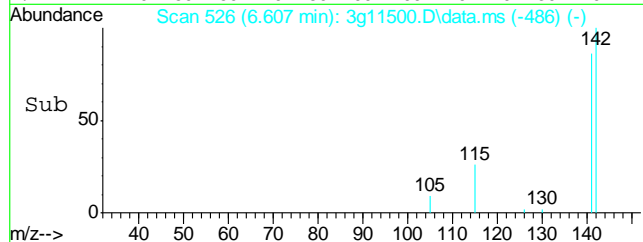
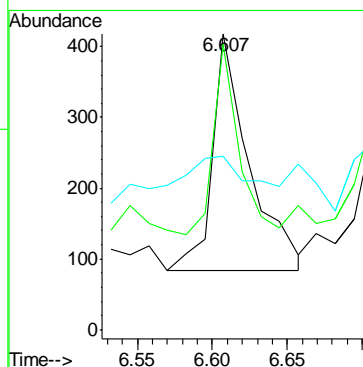
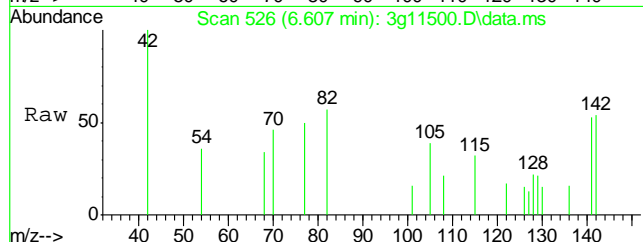
#7  
2-Fluorobiphenyl  
Concen: 45.5629 ug/mL  
RT: 6.966 min Scan# 555  
Delta R.T. 0.012 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

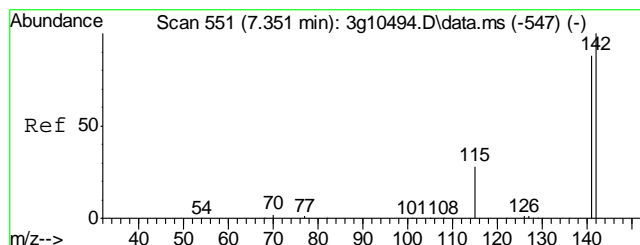
Tgt Ion:172 Resp: 2755315  
Ion Ratio Lower Upper  
172 100  
171 33.3 14.1 54.1



#8  
2-Methylnaphthalene  
Concen: Below ug/mL  
RT: 6.607 min Scan# 526  
Delta R.T. 0.000 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

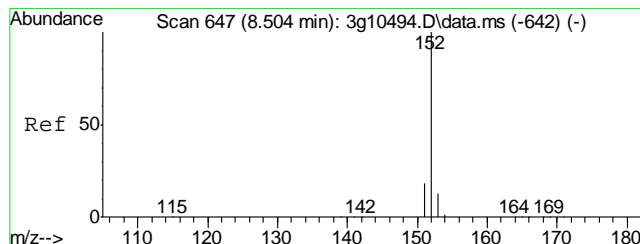
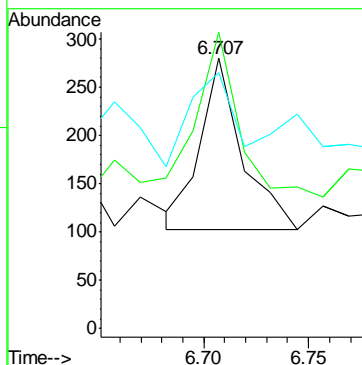
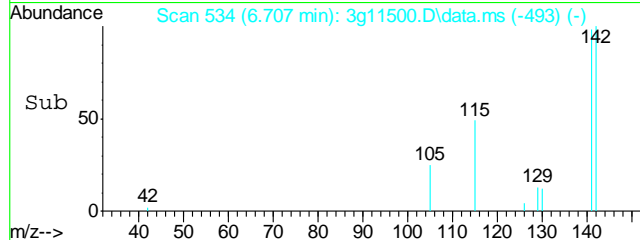
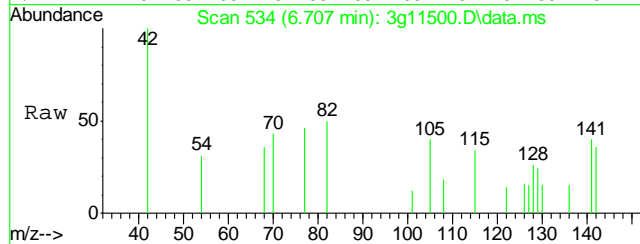
Tgt Ion:142 Resp: 571  
Ion Ratio Lower Upper  
142 100  
141 55.5 65.0 105.0#  
115 0.0 7.8 47.8#





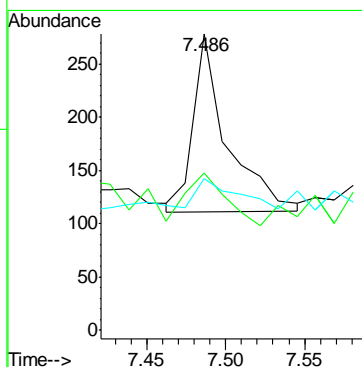
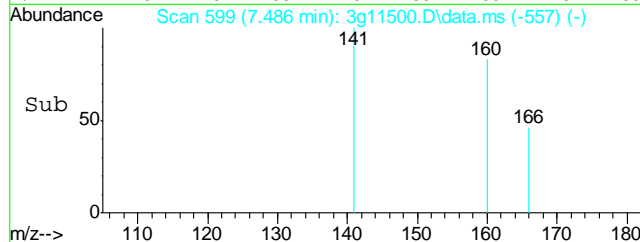
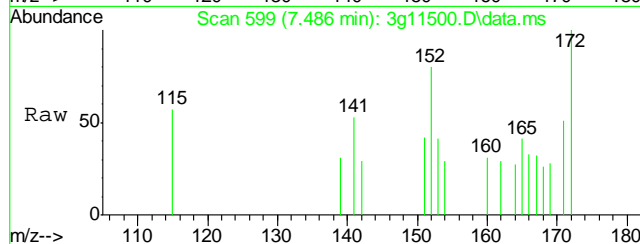
#9  
1-Methylnaphthalene  
Concen: Below ug/mL  
RT: 6.707 min Scan# 534  
Delta R.T. 0.012 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

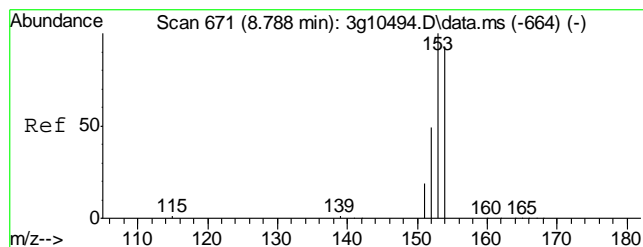
Tgt Ion: 142 Resp: 248  
Ion Ratio Lower Upper  
142 100  
141 114.9 68.0 108.0#  
115 0.0 8.9 48.9#



#10  
Acenaphthylene  
Concen: Below ug/mL  
RT: 7.486 min Scan# 599  
Delta R.T. 0.000 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

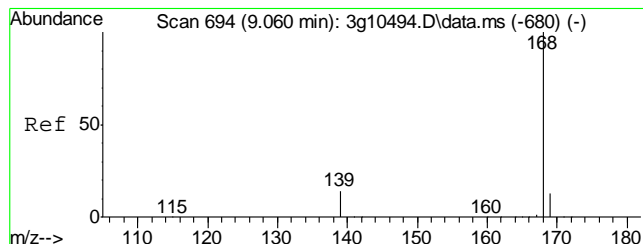
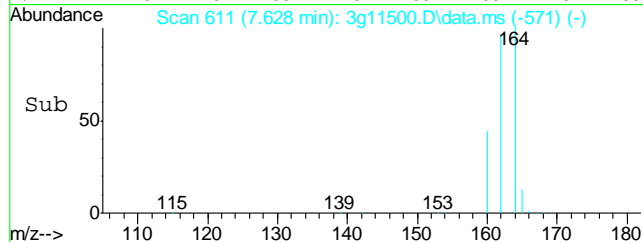
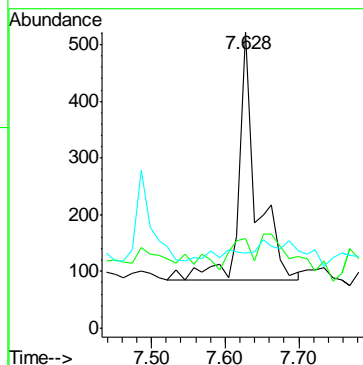
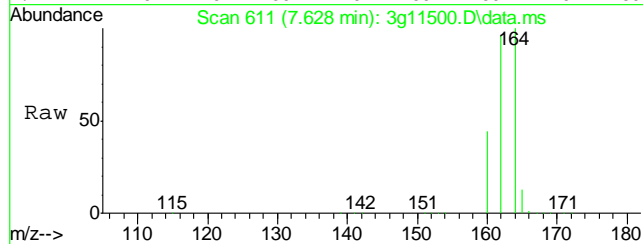
Tgt Ion: 152 Resp: 250  
Ion Ratio Lower Upper  
152 100  
151 35.2 0.0 39.3  
153 29.6 0.0 33.0





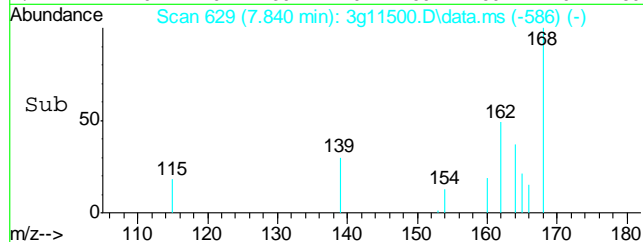
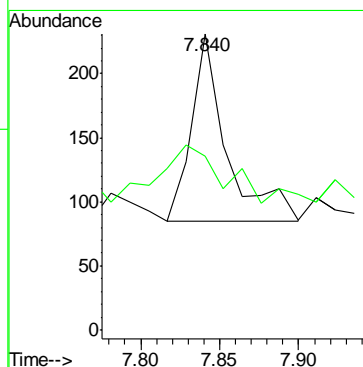
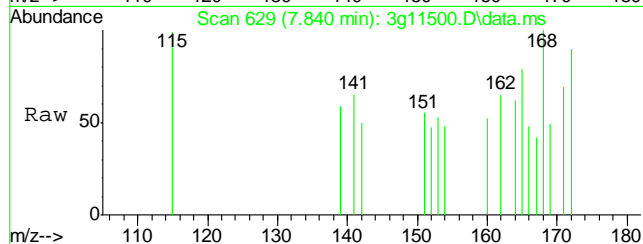
#11  
Acenaphthene  
Concen: Below ug/mL  
RT: 7.628 min Scan# 611  
Delta R.T. -0.024 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

Tgt Ion:	154	Resp:	726
Ion Ratio	Lower	Upper	
154	100		
153	15.3	85.2	125.2#
152	0.0	29.7	69.7#

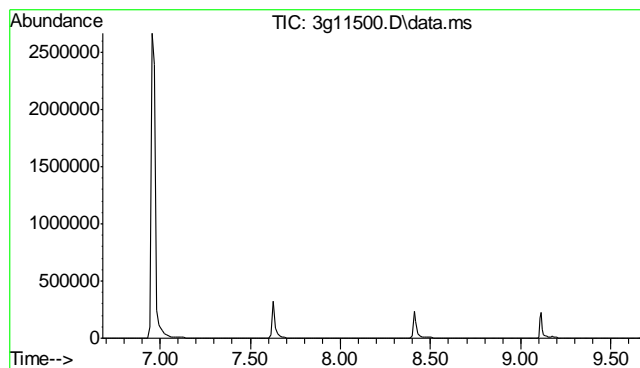


#12  
Dibenzofuran  
Concen: Below ug/mL  
RT: 7.840 min Scan# 629  
Delta R.T. 0.012 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

Tgt Ion:	168	Resp:	224
Ion Ratio	Lower	Upper	
168	100		
139	69.6	6.7	46.7#



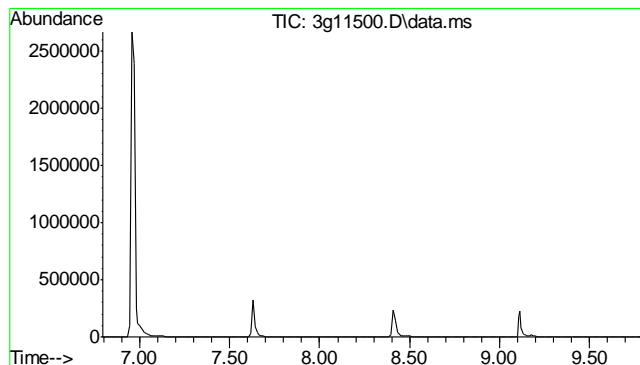
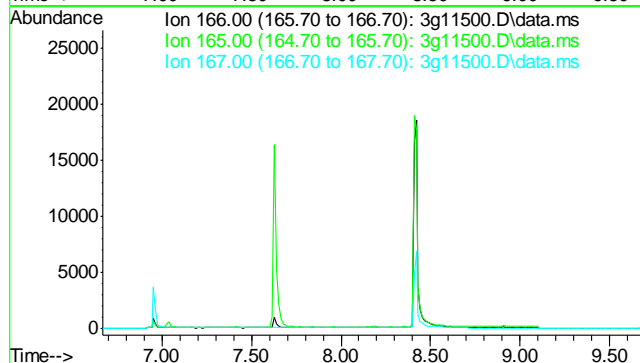




#13  
Fluorene  
Concen: N.D. ug/mL  
Expected RT: 8.17 min

Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

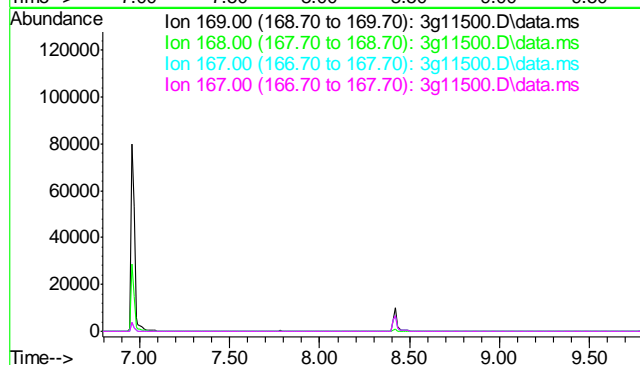
Tgt Ion:	166
Sig	Exp Ratio
166	100
165	90.2
167	13.2

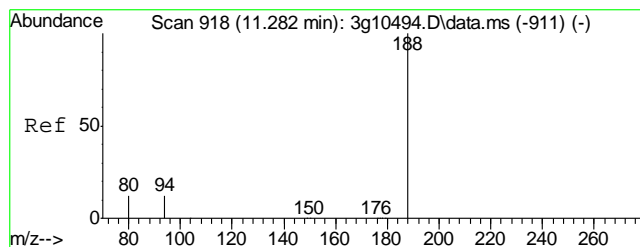


#14  
Diphenylamine  
Concen: N.D. ug/mL  
Expected RT: 8.29 min

Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

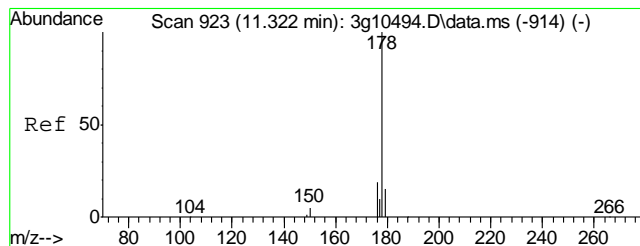
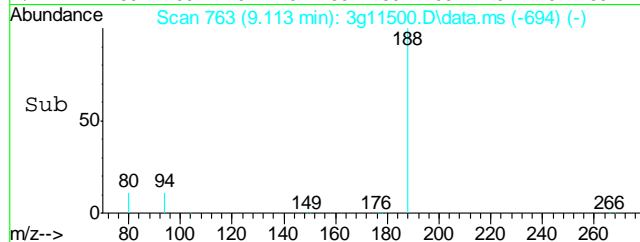
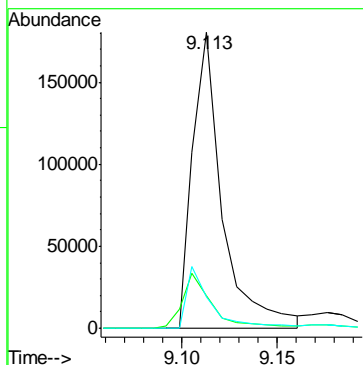
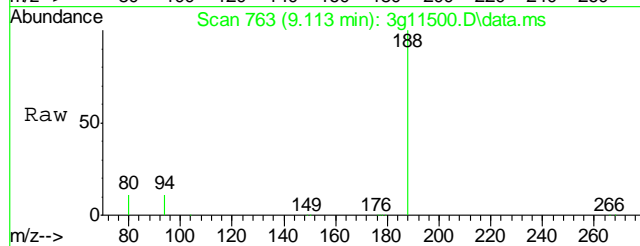
Tgt Ion:	169
Sig	Exp Ratio
169	100
168	60.8
167	33.1
167	33.1





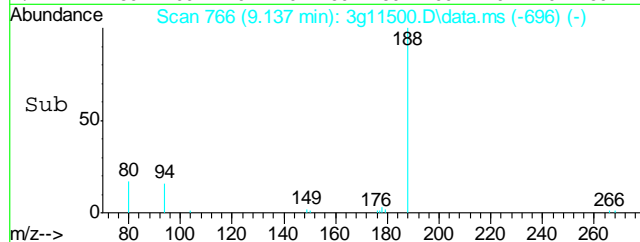
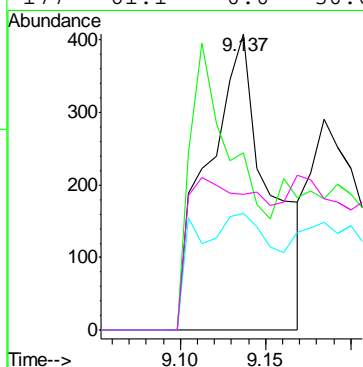
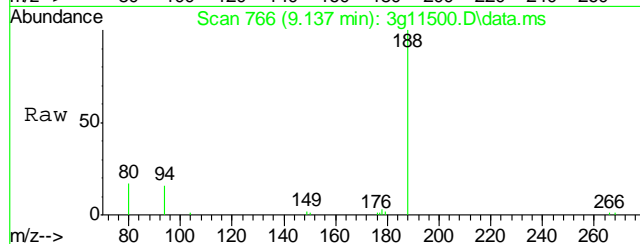
#15  
Phenanthrene-d10  
Concen: 4.0000 ug/mL  
RT: 9.113 min Scan# 763  
Delta R.T. 0.008 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

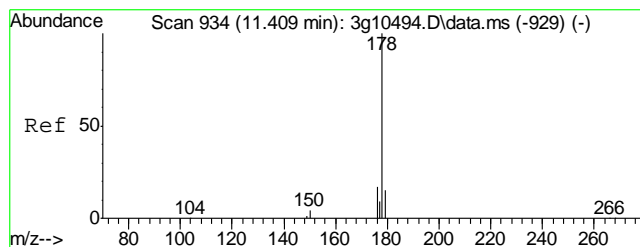
Tgt Ion:188	Resp:	193738
Ion Ratio	Lower	Upper
188	100	
94	18.5	0.8 40.8
80	17.7	0.0 32.1



#16  
Phenanthrene  
Concen: Below ug/mL  
RT: 9.137 min Scan# 766  
Delta R.T. 0.008 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

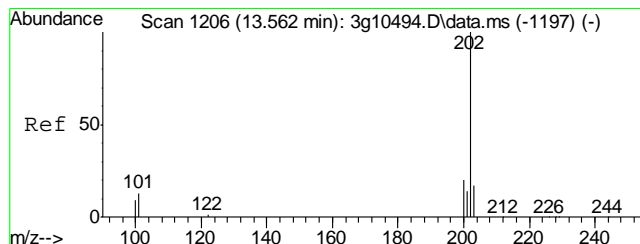
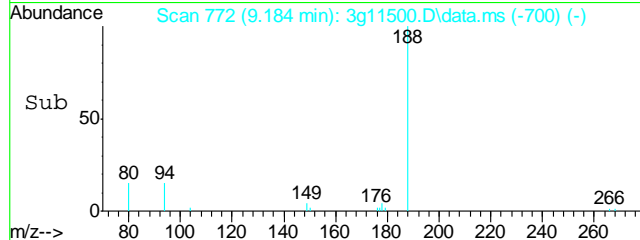
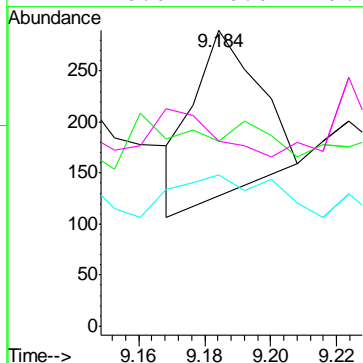
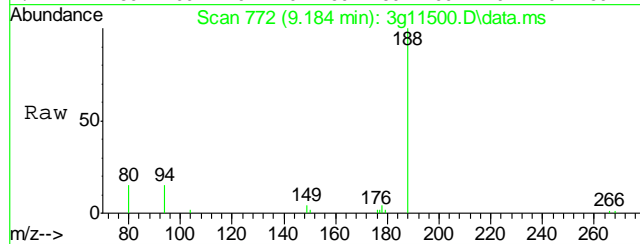
Tgt Ion:178	Resp:	995
Ion Ratio	Lower	Upper
178	100	
179	79.0	0.0 35.2#
176	49.8	0.0 38.4#
177	61.1	0.0 30.6#





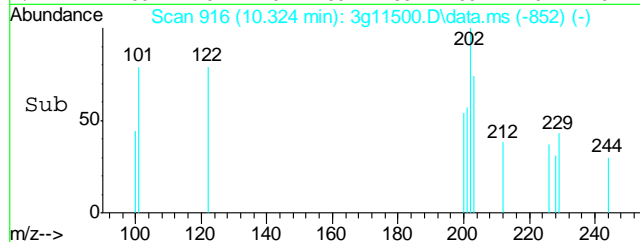
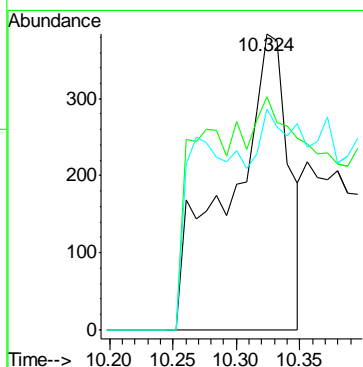
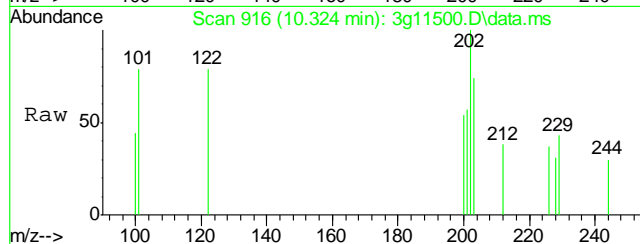
#17  
Anthracene  
Concen: Below ug/mL  
RT: 9.184 min Scan# 772  
Delta R.T. 0.000 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

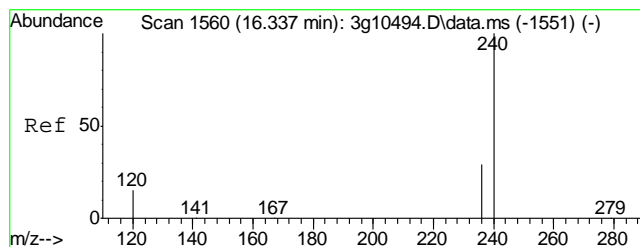
Tgt Ion: 178 Resp: 227  
Ion Ratio Lower Upper  
178 100  
179 0.0 0.0 35.0  
176 71.8 0.0 37.4#  
177 0.0 0.0 29.0



#18  
Fluoranthene  
Concen: Below ug/mL  
RT: 10.324 min Scan# 916  
Delta R.T. 0.008 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

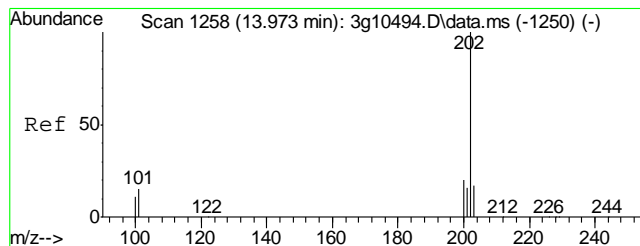
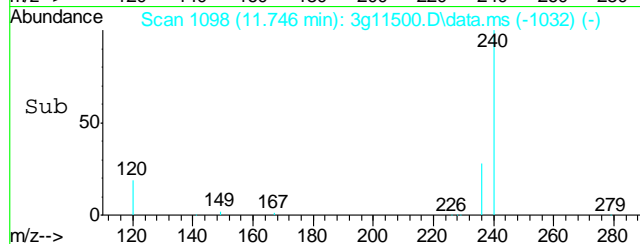
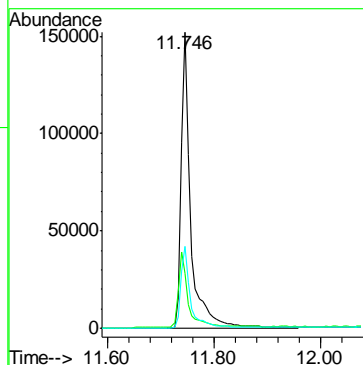
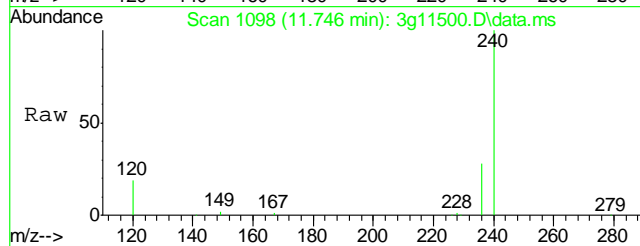
Tgt Ion: 202 Resp: 1243  
Ion Ratio Lower Upper  
202 100  
101 47.1 0.0 38.1#  
203 43.9 0.0 37.4#





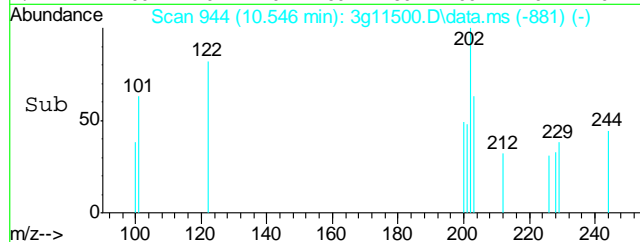
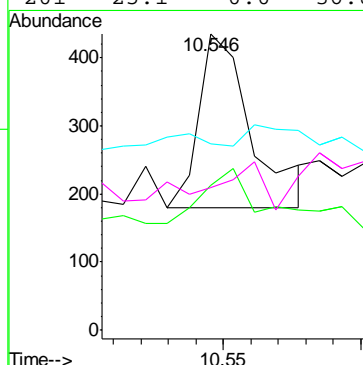
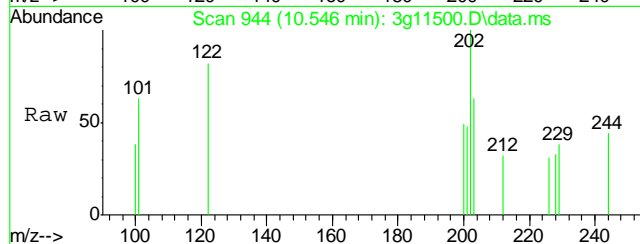
#19  
Chrysene-d12  
Concen: 4.0000 ug/mL  
RT: 11.746 min Scan# 1098  
Delta R.T. 0.007 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

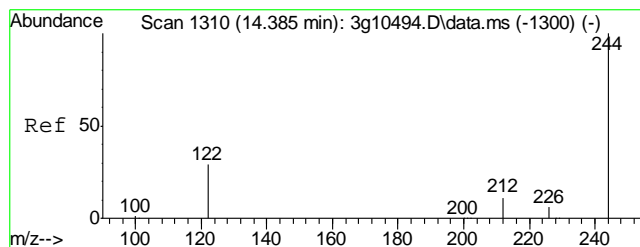
Tgt Ion	Ratio	Lower	Upper
240	100		
120	25.5	4.3	44.3
236	28.5	7.2	47.2



#20  
Pyrene  
Concen: Below ug/mL  
RT: 10.546 min Scan# 944  
Delta R.T. -0.000 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

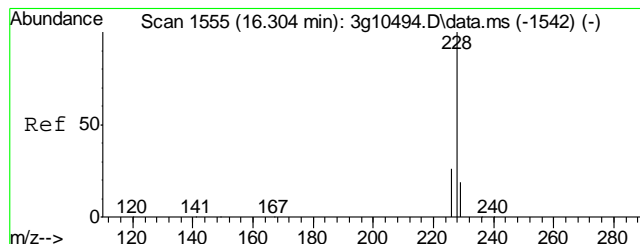
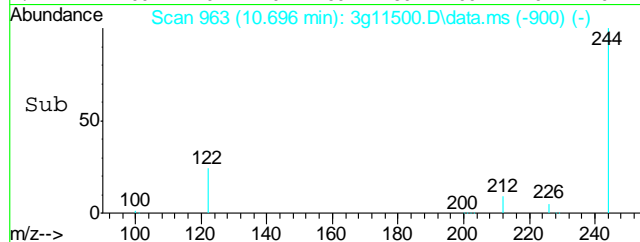
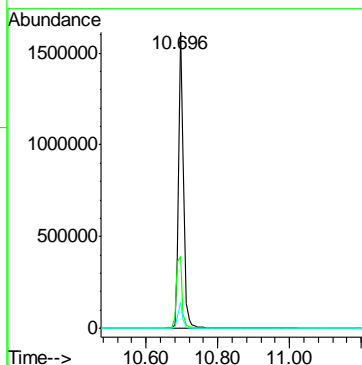
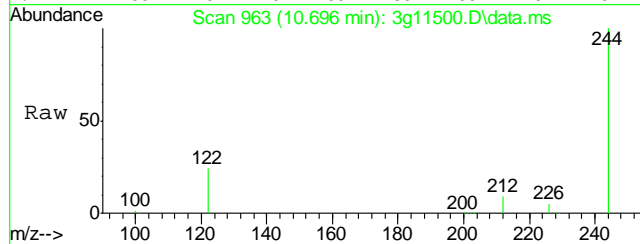
Tgt Ion	Ratio	Lower	Upper
202	100		
200	44.5	0.0	39.9#
203	0.0	0.0	37.9
201	25.1	0.0	36.8





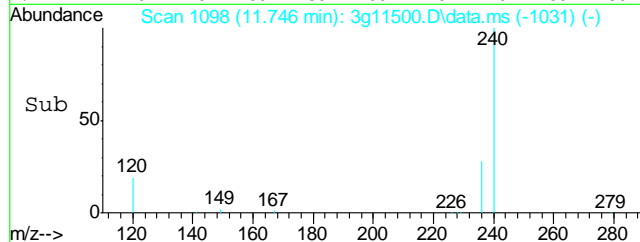
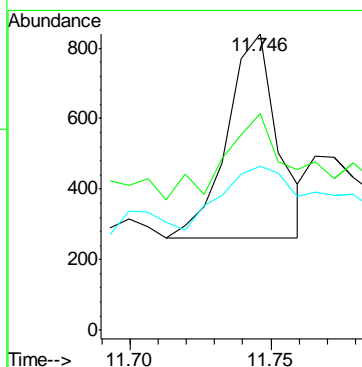
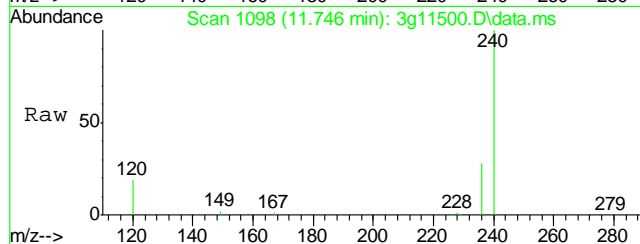
#21  
Terphenyl-d14  
Concen: 54.3093 ug/mL  
RT: 10.696 min Scan# 963  
Delta R.T. 0.000 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

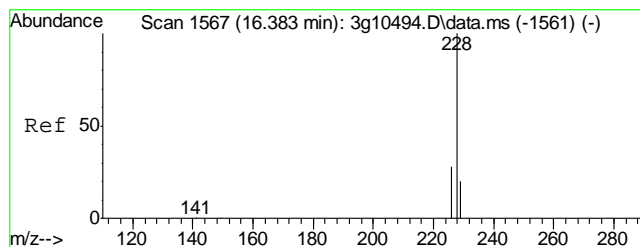
Tgt Ion:244 Resp: 1544464  
Ion Ratio Lower Upper  
244 100  
122 28.7 9.3 49.3  
212 8.5 0.0 28.2



#22  
Benzo(a)anthracene  
Concen: Below ug/mL  
RT: 11.746 min Scan# 1098  
Delta R.T. 0.013 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

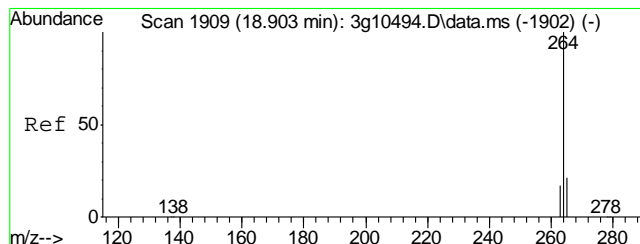
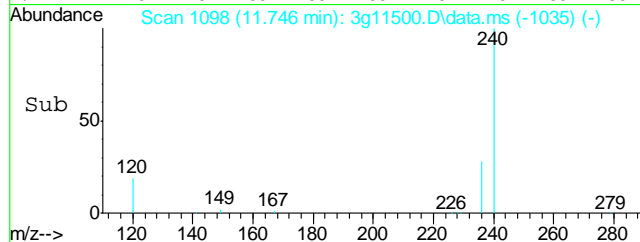
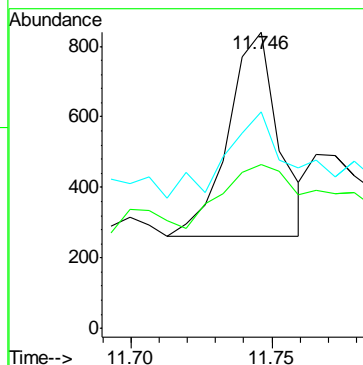
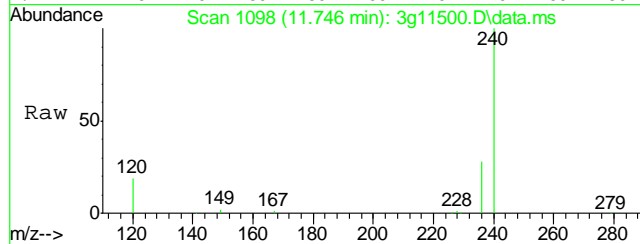
Tgt Ion:228 Resp: 721  
Ion Ratio Lower Upper  
228 100  
229 55.1 0.0 39.4#  
226 62.8 6.3 46.3#





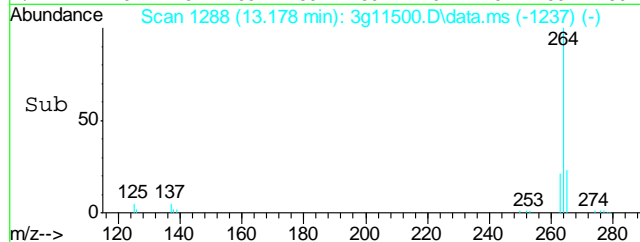
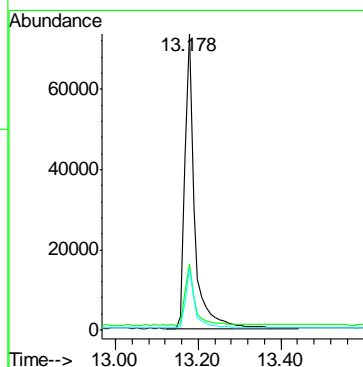
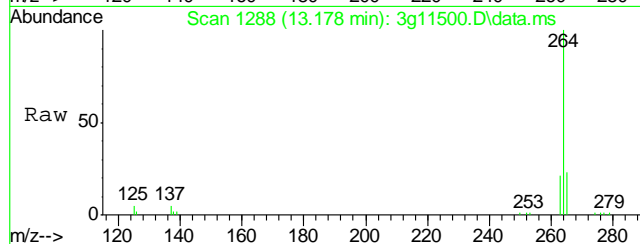
#23  
Chrysene  
Concen: Below ug/mL  
RT: 11.746 min Scan# 1098  
Delta R.T. -0.019 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

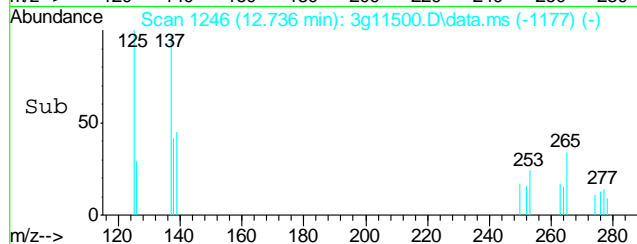
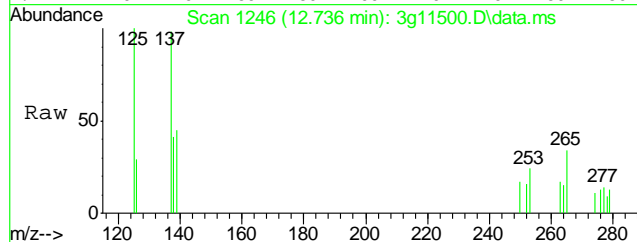
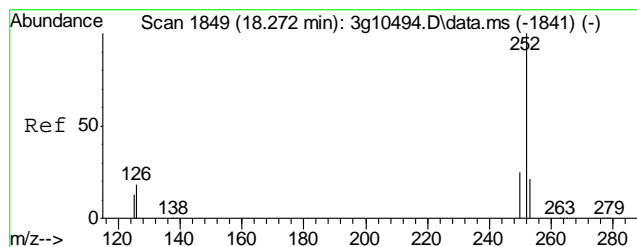
Tgt Ion: 228 Resp: 721  
Ion Ratio Lower Upper  
228 100  
226 62.8 8.0 48.0#  
229 55.1 0.0 39.4#



#24  
Perylene-d12  
Concen: 4.0000 ug/mL  
RT: 13.178 min Scan# 1288  
Delta R.T. 0.011 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

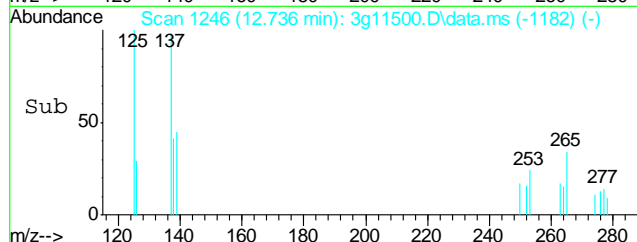
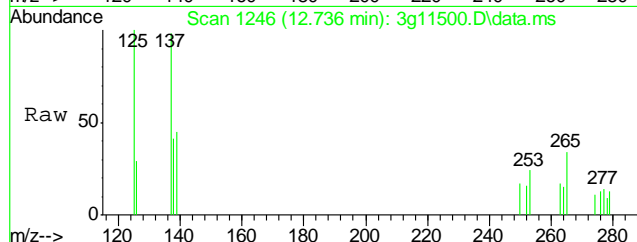
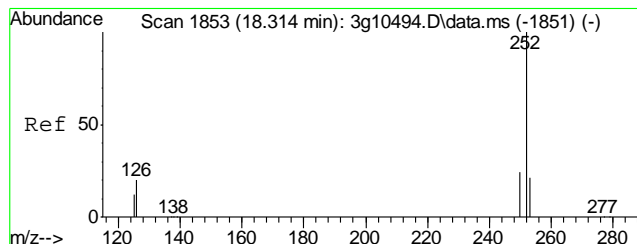
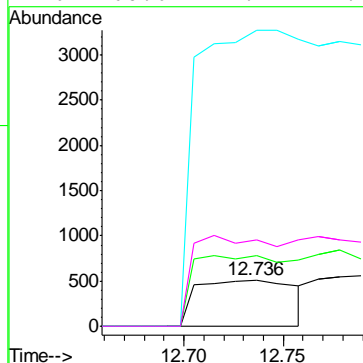
Tgt Ion: 264 Resp: 121808  
Ion Ratio Lower Upper  
264 100  
265 20.8 0.7 40.7  
263 20.0 0.0 39.2





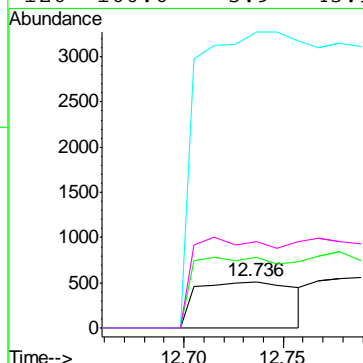
#25  
Benzo(b)fluoranthene  
Concen: Below ug/mL  
RT: 12.736 min Scan# 1246  
Delta R.T. -0.032 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

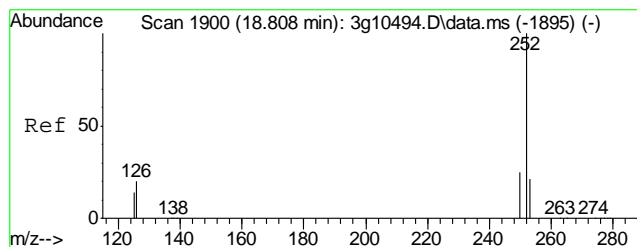
Tgt Ion:	252	Resp:	1610
Ion Ratio	Lower	Upper	
252	100		
253	129.4	0.0	39.9#
125	784.5	0.0	36.8#
126	160.6	1.2	41.2#



#26  
Benzo(k)fluoranthene  
Concen: Below ug/mL  
RT: 12.736 min Scan# 1246  
Delta R.T. -0.063 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

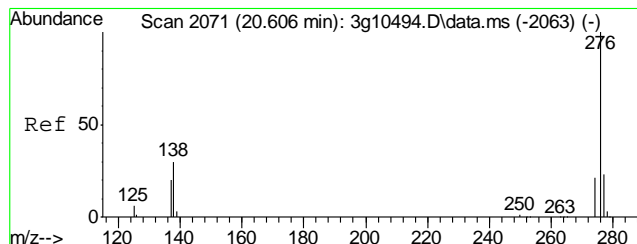
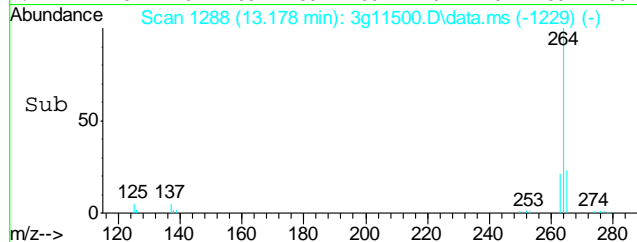
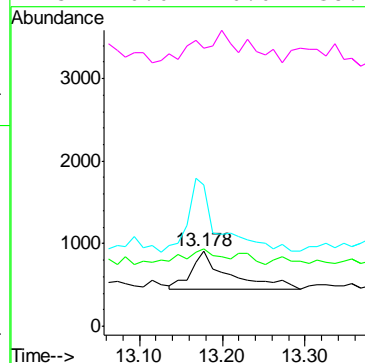
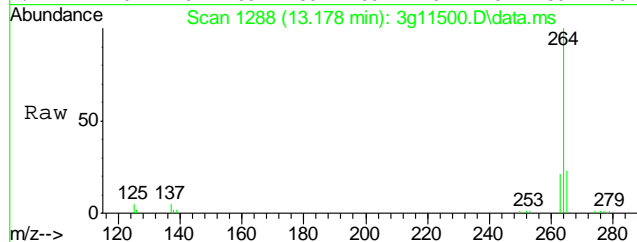
Tgt Ion:	252	Resp:	1610
Ion Ratio	Lower	Upper	
252	100		
253	129.4	4.3	44.3#
125	784.5	0.6	40.6#
126	160.6	5.9	45.9#





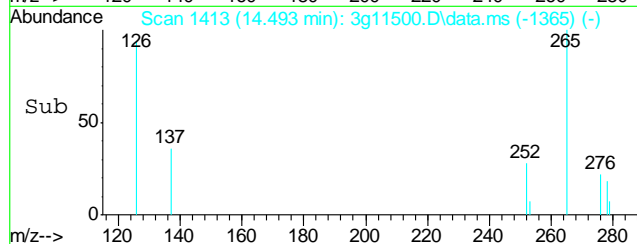
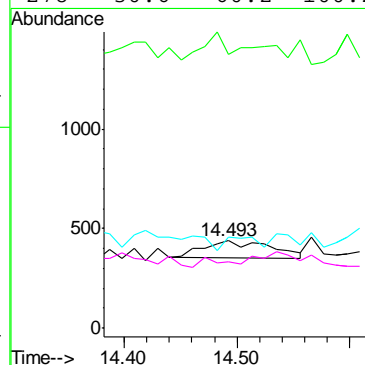
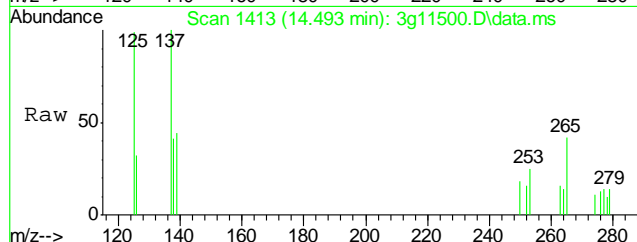
#27  
Benzo(a)pyrene  
Concen: Below ug/mL  
RT: 13.178 min Scan# 1288  
Delta R.T. 0.063 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

Tgt Ion	Ratio	Lower	Upper
252	100		
253	0.0	1.4	41.4#
126	149.9	2.9	42.9#
125	0.0	0.0	38.1

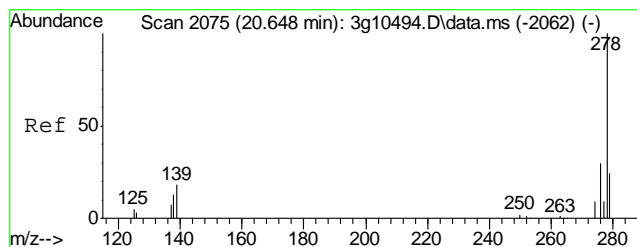


#28  
Indeno(1,2,3-cd)pyrene  
Concen: Below ug/mL  
RT: 14.493 min Scan# 1413  
Delta R.T. 0.000 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

Tgt Ion	Ratio	Lower	Upper
276	100		
138	70.0	22.1	62.1#
277	37.4	5.2	45.2
278	30.6	60.2	100.2#

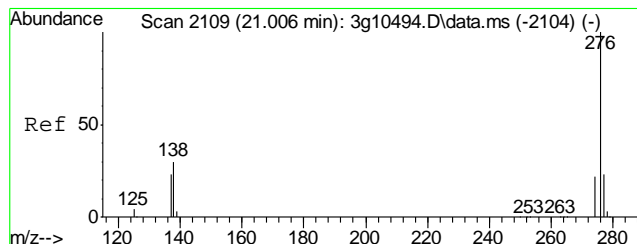
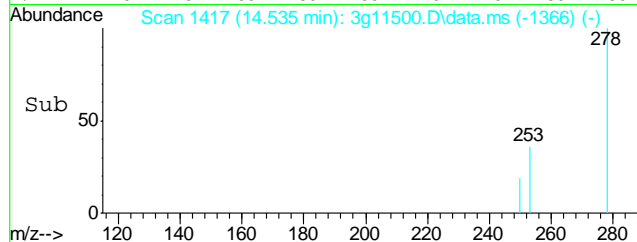
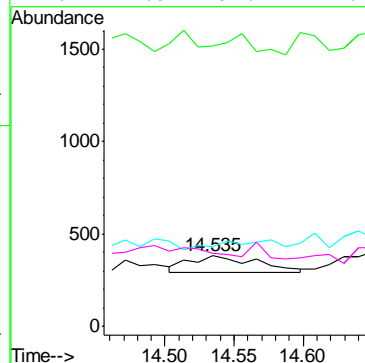
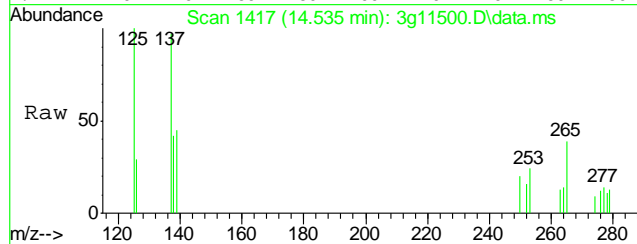






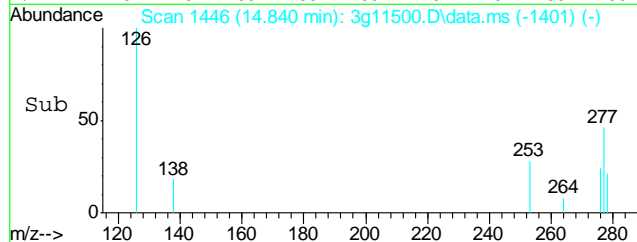
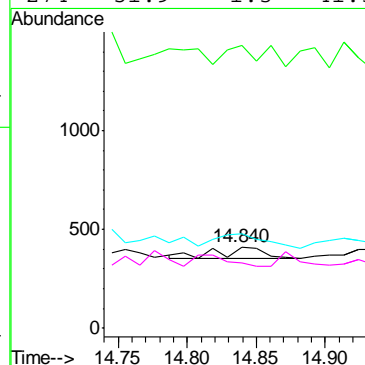
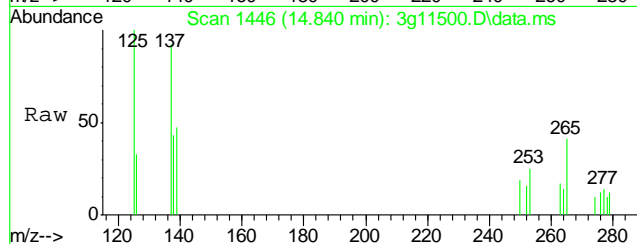
#29  
Dibenzo(a,h)anthracene  
Concen: Below ug/mL  
RT: 14.535 min Scan# 1417  
Delta R.T. 0.032 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

Tgt Ion: 278 Resp: 310  
Ion Ratio Lower Upper  
278 100  
139 43.2 10.1 50.1  
279 0.0 3.3 43.3#  
276 112.9 104.7 144.7



#30  
Benzo(g,h,i)perylene  
Concen: Below ug/mL  
RT: 14.840 min Scan# 1446  
Delta R.T. -0.032 min  
Lab File: 3g11500.D  
Acq: 4 Oct 12 12:36 pm

Tgt Ion: 276 Resp: 133  
Ion Ratio Lower Upper  
276 100  
138 154.9 15.2 55.2#  
277 133.8 3.3 43.3#  
274 51.9 1.3 41.3#



## GC Volatiles

### QC Data Summaries

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Includes the following where applicable:

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

Method Blank Summary

Job Number: D39442  
Account: XTOKRWR XTO Energy  
Project: PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB977-MB	GB17819.D	1	10/03/12	SK	n/a	n/a	GGB977

The QC reported here applies to the following samples: Method: SW846 8015B  
D39442-1, D39442-2

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	91% 60-140%

10.1.1  
10

Blank Spike Summary

Job Number: D39442  
Account: XTOKRWR XTO Energy  
Project: PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB977-BS	GB17820.D	1	10/03/12	SK	n/a	n/a	GGB977

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

D39442-1, D39442-2

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

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	103%	60-140%

\* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D39442  
Account: XTOKRWR XTO Energy  
Project: PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D39379-1MS	GB17824.D	1	10/03/12	SK	n/a	n/a	GGB977
D39379-1MSD	GB17825.D	1	10/03/12	SK	n/a	n/a	GGB977
D39379-1	GB17823.D	1	10/03/12	SK	n/a	n/a	GGB977

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

D39442-1, D39442-2

CAS No.	Compound	D39379-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		139	163	117	163	117	0	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D39379-1	Limits
120-82-1	1,2,4-Trichlorobenzene	108%	104%	91%	60-140%

\* = Outside of Control Limits.

GC Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\100312\GB17843.D\FID1A.CH Vial: 27  
 Signal #2 : Y:\1\DATA\100312\GB17843.D\FID2B.CH  
 Acq On : 4 Oct 2012 1:10 am Operator: StephK  
 Sample : D39442-1, 50X Inst : GC/MS Ins  
 Misc : GC3152,GGB977,5.064,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Oct 04 08:13:23 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Thu Oct 04 08:12:32 2012  
 Response via : Initial Calibration  
 DataAcq Meth : TVB4.M

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

	Compound	R.T.	Response	Conc	Units
-----					
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.41	2932502	93.588	%
10) S	1,2,4-Trichlorobenzene (P)	14.40	15965887	98.235	%
Target Compounds					
1) H	TVH-Gasoline	7.23	3903991	<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	7.72	159878	0.403	ug/L
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	0.00	0	N.D.	ug/L d
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.58	167085	0.847	ug/L

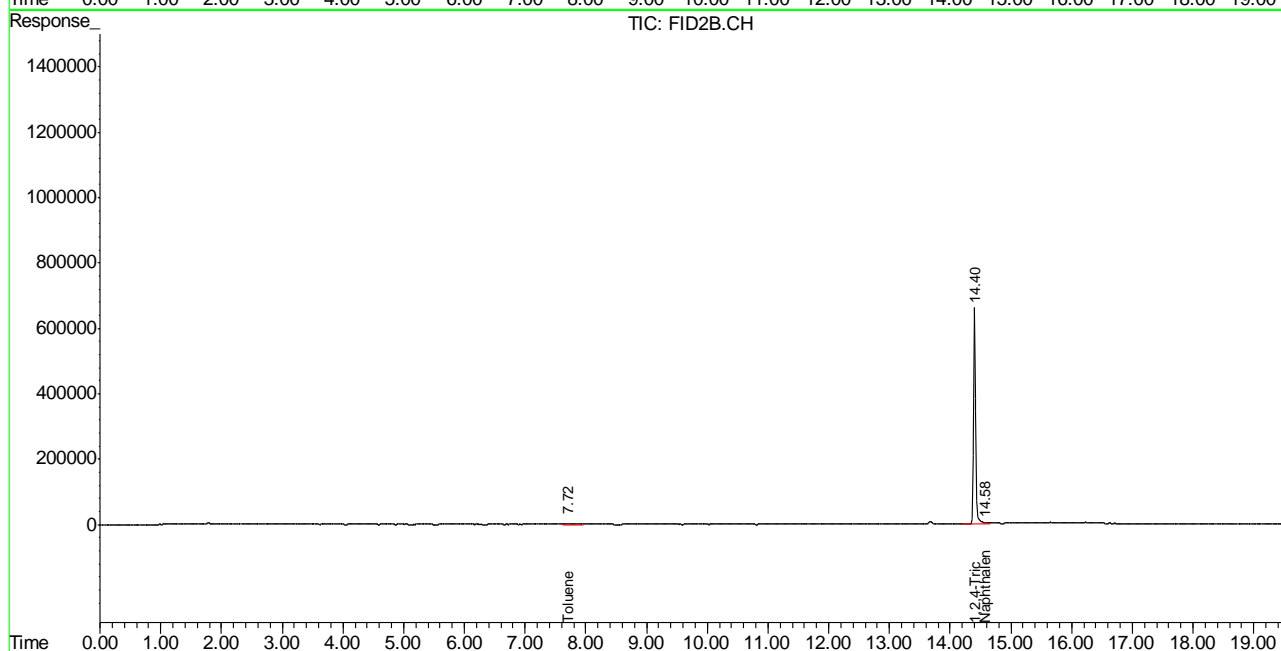
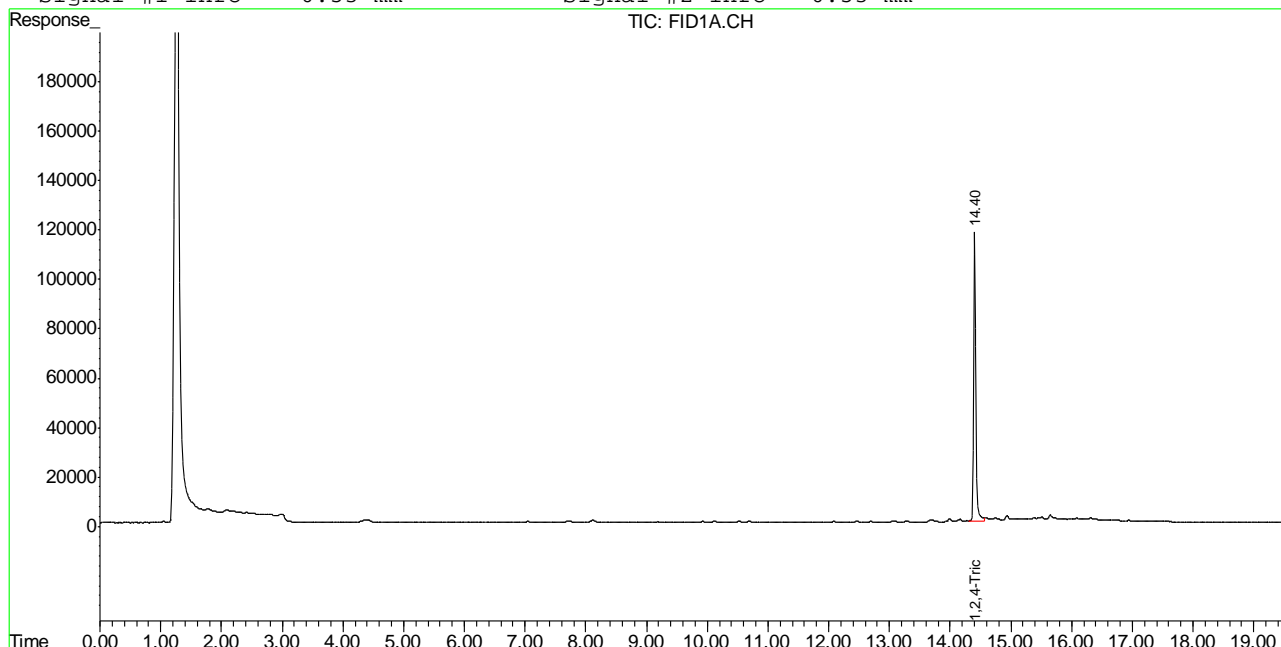
(f)=RT Delta > 1/2 Window (m)=manual int.  
 GB17843.D TB868GB868SOIL.M Thu Oct 04 08:22:14 2012 GC

Quantitation Report (QT Reviewed)

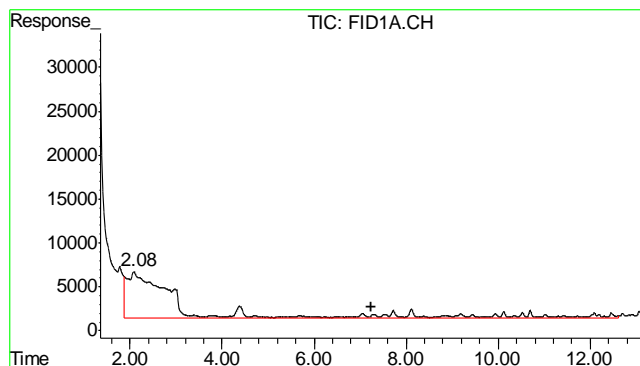
Signal #1 : Y:\1\DATA\100312\GB17843.D\FID1A.CH Vial: 27  
 Signal #2 : Y:\1\DATA\100312\GB17843.D\FID2B.CH  
 Acq On : 4 Oct 2012 1:10 am Operator: StephK  
 Sample : D39442-1, 50X Inst : GC/MS Ins  
 Misc : GC3152,GGB977,5.064,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Oct 4 7:30 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Thu Oct 04 08:12:32 2012  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TVB4.M

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

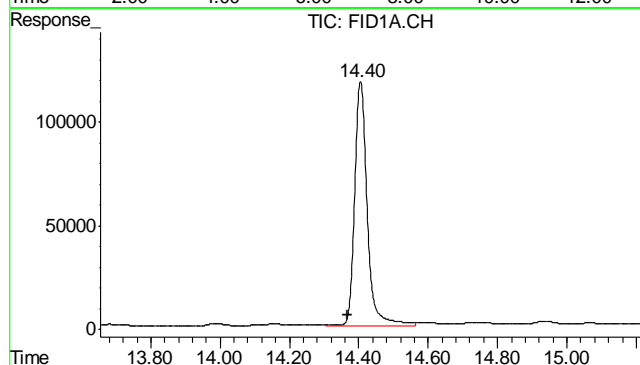






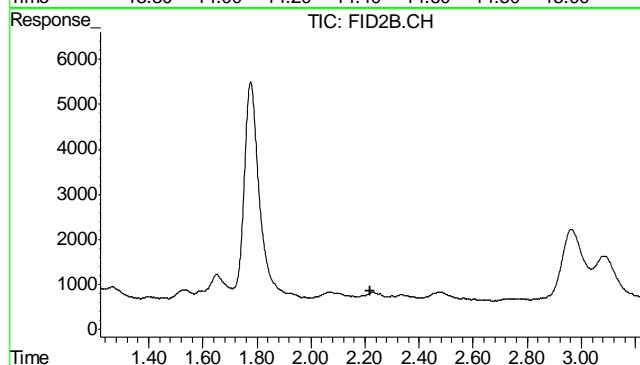
#1 TVH-Gasoline

R.T.: 7.230 min  
Delta R.T.: 0.000 min  
Response: 3903991  
Conc: N.D.



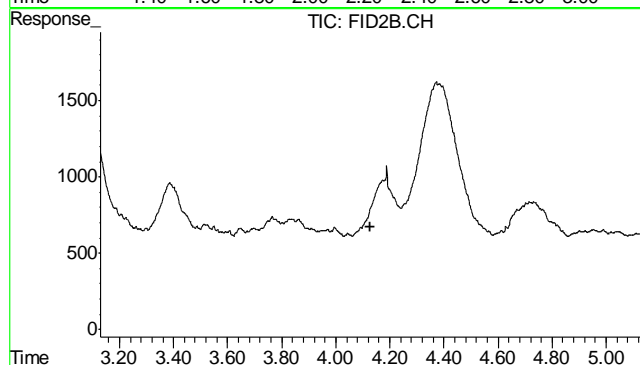
#2 1,2,4-Trichlorobenzene

R.T.: 14.405 min  
Delta R.T.: 0.037 min  
Response: 2932502  
Conc: 93.59 %



#4 Methyl-t-butyl-ether

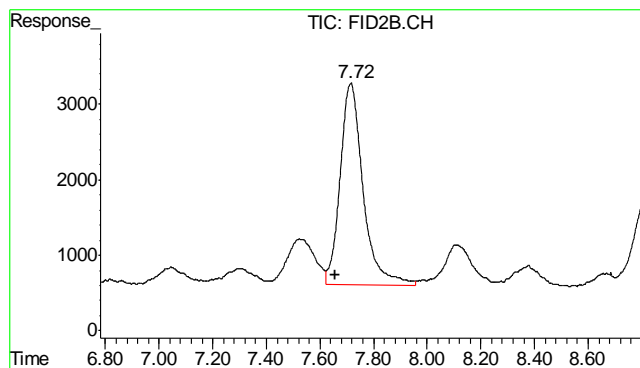
R.T.: 0.000 min  
Exp R.T.: 2.220 min  
Response: 0  
Conc: N.D.



#5 Benzene

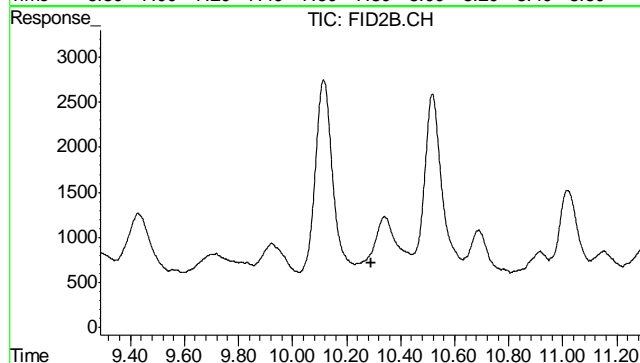
R.T.: 0.000 min  
Exp R.T.: 4.129 min  
Response: 0  
Conc: N.D.

11.11  
11



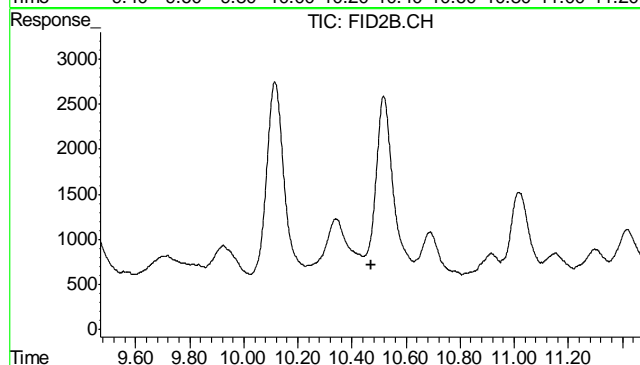
#6 Toluene

R.T.: 7.715 min  
Delta R.T.: 0.056 min  
Response: 159878  
Conc: 0.40 ug/L



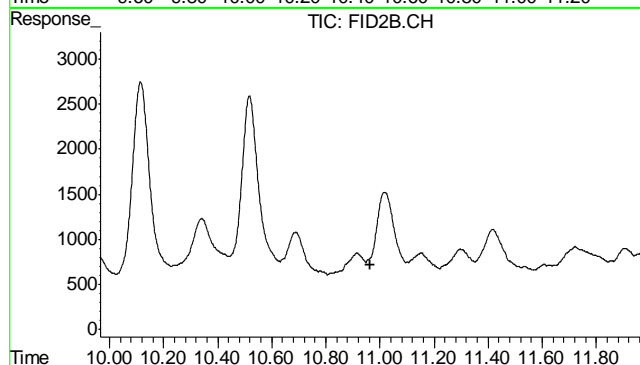
#7 Ethylbenzene

R.T.: 0.000 min  
Exp R.T.: 10.289 min  
Response: 0  
Conc: N.D.



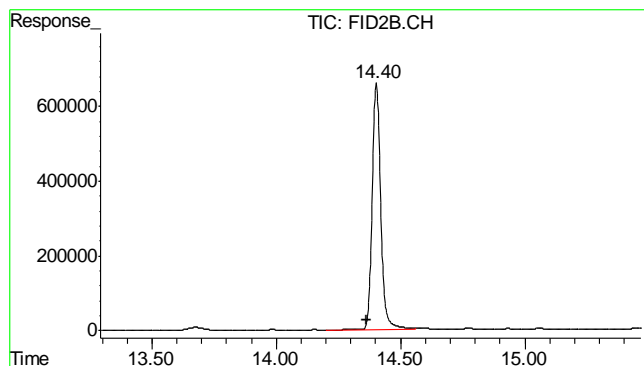
#8 m,p-Xylene

R.T.: 0.000 min  
Exp R.T.: 10.469 min  
Response: 0  
Conc: N.D.



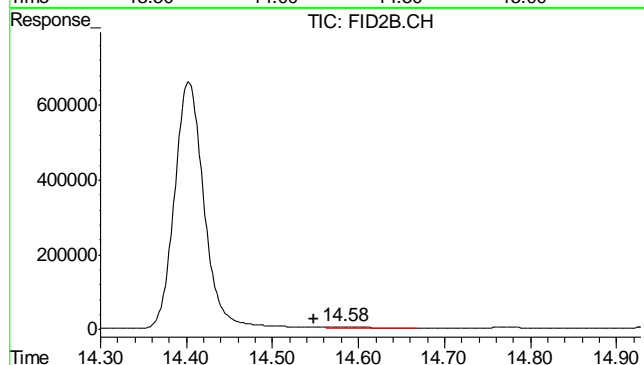
#9 o-Xylene

R.T.: 0.000 min  
Exp R.T.: 10.965 min  
Response: 0  
Conc: N.D.



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

R.T.: 14.403 min  
 Delta R.T.: 0.038 min  
 Response: 15965887  
 Conc: 98.23 %



#11 Naphthalene

R.T.: 14.580 min  
 Delta R.T.: 0.032 min  
 Response: 167085  
 Conc: 0.85 ug/L

11.1.1

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\100312\GB17844.D\FID1A.CH Vial: 28  
 Signal #2 : Y:\1\DATA\100312\GB17844.D\FID2B.CH  
 Acq On : 4 Oct 2012 1:45 am Operator: StephK  
 Sample : D39442-2, 50X Inst : GC/MS Ins  
 Misc : GC3152,GGB977,5.023,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Oct 04 08:13:27 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Thu Oct 04 08:12:32 2012  
 Response via : Initial Calibration  
 DataAcq Meth : TVB4.M

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

	Compound	R.T.	Response	Conc	Units
-----					
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.42	2915841	93.057	%
10) S	1,2,4-Trichlorobenzene (P)	14.41	15962575	98.215	%
Target Compounds					
1) H	TVH-Gasoline	7.23	3982848	<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	7.72	157634	0.398	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	14.59	171494	0.869	ug/L

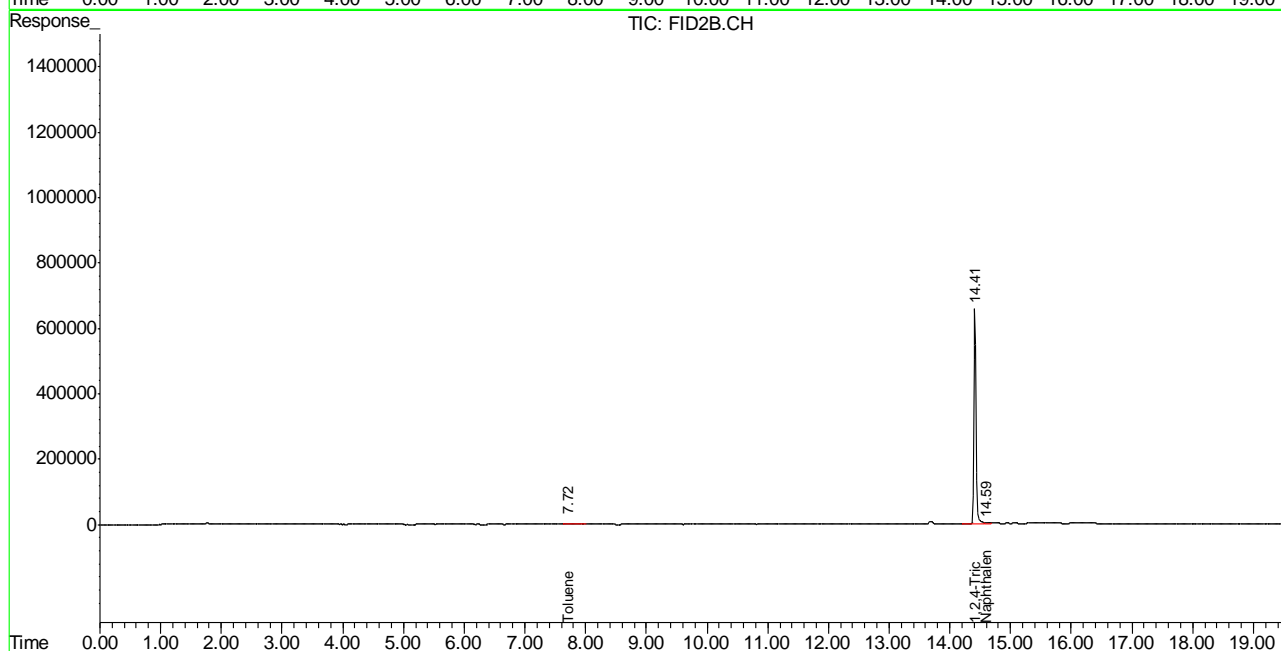
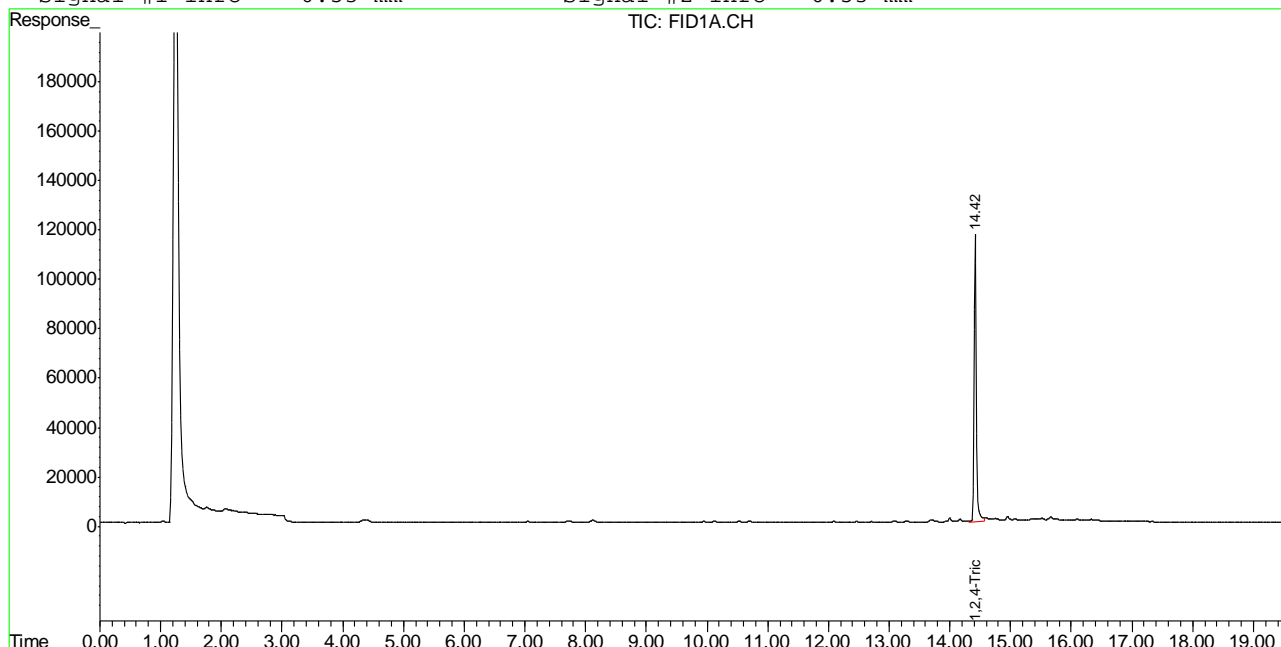
(f)=RT Delta > 1/2 Window (m)=manual int.  
 GB17844.D TB868GB868SOIL.M Thu Oct 04 08:22:17 2012 GC

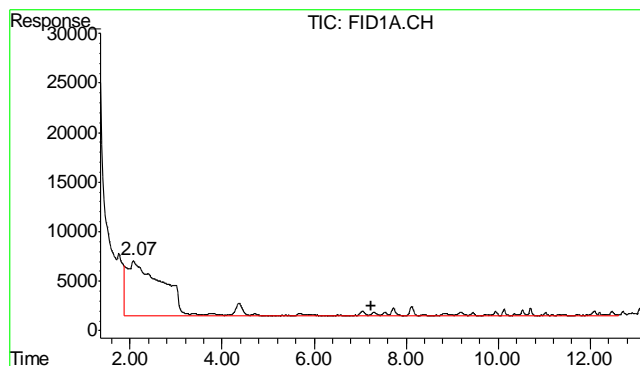
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\100312\GB17844.D\FID1A.CH Vial: 28  
 Signal #2 : Y:\1\DATA\100312\GB17844.D\FID2B.CH  
 Acq On : 4 Oct 2012 1:45 am Operator: StephK  
 Sample : D39442-2, 50X Inst : GC/MS Ins  
 Misc : GC3152,GGB977,5.023,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Oct 4 7:30 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Thu Oct 04 08:12:32 2012  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TVB4.M

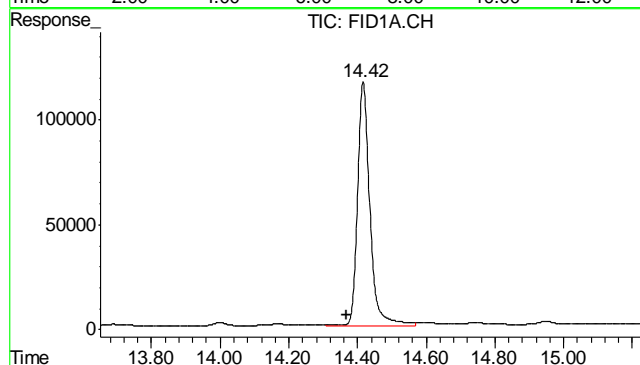
Volume Inj. :  
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





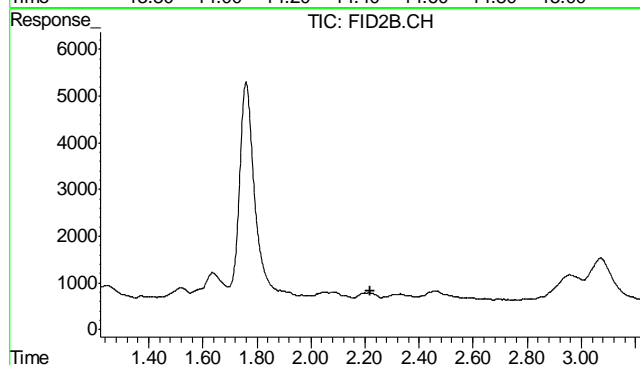
#1 TVH-Gasoline

R.T.: 7.230 min  
Delta R.T.: 0.000 min  
Response: 3982848  
Conc: N.D.



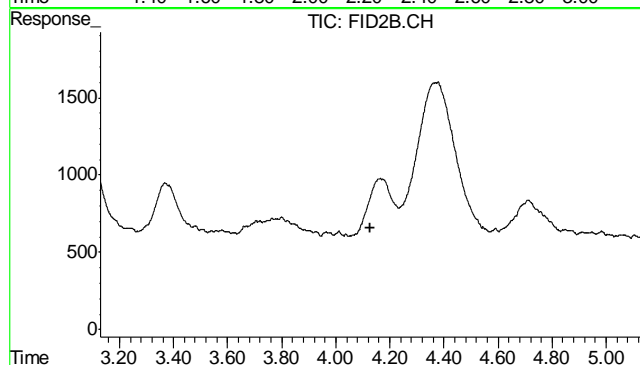
#2 1,2,4-Trichlorobenzene

R.T.: 14.417 min  
Delta R.T.: 0.049 min  
Response: 2915841  
Conc: 93.06 %



#4 Methyl-t-butyl-ether

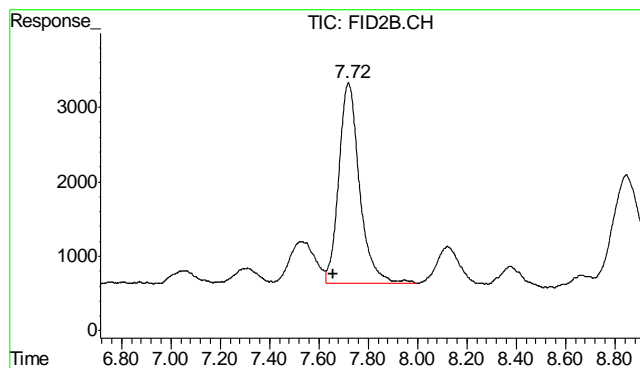
R.T.: 0.000 min  
Exp R.T.: 2.220 min  
Response: 0  
Conc: N.D.



#5 Benzene

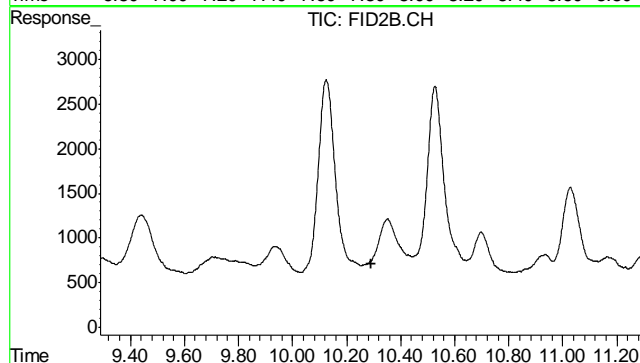
R.T.: 0.000 min  
Exp R.T.: 4.129 min  
Response: 0  
Conc: N.D.

11.12  
11



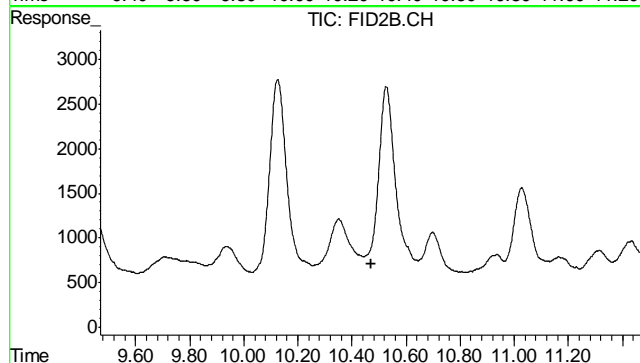
#6 Toluene

R.T.: 7.720 min  
Delta R.T.: 0.061 min  
Response: 157634  
Conc: 0.40 ug/L



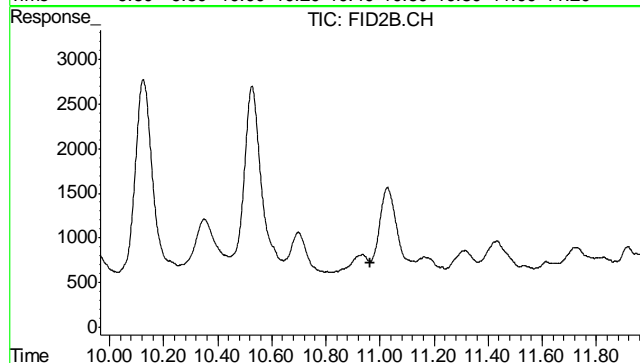
#7 Ethylbenzene

R.T.: 0.000 min  
Exp R.T.: 10.289 min  
Response: 0  
Conc: N.D.



#8 m,p-Xylene

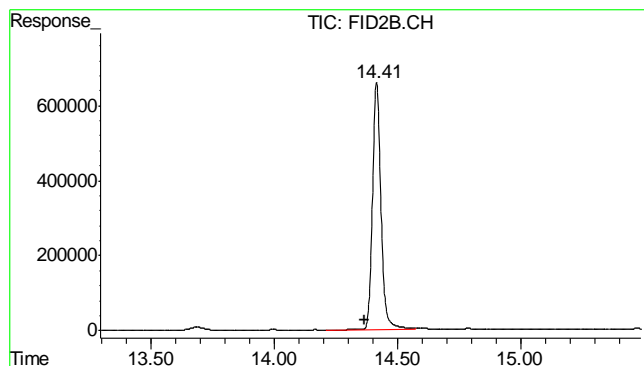
R.T.: 0.000 min  
Exp R.T.: 10.469 min  
Response: 0  
Conc: N.D.



#9 o-Xylene

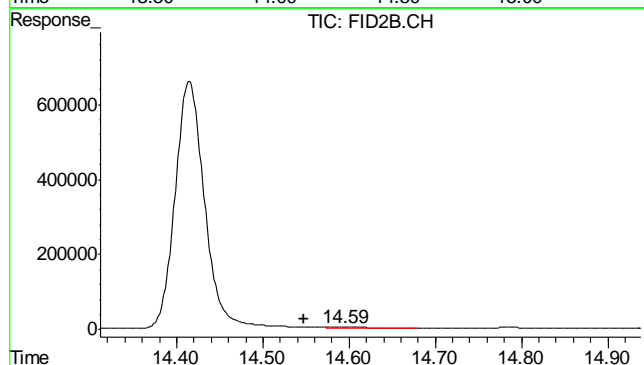
R.T.: 0.000 min  
Exp R.T.: 10.965 min  
Response: 0  
Conc: N.D.

11.12  
11



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

R.T.: 14.415 min  
 Delta R.T.: 0.049 min  
 Response: 15962575  
 Conc: 98.21 %



#11 Naphthalene

R.T.: 14.591 min  
 Delta R.T.: 0.044 min  
 Response: 171494  
 Conc: 0.87 ug/L

11.1.2  
11



## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\100312\GB17819.D\FID1A.CH Vial: 3  
Signal #2 : Y:\1\DATA\100312\GB17819.D\FID2B.CH  
Acq On : 3 Oct 2012 11:01 am Operator: StephK  
Sample : MB Inst : GC/MS Ins  
Misc : GC3152,GGB977,5.000,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Oct 03 11:28:36 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Wed Oct 03 11:06:33 2012  
Response via : Initial Calibration  
DataAcq Meth : TVB4.M

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

Compound		R.T.	Response	Conc	Units
-----					
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.39	2837168	90.546	%
10) S	1,2,4-Trichlorobenzene (P)	14.39	15276919	93.996	%
Target Compounds					
1) H	TVH-Gasoline	7.23	4202326	<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	7.69	169994	0.429	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	14.57	169648	0.860	ug/L

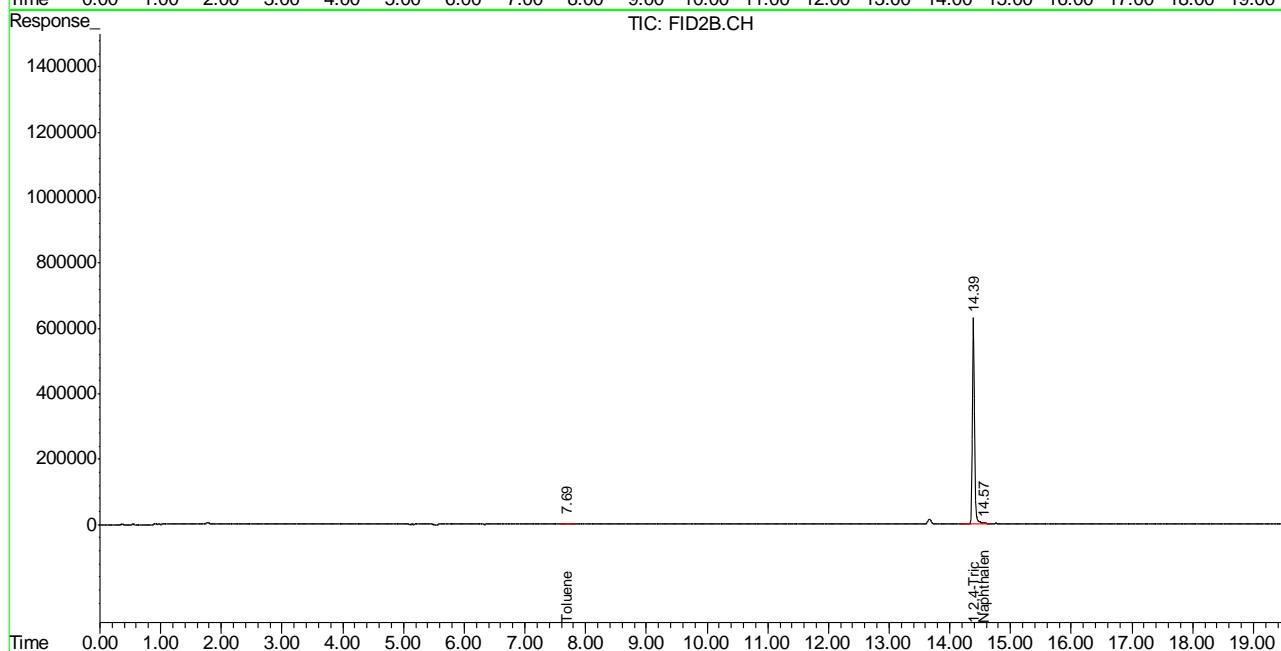
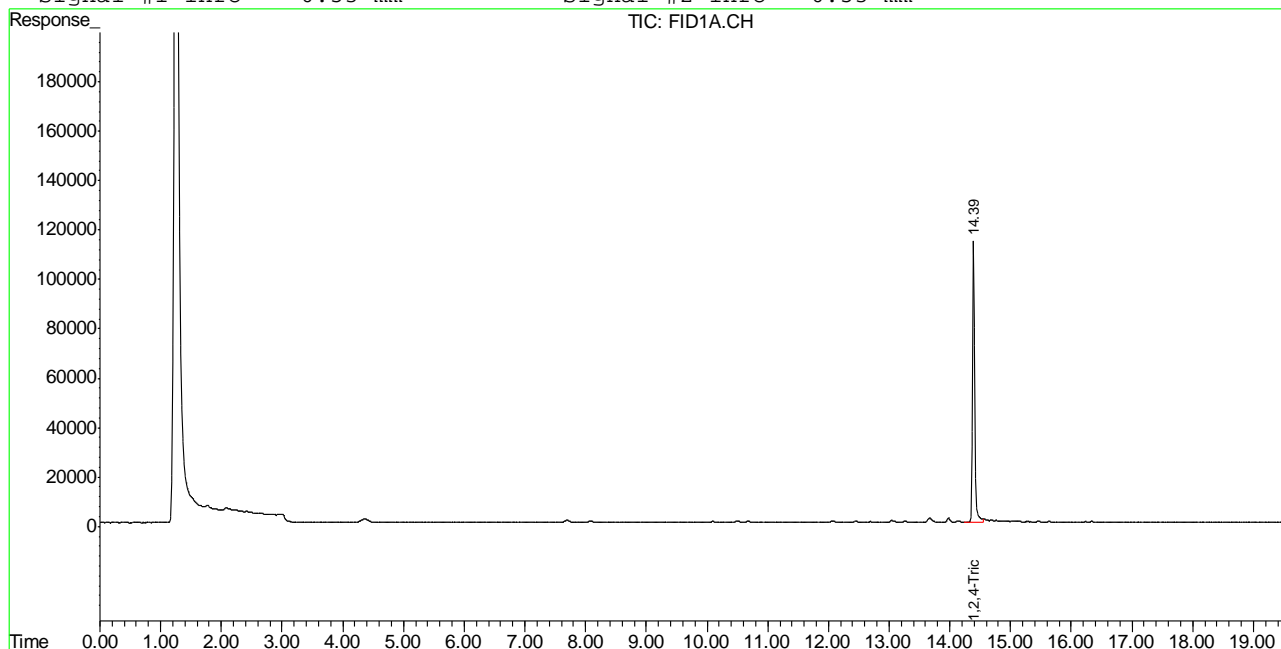
-----  
(f)=RT Delta > 1/2 Window (m)=manual int.  
GB17819.D TB868GB868SOIL.M Thu Oct 04 08:21:01 2012 GC

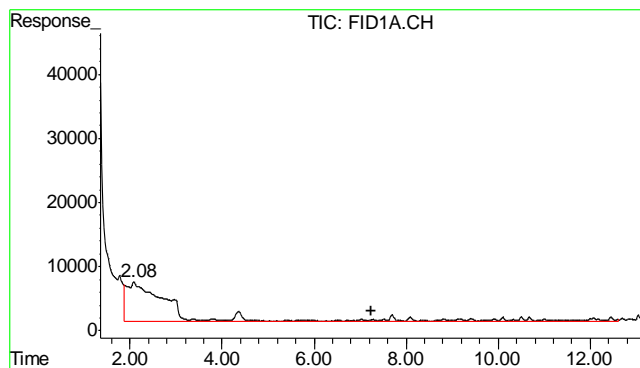
## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\100312\GB17819.D\FID1A.CH Vial: 3  
Signal #2 : Y:\1\DATA\100312\GB17819.D\FID2B.CH  
Acq On : 3 Oct 2012 11:01 am Operator: StephK  
Sample : MB Inst : GC/MS Ins  
Misc : GC3152,GGB977,5.000,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Oct 3 10:38 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Wed Oct 03 11:06:33 2012  
Response via : Multiple Level Calibration  
DataAcq Meth : TVB4.M

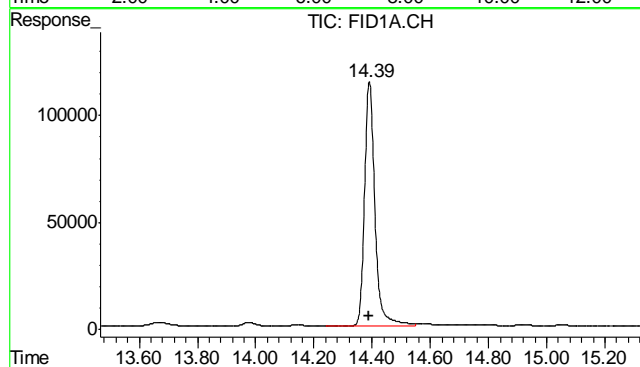
Volume Inj. :  
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





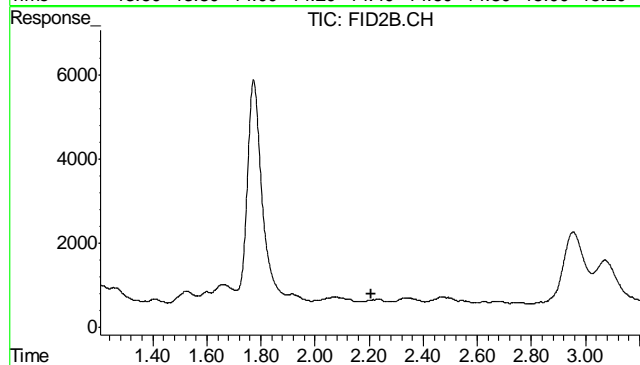
#1 TVH-Gasoline

R.T.: 7.230 min  
Delta R.T.: 0.000 min  
Response: 4202326  
Conc: N.D.



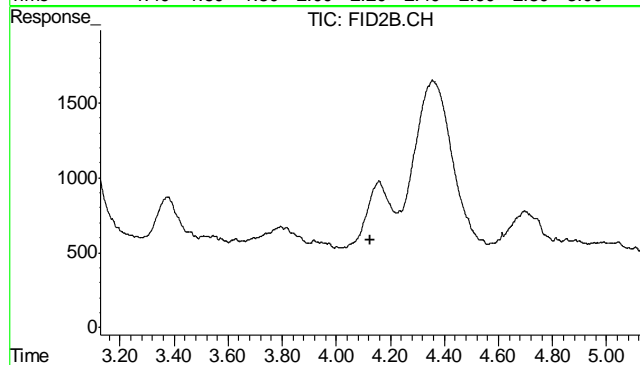
#2 1,2,4-Trichlorobenzene

R.T.: 14.391 min  
Delta R.T.: 0.000 min  
Response: 2837168  
Conc: 90.55 %



#4 Methyl-t-butyl-ether

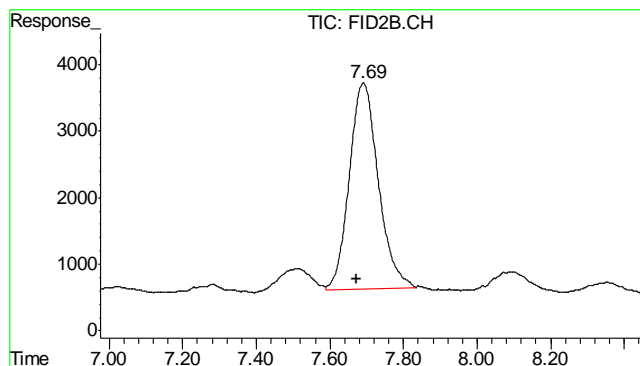
R.T.: 0.000 min  
Exp R.T.: 2.206 min  
Response: 0  
Conc: N.D.



#5 Benzene

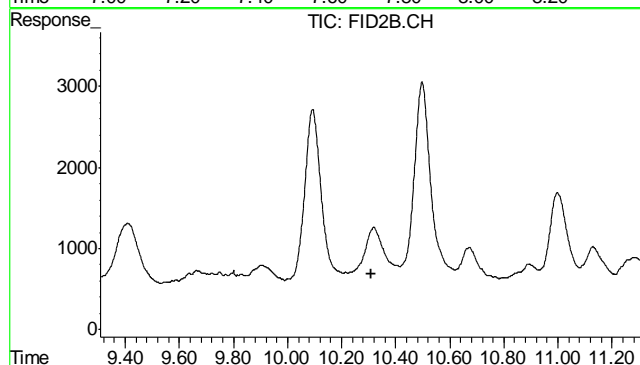
R.T.: 0.000 min  
Exp R.T.: 4.127 min  
Response: 0  
Conc: N.D.

11.21  
11



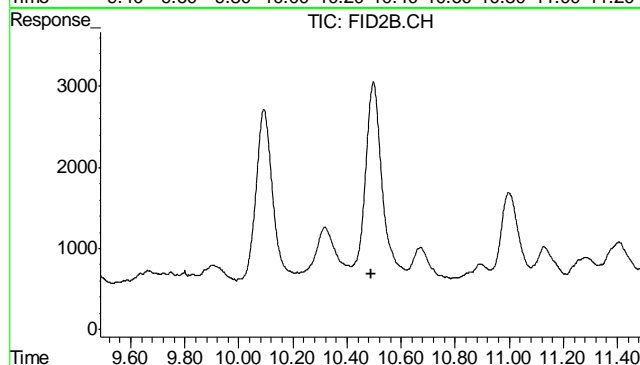
#6 Toluene

R.T.: 7.691 min  
Delta R.T.: 0.017 min  
Response: 169994  
Conc: 0.43 ug/L



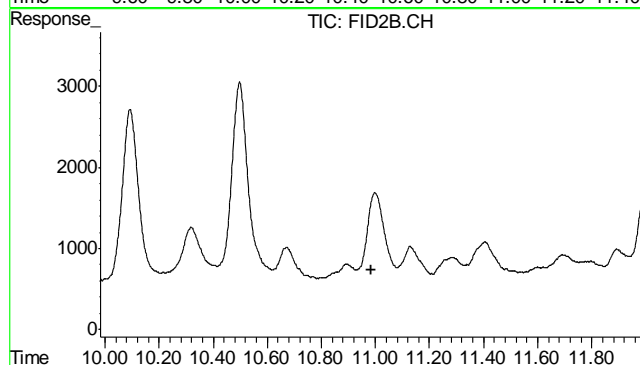
#7 Ethylbenzene

R.T.: 0.000 min  
Exp R.T.: 10.308 min  
Response: 0  
Conc: N.D.



#8 m,p-Xylene

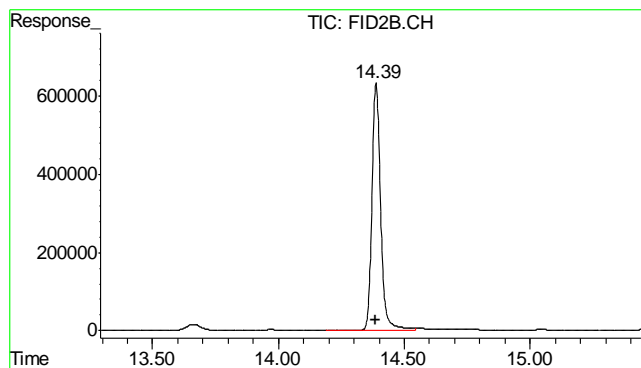
R.T.: 0.000 min  
Exp R.T.: 10.488 min  
Response: 0  
Conc: N.D.



#9 o-Xylene

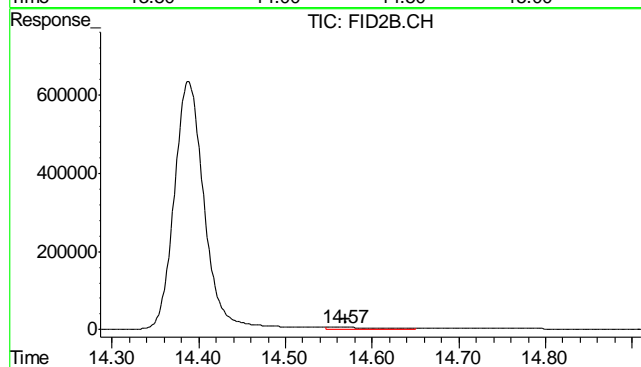
R.T.: 0.000 min  
Exp R.T.: 10.983 min  
Response: 0  
Conc: N.D.

11.21  
11



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

R.T.: 14.389 min  
Delta R.T.: 0.001 min  
Response: 15276919  
Conc: 94.00 %



#11 Naphthalene

R.T.: 14.567 min  
Delta R.T.: -0.003 min  
Response: 169648  
Conc: 0.86 ug/L

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: D39442  
Account: XTOKRWR XTO Energy  
Project: PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6744-MB	FD18164.D	1	10/04/12	AV	10/04/12	OP6744	GFD923

The QC reported here applies to the following samples: Method: SW846-8015B  
D39442-1, D39442-2

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

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	89% 43-136%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D39442  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6744-BS	FD18166.D	1	10/04/12	AV	10/04/12	OP6744	GFD923

The QC reported here applies to the following samples:

Method: SW846-8015B

D39442-1, D39442-2

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	533	80	58-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	86%	43-136%

\* = Outside of Control Limits.



# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D39442  
**Account:** XTOKRWR XTO Energy  
**Project:** PCU 197-36A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6744-MS	FD18168.D	1	10/04/12	AV	10/04/12	OP6744	GFD923
OP6744-MSD	FD18170.D	1	10/04/12	AV	10/04/12	OP6744	GFD923
D39441-1	FD18172.D	1	10/04/12	AV	10/04/12	OP6744	GFD923

The QC reported here applies to the following samples:

Method: SW846-8015B

D39442-1, D39442-2

CAS No.	Compound	D39441-1 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	28.8	714	540	72	524	69	3	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D39441-1	Limits
84-15-1	o-Terphenyl	76%	74%	72%	43-136%

\* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\OCT\FD100412\FD18212.D Vial: 26  
Acq On : 05 Oct 2012 12:24 am Operator: ashleyv  
Sample : D39442-1 Inst : FID5  
Misc : OP6744,GFD923,30.03,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Oct 05 09:12:39 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Wed Oct 03 09:30:33 2012  
Response via : Initial Calibration  
DataAcq Meth : DRODUAL.M

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

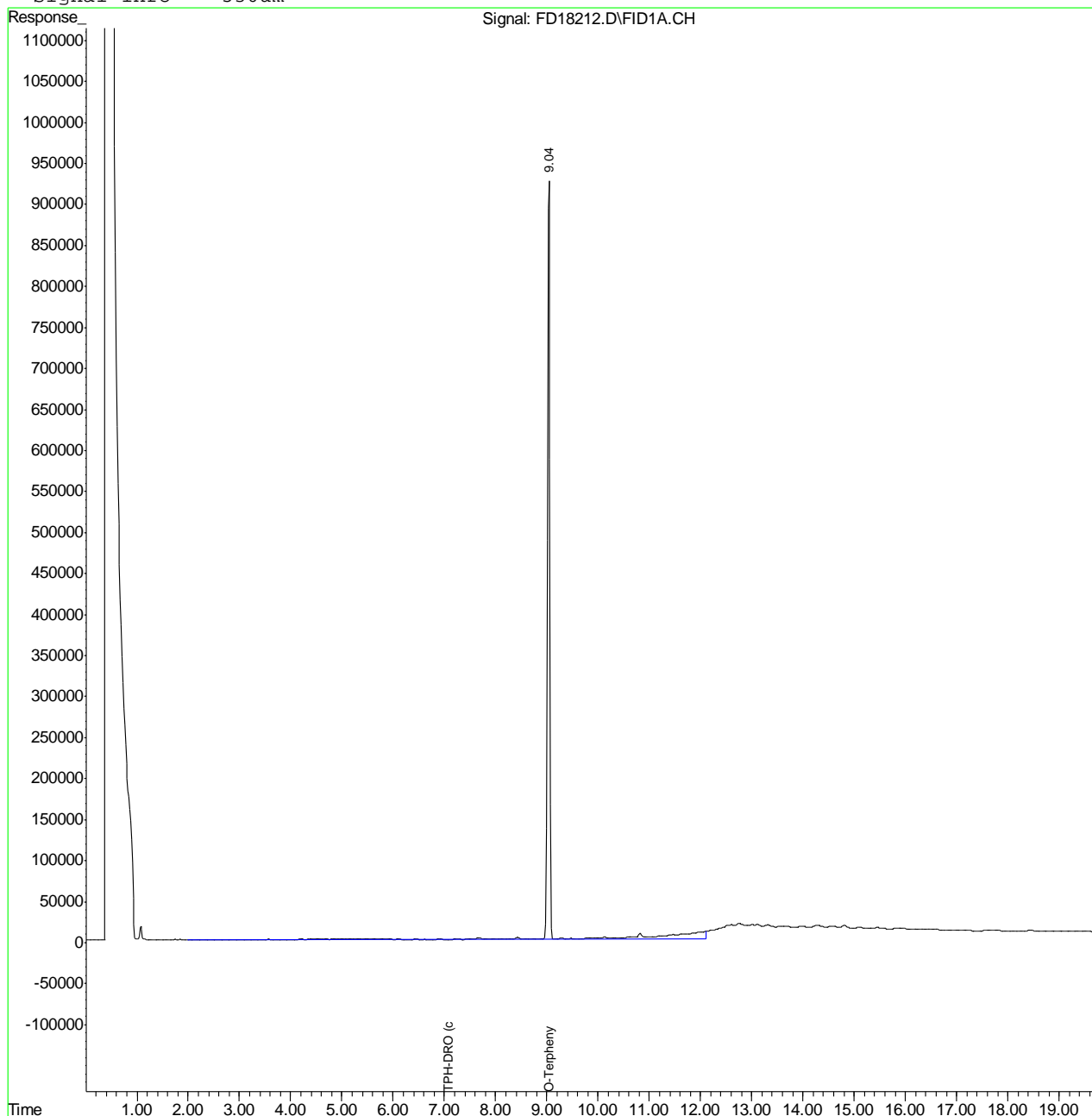
Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	9.04	32182451	681.275 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	7.08	7588014	197.064 mg/L

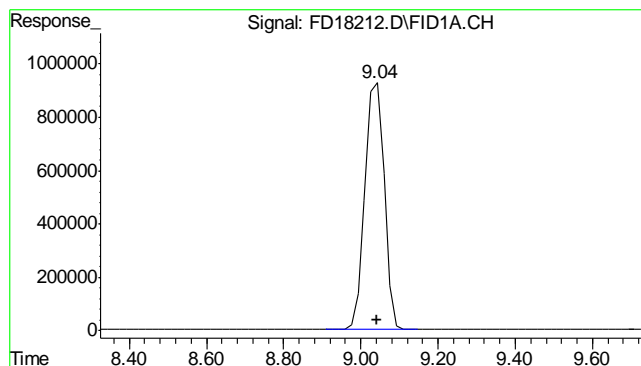
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\OCT\FD100412\FD18212.D Vial: 26  
 Acq On : 05 Oct 2012 12:24 am Operator: ashleyv  
 Sample : D39442-1 Inst : FID5  
 Misc : OP6744,GFD923,30.03,,,2,1 Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Oct 5 9:33 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)  
 Title : 8015B TEH  
 Last Update : Wed Oct 03 09:30:33 2012  
 Response via : Multiple Level Calibration  
 DataAcq Meth : DRODUAL.M

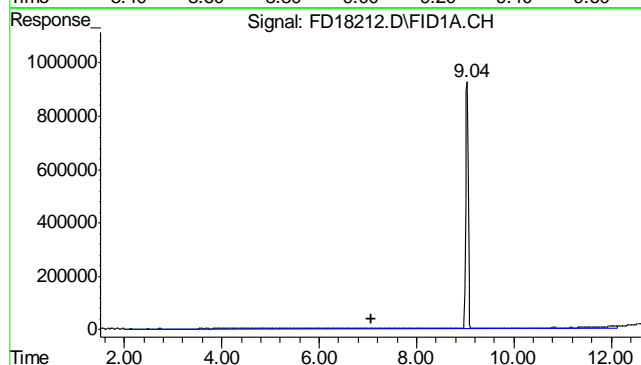
Volume Inj. : 1ul  
 Signal Phase : RTX-5  
 Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.042 min  
 Delta R.T.: 0.002 min  
 Response: 32182451  
 Conc: 681.28 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 7.075 min  
 Delta R.T.: 0.000 min  
 Response: 7588014  
 Conc: 197.06 mg/L m

13.1.1  
 13

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\OCT\FD100412\FD18216.D Vial: 28  
Acq On : 10-5-2012 01:16:27 AM Operator: ashleyv  
Sample : D39442-2 Inst : FID5  
Misc : OP6744,GFD923,30.03,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Oct 05 09:12:40 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Wed Oct 03 09:30:33 2012  
Response via : Initial Calibration  
DataAcq Meth : DRODUAL.M

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

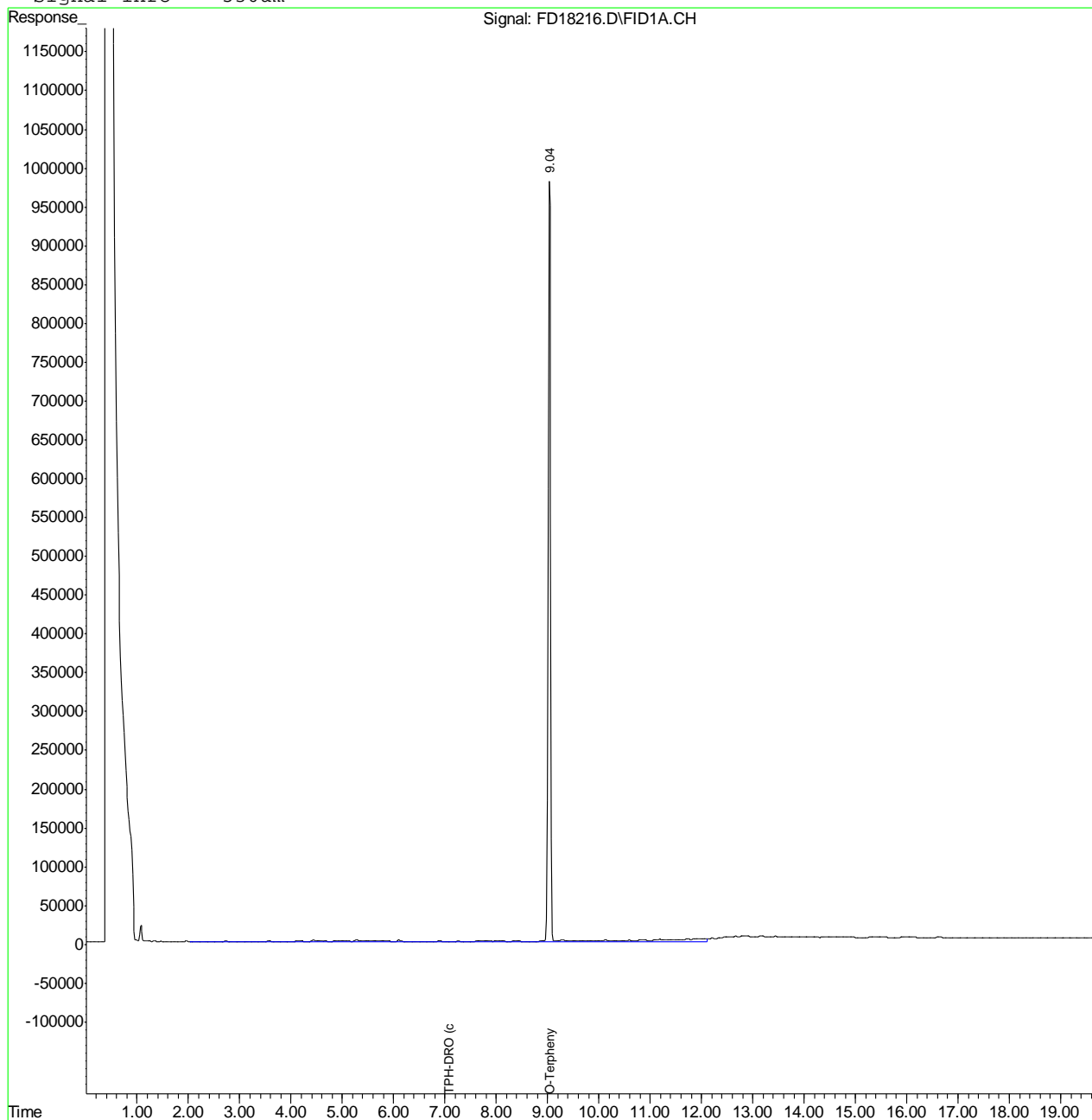
Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	9.04	34170645	723.364 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	7.08	4298927	111.645 mg/L

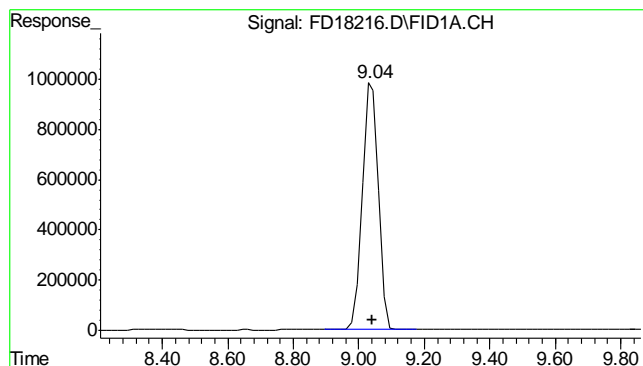
## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\OCT\FD100412\FD18216.D Vial: 28  
Acq On : 10-5-2012 01:16:27 AM Operator: ashleyv  
Sample : D39442-2 Inst : FID5  
Misc : OP6744,GFD923,30.03,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Oct 5 9:12 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Wed Oct 03 09:30:33 2012  
Response via : Multiple Level Calibration  
DataAcq Meth : DRODUAL.M

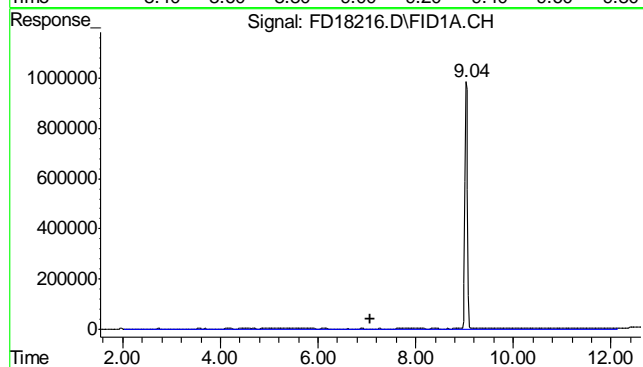
Volume Inj. : 1ul  
Signal Phase : RTX-5  
Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.042 min  
 Delta R.T.: 0.002 min  
 Response: 34170645  
 Conc: 723.36 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 7.075 min  
 Delta R.T.: 0.000 min  
 Response: 4298927  
 Conc: 111.65 mg/L m



## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\OCT\FD100412\FD18164.D Vial: 3  
Acq On : 10-4-2012 01:57:58 PM Operator: ashleyv  
Sample : OP6744-MB Inst : FID5  
Misc : OP6744,GFD923,30.00,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Oct 05 09:12:16 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Wed Oct 03 09:30:33 2012  
Response via : Initial Calibration  
DataAcq Meth : DRODUAL.M

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

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	9.05	42136639	891.997 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	7.08	391737	10.174 mg/L

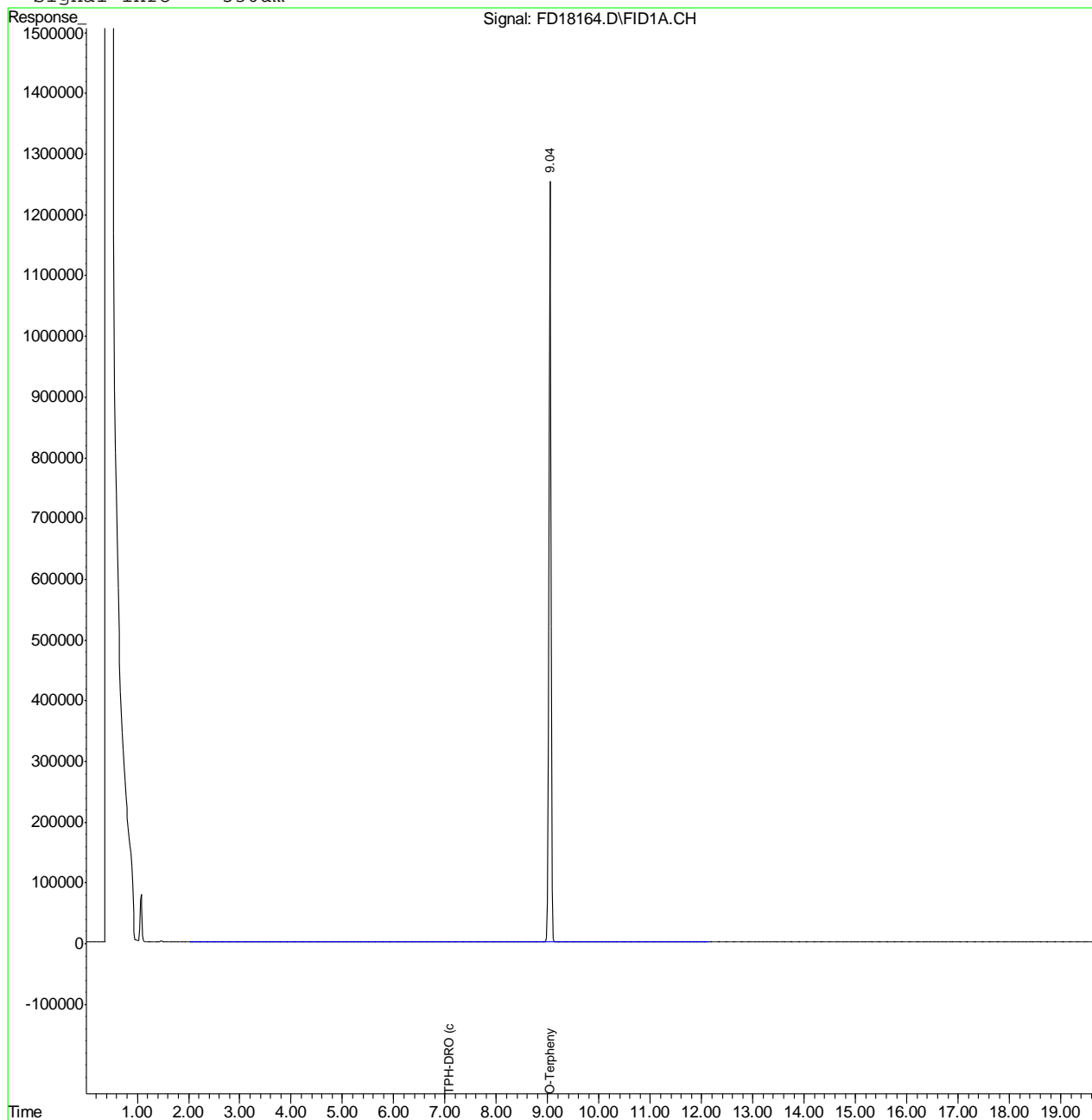
-----  
(f)=RT Delta > 1/2 Window (m)=manual int.  
FD18164.D DRO-GFD823F.M Fri Oct 05 09:35:14 2012 GC

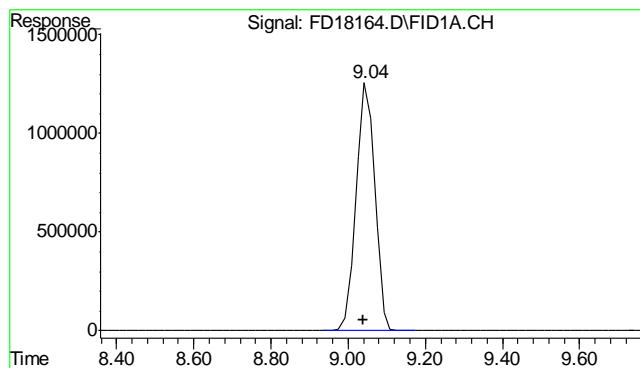
## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\OCT\FD100412\FD18164.D Vial: 3  
Acq On : 10-4-2012 01:57:58 PM Operator: ashleyv  
Sample : OP6744-MB Inst : FID5  
Misc : OP6744,GFD923,30.00,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Oct 5 9:12 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Wed Oct 03 09:30:33 2012  
Response via : Multiple Level Calibration  
DataAcq Meth : DRODUAL.M

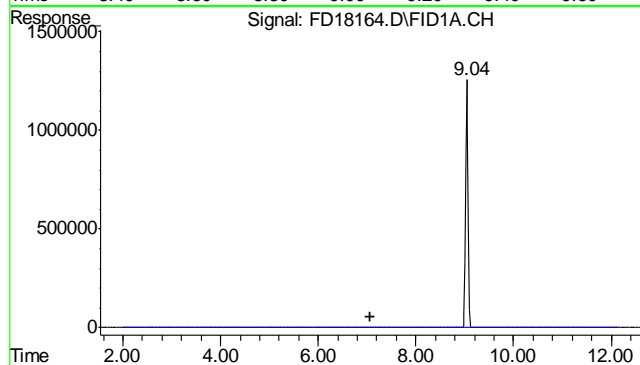
Volume Inj. : 1ul  
Signal Phase : RTX-5  
Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.051 min  
Delta R.T.: 0.011 min  
Response: 42136639  
Conc: 892.00 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 7.075 min  
Delta R.T.: 0.000 min  
Response: 391737  
Conc: 10.17 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: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8574  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 10/05/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.96	.57		
Antimony	3.0	.17	.12		
Arsenic	2.5	.44	.56		
Barium	1.0	.01	.11	0.11	<1.0
Beryllium	1.0	.13	.15		
Boron	5.0	.1	.06		
Cadmium	1.0	.06	.036	0.010	<1.0
Calcium	40	.54	9		
Chromium	1.0	.03	.03	0.010	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	-0.030	<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	0.0	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	-0.090	<5.0
Silicon	5.0	.29	.37		
Silver	3.0	.04	.06	0.0	<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	0.12	<3.0

Associated samples MP8574: D39442-1, D39442-2

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8574  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8574  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 10/05/12

Metal	D39440-1 Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	3680	5680	252	793.6(a)	75-125
Beryllium					
Boron					
Cadmium	0.0	53.8	63	85.0	75-125
Calcium					
Chromium	14.8	68.0	63	84.4	75-125
Cobalt					
Copper	27.5	81.3	63	85.4	75-125
Iron					
Lead	33.5	124	126	75.3	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	13.8	64.5	63	80.5	75-125
Phosphorus					
Potassium					
Selenium	1.3	111	126	88.1	75-125
Silicon					
Silver	0.0	23.1	25.2	91.7	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	40.5	96.2	63	88.4	75-125

Associated samples MP8574: D39442-1, D39442-2

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: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8574  
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.

14.1.2  
14



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8574  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 10/05/12

Metal	D39440-1 Original	MSD	Spikelot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	3680	5560	257	731.3(a)	2.1	20
Beryllium						
Boron						
Cadmium	0.0	56.4	64.3	87.4	4.7	20
Calcium						
Chromium	14.8	73.4	64.3	91.2	7.6	20
Cobalt						
Copper	27.5	86.8	64.3	92.3	6.5	20
Iron						
Lead	33.5	129	129	77.7	4.0	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	13.8	68.3	64.3	84.8	5.7	20
Phosphorus						
Potassium						
Selenium	1.3	114	129	88.7	2.6	20
Silicon						
Silver	0.0	24.1	25.7	93.7	4.2	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	40.5	100	64.3	92.6	3.9	20

Associated samples MP8574: D39442-1, D39442-2

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8574  
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: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8574  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 10/05/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	186	200	93.0	80-120
Beryllium				
Boron				
Cadmium	43.8	50	87.6	80-120
Calcium				
Chromium	47.1	50	94.2	80-120
Cobalt				
Copper	43.2	50	86.4	80-120
Iron				
Lead	94.0	100	94.0	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	45.5	50	91.0	80-120
Phosphorus				
Potassium				
Selenium	95.4	100	95.4	80-120
Silicon				
Silver	18.7	20	93.5	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	47.7	50	95.4	80-120

Associated samples MP8574: D39442-1, D39442-2

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8574  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8574  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date: 10/05/12

Metal	D39440-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	24200	24800	14.3*(a)	0-10
Beryllium				
Boron				
Cadmium	0.00	0.00	NC (b)	0-10
Calcium				
Chromium	115	126	8.5	0-10
Cobalt				
Copper	225	222	2.4	0-10
Iron				
Lead	221	246	7.5	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	108	124	14.0*(a)	0-10
Phosphorus				
Potassium				
Selenium	10.5	0.00	NC	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	368	376	17.9*(a)	0-10

Associated samples MP8574: D39442-1, D39442-2

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8574  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date:

Metal

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

14.1.4  
14

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8575  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 10/05/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.006	.06	0.015	<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 MP8575: D39442-1, D39442-2

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

14.2.1  
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8575  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 10/05/12

Metal	D39440-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	12.1	133	126	95.9	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP8575: D39442-1, D39442-2

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: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8575  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 10/05/12

Metal	D39440-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	12.1	140	129	99.5	5.1	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP8575: D39442-1, D39442-2

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: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8575  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 10/05/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	102	100	102.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8575: D39442-1, D39442-2

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: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8575  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: ug/l

Prep Date: 10/05/12

Metal	D39440-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	95.2	102	7.7	0-10	
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP8575: D39442-1, D39442-2

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: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8582  
Matrix Type: AQUEOUS

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

Prep Date: 10/05/12

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	22.0	<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	-11	<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	168	<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 MP8582: D39442-1A, D39442-2A

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8582  
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: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8582  
Matrix Type: AQUEOUS

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

Prep Date: 10/05/12

Metal	D39442-1A Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	82900	221000	125000	110.5	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	18000	142000	125000	99.2	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	455000	553000	125000	78.4	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP8582: D39442-1A, D39442-2A

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

14.3.2  
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8582  
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: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8582  
Matrix Type: AQUEOUS

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

Prep Date: 10/05/12

Metal	D39442-1A Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	82900	217000	125000	107.3	1.8	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	18000	141000	125000	98.4	0.7	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	455000	536000	125000	64.8N(a)	3.1	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP8582: D39442-1A, D39442-2A

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

14.3.2  
14



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8582  
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  
(a) Spike recovery indicates possible matrix interference.

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8582  
Matrix Type: AQUEOUS

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

Prep Date: 10/05/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	143000	125000	114.4	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	126000	125000	100.8	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	126000	125000	100.8	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8582: D39442-1A, D39442-2A

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

14.3.3  
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8582  
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: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8582  
Matrix Type: AQUEOUS

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

Prep Date: 10/05/12

Metal	D39442-1A Original SDL 1:1		%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	16600	3710	77.6*(a)	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	3590	836	76.7*(a)	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	91000	21500	76.4*(a)	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8582: D39442-1A, D39442-2A

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

14.3.4  
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8582  
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

QC Batch ID: MP8583  
Matrix Type: SOLID

Methods: SW846 7471B  
Units: mg/kg

Prep Date: 10/08/12

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.0009	-0.00091	<0.10

Associated samples MP8583: D39442-1, D39442-2

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: D39442  
 Account: XTOKRWR - XTO Energy  
 Project: PCU 197-36A

QC Batch ID: MP8583  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 10/08/12

Metal	D39311-1		Spikelot		QC	
	Original	MS	HGWSR1	% Rec	Limits	
Mercury	0.015	0.49	0.468	101.5	75-125	

Associated samples MP8583: D39442-1, D39442-2

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: D39442  
 Account: XTOKRWR - XTO Energy  
 Project: PCU 197-36A

QC Batch ID: MP8583  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 10/08/12

Metal	D39311-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.015	0.46	0.459	97.0	6.3	

Associated samples MP8583: D39442-1, D39442-2

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: D39442  
 Account: XTOKRWR - XTO Energy  
 Project: PCU 197-36A

QC Batch ID: MP8583  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 10/08/12

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

Associated samples MP8583: D39442-1, D39442-2

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

## General Chemistry

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### QC Data Summaries

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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: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP8341/GN17108	1.0	0.0	mg/kg	173	194	111.0	80-120%
Specific Conductivity	GP8361/GN17088			umhos/cm	9989	9900	99.3	90-110%
pH	GN17071			su	8.00	7.99	99.9	99.3-100.7%

Associated Samples:  
Batch GP8341: D39442-1, D39442-2  
Batch GP8361: D39442-1, D39442-2  
Batch GN17071: D39442-1, D39442-2  
(\*) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP8341/GN17108	D39441-1	mg/kg	0.0	0.0	155.0 (a)	0-20%
Redox Potential Vs H2	GN17076	D39383-3	mv	51.2	52.8	3.1	0-20%

Associated Samples:

Batch GP8341: D39442-1, D39442-2

Batch GN17076: D39442-1, D39442-2

(\*) Outside of QC limits

(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP8341/GN17108	D39441-1	mg/kg	0.0	40	33.2	83.0	75-125%

Associated Samples:

Batch GP8341: D39442-1, D39442-2

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D39442  
Account: XTOKRWR - XTO Energy  
Project: PCU 197-36A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP8341/GN17108	D39441-1	mg/kg	0.0	40	34.3	3.1	

Associated Samples:  
Batch GP8341: D39442-1, D39442-2  
(\*) Outside of QC limits  
(N) Matrix Spike Rec. outside of QC limits

15.4  
15