



03/01/13

## Technical Report for

**XTO Energy**

**XTO Love Ranch 8**

**1108-7A**

**Accutest Job Number: D43723**

**Sampling Date: 02/20/13**

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**Total number of pages in report: 129**



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

  
**Brad Madadian**  
Laboratory Director

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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.

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Sample Summary

XTO Energy

Job No: D43723

XTO Love Ranch 8  
Project No: 1108-7A

Sample Number	Collected		Matrix Code	Type	Client Sample ID
	Date	Time By			
D43723-1	02/20/13	09:55 DS	02/22/13	SO Soil	CUTTINGS SUBLINER COMP
D43723-1A	02/20/13	09:55 DS	02/22/13	SO Soil	CUTTINGS 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** D43723

**Site:** XTO Love Ranch 8

**Report Date** 3/1/2013 8:56:45 AM

On 02/22/2013, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 3.7 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D43723 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:** V5V1568

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D43738-1MS, D43738-1MSD were used as the QC samples indicated.

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

**Matrix** SO

**Batch ID:** OP7430

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D43723-1MS, D43723-1MSD were used as the QC samples indicated.

### Volatiles by GC By Method SW846 8015B

**Matrix** SO

**Batch ID:** GGB1069

- All samples were analyzed within the recommended method holding time.
- Sample(s) D43724-1MS, D43724-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

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

**Matrix** SO

**Batch ID:** OP7429

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D43738-1MS, D43738-1MSD were used as the QC samples indicated.

## Metals By Method SW846 6010C

**Matrix** AQ

**Batch ID:** MP9531

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D43722-2AMS, D43722-2AMSD, D43722-2ASDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Sodium 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 Magnesium are outside control limits for sample MP9531-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

**Matrix** SO

**Batch ID:** MP9521

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D43722-1MSD, D43722-1SDL, D43722-1MS, D43722-1MSD 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, Selenium, Chromium, Lead, Nickel, Zinc are outside control limits for sample MP9521-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP9521-SD1 for Zinc, Nickel, Lead and Chromium: Serial dilution indicates possible matrix interference.

## Metals By Method SW846 6020A

**Matrix** SO

**Batch ID:** MP9522

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D43722-1MS, D43722-1MSD, D43722-1SDL were used as the QC samples for the metals analysis.

## Metals By Method SW846 7471B

**Matrix** SO

**Batch ID:** MP9527

- All samples were digested and analyzed within the recommended method holding time.
- A
- All method blanks for this batch meet method specific criteria.
- Sample(s) D43722-1MS, D43722-1MSD were used as the QC samples for the metals analysis.

## Wet Chemistry By Method ASTM D1498-76M

**Matrix** SO

**Batch ID:** GN19103

- Sample(s) D43722-2DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

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

**Matrix** SO

**Batch ID:** GP9427

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

## Wet Chemistry By Method SM19 2540B M

**Matrix** SO

**Batch ID:** GN19009

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

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

**Matrix** SO

**Batch ID:** GP9438

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D43722-2DUP, D43722-2MS, D43722-2MSD were used as the QC samples for the Chromium, Hexavalent analysis.

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

**Matrix** SO

**Batch ID:** R16145

- The data for SW846 3060A/7196A M meets quality control requirements.
- D43723-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

### Wet Chemistry By Method SW846 9045D

**Matrix** SO

**Batch ID:** GN19031

- The following samples were run outside of holding time for method SW846 9045D: D43723-1

### Wet Chemistry By Method USDA HANDBOOK 60

**Matrix** SO

**Batch ID:** MP9531

- D43723-1A for Sodium Adsorption Ratio: Calculated as:  $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

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

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

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

## Summary of Hits

Page 1 of 1

**Job Number:** D43723  
**Account:** XTO Energy  
**Project:** XTO Love Ranch 8  
**Collected:** 02/20/13



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

### D43723-1 CUTTINGS SUBLINER COMP

Benzene	0.201	0.063	0.031	mg/kg	SW846 8260B
Toluene	0.707	0.13	0.063	mg/kg	SW846 8260B
Ethylbenzene	0.157	0.13	0.024	mg/kg	SW846 8260B
Xylene (total)	0.574	0.25	0.13	mg/kg	SW846 8260B
Chrysene	0.0196	0.0094	0.0049	mg/kg	SW846 8270C BY SIM
Fluorene	0.0233	0.0094	0.0057	mg/kg	SW846 8270C BY SIM
Naphthalene	0.105	0.013	0.012	mg/kg	SW846 8270C BY SIM
TPH-DRO (C10-C28)	211	7.6	4.5	mg/kg	SW846-8015B
Arsenic	12.3	0.10		mg/kg	SW846 6020A
Barium	4470	5.0		mg/kg	SW846 6010C
Chromium	15.4	1.0		mg/kg	SW846 6010C
Copper	19.4	1.0		mg/kg	SW846 6010C
Lead	16.8	5.0		mg/kg	SW846 6010C
Nickel	15.1	3.0		mg/kg	SW846 6010C
Zinc	43.5	3.0		mg/kg	SW846 6010C
Specific Conductivity	5750	1.0		umhos/cm	SM 2510B-2011 MOD
Chromium, Trivalent <sup>a</sup>	15.4	2.0		mg/kg	SW846 3060A/7196A M
Redox Potential Vs H2	179			mv	ASTM D1498-76M
pH	10.05			su	SW846 9045D

### D43723-1A CUTTINGS SUBLINER COMP

Calcium	35.3	2.0		mg/l	SW846 6010C
Sodium	1280	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio <sup>b</sup>	58.3			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

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<b>Client Sample ID:</b>	CUTTINGS SUBLINER COMP	<b>Date Sampled:</b>	02/20/13
<b>Lab Sample ID:</b>	D43723-1	<b>Date Received:</b>	02/22/13
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.9
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	XTO Love Ranch 8		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V25772.D	1	02/25/13	BD	n/a	n/a	V5V1568
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.08 g	5.0 ml	100 ul
Run #2			

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	0.201	0.063	0.031	mg/kg	
108-88-3	Toluene	0.707	0.13	0.063	mg/kg	
100-41-4	Ethylbenzene	0.157	0.13	0.024	mg/kg	
1330-20-7	Xylene (total)	0.574	0.25	0.13	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	87%		64-130%
460-00-4	4-Bromofluorobenzene	116%		62-131%
17060-07-0	1,2-Dichloroethane-D4	92%		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

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<b>Client Sample ID:</b>	CUTTINGS SUBLINER COMP	<b>Date Sampled:</b>	02/20/13
<b>Lab Sample ID:</b>	D43723-1	<b>Date Received:</b>	02/22/13
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.9
<b>Method:</b>	SW846 8270C BY SIM SW846 3546		
<b>Project:</b>	XTO Love Ranch 8		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G112114.D	1	02/25/13	DC	02/25/13	OP7430	E1G940
Run #2							

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

## COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0094	0.0049	mg/kg	
120-12-7	Anthracene	ND	0.0094	0.0049	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0094	0.0049	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0094	0.0049	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0094	0.0049	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0094	0.0049	mg/kg	
218-01-9	Chrysene	0.0196	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	0.0233	0.0094	0.0057	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0094	0.0049	mg/kg	
91-20-3	Naphthalene	0.105	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	48%		10-159%
321-60-8	2-Fluorobiphenyl	58%		19-131%
1718-51-0	Terphenyl-d14	76%		18-150%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

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## Report of Analysis

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<b>Client Sample ID:</b>	CUTTINGS SUBLINER COMP					<b>Date Sampled:</b>	02/20/13
<b>Lab Sample ID:</b>	D43723-1					<b>Date Received:</b>	02/22/13
<b>Matrix:</b>	SO - Soil					<b>Percent Solids:</b>	87.9
<b>Method:</b>	SW846 8015B						
<b>Project:</b>	XTO Love Ranch 8						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB19588.D	1	02/22/13	BD	n/a	n/a	GGB1069
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	13	6.3	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	79%		60-140%		

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

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

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## Report of Analysis

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<b>Client Sample ID:</b>	CUTTINGS SUBLINER COMP					<b>Date Sampled:</b>	02/20/13
<b>Lab Sample ID:</b>	D43723-1					<b>Date Received:</b>	02/22/13
<b>Matrix:</b>	SO - Soil					<b>Percent Solids:</b>	87.9
<b>Method:</b>	SW846-8015B SW846 3546						
<b>Project:</b>	XTO Love Ranch 8						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD22251.D	1	02/25/13	AV	02/25/13	OP7429	GFD1114
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	211	7.6	4.5	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	53%		35-130%		

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

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

## Report of Analysis

<b>Client Sample ID:</b>	CUTTINGS SUBLINER COMP	<b>Date Sampled:</b>	02/20/13
<b>Lab Sample ID:</b>	D43723-1	<b>Date Received:</b>	02/22/13
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.9
<b>Project:</b>	XTO Love Ranch 8		

## Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	12.3	0.10	mg/kg	5	02/25/13	02/26/13 JB	SW846 6020A <sup>3</sup>	SW846 3050B <sup>7</sup>
Barium	4470	5.0	mg/kg	5	02/25/13	02/27/13 JB	SW846 6010C <sup>4</sup>	SW846 3050B <sup>6</sup>
Cadmium	< 1.0	1.0	mg/kg	1	02/25/13	02/25/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>6</sup>
Chromium	15.4	1.0	mg/kg	1	02/25/13	02/25/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>6</sup>
Copper	19.4	1.0	mg/kg	1	02/25/13	02/27/13 JB	SW846 6010C <sup>5</sup>	SW846 3050B <sup>6</sup>
Lead	16.8	5.0	mg/kg	1	02/25/13	02/25/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>6</sup>
Mercury	< 0.096	0.096	mg/kg	1	02/26/13	02/26/13 JM	SW846 7471B <sup>2</sup>	SW846 7471B <sup>8</sup>
Nickel	15.1	3.0	mg/kg	1	02/25/13	02/25/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>6</sup>
Selenium	< 5.0	5.0	mg/kg	1	02/25/13	02/25/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>6</sup>
Silver	< 3.0	3.0	mg/kg	1	02/25/13	02/25/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>6</sup>
Zinc	43.5	3.0	mg/kg	1	02/25/13	02/25/13 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>6</sup>

- (1) Instrument QC Batch: MA3308
- (2) Instrument QC Batch: MA3312
- (3) Instrument QC Batch: MA3314
- (4) Instrument QC Batch: MA3315
- (5) Instrument QC Batch: MA3319
- (6) Prep QC Batch: MP9521
- (7) Prep QC Batch: MP9522
- (8) Prep QC Batch: MP9527

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b>	CUTTINGS SUBLINER COMP	<b>Date Sampled:</b>	02/20/13
<b>Lab Sample ID:</b>	D43723-1	<b>Date Received:</b>	02/22/13
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.9
<b>Project:</b>	XTO Love Ranch 8		

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
<b>prep: DEPT.OF AG, BOOK N9</b>							
Specific Conductivity	5750	1.0	umhos/cm	1	02/26/13	JK	SM 2510B-2011 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	02/26/13	KB	SW846 3060A/7196A
Chromium, Trivalent <sup>a</sup>	15.4	2.0	mg/kg	1	02/26/13	KB	SW846 3060A/7196A M
Redox Potential Vs H2	179		mv	1	02/28/13	JD	ASTM D1498-76M
Solids, Percent	87.9		%	1	02/25/13	SWT	SM19 2540B M
pH	10.05		su	1	02/25/13 10:50	AK	SW846 9045D

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

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	CUTTINGS SUBLINER COMP	<b>Date Sampled:</b>	02/20/13
<b>Lab Sample ID:</b>	D43723-1A	<b>Date Received:</b>	02/22/13
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.9
<b>Project:</b>	XTO Love Ranch 8		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	35.3	2.0	mg/l	1	02/26/13	02/27/13 JB	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Magnesium	< 1.0	1.0	mg/l	1	02/26/13	02/27/13 JB	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Sodium	1280	2.0	mg/l	1	02/26/13	02/27/13 JB	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>

(1) Instrument QC Batch: MA3315  
(2) Prep QC Batch: MP9531

RL = Reporting Limit



Report of Analysis

<b>Client Sample ID:</b>	CUTTINGS SUBLINER COMP	<b>Date Sampled:</b>	02/20/13
<b>Lab Sample ID:</b>	D43723-1A	<b>Date Received:</b>	02/22/13
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	87.9
<b>Project:</b>	XTO Love Ranch 8		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	58.3		ratio	1	02/27/13 11:23	JB	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



# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D43723

Client: KRW CONSULTING

Immediate Client Services Action Required: No

Date / Time Received: 2/22/2013 2:20:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XTO LOVERANCH 8

Airbill #'s: HD-Co

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

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

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

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

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

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

Comments

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

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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:** D43723  
**Account:** XTOKRWR XTO Energy  
**Project:** XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1568-MB	5V25759.D	1	02/25/13	BD	n/a	n/a	V5V1568

The QC reported here applies to the following samples:

Method: SW846 8260B

D43723-1

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	84% 64-130%
460-00-4	4-Bromofluorobenzene	115% 62-131%
17060-07-0	1,2-Dichloroethane-D4	91% 70-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D43723

**Account:** XTOKRWR XTO Energy

**Project:** XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1568-BS	5V25760.D	1	02/25/13	BD	n/a	n/a	V5V1568

The QC reported here applies to the following samples:

Method: SW846 8260B

D43723-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	48.6	97	70-130
100-41-4	Ethylbenzene	50	50.4	101	70-130
108-88-3	Toluene	50	44.5	89	70-130
1330-20-7	Xylene (total)	150	153	102	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	89%	64-130%
460-00-4	4-Bromofluorobenzene	116%	62-131%
17060-07-0	1,2-Dichloroethane-D4	85%	70-130%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D43723  
**Account:** XTOKRWR XTO Energy  
**Project:** XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D43738-1MS	5V25762.D	1	02/25/13	BD	n/a	n/a	V5V1568
D43738-1MSD	5V25763.D	1	02/25/13	BD	n/a	n/a	V5V1568
D43738-1	5V25761.D	1	02/25/13	BD	n/a	n/a	V5V1568

The QC reported here applies to the following samples:

Method: SW846 8260B

D43723-1

CAS No.	Compound	D43738-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	43.6	J	3290	3320	100	3490	105	5	64-139/30
100-41-4	Ethylbenzene	46.5	J	3290	3380	101	3470	104	3	68-136/30
108-88-3	Toluene	118	J	3290	3070	90	3140	92	2	60-130/30
1330-20-7	Xylene (total)	ND		9860	10400	106	10700	109	3	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D43738-1	Limits
2037-26-5	Toluene-D8	86%	87%	84%	64-130%
460-00-4	4-Bromofluorobenzene	122%	123%	115%	62-131%
17060-07-0	1,2-Dichloroethane-D4	86%	84%	87%	70-130%

\* = Outside of Control Limits.



GC/MS Volatiles

Raw Data

7

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5022513.S\  
 Data File : 5V25772.D  
 Acq On : 25 Feb 2013 10:11 pm  
 Operator : BRETD  
 Sample : D43723-1  
 Misc : MS5403,V5V1568,5.083,,100,5,1  
 ALS Vial : 16 Sample Multiplier: 1

Quant Time: Feb 26 09:36:21 2013  
 Quant Method : C:\msdchem\1\METHODS\V5AP1565TVH1565.M  
 Quant Title : 8260  
 QLast Update : Fri Feb 22 10:33:44 2013  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.613	168	164305	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.412	114	217348	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.072	117	243868	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.036	152	184329	50.00	ug/l	0.00

## System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.012	102	15534	46.10	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	92.20%
61) Toluene-d8	13.816	98	261398	43.74	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	87.48%
69) 4-Bromofluorobenzene	16.008	95	134241	58.06	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	116.12%

## Target Compounds

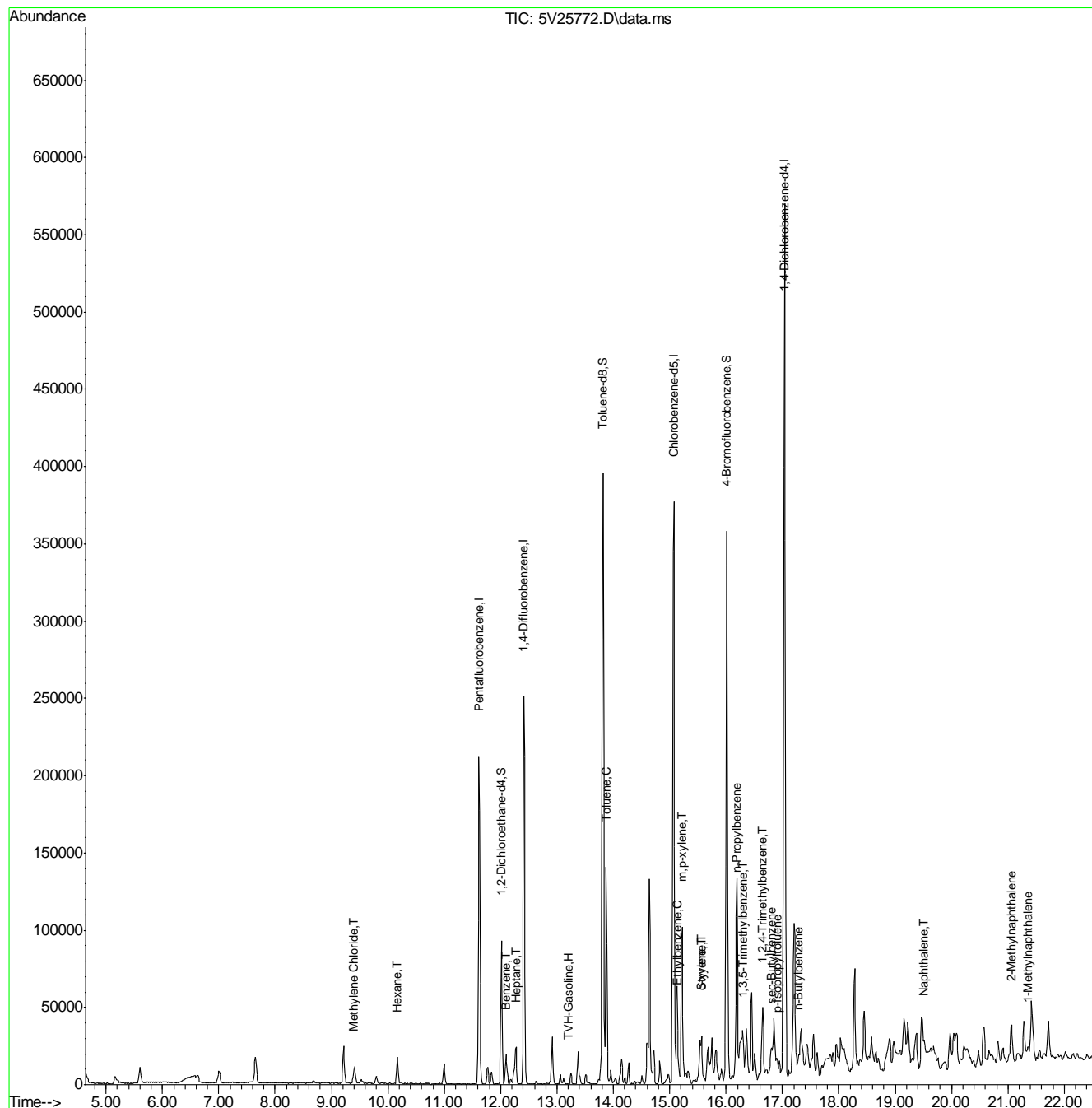
					Qvalue
1) TVH-Gasoline	13.220	TIC	2351009m	221.45	ug/l
17) Methylene Chloride	9.386	84	1534	0.98	ug/l # 82
41) Hexane	10.163	57	9049	5.46	ug/l 100
43) Heptane	12.275	43	9290	5.01	ug/l 87
50) Benzene	12.092	78	17650	3.21	ug/l 100
62) Toluene	13.873	92	48509	11.24	ug/l 98
66) Ethylbenzene	15.140	91	17485	2.50	ug/l 97
71) Styrene	15.563	104	6003	1.94	ug/l 96
72) m,p-xylene	15.220	106	33690	7.17	ug/l 98
73) o-xylene	15.563	106	4700	1.97	ug/l 95
77) n-Propylbenzene	16.179	91	7888	1.01	ug/l 97
80) 1,3,5-Trimethylbenzene	16.305	105	7995m	1.56	ug/l
82) 1,2,4-Trimethylbenzene	16.647	105	22358	3.15	ug/l 90
83) sec-Butylbenzene	16.807	105	1861	0.82	ug/l 85
86) p-Isopropyltoluene	16.899	119	6040	1.34	ug/l 88
88) n-Butylbenzene	17.287	91	4720	1.16	ug/l # 73
91) Naphthalene	19.513	128	13301	2.35	ug/l 100
94) 2-Methylnaphthalene	21.054	142	12206	5.55	ug/l 93
95) 1-Methylnaphthalene	21.351	142	5870	3.67	ug/l # 83

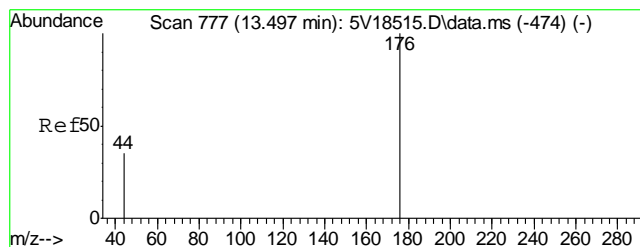
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5022513.S\  
Data File : 5V25772.D  
Acq On : 25 Feb 2013 10:11 pm  
Operator : BRETD  
Sample : D43723-1  
Misc : MS5403,V5V1568,5.083,,100,5,1  
ALS Vial : 16 Sample Multiplier: 1

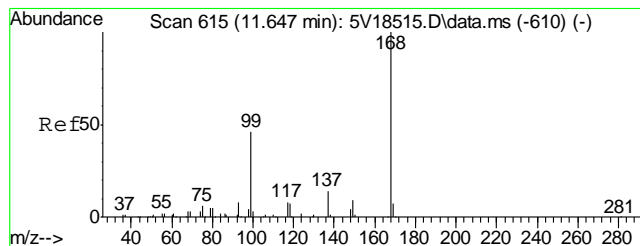
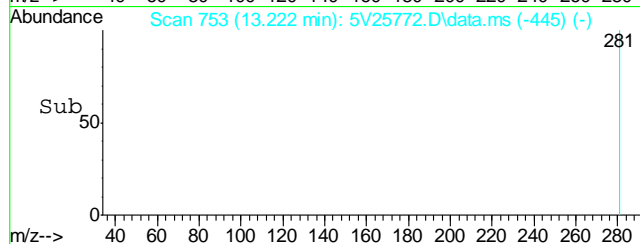
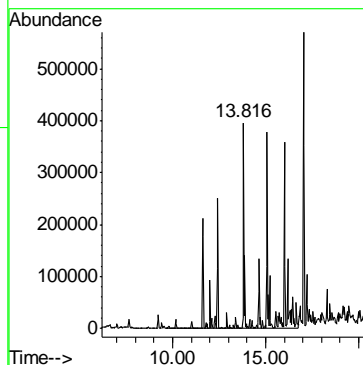
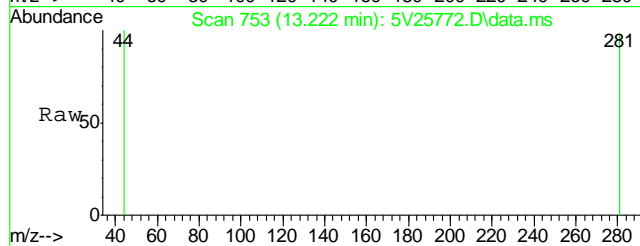
Quant Time: Feb 26 09:36:21 2013  
Quant Method : C:\msdchem\1\METHODS\V5AP1565TVH1565.M  
Quant Title : 8260  
QLast Update : Fri Feb 22 10:33:44 2013  
Response via : Initial Calibration





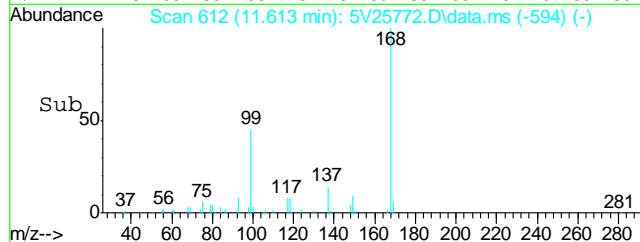
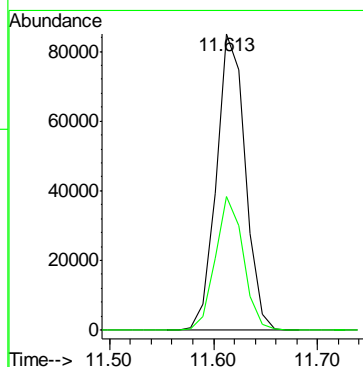
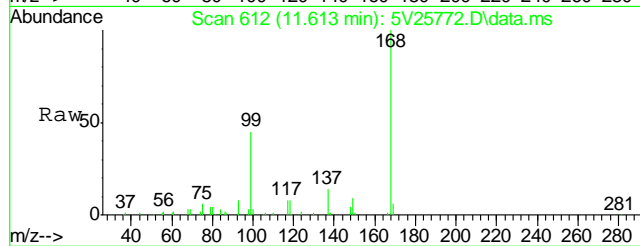
#1  
TVH-Gasoline  
Concen: 221.45 ug/l m  
RT: 13.220 min Scan# 753  
Delta R.T. 0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

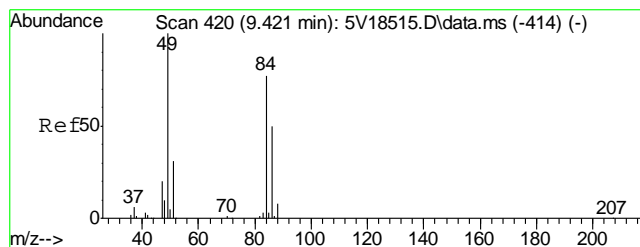
Tgt Ion:TIC Resp: 2351009



#2  
Pentafluorobenzene  
Concen: 50.00 ug/l  
RT: 11.613 min Scan# 612  
Delta R.T. -0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

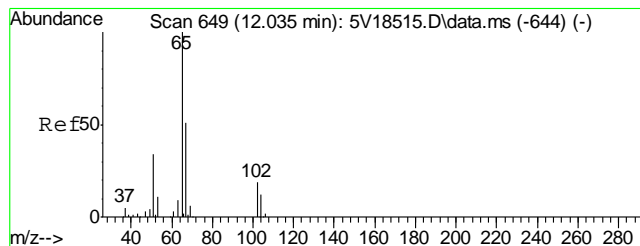
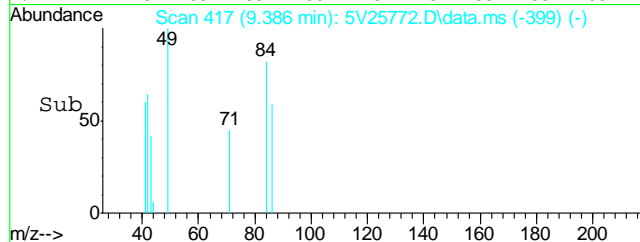
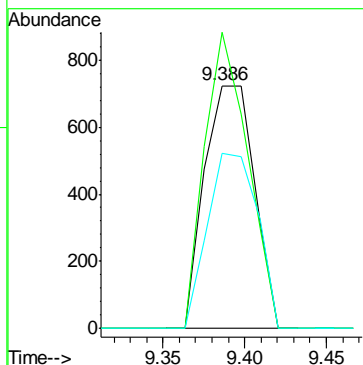
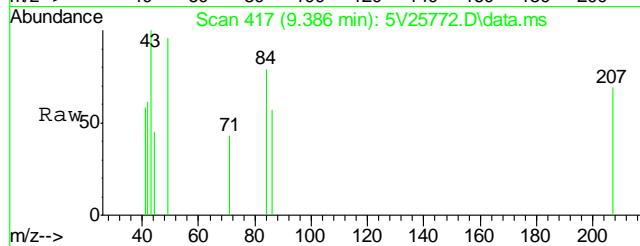
Tgt Ion:168 Resp: 164305  
Ion Ratio Lower Upper  
168 100  
99 43.7 37.4 56.2





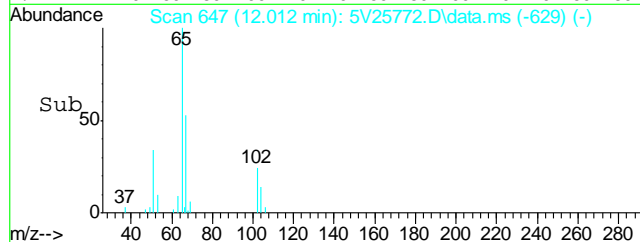
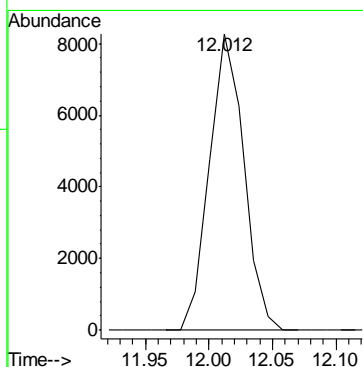
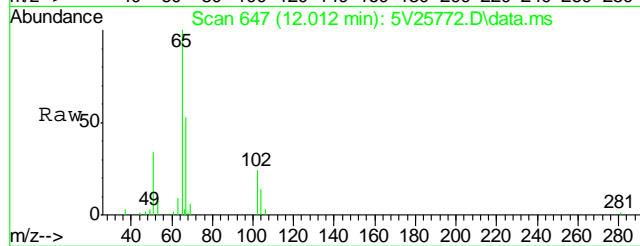
#17  
Methylene Chloride  
Concen: 0.98 ug/l  
RT: 9.386 min Scan# 417  
Delta R.T. -0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

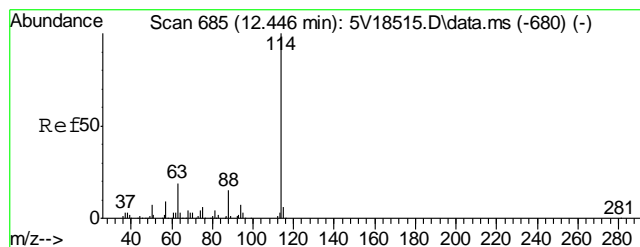
Tgt Ion: 84 Resp: 1534  
Ion Ratio Lower Upper  
84 100  
49 105.4 110.4 150.4#  
86 72.6 44.0 84.0



#33  
1,2-Dichloroethane-d4  
Concen: 46.10 ug/l  
RT: 12.012 min Scan# 647  
Delta R.T. -0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

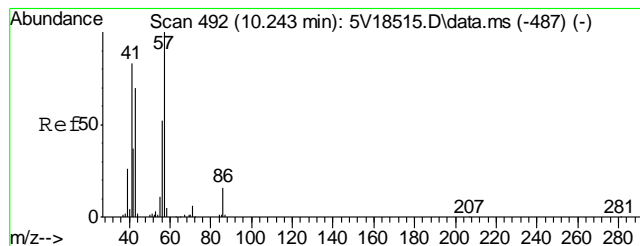
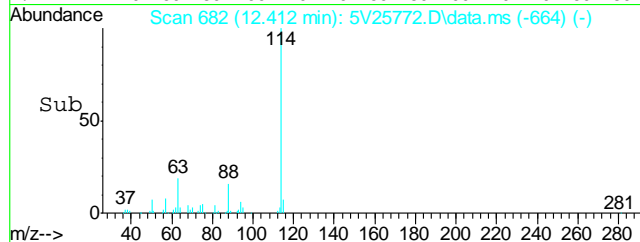
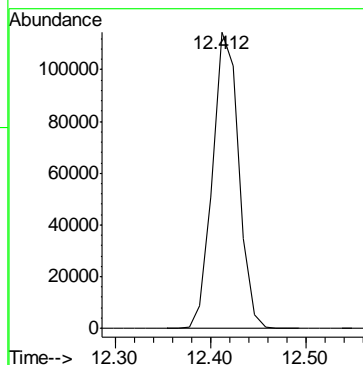
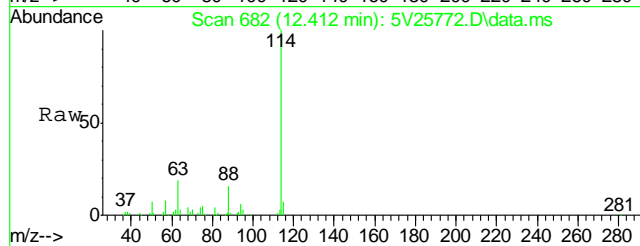
Tgt Ion: 102 Resp: 15534





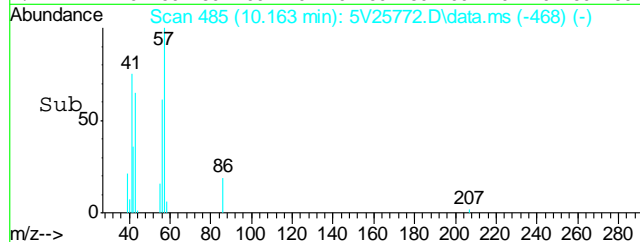
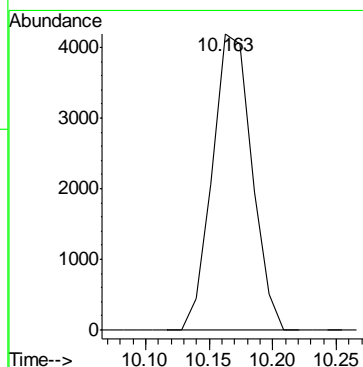
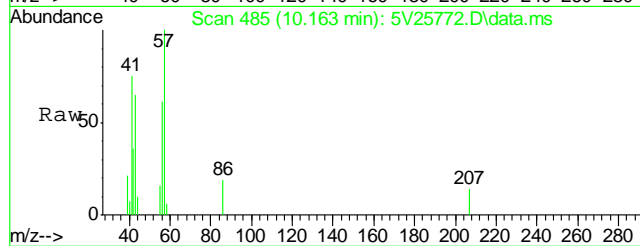
#35  
1,4-Difluorobenzene  
Concen: 50.00 ug/l  
RT: 12.412 min Scan# 682  
Delta R.T. -0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

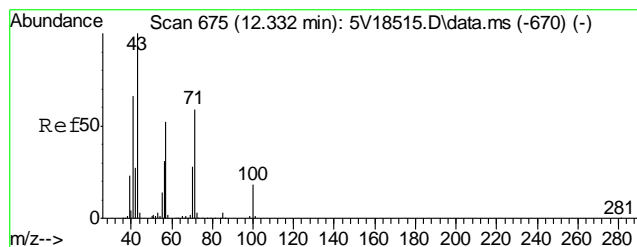
Tgt Ion:114 Resp: 217348



#41  
Hexane  
Concen: 5.46 ug/l  
RT: 10.163 min Scan# 485  
Delta R.T. -0.011 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

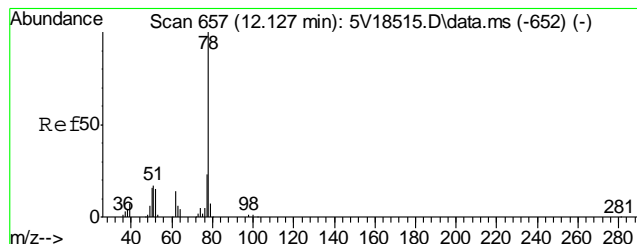
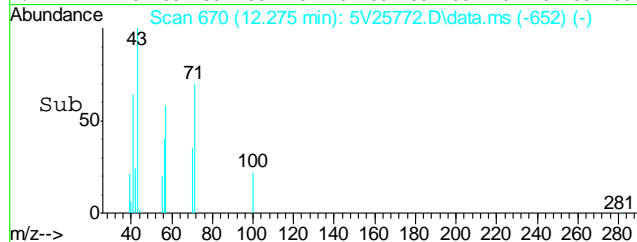
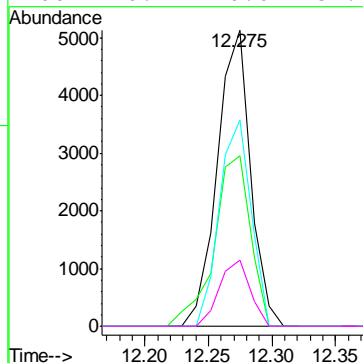
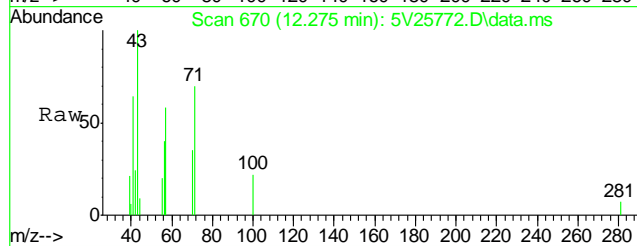
Tgt Ion: 57 Resp: 9049





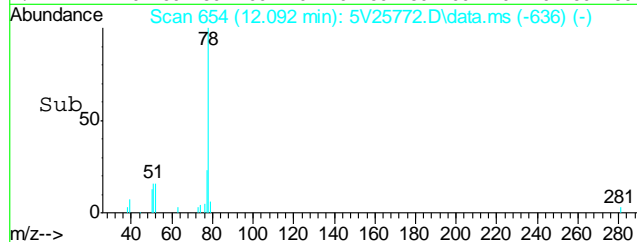
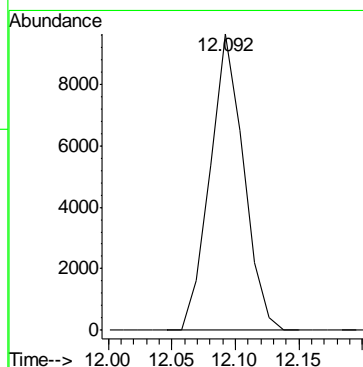
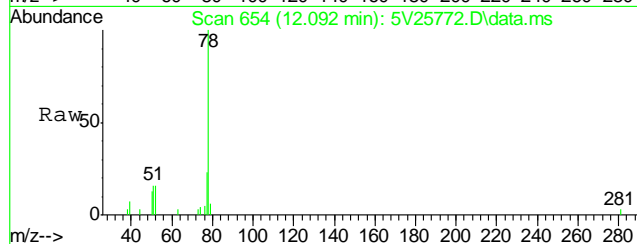
#43  
Heptane  
Concen: 5.01 ug/l  
RT: 12.275 min Scan# 670  
Delta R.T. 0.001 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

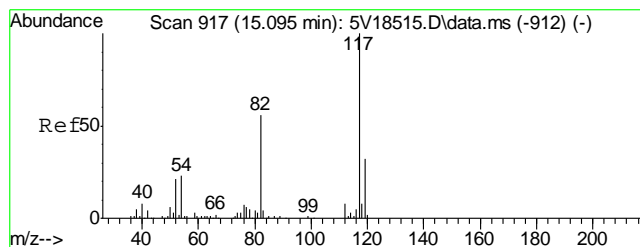
Tgt Ion	Ratio	Lower	Upper
43	100		
57	63.0	30.6	70.6
71	66.2	38.9	78.9
100	20.7	0.0	37.4



#50  
Benzene  
Concen: 3.21 ug/l  
RT: 12.092 min Scan# 654  
Delta R.T. -0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

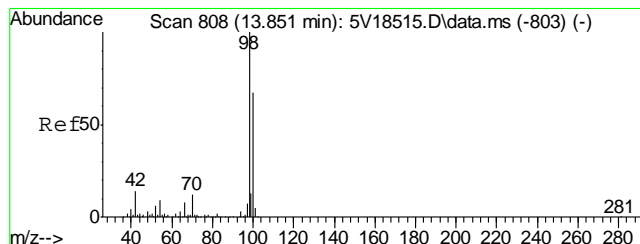
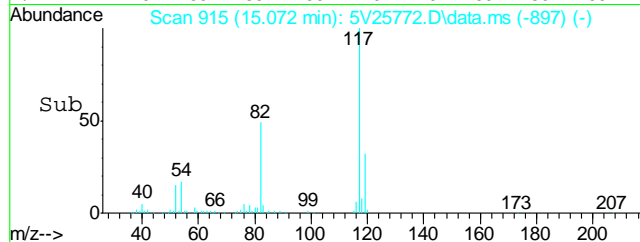
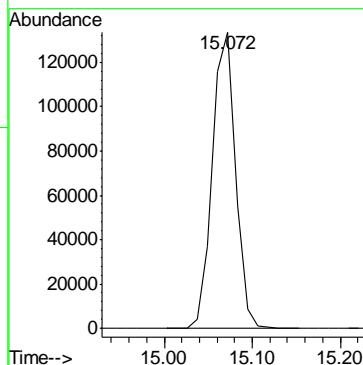
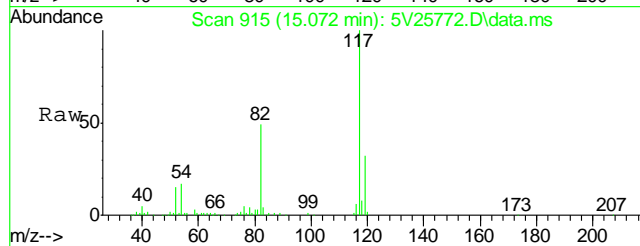
Tgt Ion: 78 Resp: 17650





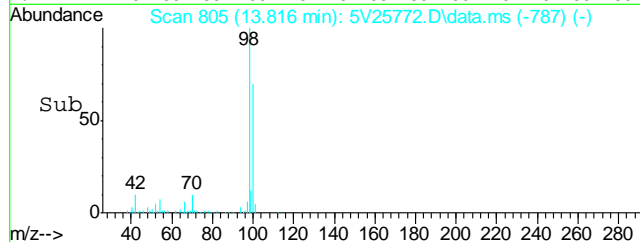
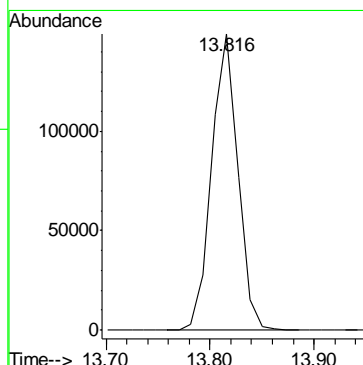
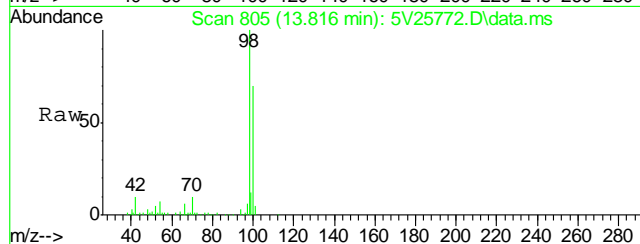
#53  
Chlorobenzene-d5  
Concen: 50.00 ug/l  
RT: 15.072 min Scan# 915  
Delta R.T. -0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

Tgt Ion:117 Resp: 243868

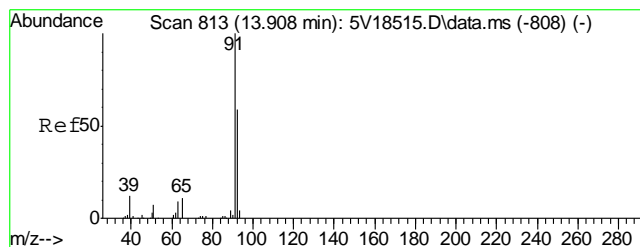


#61  
Toluene-d8  
Concen: 43.74 ug/l  
RT: 13.816 min Scan# 805  
Delta R.T. -0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

Tgt Ion: 98 Resp: 261398

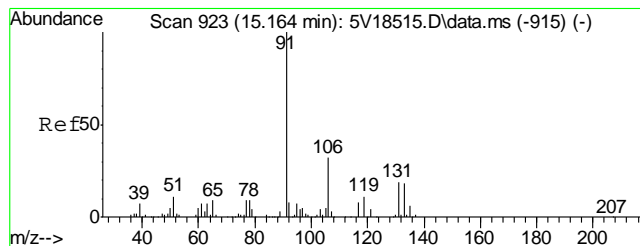
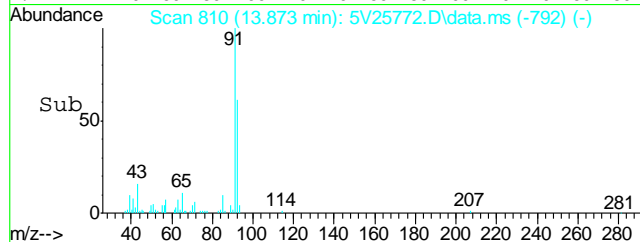
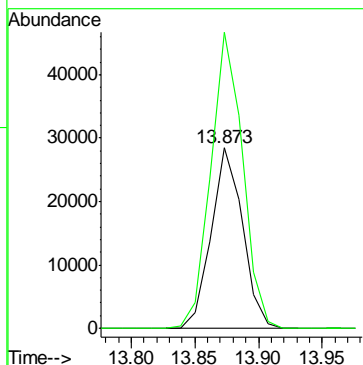
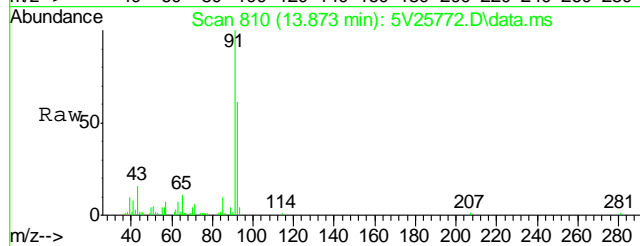






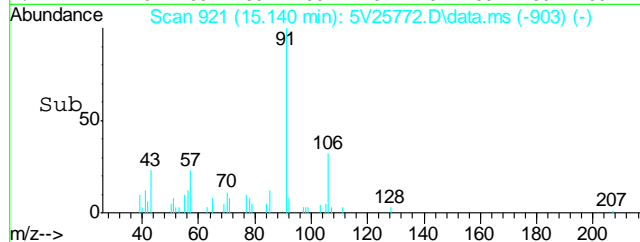
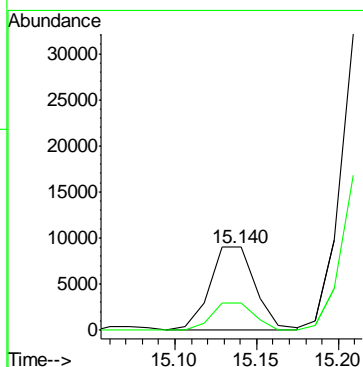
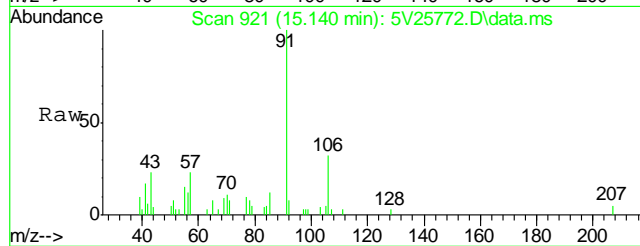
#62  
Toluene  
Concen: 11.24 ug/l  
RT: 13.873 min Scan# 810  
Delta R.T. -0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

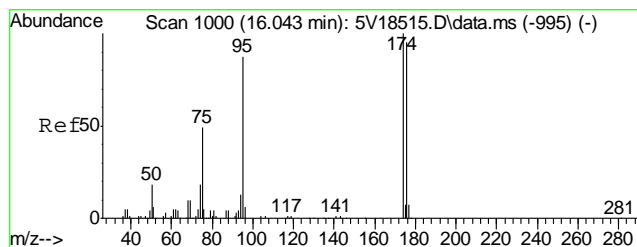
Tgt Ion: 92 Resp: 48509  
Ion Ratio Lower Upper  
92 100  
91 167.4 149.8 189.8



#66  
Ethylbenzene  
Concen: 2.50 ug/l  
RT: 15.140 min Scan# 921  
Delta R.T. 0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

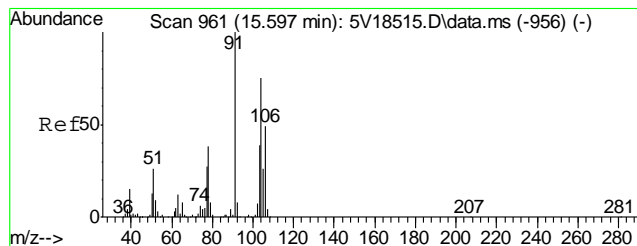
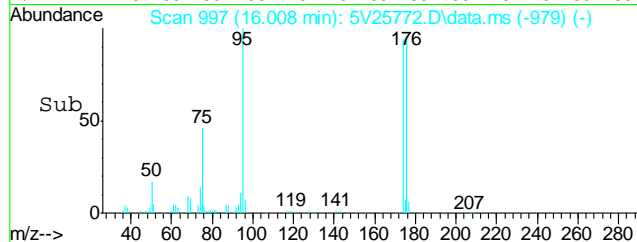
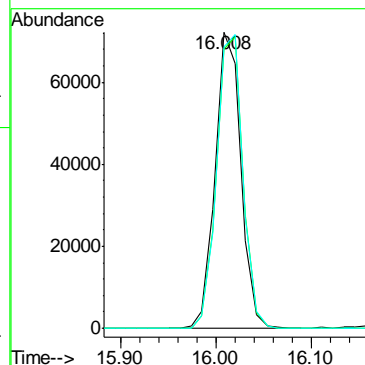
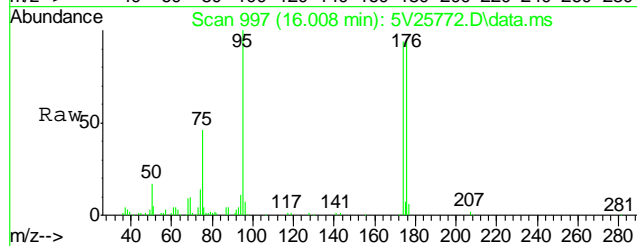
Tgt Ion: 91 Resp: 17485  
Ion Ratio Lower Upper  
91 100  
106 30.2 11.7 51.7





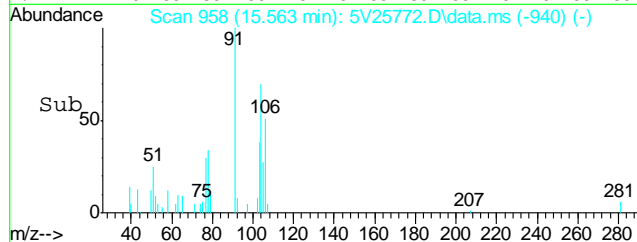
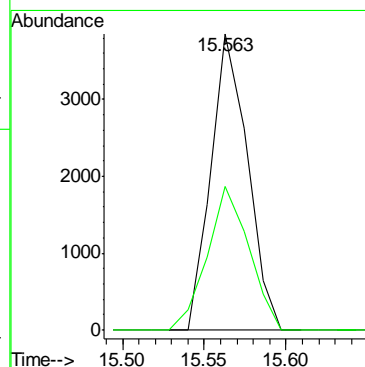
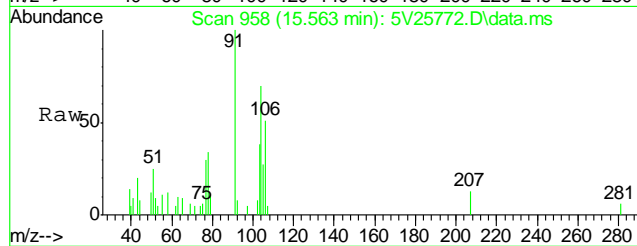
#69  
4-Bromofluorobenzene  
Concen: 58.06 ug/l  
RT: 16.008 min Scan# 997  
Delta R.T. -0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

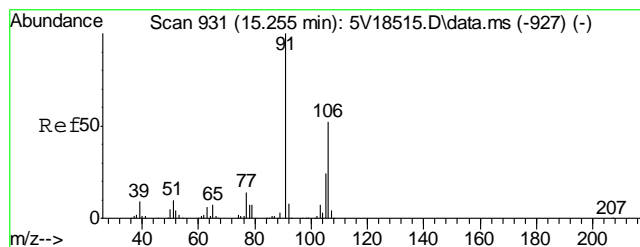
Tgt Ion	Ratio	Lower	Upper
95	100		
174	101.0	77.1	117.1
176	101.3	73.4	113.4



#71  
Styrene  
Concen: 1.94 ug/l  
RT: 15.563 min Scan# 958  
Delta R.T. -0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

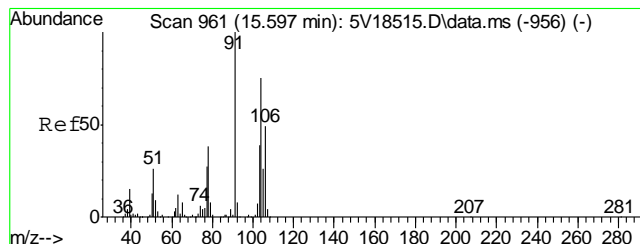
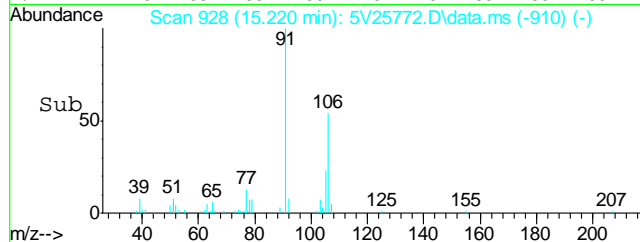
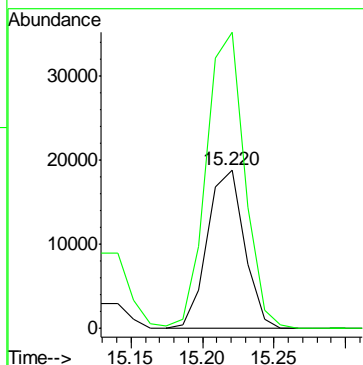
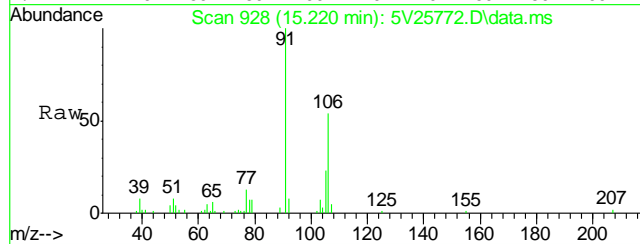
Tgt Ion	Ratio	Lower	Upper
104	100		
78	55.3	32.6	72.6





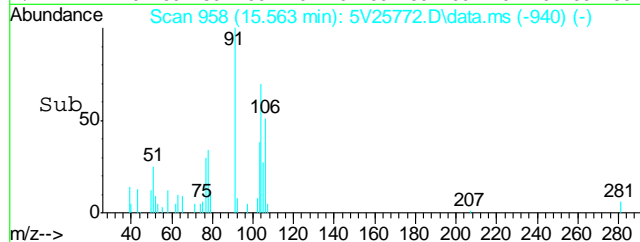
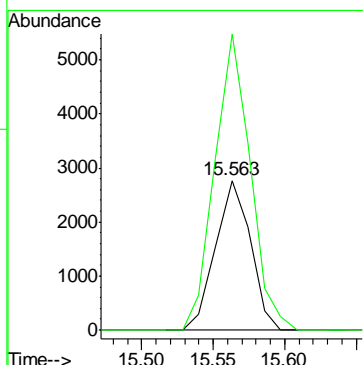
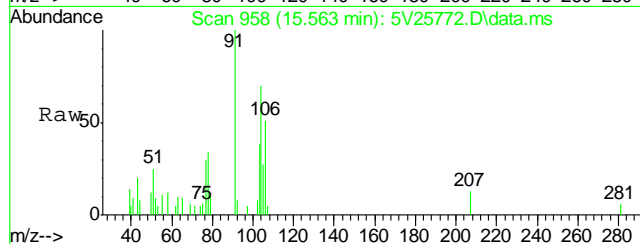
#72  
m,p-xylene  
Concen: 7.17 ug/l  
RT: 15.220 min Scan# 928  
Delta R.T. 0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

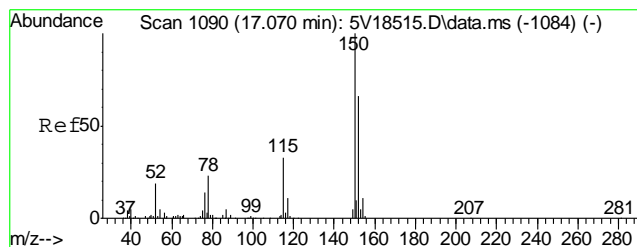
Tgt Ion:106 Resp: 33690  
Ion Ratio Lower Upper  
106 100  
91 193.4 177.1 217.1



#73  
o-xylene  
Concen: 1.97 ug/l  
RT: 15.563 min Scan# 958  
Delta R.T. -0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

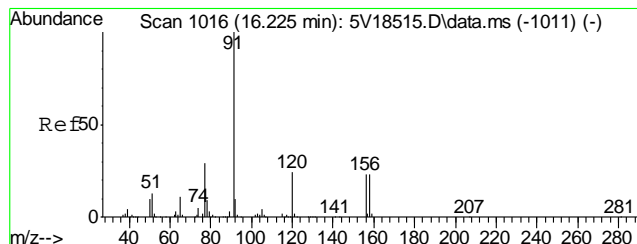
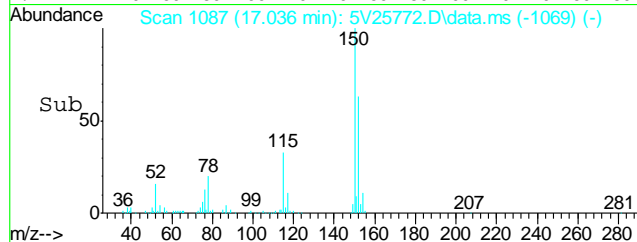
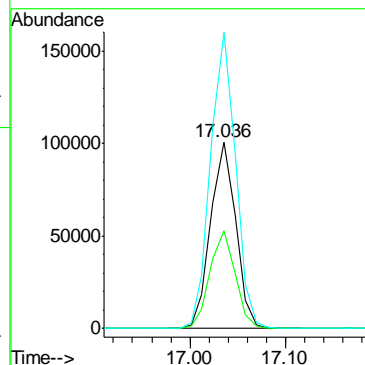
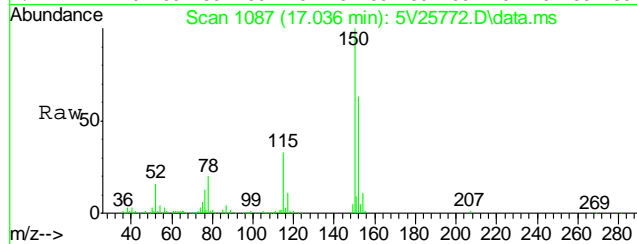
Tgt Ion:106 Resp: 4700  
Ion Ratio Lower Upper  
106 100  
91 201.0 188.2 228.2





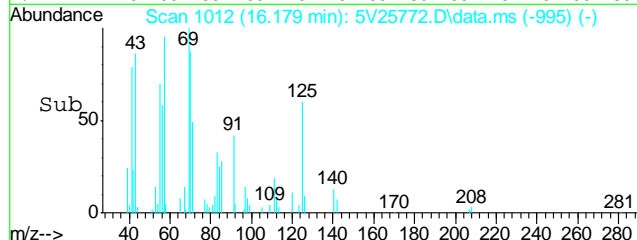
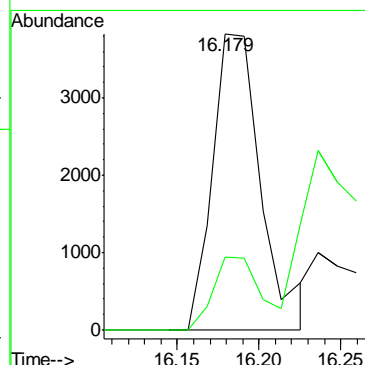
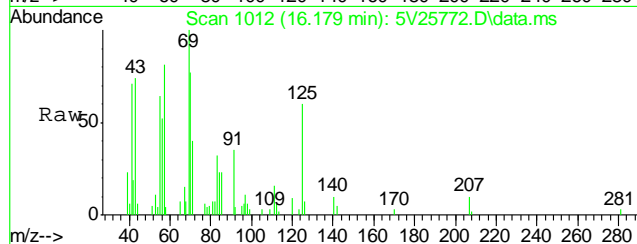
#74  
1,4-Dichlorobenzene-d4  
Concen: 50.00 ug/l  
RT: 17.036 min Scan# 1087  
Delta R.T. -0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

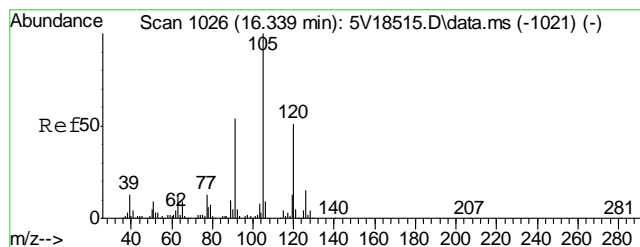
Tgt Ion	Ratio	Lower	Upper
152	100		
115	52.5	41.4	62.0
150	157.5	153.9	230.9



#77  
n-Propylbenzene  
Concen: 1.01 ug/l  
RT: 16.179 min Scan# 1012  
Delta R.T. -0.011 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

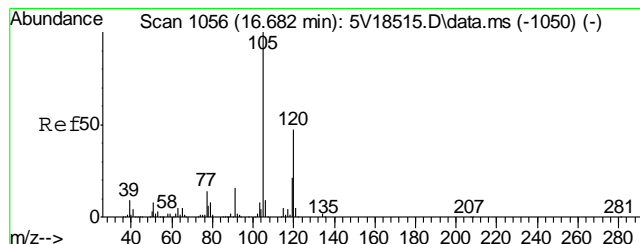
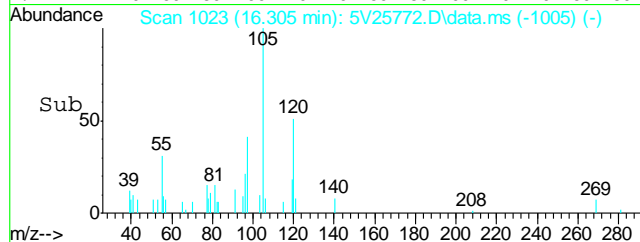
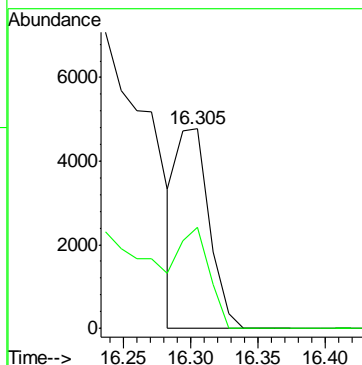
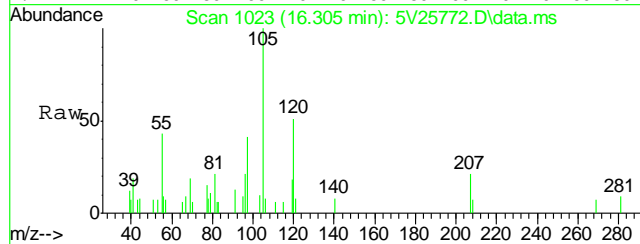
Tgt Ion	Ratio	Lower	Upper
91	100		
120	24.7	3.2	43.2





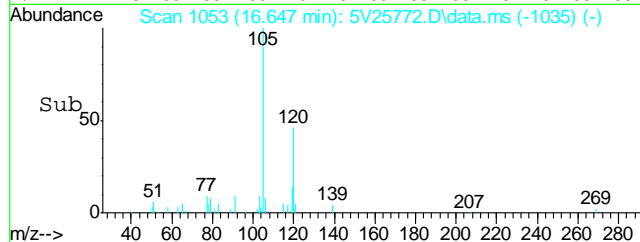
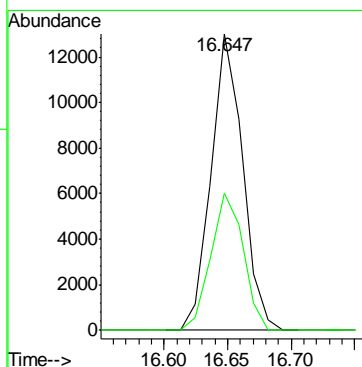
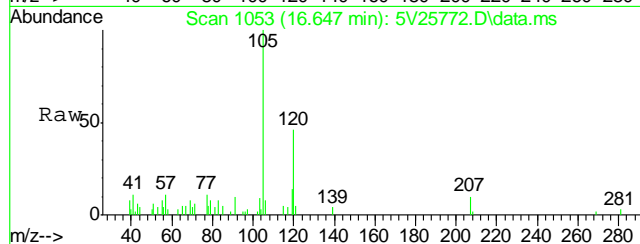
#80  
1,3,5-Trimethylbenzene  
Concen: 1.56 ug/l m  
RT: 16.305 min Scan# 1023  
Delta R.T. -0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

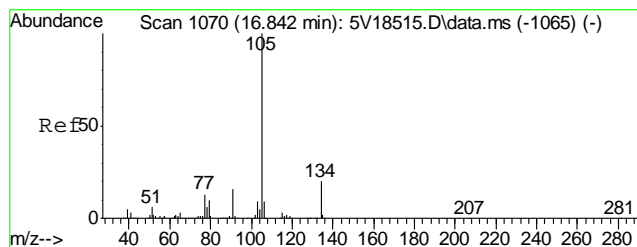
Tgt Ion:105 Resp: 7995  
Ion Ratio Lower Upper  
105 100  
120 87.8 30.1 70.1#



#82  
1,2,4-Trimethylbenzene  
Concen: 3.15 ug/l  
RT: 16.647 min Scan# 1053  
Delta R.T. 0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

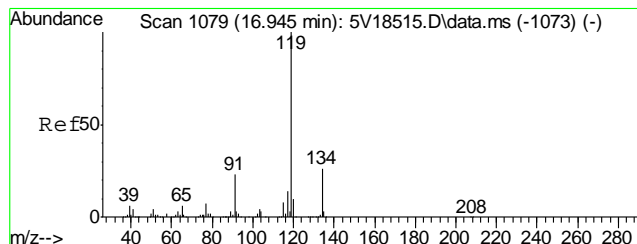
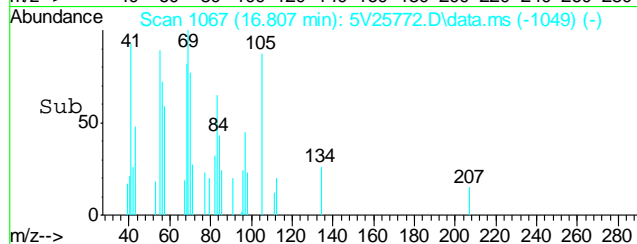
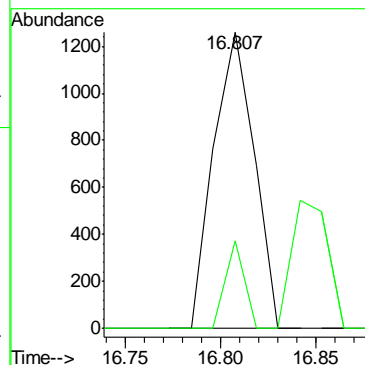
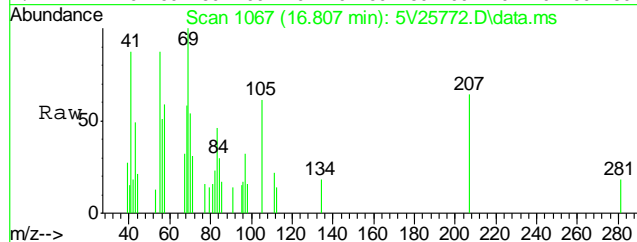
Tgt Ion:105 Resp: 22358  
Ion Ratio Lower Upper  
105 100  
120 47.3 34.8 74.8





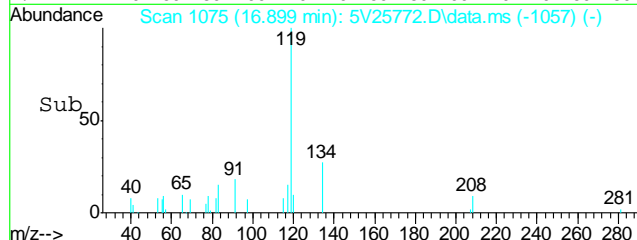
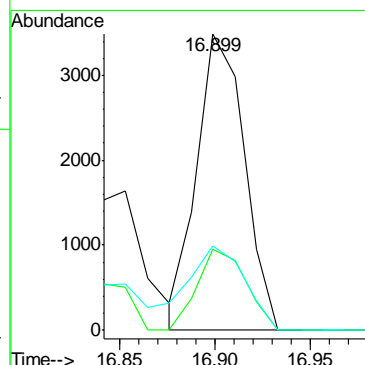
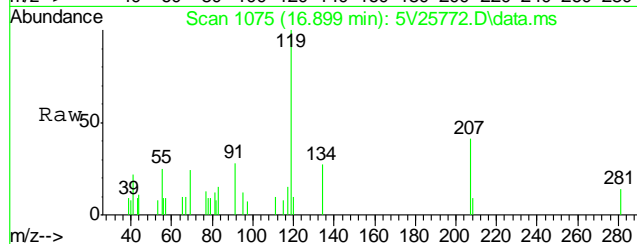
#83  
 sec-Butylbenzene  
 Concen: 0.82 ug/l  
 RT: 16.807 min Scan# 1067  
 Delta R.T. 0.000 min  
 Lab File: 5V25772.D  
 Acq: 25 Feb 2013 10:11 pm

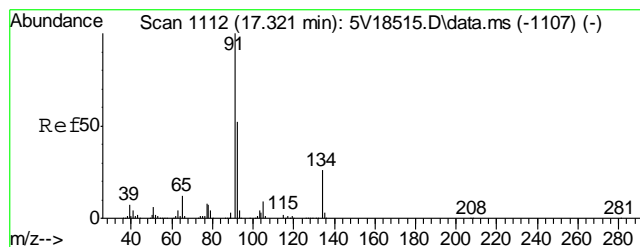
Tgt Ion	Ratio	Lower	Upper
105	100		
134	13.6	0.6	40.6



#86  
 p-Isopropyltoluene  
 Concen: 1.34 ug/l  
 RT: 16.899 min Scan# 1075  
 Delta R.T. 0.001 min  
 Lab File: 5V25772.D  
 Acq: 25 Feb 2013 10:11 pm

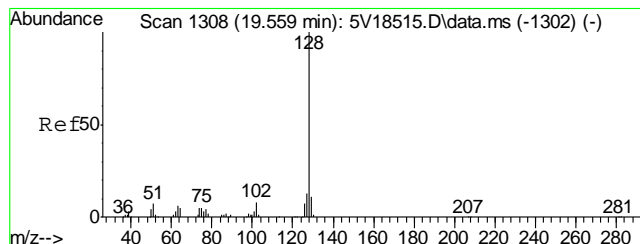
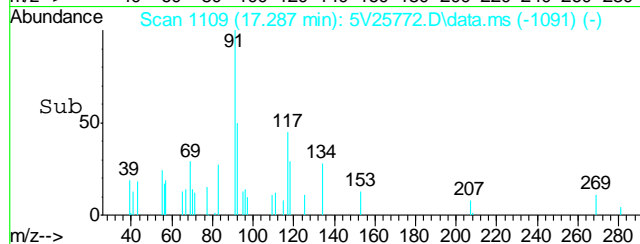
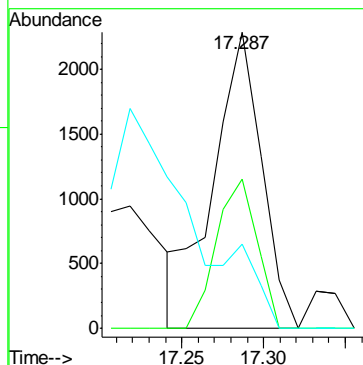
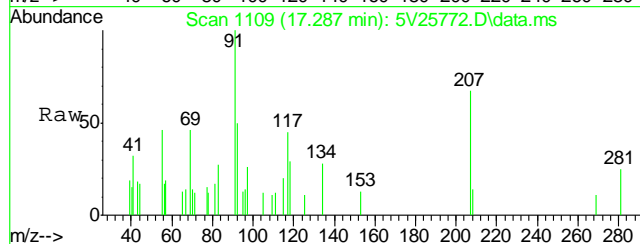
Tgt Ion	Ratio	Lower	Upper
119	100		
134	28.1	6.6	46.6
91	34.9	3.8	43.8





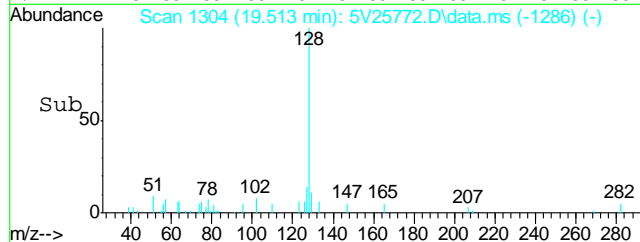
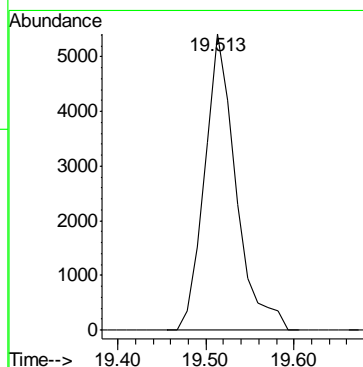
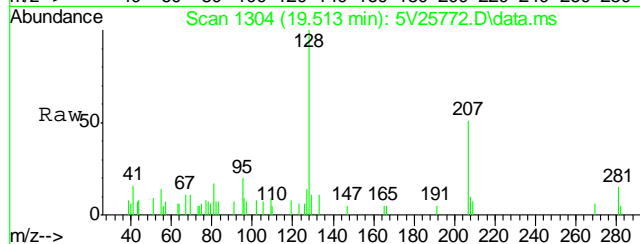
#88  
n-Butylbenzene  
Concen: 1.16 ug/l  
RT: 17.287 min Scan# 1109  
Delta R.T. 0.001 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

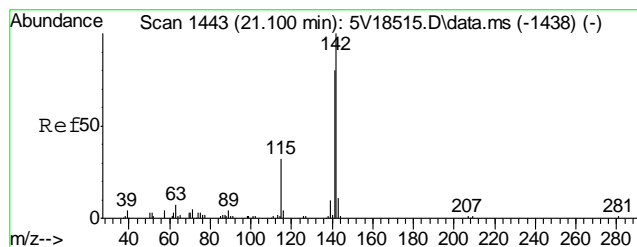
Tgt Ion	Ratio	Lower	Upper
91	100		
92	42.3	32.8	72.8
134	0.0	6.8	46.8



#91  
Naphthalene  
Concen: 2.35 ug/l  
RT: 19.513 min Scan# 1304  
Delta R.T. 0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

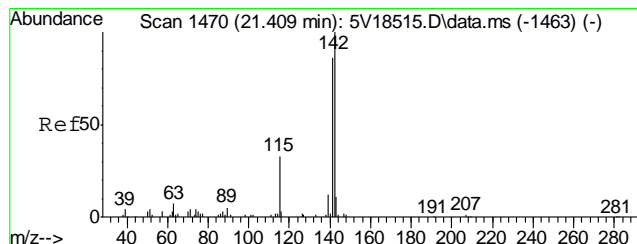
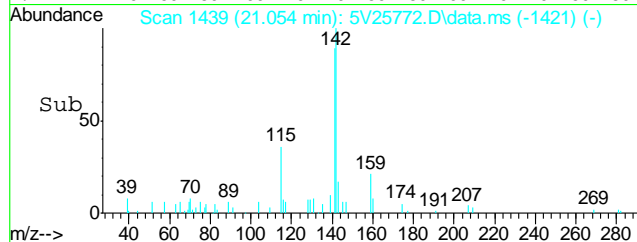
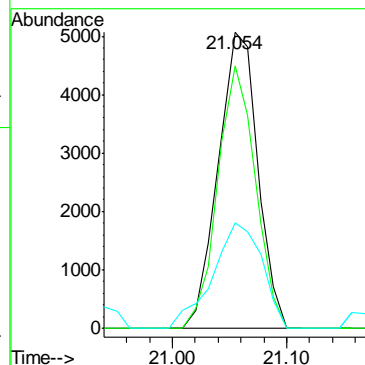
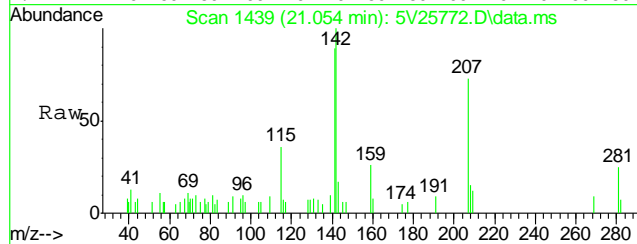
Tgt Ion: 128 Resp: 13301





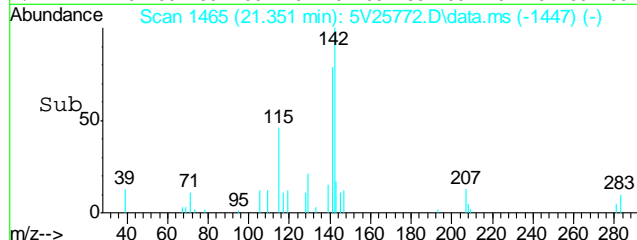
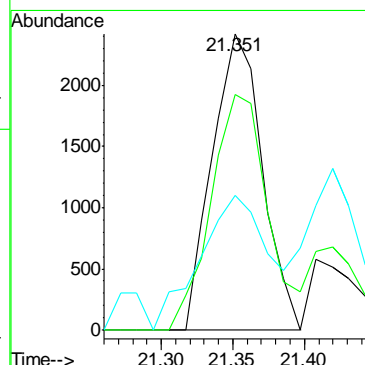
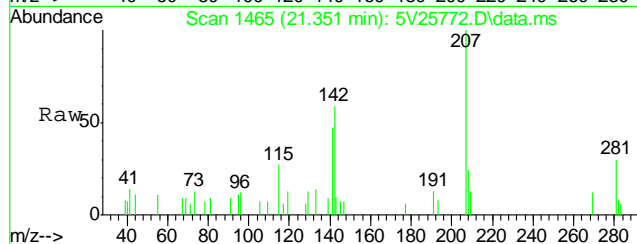
#94  
2-Methylnaphthalene  
Concen: 5.55 ug/l  
RT: 21.054 min Scan# 1439  
Delta R.T. 0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

Tgt Ion	Ratio	Lower	Upper
142	100		
141	84.6	62.8	102.8
115	44.3	12.4	52.4



#95  
1-Methylnaphthalene  
Concen: 3.67 ug/l  
RT: 21.351 min Scan# 1465  
Delta R.T. 0.000 min  
Lab File: 5V25772.D  
Acq: 25 Feb 2013 10:11 pm

Tgt Ion	Ratio	Lower	Upper
142	100		
141	90.4	66.1	106.1
115	62.3	14.1	54.1#





## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5022513.S\  
Data File : 5V25759.D  
Acq On : 25 Feb 2013 3:04 pm  
Operator : BRETD  
Sample : MB  
Misc : MS5403,V5V1568,5.00,,100,5,1  
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Feb 26 09:14:27 2013  
Quant Method : C:\msdchem\1\METHODS\V5AP1565TVH1565.M  
Quant Title : 8260  
QLast Update : Fri Feb 22 10:33:44 2013  
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.613	168	149241	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.412	114	190794	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.072	117	222301	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.036	152	173278	50.00	ug/l	0.00

## System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.012	102	13906	45.44	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	90.88%
61) Toluene-d8	13.816	98	229446	42.12	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	84.24%
69) 4-Bromofluorobenzene	16.008	95	121270	57.54	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	115.08%

## Target Compounds

					Qvalue
1) TVH-Gasoline	13.220	TIC	1288m	34.29	ug/l
17) Methylene Chloride	9.386	84	786	0.55	ug/l
91) Naphthalene	19.513	128	1731	1.13	ug/l

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

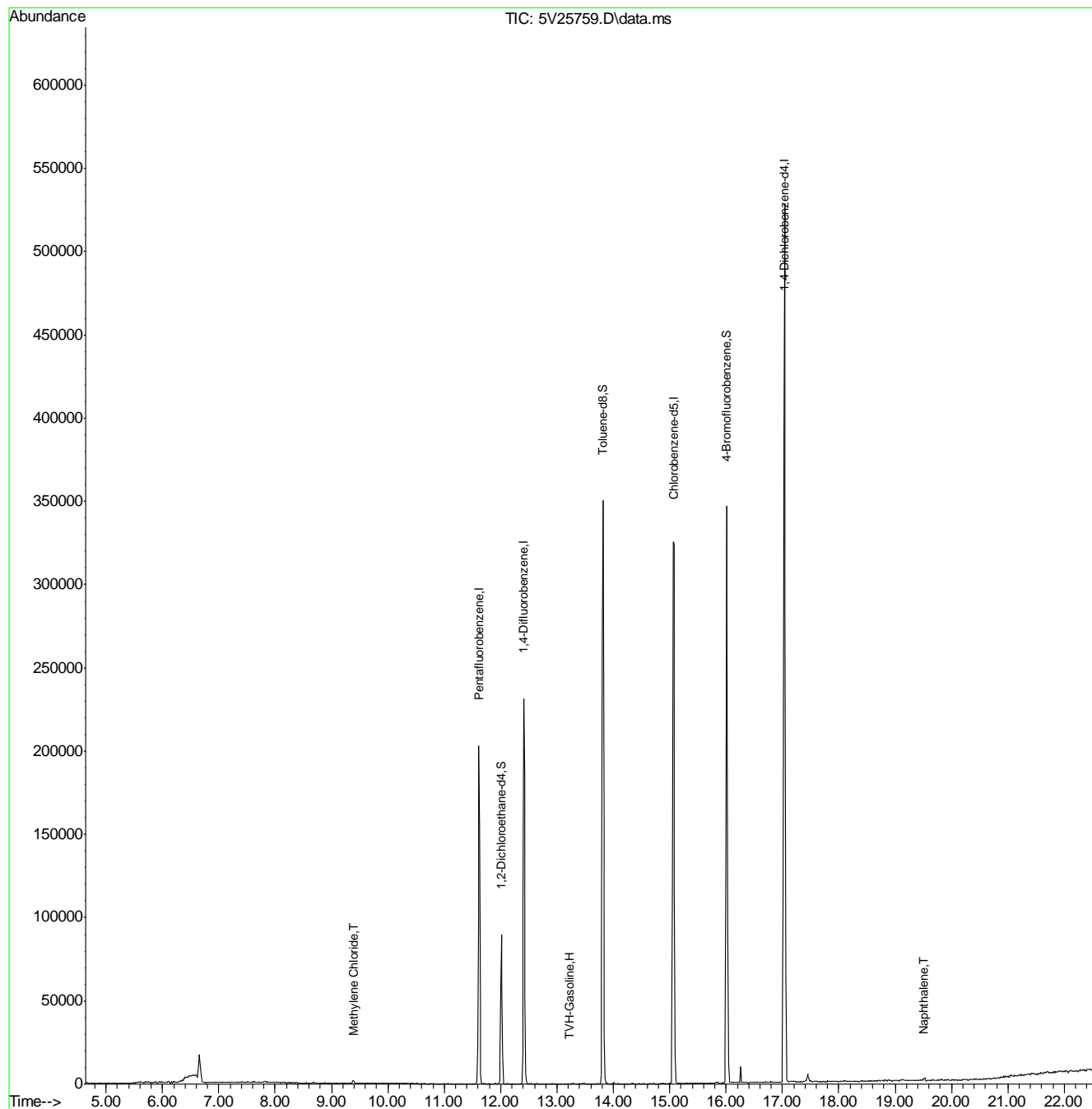
7.2.1

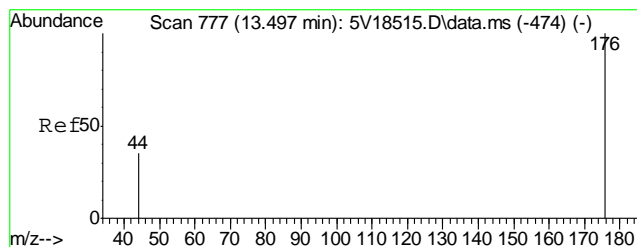
7

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5022513.S\  
Data File : 5V25759.D  
Acq On : 25 Feb 2013 3:04 pm  
Operator : BRETD  
Sample : MB  
Misc : MS5403,V5V1568,5.00,,100,5,1  
ALS Vial : 3 Sample Multiplier: 1

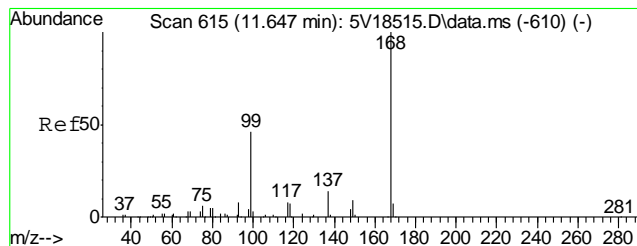
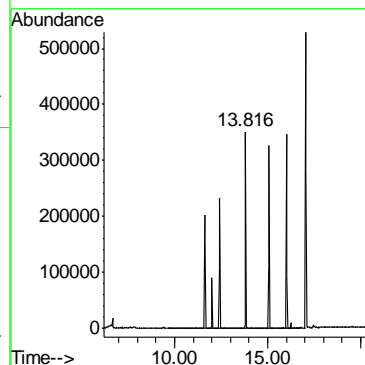
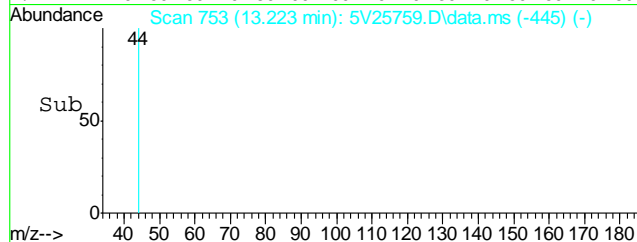
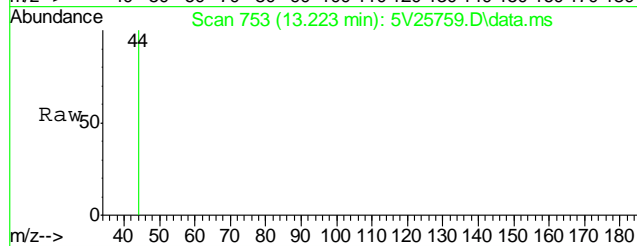
Quant Time: Feb 26 09:14:27 2013  
Quant Method : C:\msdchem\1\METHODS\V5AP1565TVH1565.M  
Quant Title : 8260  
QLast Update : Fri Feb 22 10:33:44 2013  
Response via : Initial Calibration





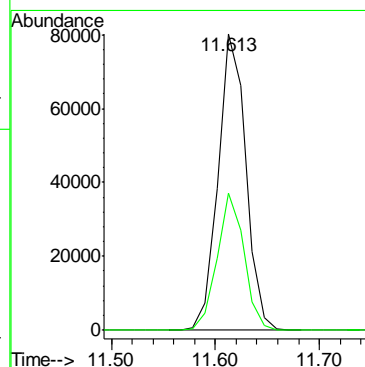
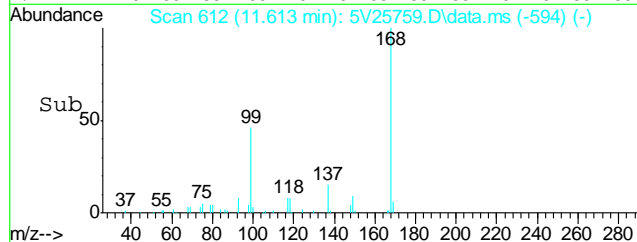
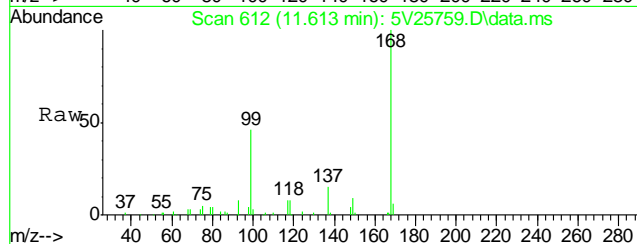
#1  
TVH-Gasoline  
Concen: 34.29 ug/l m  
RT: 13.220 min Scan# 753  
Delta R.T. 0.000 min  
Lab File: 5V25759.D  
Acq: 25 Feb 2013 3:04 pm

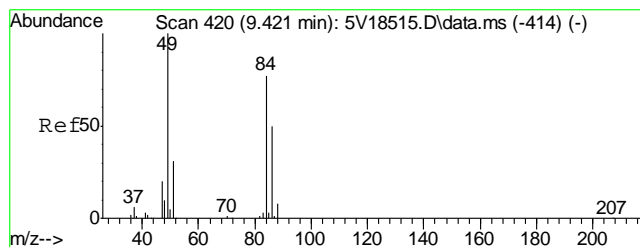
Tgt Ion:TIC Resp: 1288



#2  
Pentafluorobenzene  
Concen: 50.00 ug/l  
RT: 11.613 min Scan# 612  
Delta R.T. 0.000 min  
Lab File: 5V25759.D  
Acq: 25 Feb 2013 3:04 pm

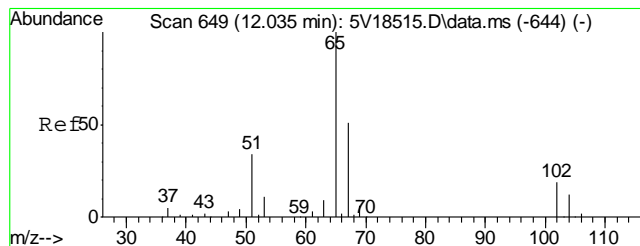
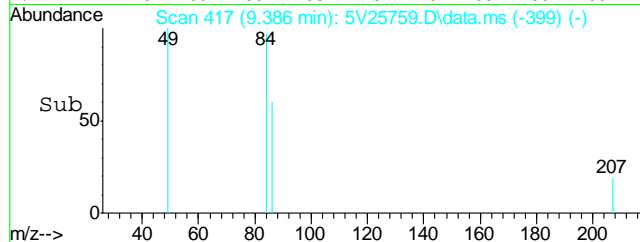
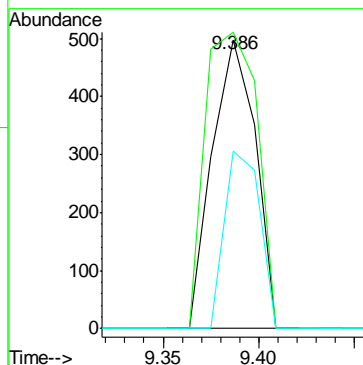
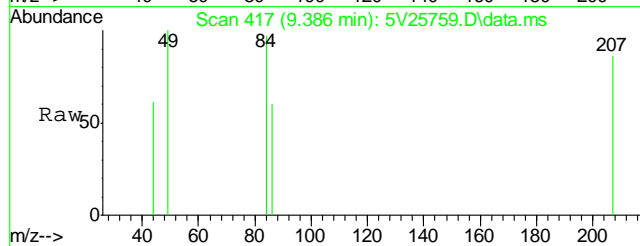
Tgt Ion:168 Resp: 149241  
Ion Ratio Lower Upper  
168 100  
99 44.6 37.4 56.2





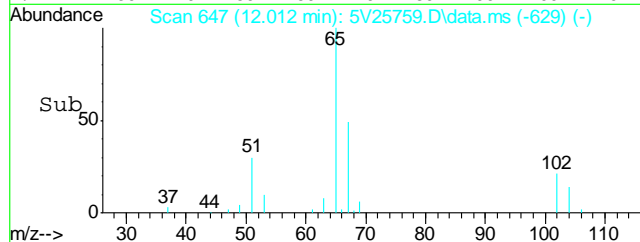
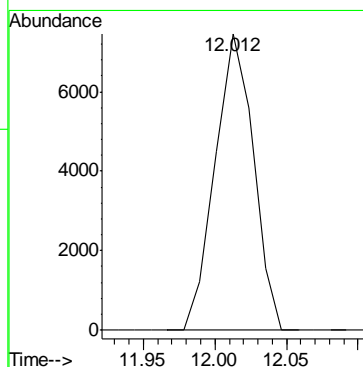
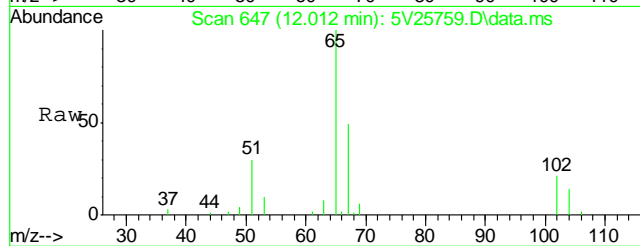
#17  
Methylene Chloride  
Concen: 0.55 ug/l  
RT: 9.386 min Scan# 417  
Delta R.T. 0.000 min  
Lab File: 5V25759.D  
Acq: 25 Feb 2013 3:04 pm

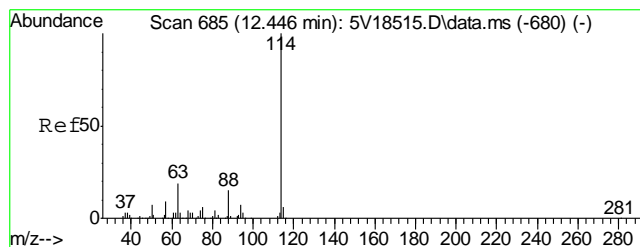
Tgt Ion: 84 Resp: 786  
Ion Ratio Lower Upper  
84 100  
49 123.8 110.4 150.4  
86 50.6 44.0 84.0



#33  
1,2-Dichloroethane-d4  
Concen: 45.44 ug/l  
RT: 12.012 min Scan# 647  
Delta R.T. 0.000 min  
Lab File: 5V25759.D  
Acq: 25 Feb 2013 3:04 pm

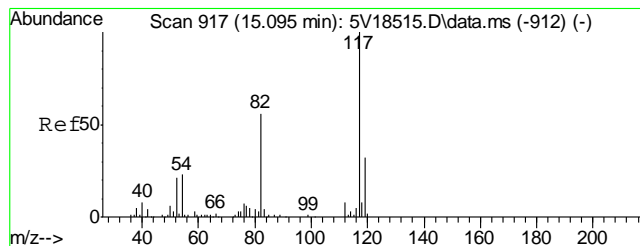
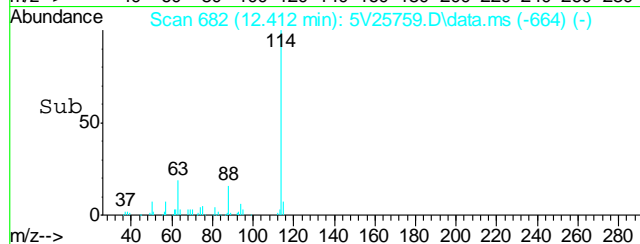
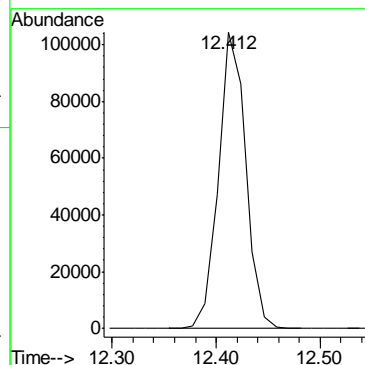
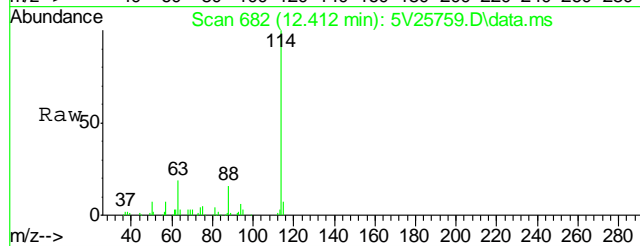
Tgt Ion: 102 Resp: 13906





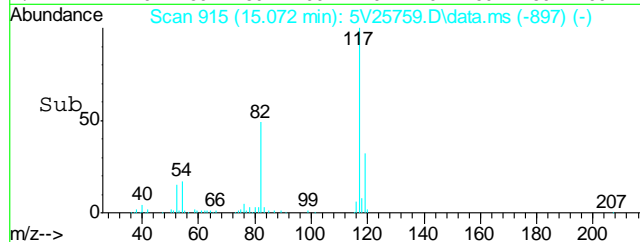
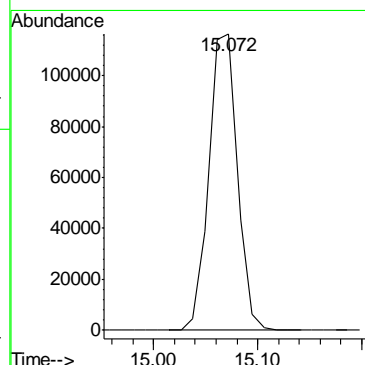
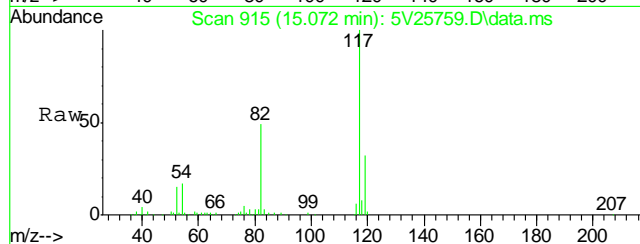
#35  
1,4-Difluorobenzene  
Concen: 50.00 ug/l  
RT: 12.412 min Scan# 682  
Delta R.T. 0.000 min  
Lab File: 5V25759.D  
Acq: 25 Feb 2013 3:04 pm

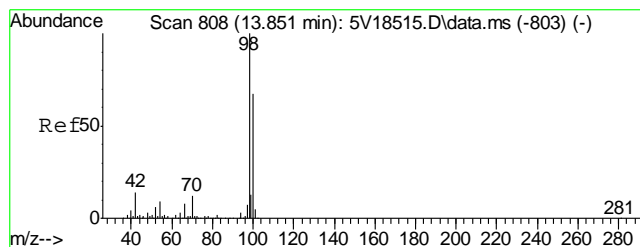
Tgt Ion:114 Resp: 190794



#53  
Chlorobenzene-d5  
Concen: 50.00 ug/l  
RT: 15.072 min Scan# 915  
Delta R.T. 0.000 min  
Lab File: 5V25759.D  
Acq: 25 Feb 2013 3:04 pm

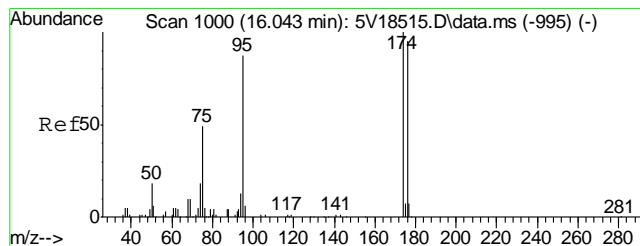
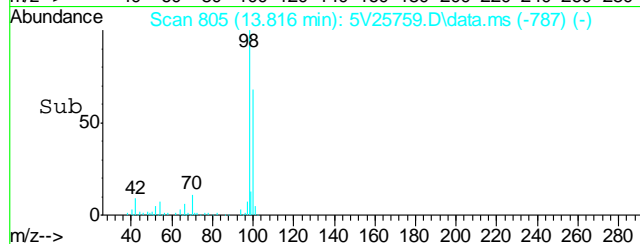
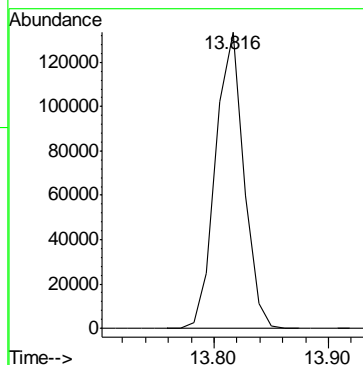
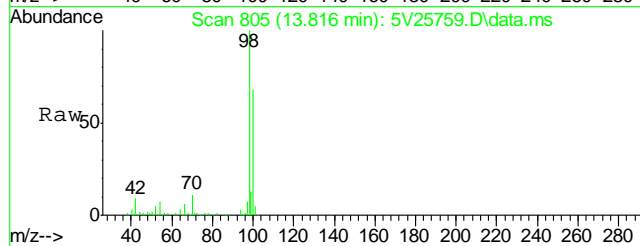
Tgt Ion:117 Resp: 222301





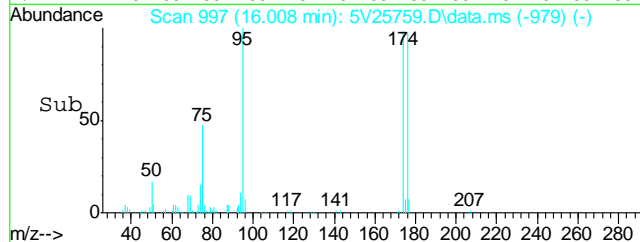
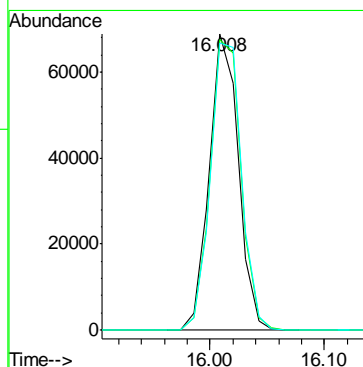
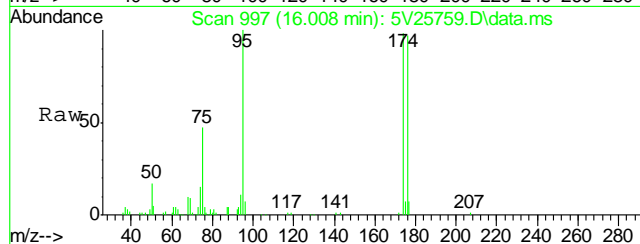
#61  
Toluene-d8  
Concen: 42.12 ug/l  
RT: 13.816 min Scan# 805  
Delta R.T. 0.000 min  
Lab File: 5V25759.D  
Acq: 25 Feb 2013 3:04 pm

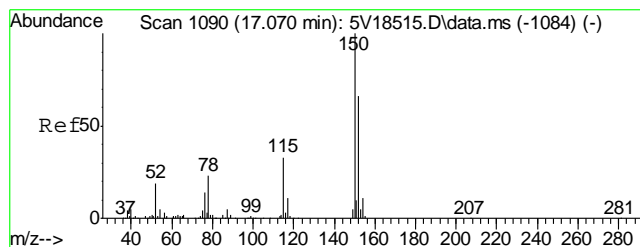
Tgt Ion: 98 Resp: 229446



#69  
4-Bromofluorobenzene  
Concen: 57.54 ug/l  
RT: 16.008 min Scan# 997  
Delta R.T. 0.000 min  
Lab File: 5V25759.D  
Acq: 25 Feb 2013 3:04 pm

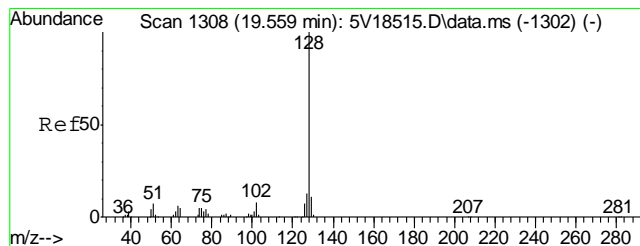
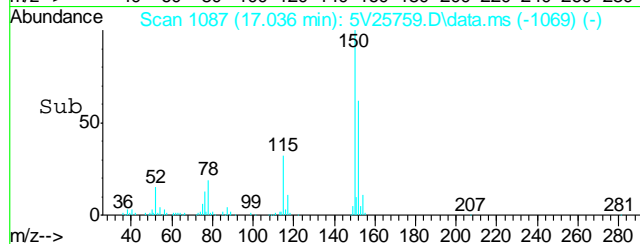
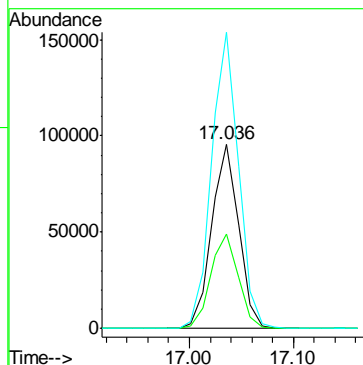
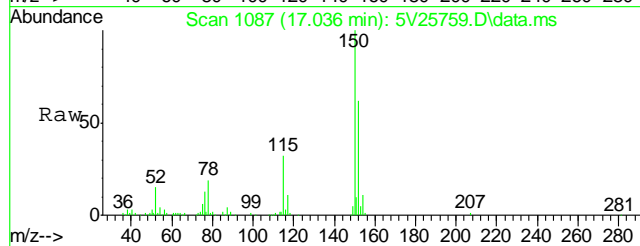
Tgt Ion: 95 Resp: 121270  
Ion Ratio Lower Upper  
95 100  
174 103.6 77.1 117.1  
176 104.3 73.4 113.4





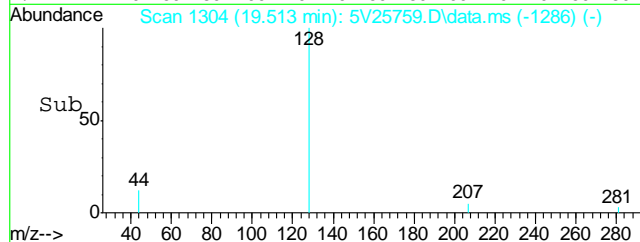
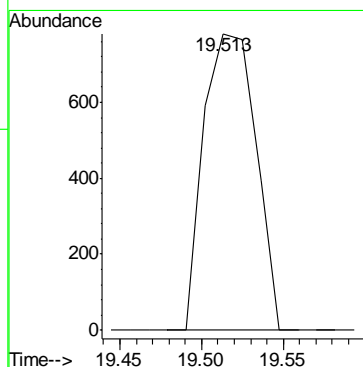
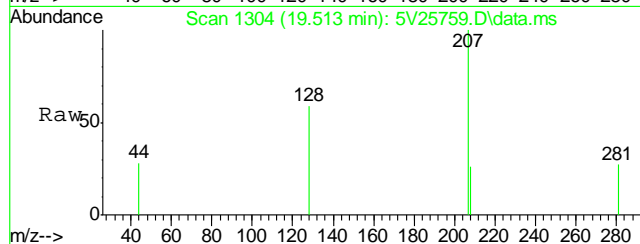
#74  
1,4-Dichlorobenzene-d4  
Concen: 50.00 ug/l  
RT: 17.036 min Scan# 1087  
Delta R.T. 0.000 min  
Lab File: 5V25759.D  
Acq: 25 Feb 2013 3:04 pm

Tgt Ion:	152	Resp:	173278
Ion Ratio	Lower	Upper	
152	100		
115	52.0	41.4	62.0
150	160.1	153.9	230.9



#91  
Naphthalene  
Concen: 1.13 ug/l  
RT: 19.513 min Scan# 1304  
Delta R.T. 0.000 min  
Lab File: 5V25759.D  
Acq: 25 Feb 2013 3:04 pm

Tgt Ion: 128 Resp: 1731



## 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:** D43723  
**Account:** XTOKRWR XTO Energy  
**Project:** XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7430-MB	1G112112.D	1	02/25/13	DC	02/25/13	OP7430	E1G940

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D43723-1

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	8.3	4.3	ug/kg	
120-12-7	Anthracene	ND	8.3	4.3	ug/kg	
56-55-3	Benzo(a)anthracene	ND	8.3	4.3	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	8.3	4.3	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	8.3	4.3	ug/kg	
50-32-8	Benzo(a)pyrene	ND	8.3	4.3	ug/kg	
218-01-9	Chrysene	ND	8.3	4.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	8.3	4.3	ug/kg	
206-44-0	Fluoranthene	ND	8.3	4.3	ug/kg	
86-73-7	Fluorene	ND	8.3	5.0	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	88% 10-159%
321-60-8	2-Fluorobiphenyl	79% 19-131%
1718-51-0	Terphenyl-d14	101% 18-150%

8.1.1

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## Blank Spike Summary

Page 1 of 1

**Job Number:** D43723  
**Account:** XTOKRWR XTO Energy  
**Project:** XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7430-BS	1G112113.D	1	02/25/13	DC	02/25/13	OP7430	E1G940

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D43723-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	74.8	90	68-130
120-12-7	Anthracene	83.3	76.5	92	67-130
56-55-3	Benzo(a)anthracene	83.3	81.2	97	65-130
205-99-2	Benzo(b)fluoranthene	83.3	73.9	89	44-130
207-08-9	Benzo(k)fluoranthene	83.3	86.7	104	56-131
50-32-8	Benzo(a)pyrene	83.3	83.1	100	62-130
218-01-9	Chrysene	83.3	79.9	96	70-130
53-70-3	Dibenzo(a,h)anthracene	83.3	82.7	99	55-130
206-44-0	Fluoranthene	83.3	75.0	90	70-130
86-73-7	Fluorene	83.3	70.5	85	70-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	82.4	99	56-130
91-20-3	Naphthalene	83.3	72.8	87	70-130
129-00-0	Pyrene	83.3	80.5	97	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	88%	10-159%
321-60-8	2-Fluorobiphenyl	80%	19-131%
1718-51-0	Terphenyl-d14	103%	18-150%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D43723  
**Account:** XTOKRWR XTO Energy  
**Project:** XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7430-MS	1G112115.D	1	02/25/13	DC	02/25/13	OP7430	E1G940
OP7430-MSD	1G112116.D	1	02/25/13	DC	02/25/13	OP7430	E1G940
D43723-1	1G112114.D	1	02/25/13	DC	02/25/13	OP7430	E1G940

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D43723-1

CAS No.	Compound	D43723-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		94.7	63.5	67	76.4	81	18	25-151/30
120-12-7	Anthracene	ND		94.7	75.4	80	78.8	83	4	39-159/30
56-55-3	Benzo(a)anthracene	ND		94.7	82.0	87	86.2	91	5	39-168/30
205-99-2	Benzo(b)fluoranthene	ND		94.7	92.2	97	96.5	102	5	24-163/30
207-08-9	Benzo(k)fluoranthene	ND		94.7	76.1	80	88.1	93	15	10-188/30
50-32-8	Benzo(a)pyrene	ND		94.7	79.5	84	82.2	87	3	32-144/30
218-01-9	Chrysene	19.6		94.7	95.7	80	101	86	5	43-150/30
53-70-3	Dibenzo(a,h)anthracene	ND		94.7	70.8	75	73.2	77	3	21-152/30
206-44-0	Fluoranthene	ND		94.7	78.4	83	90.2	95	14	36-157/30
86-73-7	Fluorene	23.3		94.7	97.2	78	108	89	11	10-182/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		94.7	70.3	74	73.0	77	4	20-154/30
91-20-3	Naphthalene	105		94.7	187	87	207	108	10	10-163/30
129-00-0	Pyrene	ND		94.7	96.0	101	98.7	104	3	25-180/30

CAS No.	Surrogate Recoveries	MS	MSD	D43723-1	Limits
4165-60-0	Nitrobenzene-d5	46%	52%	48%	10-159%
321-60-8	2-Fluorobiphenyl	56%	60%	58%	19-131%
1718-51-0	Terphenyl-d14	88%	90%	76%	18-150%

\* = Outside of Control Limits.

GC/MS Semi-volatiles

Raw Data

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## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\022513\  
 Data File : 1g112114.D  
 Acq On : 25 Feb 2013 12:05 pm  
 Operator : DONC  
 Sample : D43723-1  
 Misc : OP7430,E1G940,30.13,,,1,1  
 ALS Vial : 6 Sample Multiplier: 1

Quant Time: Feb 25 14:12:20 2013  
 Quant Method : C:\msdchem\1\METHODS\simpelg933.m  
 Quant Title : PAHSIM BASE  
 QLast Update : Fri Feb 22 15:40:40 2013  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.463	136	32696	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.158	164	23184	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.637	188	60777	4.0000	ug/mL	0.00
19) Chrysene-d12	11.262	240	61694	4.0000	ug/mL	0.00
24) Perylene-d12	12.596	264	57234	4.0000	ug/mL	0.01

## System Monitoring Compounds

2) Nitrobenzene-d5	4.790	82	78754	23.8443	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	47.68%
7) 2-Fluorobiphenyl	6.508	172	314969	28.7951	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	57.60%
21) Terphenyl-d14	10.232	244	485681	38.0222	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	76.04%

## Target Compounds

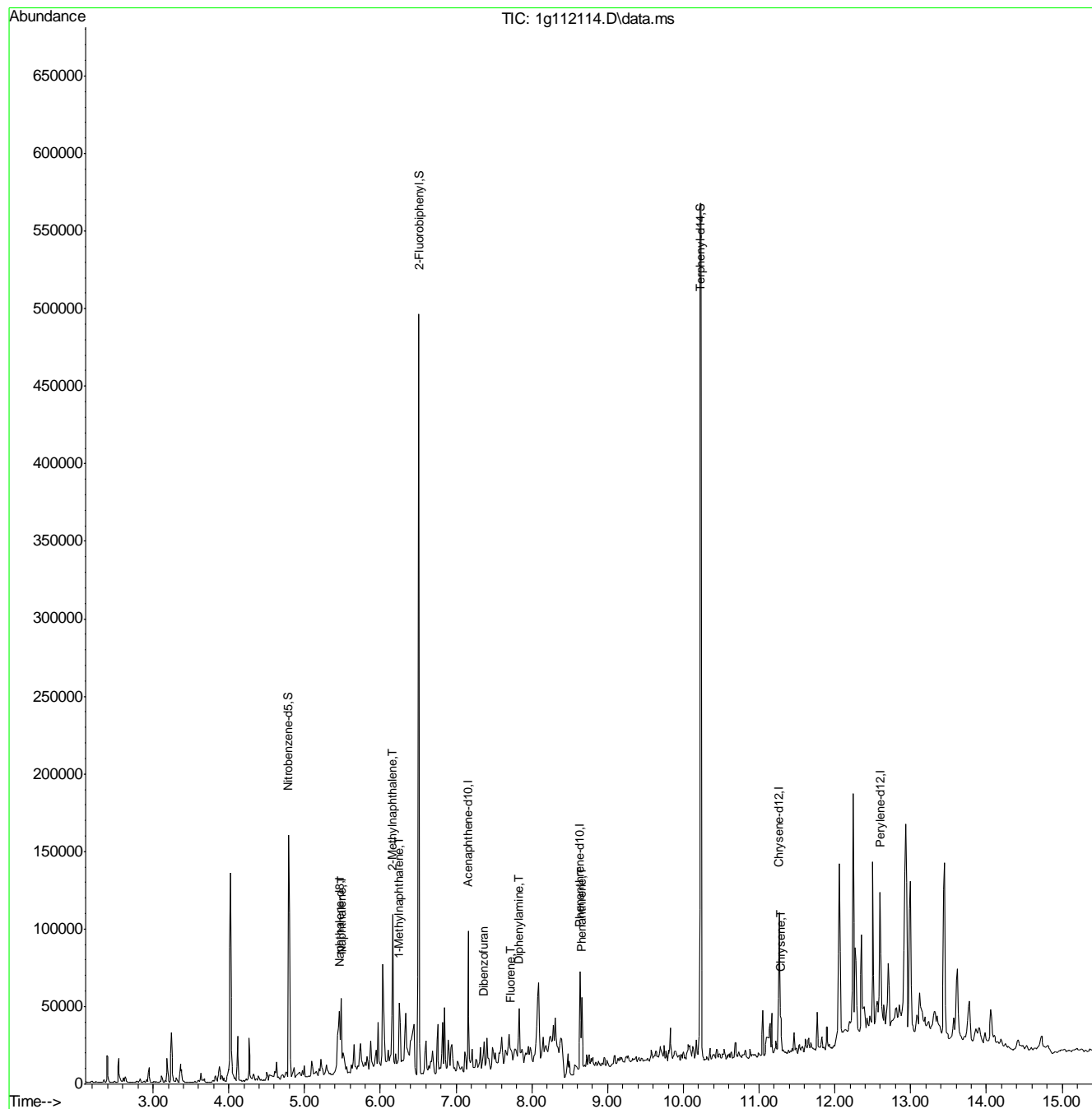
					Qvalue
5) Naphthalene	5.488	128	28797m	2.7910	ug/mL
8) 2-Methylnaphthalene	6.162	142	43255	6.1657	ug/mL
9) 1-Methylnaphthalene	6.249	142	17684m	2.8373	ug/mL
12) Dibenzofuran	7.371	168	4498	0.4496	ug/mL
13) Fluorene	7.713	166	5037m	0.6176	ug/mL
14) Diphenylamine	7.832	169	20980	3.0269	ug/mL#
16) Phenanthrene	8.661	178	28039	1.6631	ug/mL#
23) Chrysene	11.288	228	9110	0.5195	ug/mL

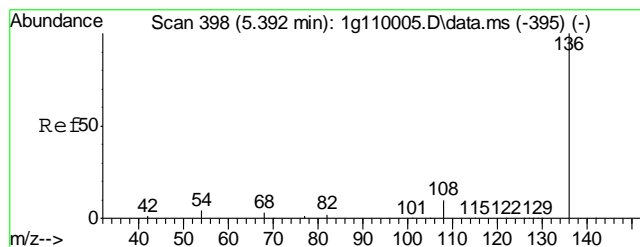
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\022513\  
Data File : 1g112114.D  
Acq On : 25 Feb 2013 12:05 pm  
Operator : DONC  
Sample : D43723-1  
Misc : OP7430,E1G940,30.13,,,1,1  
ALS Vial : 6 Sample Multiplier: 1

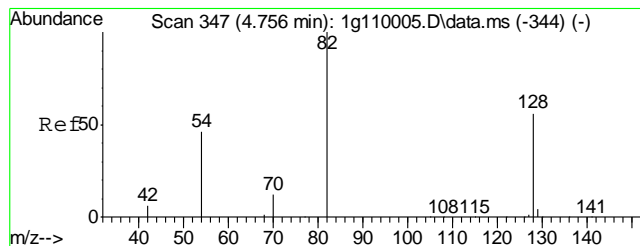
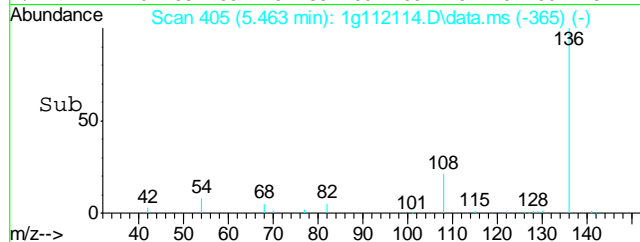
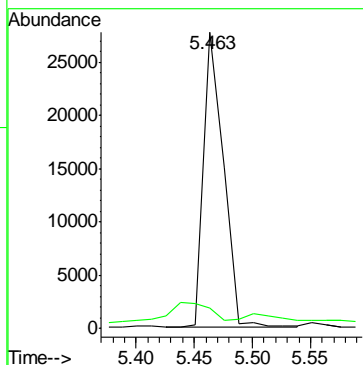
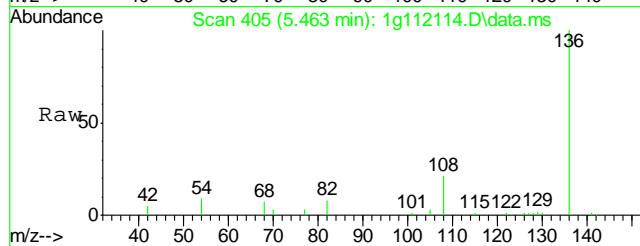
Quant Time: Feb 25 14:12:20 2013  
Quant Method : C:\msdchem\1\METHODS\simpelg933.m  
Quant Title : PAHSIM BASE  
QLast Update : Fri Feb 22 15:40:40 2013  
Response via : Initial Calibration





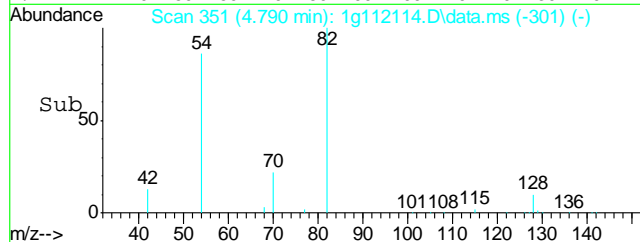
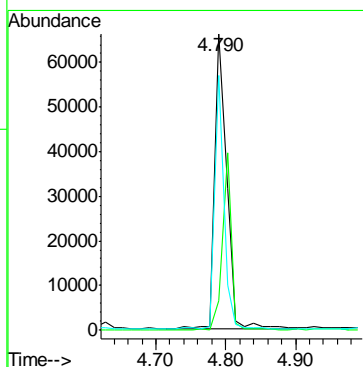
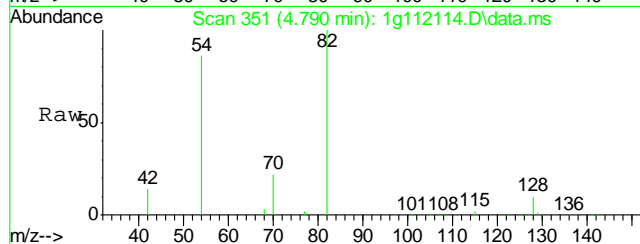
#1  
Naphthalene-d8  
Concen: 4.0000 ug/mL  
RT: 5.463 min Scan# 405  
Delta R.T. 0.000 min  
Lab File: 1g112114.D  
Acq: 25 Feb 2013 12:05 pm

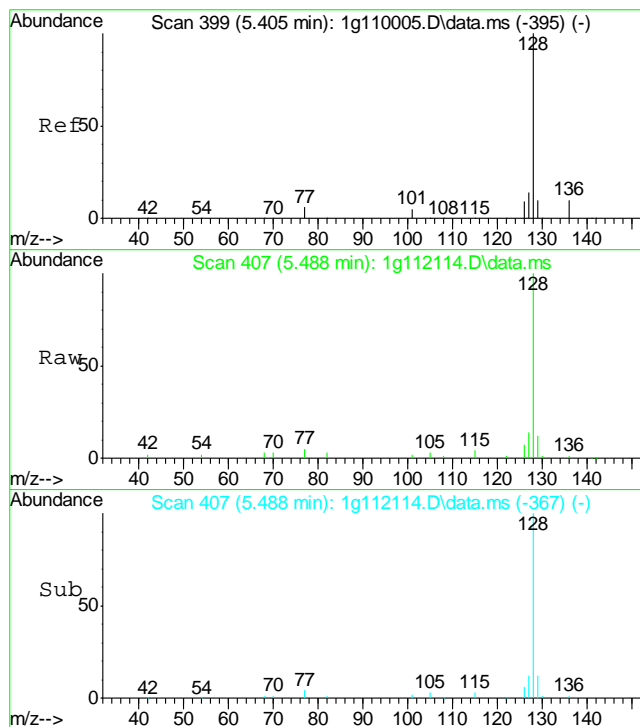
Tgt Ion: 136 Resp: 32696  
Ion Ratio Lower Upper  
136 100  
68 15.0 0.0 23.9



#2  
Nitrobenzene-d5  
Concen: 23.8443 ug/mL  
RT: 4.790 min Scan# 351  
Delta R.T. 0.000 min  
Lab File: 1g112114.D  
Acq: 25 Feb 2013 12:05 pm

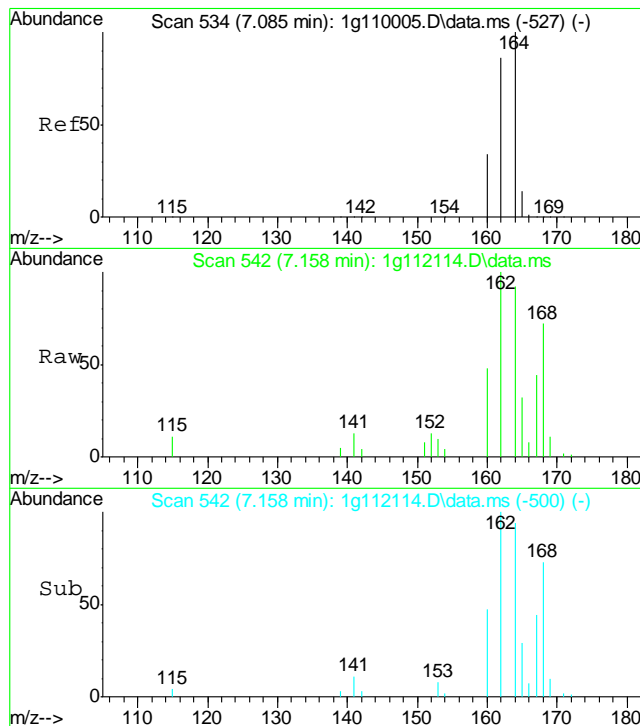
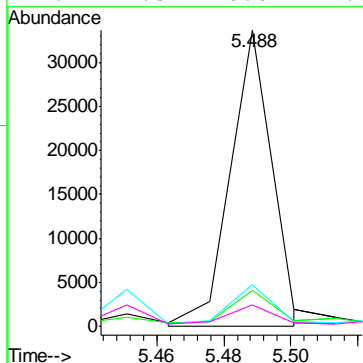
Tgt Ion: 82 Resp: 78754  
Ion Ratio Lower Upper  
82 100  
128 46.5 25.3 65.3  
54 67.1 45.9 85.9





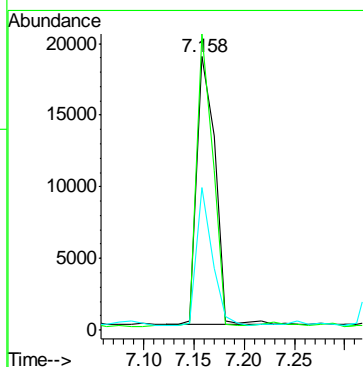
#5  
Naphthalene  
Concen: 2.7910 ug/mL m  
RT: 5.488 min Scan# 407  
Delta R.T. 0.000 min  
Lab File: 1g112114.D  
Acq: 25 Feb 2013 12:05 pm

Tgt Ion:	128	Resp:	28797
Ion Ratio	Lower	Upper	
128	100		
129	23.3	0.0	30.9
127	13.4	0.0	33.4
126	7.3	0.0	27.3

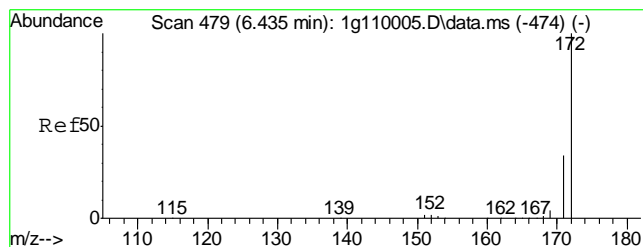


#6  
Acenaphthene-d10  
Concen: 4.0000 ug/mL  
RT: 7.158 min Scan# 542  
Delta R.T. 0.001 min  
Lab File: 1g112114.D  
Acq: 25 Feb 2013 12:05 pm

Tgt Ion:	164	Resp:	23184
Ion Ratio	Lower	Upper	
164	100		
162	97.2	79.1	119.1
160	45.7	23.2	63.2

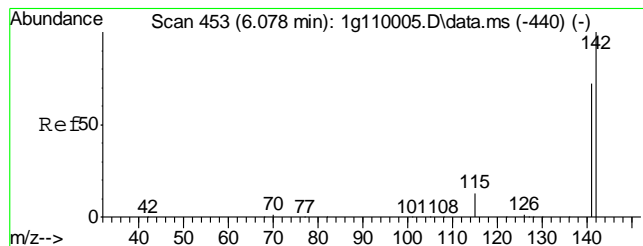
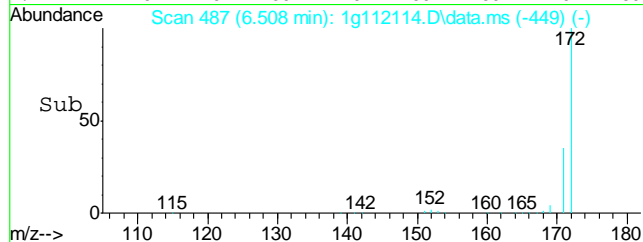
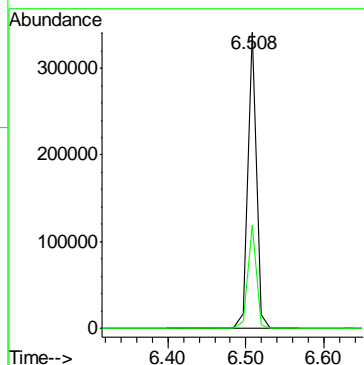
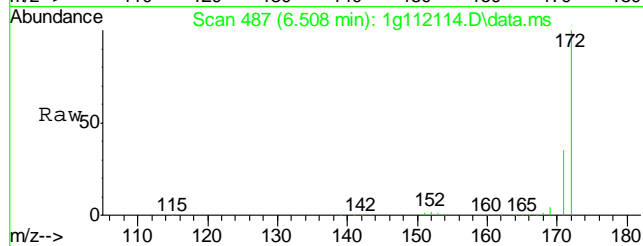






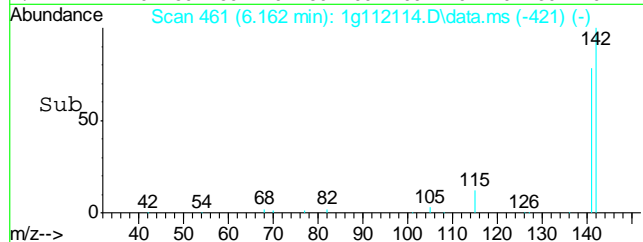
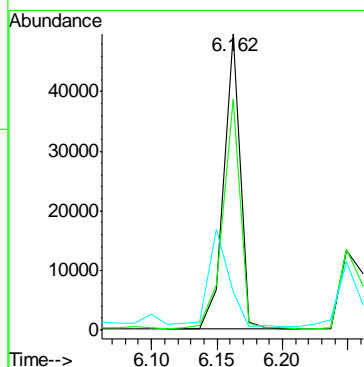
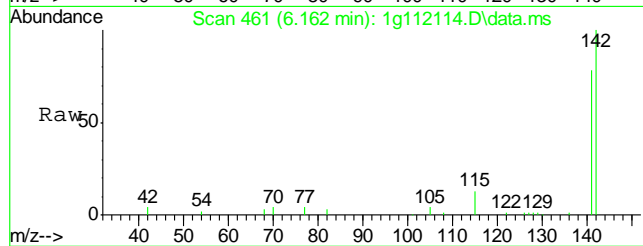
#7  
2-Fluorobiphenyl  
Concen: 28.7951 ug/mL  
RT: 6.508 min Scan# 487  
Delta R.T. 0.001 min  
Lab File: 1g112114.D  
Acq: 25 Feb 2013 12:05 pm

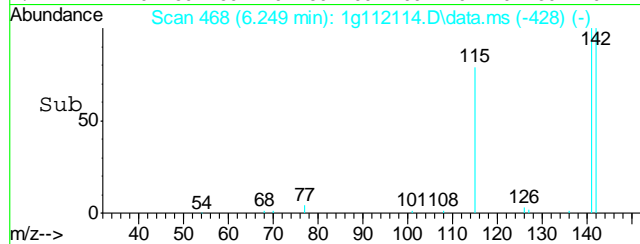
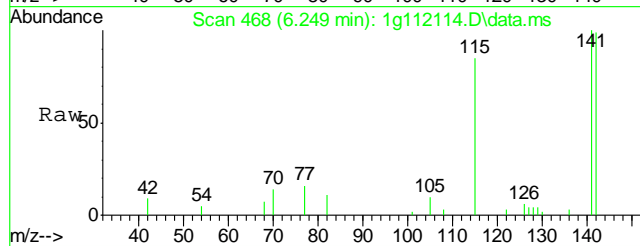
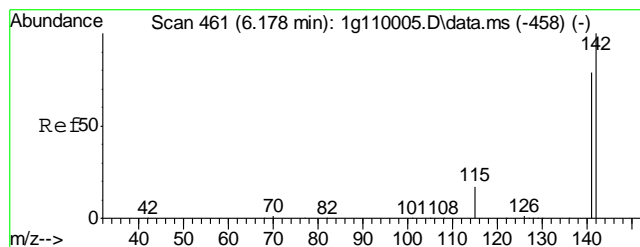
Tgt Ion	Ratio	Lower	Upper
172	100		
171	35.3	15.6	55.6



#8  
2-Methylnaphthalene  
Concen: 6.1657 ug/mL  
RT: 6.162 min Scan# 461  
Delta R.T. 0.001 min  
Lab File: 1g112114.D  
Acq: 25 Feb 2013 12:05 pm

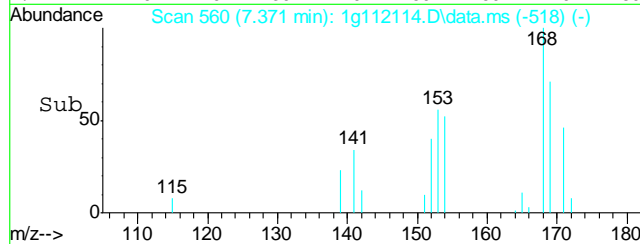
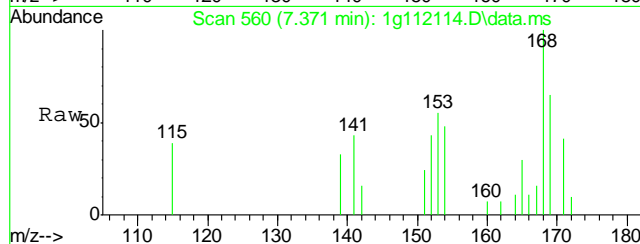
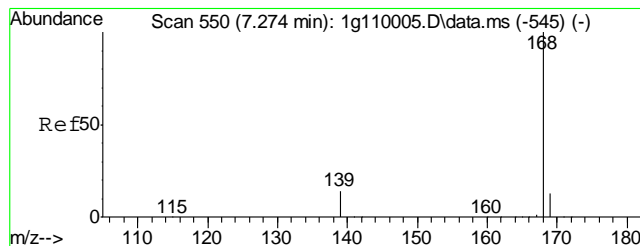
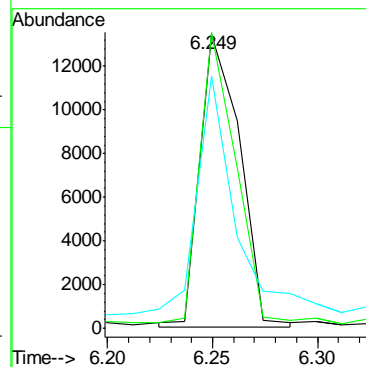
Tgt Ion	Ratio	Lower	Upper
142	100		
141	82.4	61.6	101.6
115	40.9	20.7	60.7





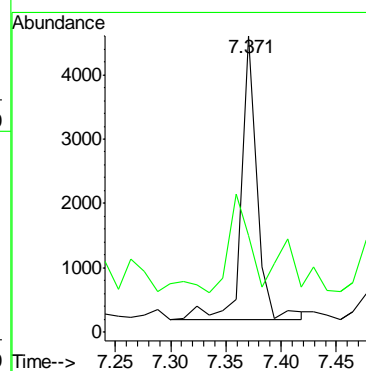
#9  
1-Methylnaphthalene  
Concen: 2.8373 ug/mL m  
RT: 6.249 min Scan# 468  
Delta R.T. 0.000 min  
Lab File: 1g112114.D  
Acq: 25 Feb 2013 12:05 pm

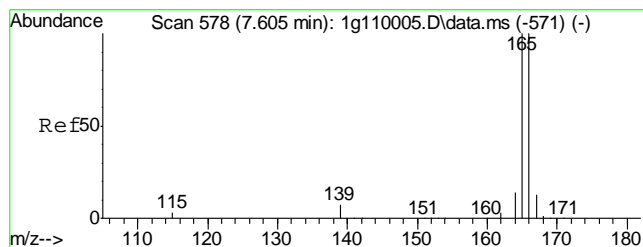
Tgt Ion	Ratio	Lower	Upper
142	100		
141	201.5	69.1	109.1#
115	99.4	28.3	68.3#



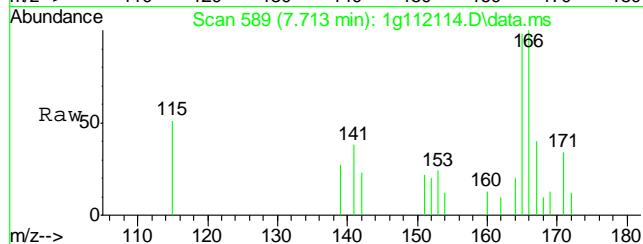
#12  
Dibenzofuran  
Concen: 0.4496 ug/mL  
RT: 7.371 min Scan# 560  
Delta R.T. 0.001 min  
Lab File: 1g112114.D  
Acq: 25 Feb 2013 12:05 pm

Tgt Ion	Ratio	Lower	Upper
168	100		
139	43.5	17.3	57.3

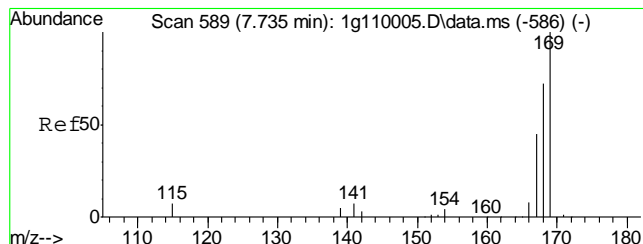
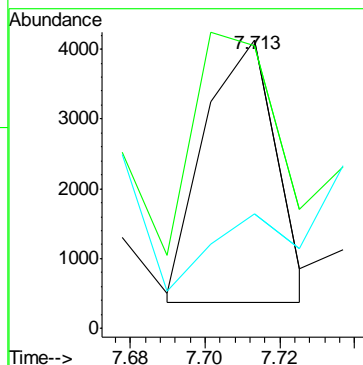
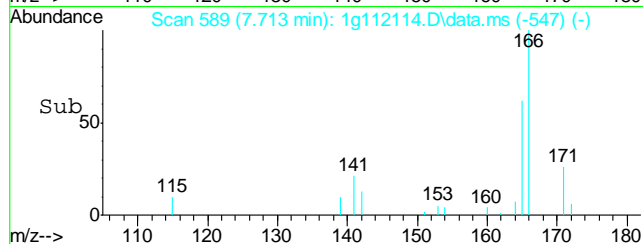




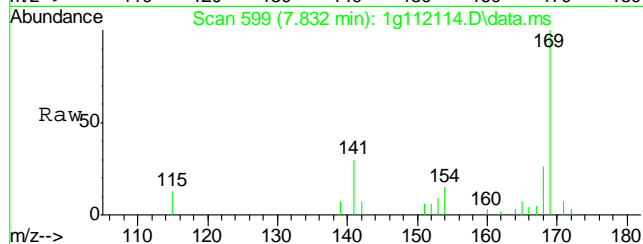
#13  
Fluorene  
Concen: 0.6176 ug/mL m  
RT: 7.713 min Scan# 589  
Delta R.T. 0.001 min  
Lab File: 1g112114.D  
Acq: 25 Feb 2013 12:05 pm



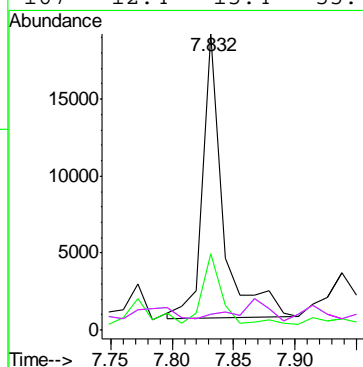
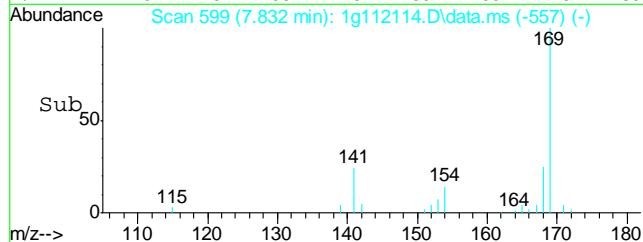
Tgt Ion:166 Resp: 5037  
Ion Ratio Lower Upper  
166 100  
165 196.2 75.3 115.3#  
167 58.1 0.0 33.3#

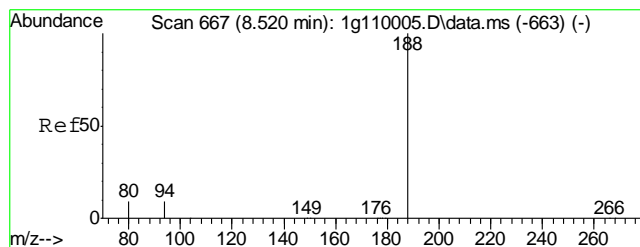


#14  
Diphenylamine  
Concen: 3.0269 ug/mL  
RT: 7.832 min Scan# 599  
Delta R.T. 0.001 min  
Lab File: 1g112114.D  
Acq: 25 Feb 2013 12:05 pm



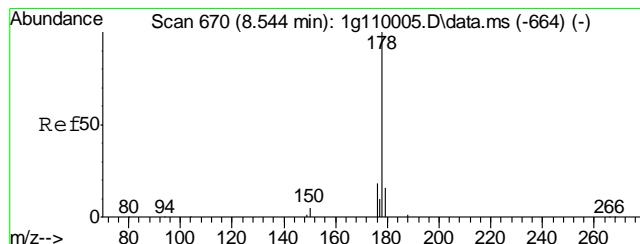
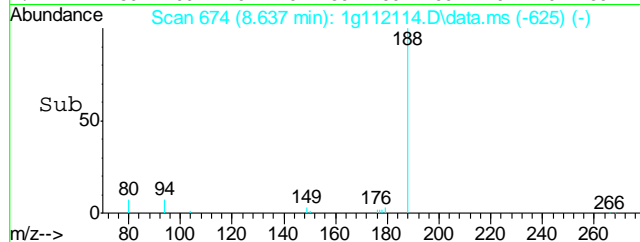
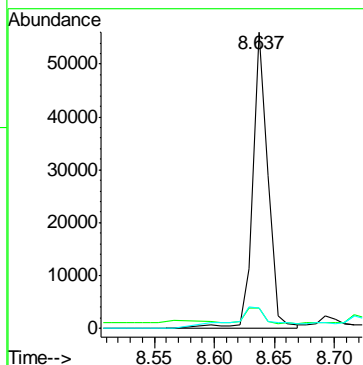
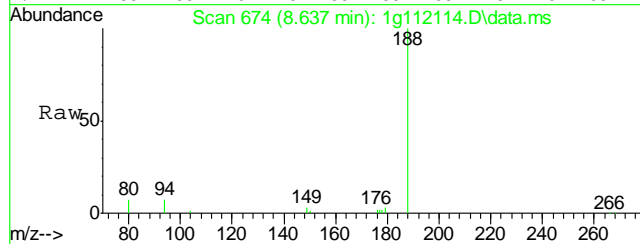
Tgt Ion:169 Resp: 20980  
Ion Ratio Lower Upper  
169 100  
168 21.4 44.8 84.8#  
167 12.4 15.4 55.4#  
167 12.4 15.4 55.4#





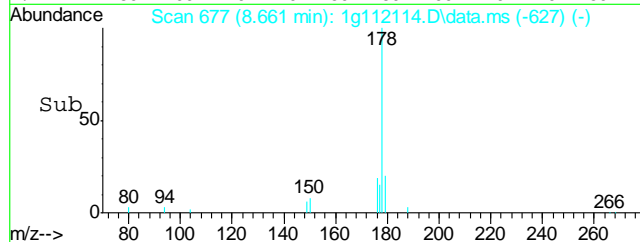
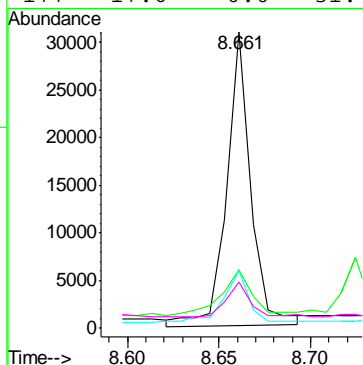
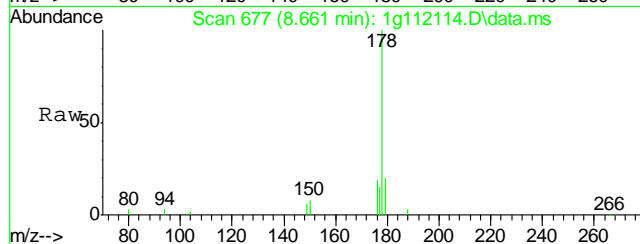
#15  
Phenanthrene-d10  
Concen: 4.0000 ug/mL  
RT: 8.637 min Scan# 674  
Delta R.T. -0.001 min  
Lab File: 1g112114.D  
Acq: 25 Feb 2013 12:05 pm

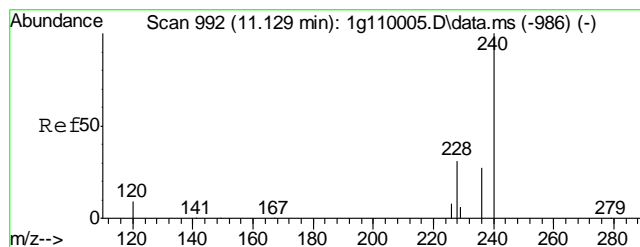
Tgt Ion:188	Resp:	60777
Ion Ratio	Lower	Upper
188	100	
94	5.2	0.0 25.0
80	17.0	0.0 27.8



#16  
Phenanthrene  
Concen: 1.6631 ug/mL  
RT: 8.661 min Scan# 677  
Delta R.T. -0.001 min  
Lab File: 1g112114.D  
Acq: 25 Feb 2013 12:05 pm

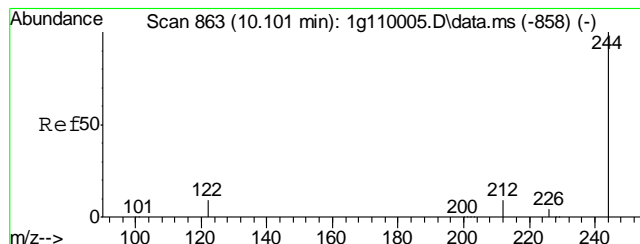
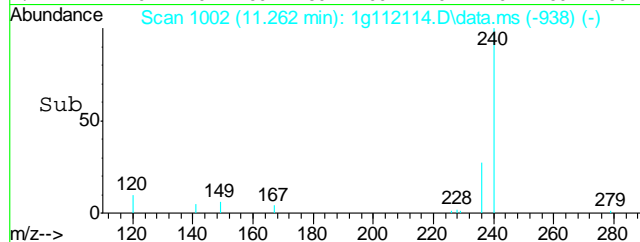
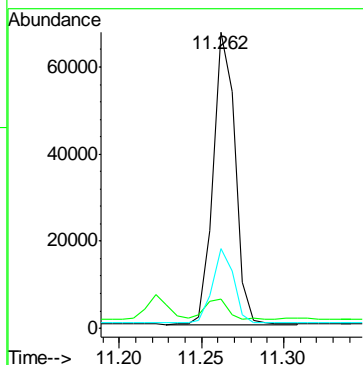
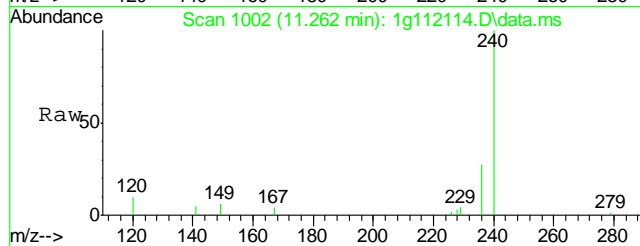
Tgt Ion:178	Resp:	28039
Ion Ratio	Lower	Upper
178	100	
179	60.2	0.0 35.6#
176	39.0	0.0 35.2#
177	17.6	0.0 31.7





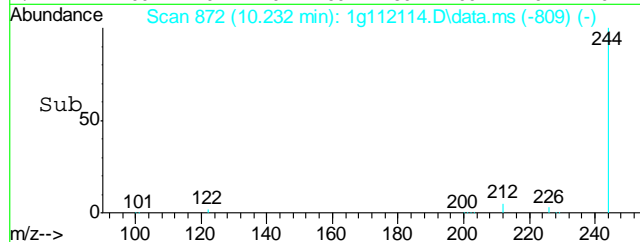
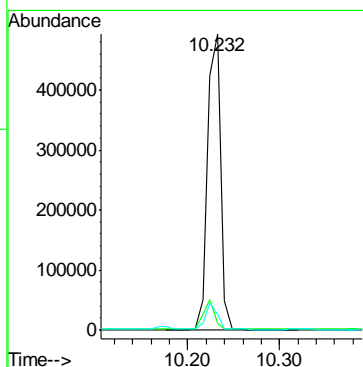
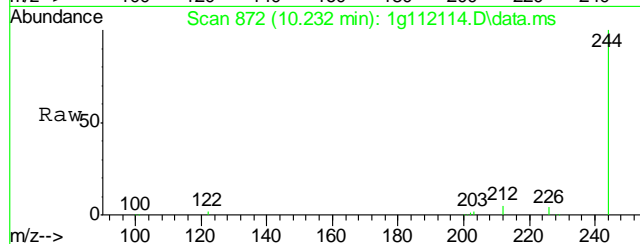
#19  
Chrysene-d12  
Concen: 4.0000 ug/mL  
RT: 11.262 min Scan# 1002  
Delta R.T. 0.007 min  
Lab File: 1g112114.D  
Acq: 25 Feb 2013 12:05 pm

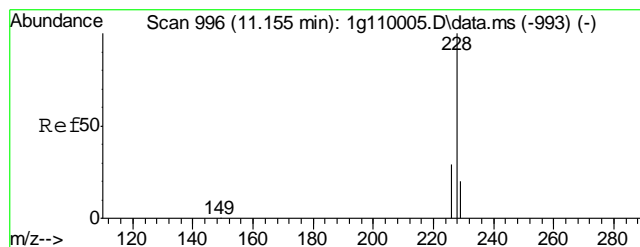
Tgt Ion	Ratio	Lower	Upper
240	100		
120	8.7	0.0	27.4
236	24.5	4.7	44.7



#21  
Terphenyl-d14  
Concen: 38.0222 ug/mL  
RT: 10.232 min Scan# 872  
Delta R.T. 0.008 min  
Lab File: 1g112114.D  
Acq: 25 Feb 2013 12:05 pm

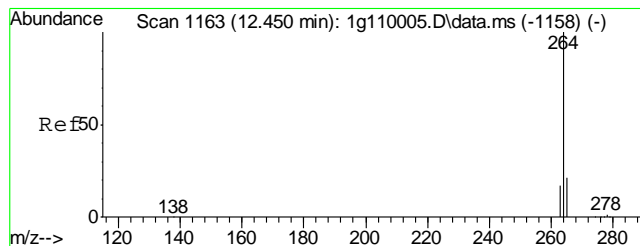
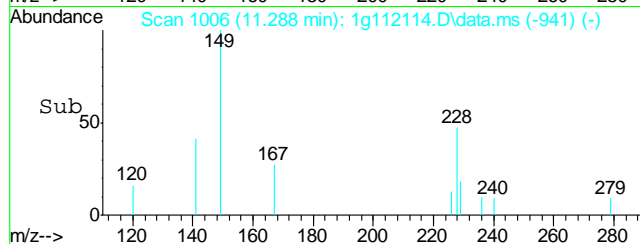
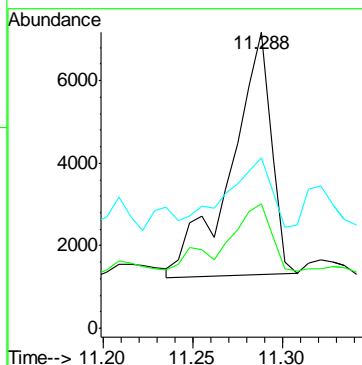
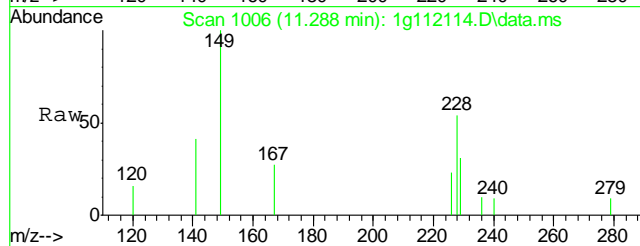
Tgt Ion	Ratio	Lower	Upper
244	100		
122	8.6	0.0	28.4
212	8.2	0.0	27.9





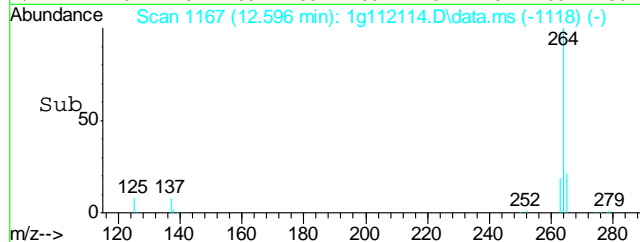
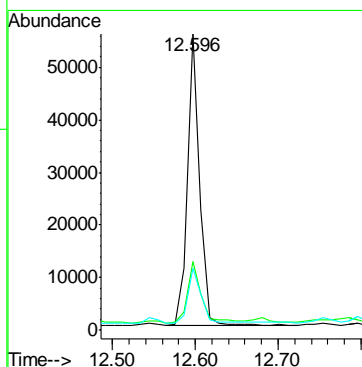
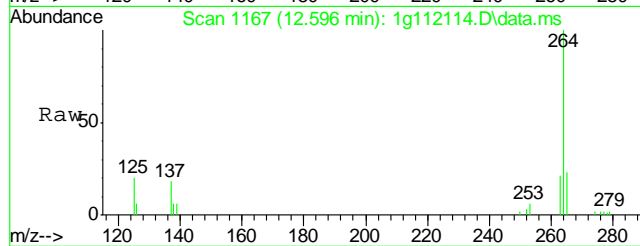
#23  
Chrysene  
Concen: 0.5195 ug/mL  
RT: 11.288 min Scan# 1006  
Delta R.T. 0.007 min  
Lab File: 1g112114.D  
Acq: 25 Feb 2013 12:05 pm

Tgt Ion	Ratio	Lower	Upper
228	100		
226	31.5	8.1	48.1
229	34.7	0.0	39.7



#24  
Perylene-d12  
Concen: 4.0000 ug/mL  
RT: 12.596 min Scan# 1167  
Delta R.T. 0.011 min  
Lab File: 1g112114.D  
Acq: 25 Feb 2013 12:05 pm

Tgt Ion	Ratio	Lower	Upper
264	100		
265	23.9	1.6	41.6
263	20.9	0.0	39.1



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\022513\  
Data File : 1g112112.D  
Acq On : 25 Feb 2013 11:17 am  
Operator : DONC  
Sample : OP7430-MB  
Misc : OP7430,E1G940,30.00,,,1,1  
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Feb 25 14:08:31 2013  
Quant Method : C:\msdchem\1\METHODS\simpelg933.m  
Quant Title : PAHSIM BASE  
QLast Update : Fri Feb 22 15:40:40 2013  
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.463	136	31118	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.168	164	22850	4.0000	ug/mL	0.01
15) Phenanthrene-d10	8.638	188	56292	4.0000	ug/mL	0.00
19) Chrysene-d12	11.261	240	57606	4.0000	ug/mL	0.00
24) Perylene-d12	12.585	264	54406	4.0000	ug/mL	0.00

## System Monitoring Compounds

2) Nitrobenzene-d5	4.789	82	138609	44.0946	ug/mL	0.00
Spiked Amount	50.000	Range 25 - 135	Recovery	=	88.18%	
7) 2-Fluorobiphenyl	6.506	172	425470	39.4658	ug/mL	0.00
Spiked Amount	50.000	Range 25 - 135	Recovery	=	78.94%	
21) Terphenyl-d14	10.224	244	603064	50.5620	ug/mL	0.00
Spiked Amount	50.000	Range 25 - 135	Recovery	=	101.12%	

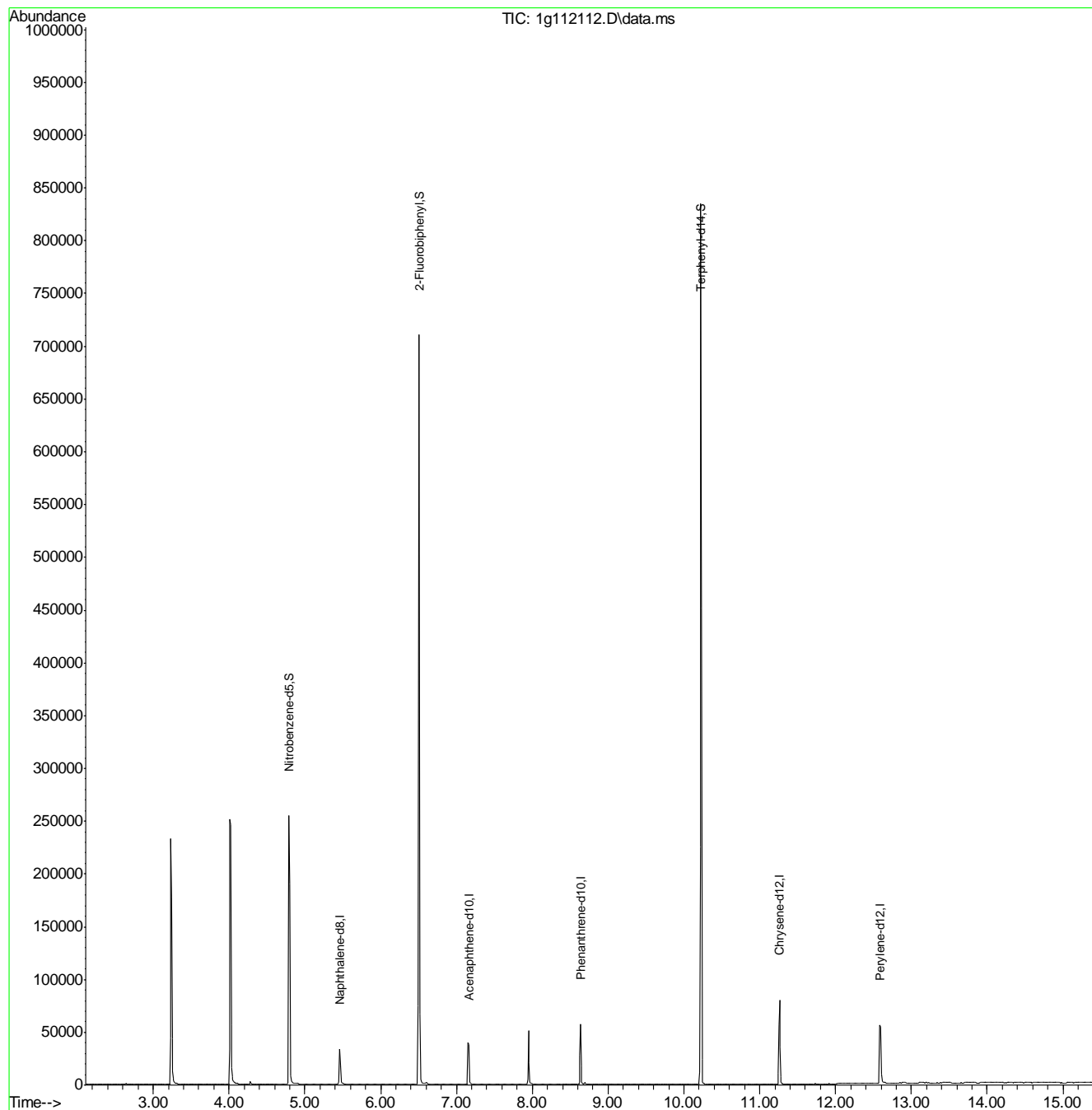
Target Compounds	Qvalue
------------------	--------

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

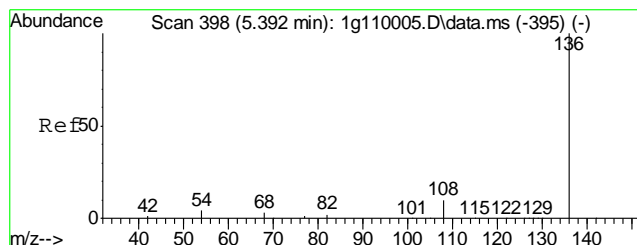
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\022513\  
Data File : 1g112112.D  
Acq On : 25 Feb 2013 11:17 am  
Operator : DONC  
Sample : OP7430-MB  
Misc : OP7430,E1G940,30.00,,,1,1  
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Feb 25 14:08:31 2013  
Quant Method : C:\msdchem\1\METHODS\simpelg933.m  
Quant Title : PAHSIM BASE  
QLast Update : Fri Feb 22 15:40:40 2013  
Response via : Initial Calibration

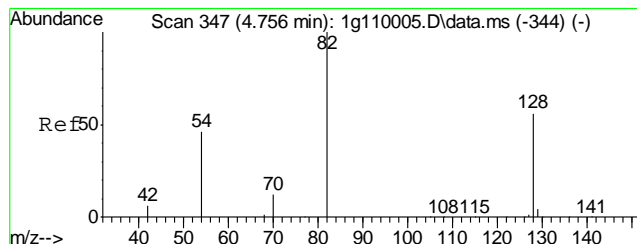
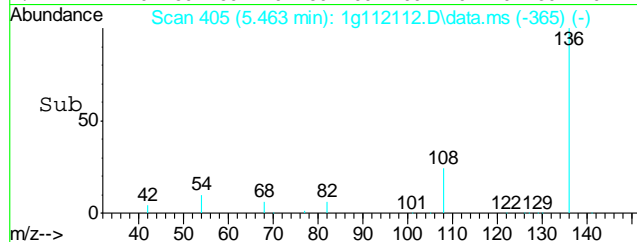
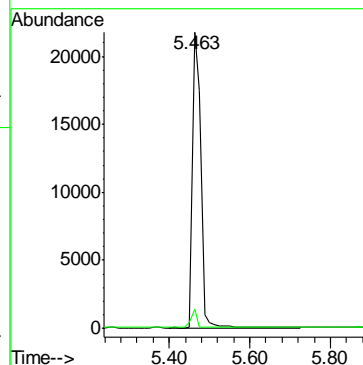
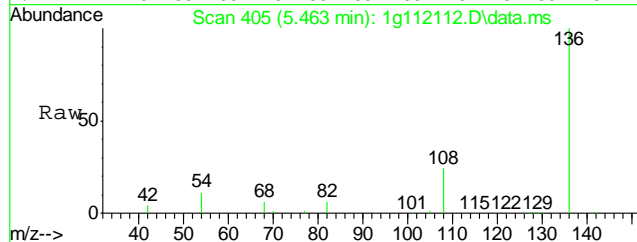






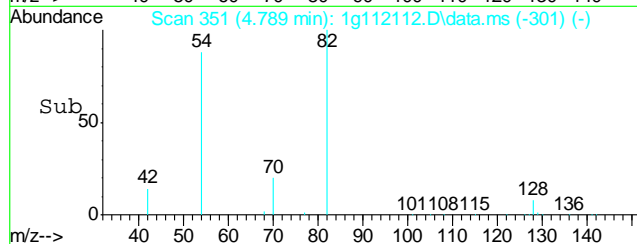
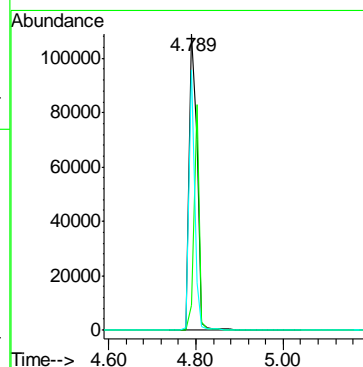
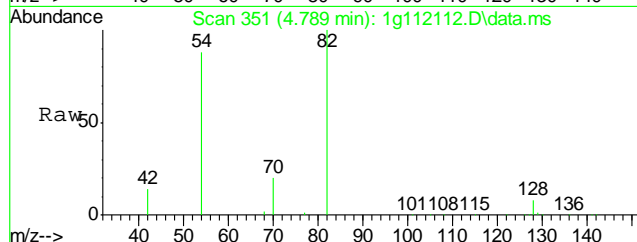
#1  
Naphthalene-d8  
Concen: 4.0000 ug/mL  
RT: 5.463 min Scan# 405  
Delta R.T. -0.001 min  
Lab File: 1g112112.D  
Acq: 25 Feb 2013 11:17 am

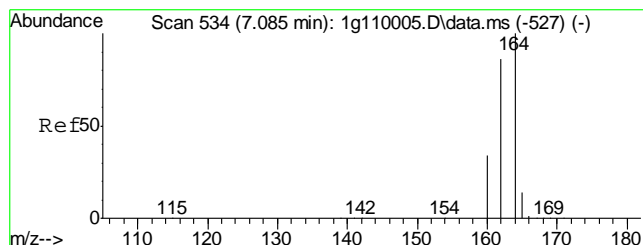
Tgt Ion: 136	Resp: 31118
Ion Ratio	Lower Upper
136	100
68	4.5 0.0 23.9



#2  
Nitrobenzene-d5  
Concen: 44.0946 ug/mL  
RT: 4.789 min Scan# 351  
Delta R.T. -0.001 min  
Lab File: 1g112112.D  
Acq: 25 Feb 2013 11:17 am

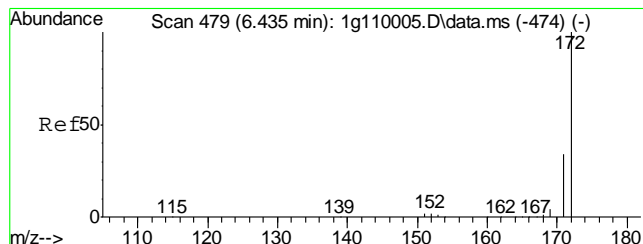
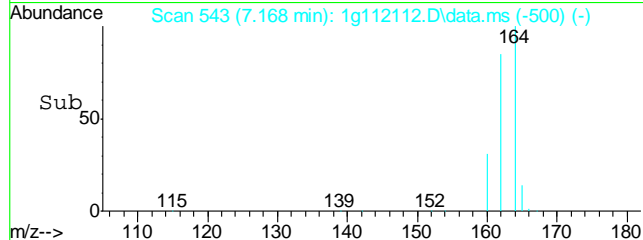
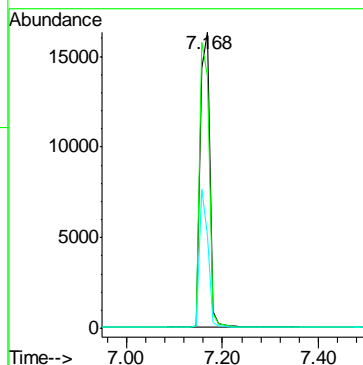
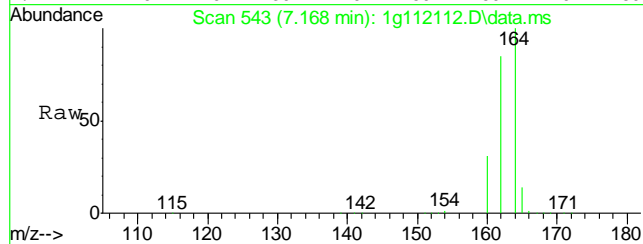
Tgt Ion: 82	Resp: 138609
Ion Ratio	Lower Upper
82	100
128	52.0 25.3 65.3
54	63.1 45.9 85.9





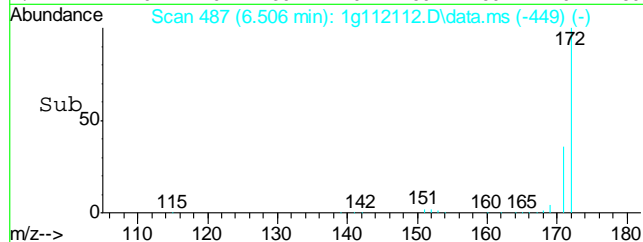
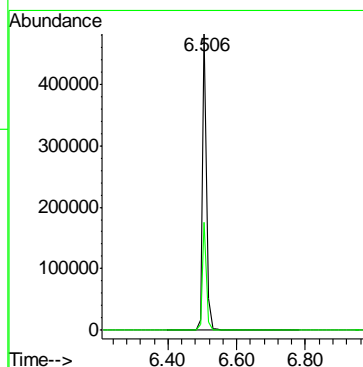
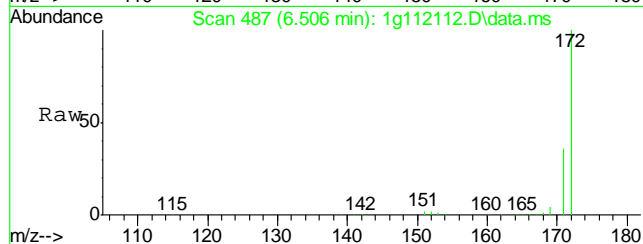
#6  
Acenaphthene-d10  
Concen: 4.0000 ug/mL  
RT: 7.168 min Scan# 543  
Delta R.T. 0.011 min  
Lab File: 1g112112.D  
Acq: 25 Feb 2013 11:17 am

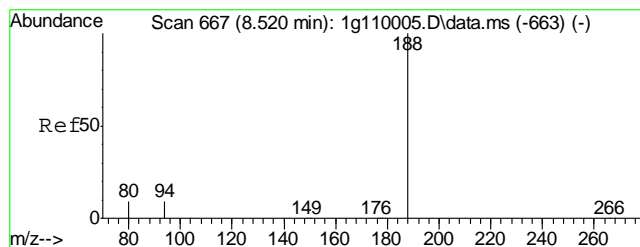
Tgt Ion	164	162	160
Resp	22850	96.5	41.4
Ratio	100		
Lower		79.1	23.2
Upper		119.1	63.2



#7  
2-Fluorobiphenyl  
Concen: 39.4658 ug/mL  
RT: 6.506 min Scan# 487  
Delta R.T. -0.001 min  
Lab File: 1g112112.D  
Acq: 25 Feb 2013 11:17 am

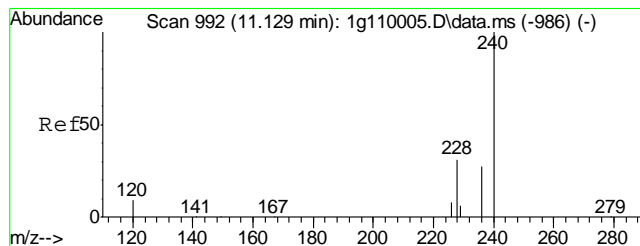
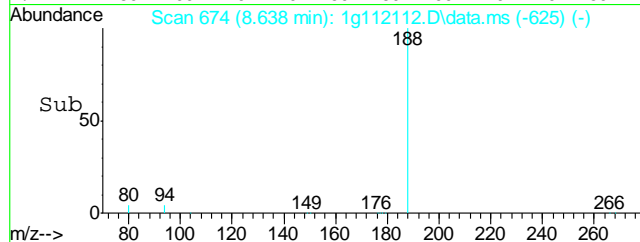
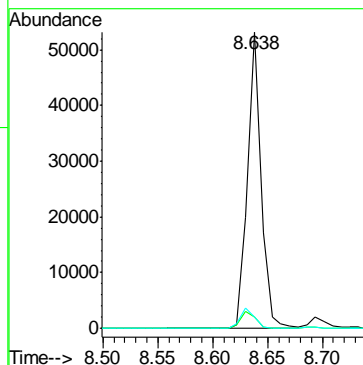
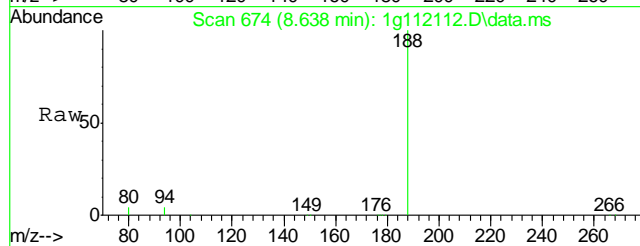
Tgt Ion	172	171
Resp	425470	36.0
Ratio	100	
Lower		15.6
Upper		55.6





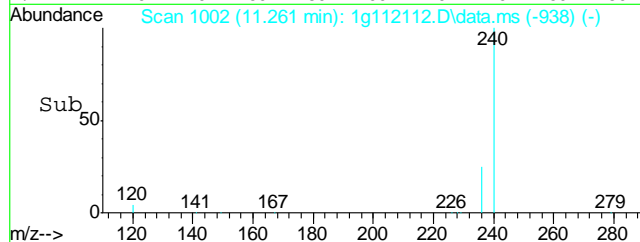
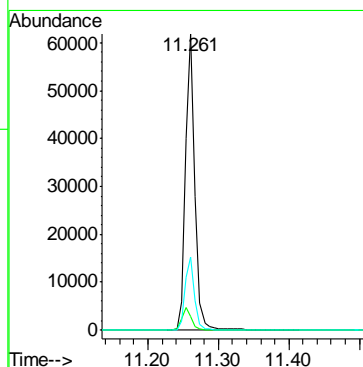
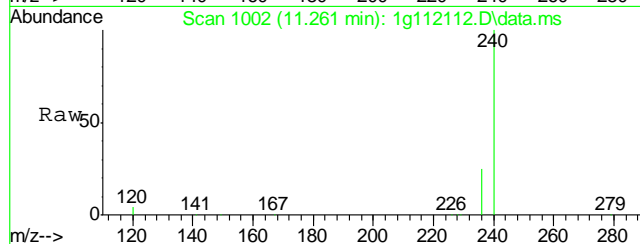
#15  
Phenanthrene-d10  
Concen: 4.0000 ug/mL  
RT: 8.638 min Scan# 674  
Delta R.T. -0.000 min  
Lab File: 1g112112.D  
Acq: 25 Feb 2013 11:17 am

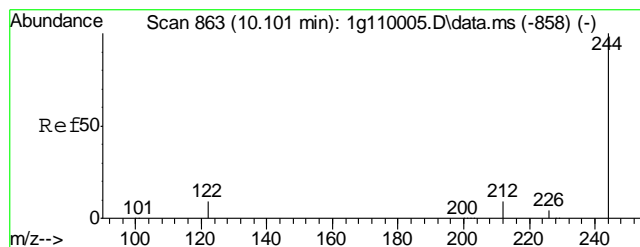
Tgt Ion: 188	Resp: 56292
Ion Ratio	Lower Upper
188 100	
94 5.1	0.0 25.0
80 7.7	0.0 27.8



#19  
Chrysene-d12  
Concen: 4.0000 ug/mL  
RT: 11.261 min Scan# 1002  
Delta R.T. 0.006 min  
Lab File: 1g112112.D  
Acq: 25 Feb 2013 11:17 am

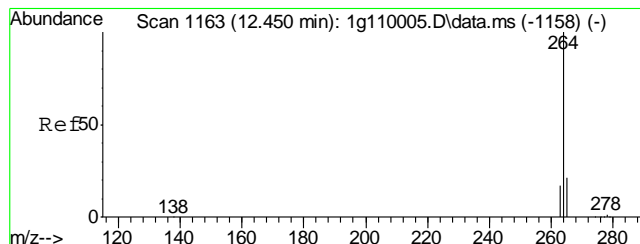
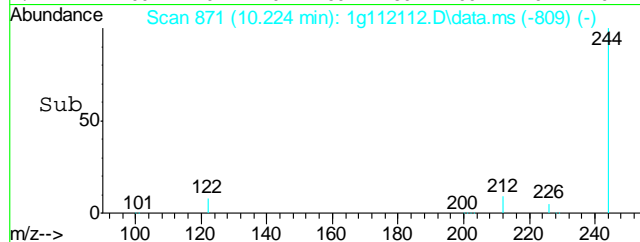
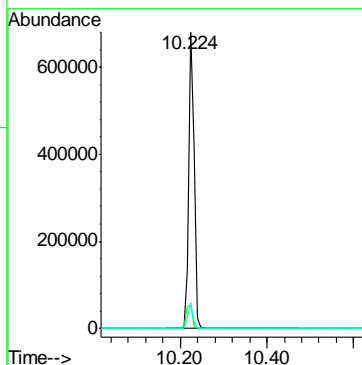
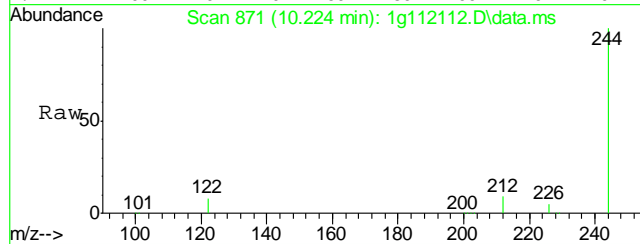
Tgt Ion: 240	Resp: 57606
Ion Ratio	Lower Upper
240 100	
120 7.4	0.0 27.4
236 25.0	4.7 44.7





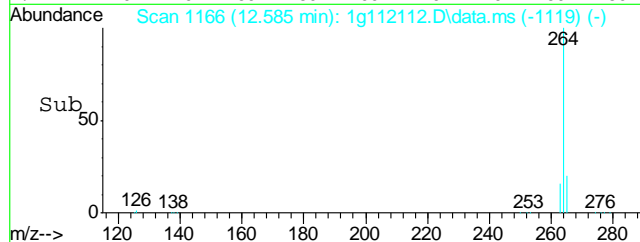
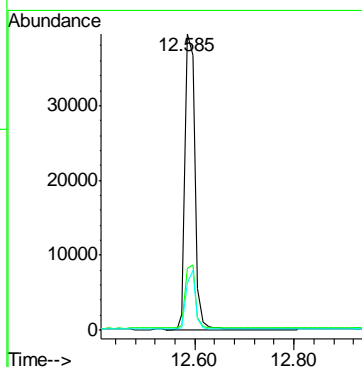
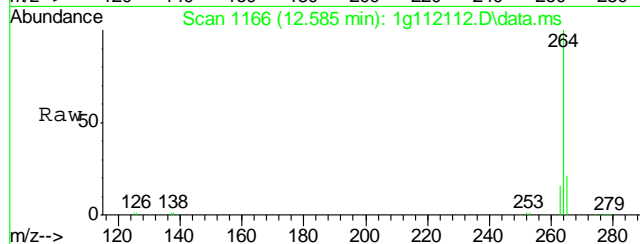
#21  
Terphenyl-d14  
Concen: 50.5620 ug/mL  
RT: 10.224 min Scan# 871  
Delta R.T. -0.000 min  
Lab File: 1g112112.D  
Acq: 25 Feb 2013 11:17 am

Tgt Ion	Ratio	Lower	Upper
244	100		
122	8.8	0.0	28.4
212	8.0	0.0	27.9



#24  
Perylene-d12  
Concen: 4.0000 ug/mL  
RT: 12.585 min Scan# 1166  
Delta R.T. -0.001 min  
Lab File: 1g112112.D  
Acq: 25 Feb 2013 11:17 am

Tgt Ion	Ratio	Lower	Upper
264	100		
265	21.7	1.6	41.6
263	19.0	0.0	39.1



## GC Volatiles

### QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D43723  
Account: XTOKRWR XTO Energy  
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1069-MB	GB19579.D	1	02/22/13	BD	n/a	n/a	GGB1069

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

D43723-1

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

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	80% 60-140%

10.1.1  
10

## Blank Spike Summary

Page 1 of 1

**Job Number:** D43723  
**Account:** XTOKRWR XTO Energy  
**Project:** XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1069-BS	GB19580.D	1	02/22/13	BD	n/a	n/a	GGB1069

The QC reported here applies to the following samples:

Method: SW846 8015B

D43723-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	119	108	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	88%	60-140%

\* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D43723  
Account: XTOKRWR XTO Energy  
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D43724-1MS	GB19582.D	1	02/22/13	BD	n/a	n/a	GGB1069
D43724-1MSD	GB19583.D	1	02/22/13	BD	n/a	n/a	GGB1069
D43724-1	GB19581.D	1	02/22/13	BD	n/a	n/a	GGB1069

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

D43723-1

CAS No.	Compound	D43724-1 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND	144	143	100	154	107	7	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D43724-1	Limits
120-82-1	1,2,4-Trichlorobenzene	80%	86%	76%	60-140%

\* = Outside of Control Limits.



GC Volatiles

Raw Data



Judy Melson  
02/25/13 15:16

## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\022213\GB19588.D\FID1A.CH Vial: 12  
Signal #2 : Y:\1\DATA\022213\GB19588.D\FID2B.CH  
Acq On : 22 Feb 2013 10:32 pm Operator: BRETD  
Sample : D43723-1 Inst : GC/MS Ins  
Misc : GC3425,GGB1069,5.083,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Feb 23 08:46:32 2013 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Wed Feb 06 08:49:04 2013  
Response via : Initial Calibration  
DataAcq Meth : TVB4.M

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

Compound		R.T.	Response	Conc Units	
-----					
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.35	2487939	79.401 %	m
10) S	1,2,4-Trichlorobenzene (P)	14.35	12764147	78.535 %	
Target Compounds					
1) H	TVH-Gasoline	7.25	5630244	<MDL	mg/L
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T	Benzene	0.00	0	N.D.	ug/L d
6) T	Toluene	7.65	345255	0.871	ug/L m
7) T	Ethylbenzene	10.28	65358	0.193	ug/L m
8) T	m,p-Xylene	10.45	437516	0.825	ug/L m
9) T	o-Xylene	10.97	94833	0.289	ug/L m
11) T	Naphthalene	14.54	38434	0.195	uq/L m

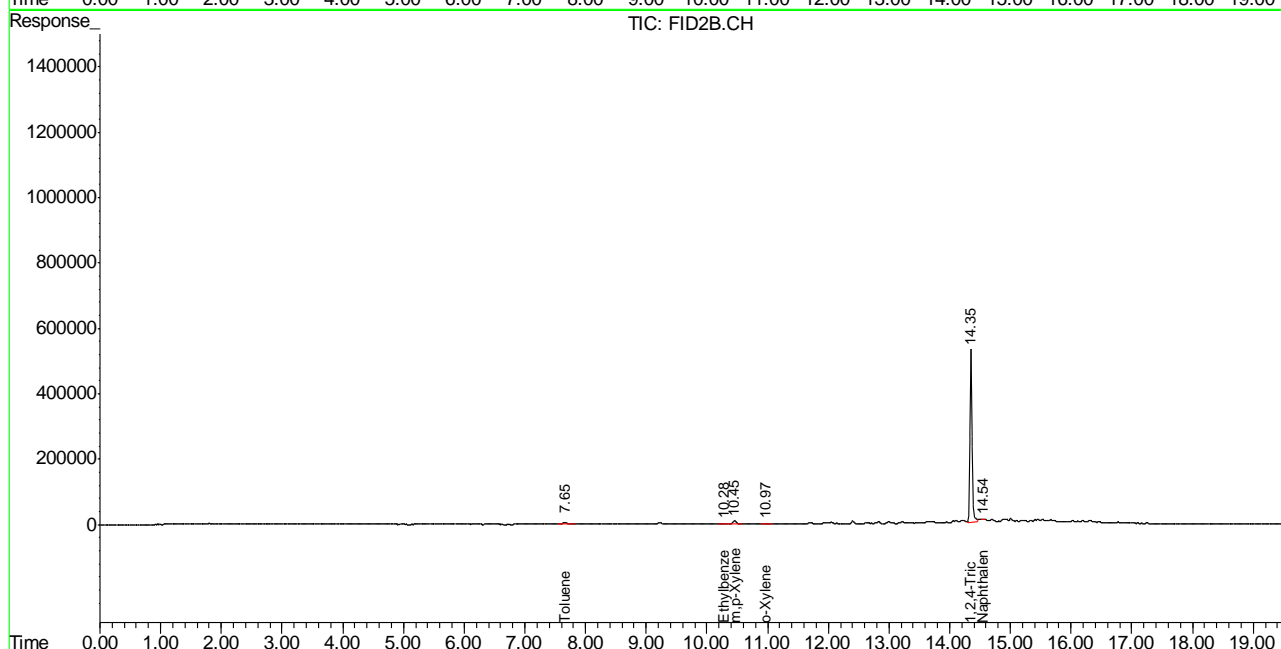
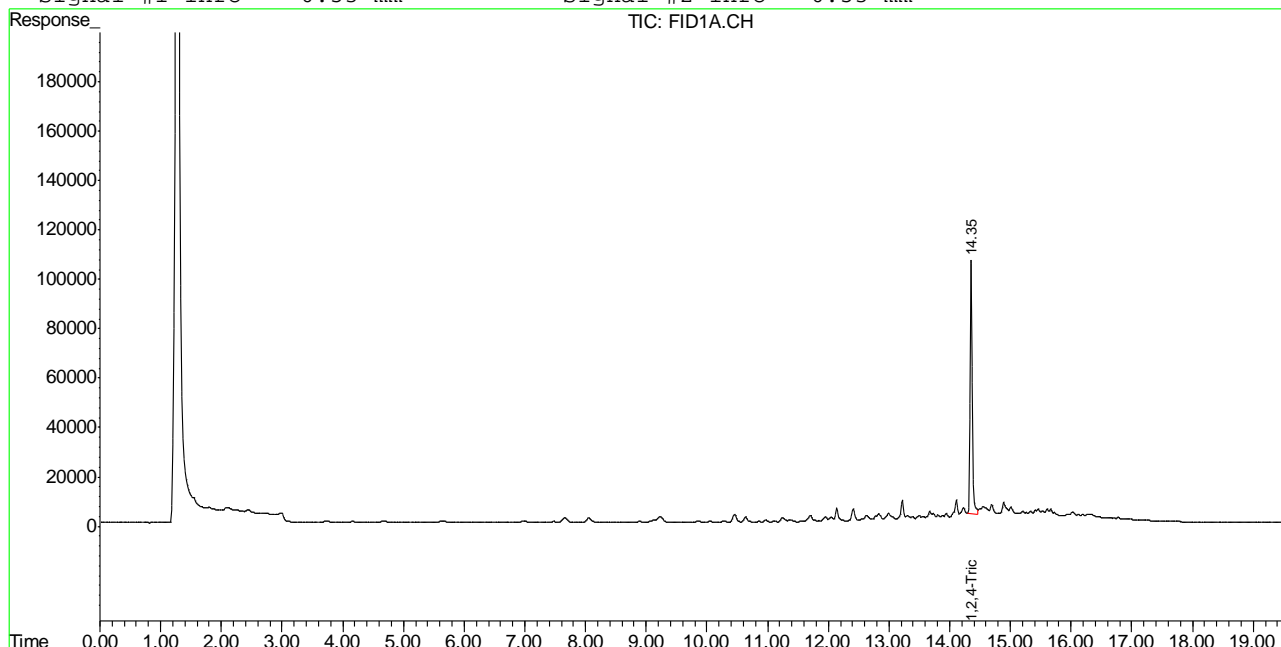
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(f)=RT Delta > 1/2 Window (m)=manual int.  
GB19588.D TB868GB868SOIL.M Sat Feb 23 08:59:05 2013 GC

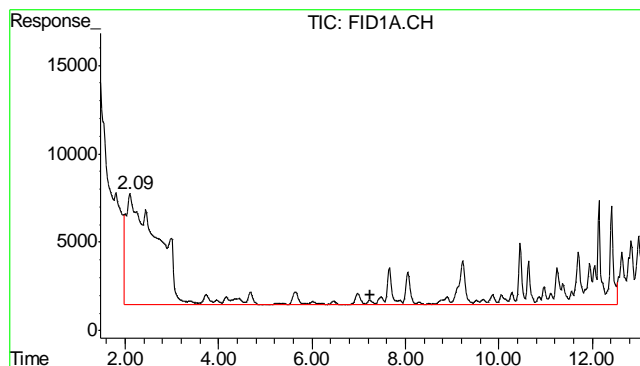
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\022213\GB19588.D\FID1A.CH Vial: 12  
 Signal #2 : Y:\1\DATA\022213\GB19588.D\FID2B.CH  
 Acq On : 22 Feb 2013 10:32 pm Operator: BRET D  
 Sample : D43723-1 Inst : GC/MS Ins  
 Misc : GC3425,GGB1069,5.083,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Feb 23 8:59 2013 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Wed Feb 06 08:49:04 2013  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TVB4.M

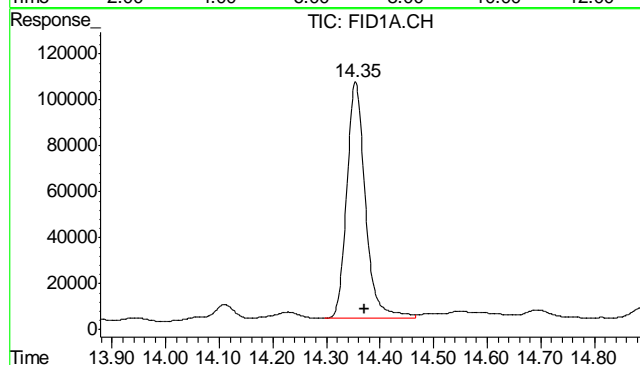
Volume Inj. :  
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





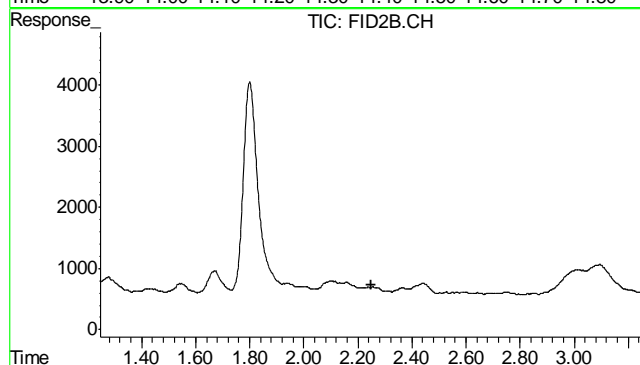
#1 TVH-Gasoline

R.T.: 7.255 min  
Delta R.T.: 0.000 min  
Response: 5630244  
Conc: N.D.



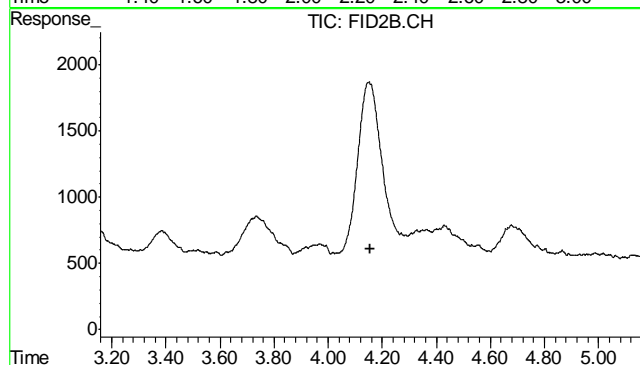
#2 1,2,4-Trichlorobenzene

R.T.: 14.354 min  
Delta R.T.: -0.016 min  
Response: 2487939  
Conc: 79.40 % m



#4 Methyl-t-butyl-ether

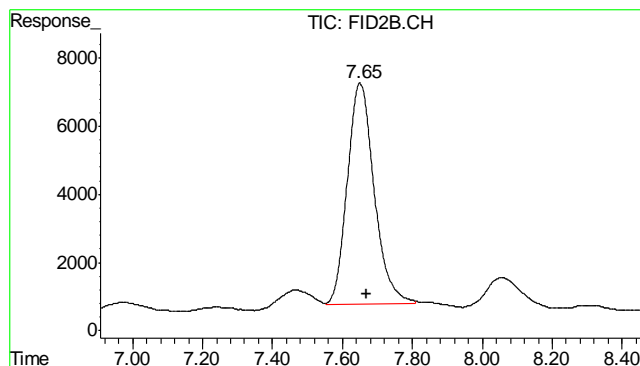
R.T.: 0.000 min  
Exp R.T.: 2.248 min  
Response: 0  
Conc: N.D.



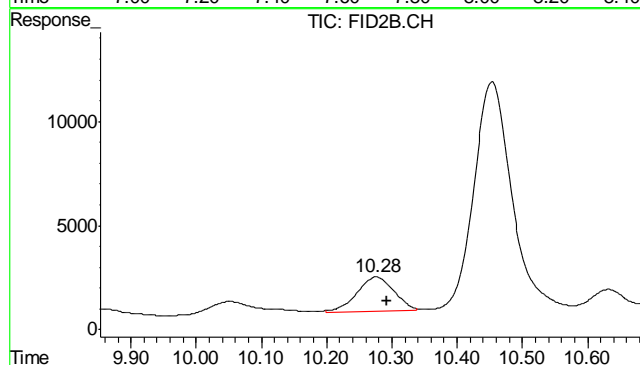
#5 Benzene

R.T.: 0.000 min  
Exp R.T.: 4.157 min  
Response: 0  
Conc: N.D.

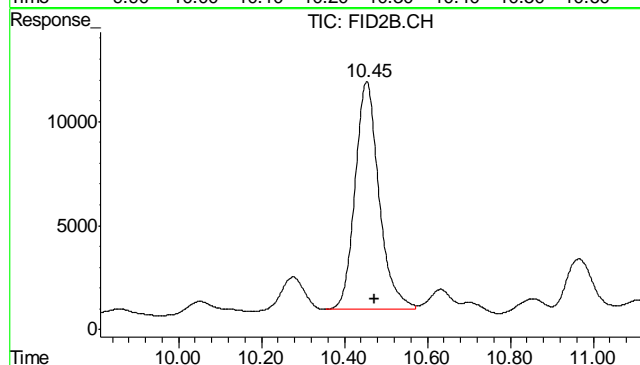
11.11



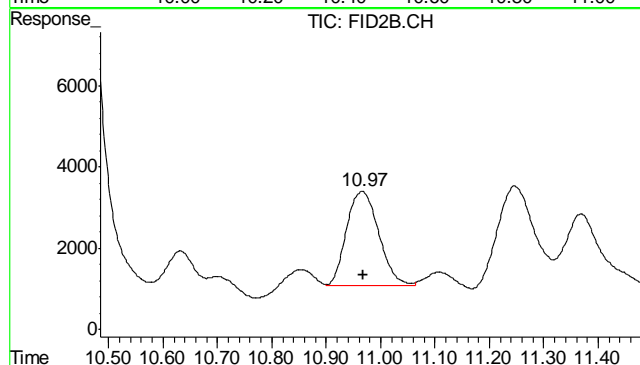
#6 Toluene  
 R.T.: 7.649 min  
 Delta R.T.: -0.021 min  
 Response: 345255  
 Conc: 0.87 ug/L m



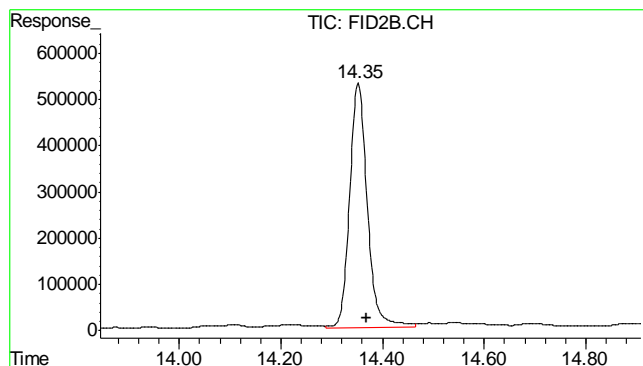
#7 Ethylbenzene  
 R.T.: 10.276 min  
 Delta R.T.: -0.018 min  
 Response: 65358  
 Conc: 0.19 ug/L m



#8 m,p-Xylene  
 R.T.: 10.454 min  
 Delta R.T.: -0.018 min  
 Response: 437516  
 Conc: 0.83 ug/L m

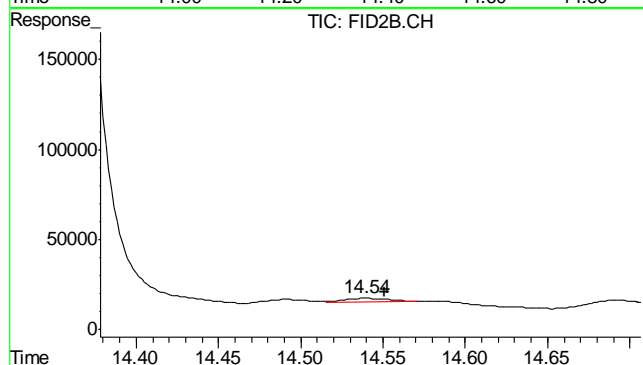


#9 o-Xylene  
 R.T.: 10.966 min  
 Delta R.T.: -0.002 min  
 Response: 94833  
 Conc: 0.29 ug/L m



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

R.T.: 14.353 min  
Delta R.T.: -0.016 min  
Response: 12764147  
Conc: 78.54 %



#11 Naphthalene

R.T.: 14.539 min  
Delta R.T.: -0.012 min  
Response: 38434  
Conc: 0.19 ug/L m

11.1.1

Judy Melson  
02/25/13 15:16

## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\022213\GB19579.D\FID1A.CH Vial: 3  
Signal #2 : Y:\1\DATA\022213\GB19579.D\FID2B.CH  
Acq On : 22 Feb 2013 5:13 pm Operator: BRETD  
Sample : MB Inst : GC/MS Ins  
Misc : GC3425,GGB1069,5.000,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Feb 23 08:45:56 2013 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Wed Feb 06 08:49:04 2013  
Response via : Initial Calibration  
DataAcq Meth : TVB4.M

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

Compound		R.T.	Response	Conc	Units
-----					
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.35	2508694	80.063 %	m
10) S	1,2,4-Trichlorobenzene (P)	14.35	12592934	77.482 %	
Target Compounds					
1) H	TVH-Gasoline	7.25	3424033	<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	7.64	79973	0.202	ug/L m
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	14.53	29298	0.148	ug/L m

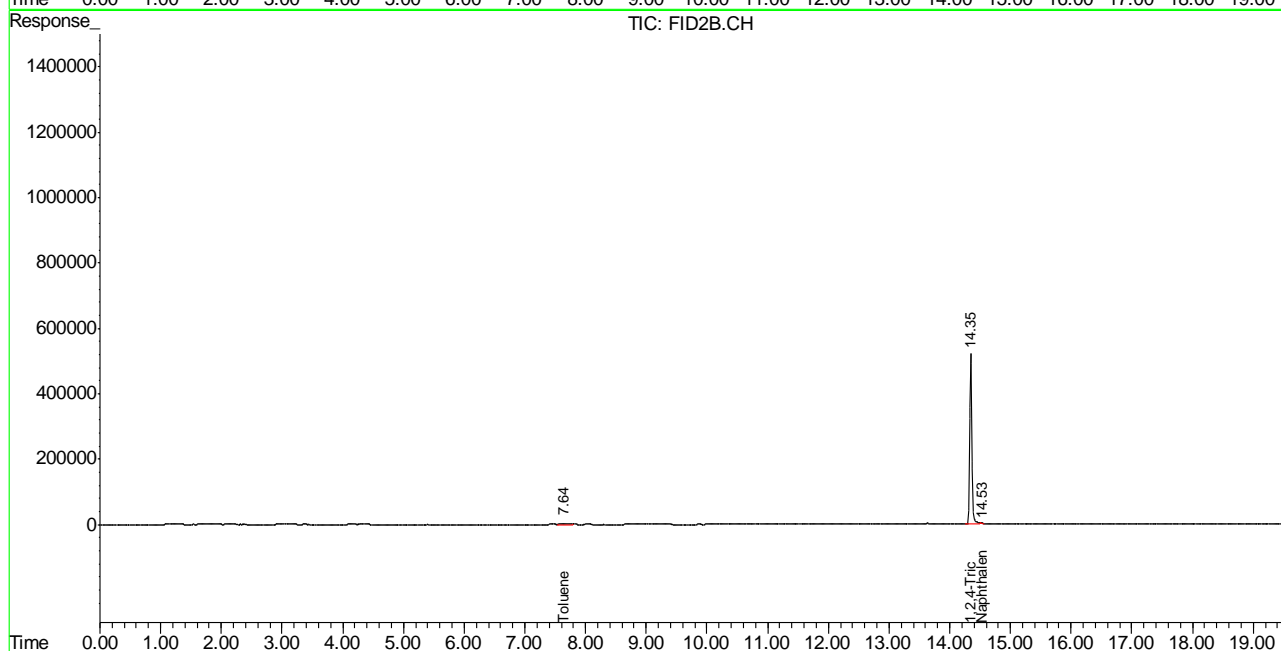
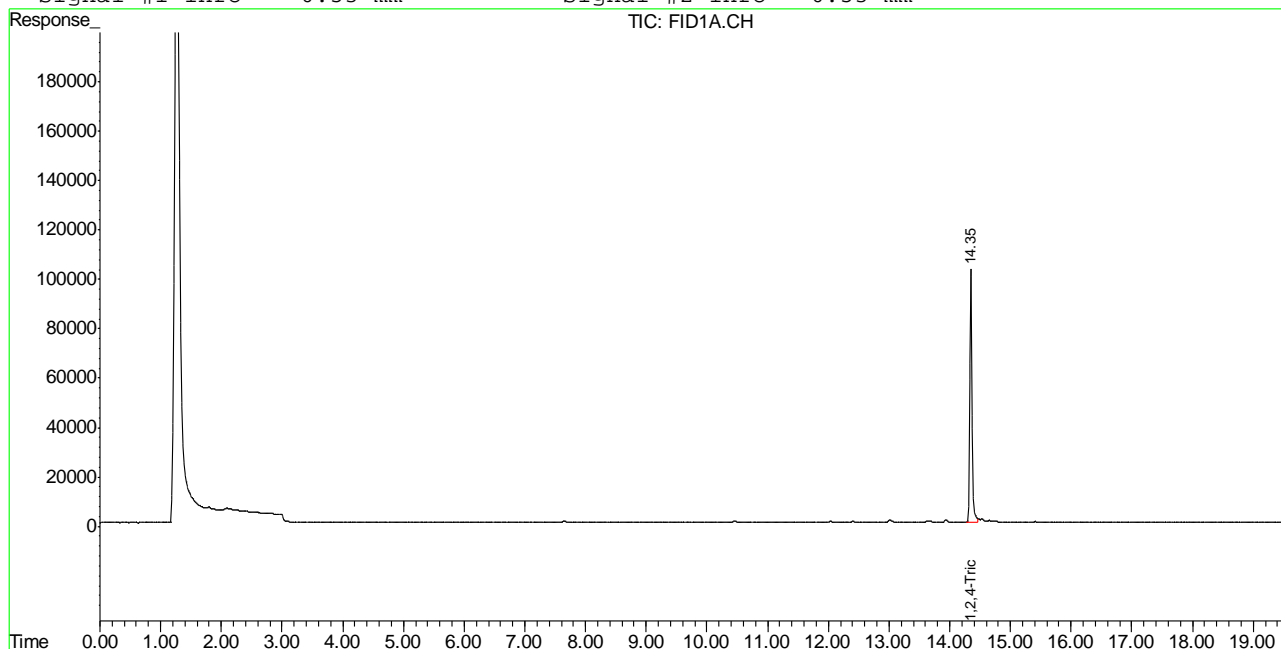
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(f)=RT Delta > 1/2 Window (m)=manual int.  
GB19579.D TB868GB868SOIL.M Sat Feb 23 08:58:38 2013 GC

## Quantitation Report (QT Reviewed)

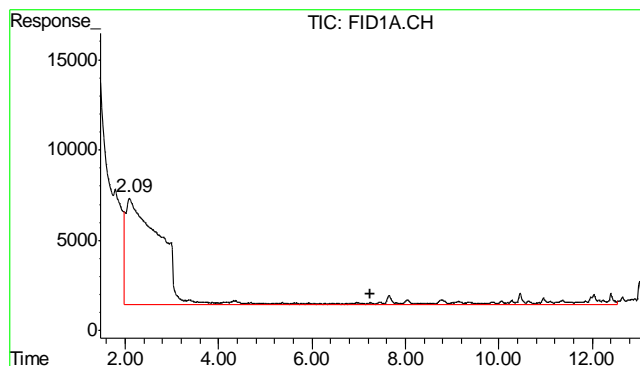
Signal #1 : Y:\1\DATA\022213\GB19579.D\FID1A.CH Vial: 3  
Signal #2 : Y:\1\DATA\022213\GB19579.D\FID2B.CH  
Acq On : 22 Feb 2013 5:13 pm Operator: BRET D  
Sample : MB Inst : GC/MS Ins  
Misc : GC3425,GGB1069,5.000,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Feb 23 8:51 2013 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Wed Feb 06 08:49:04 2013  
Response via : Multiple Level Calibration  
DataAcq Meth : TVB4.M

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

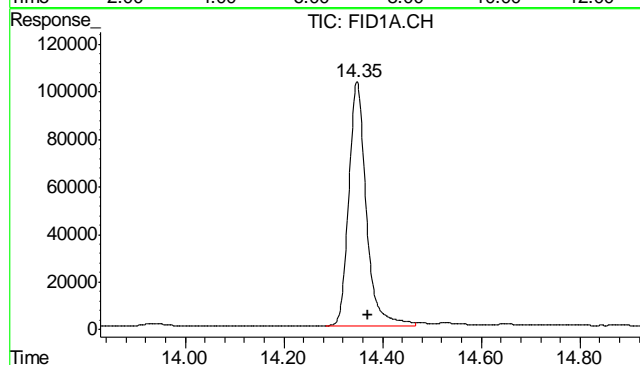






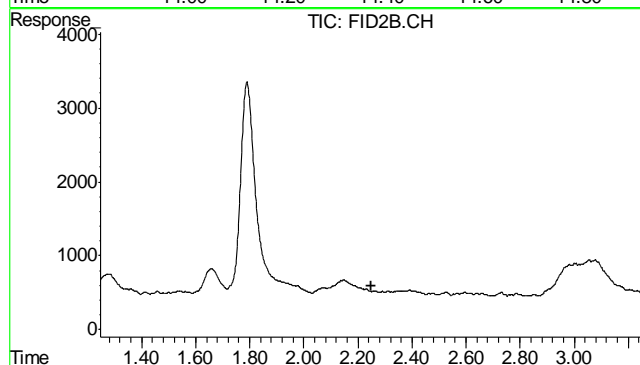
#1 TVH-Gasoline

R.T.: 7.255 min  
Delta R.T.: 0.000 min  
Response: 3424033  
Conc: N.D.



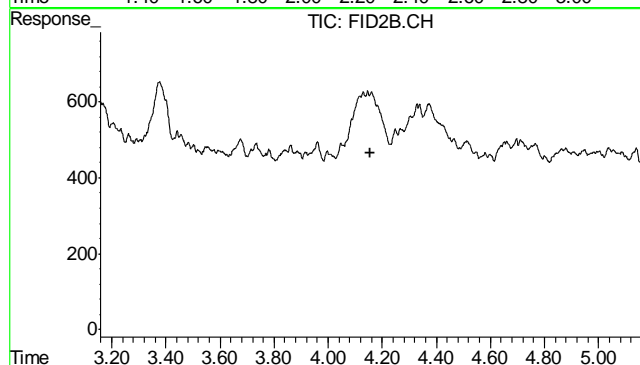
#2 1,2,4-Trichlorobenzene

R.T.: 14.348 min  
Delta R.T.: -0.022 min  
Response: 2508694  
Conc: 80.06 % m



#4 Methyl-t-butyl-ether

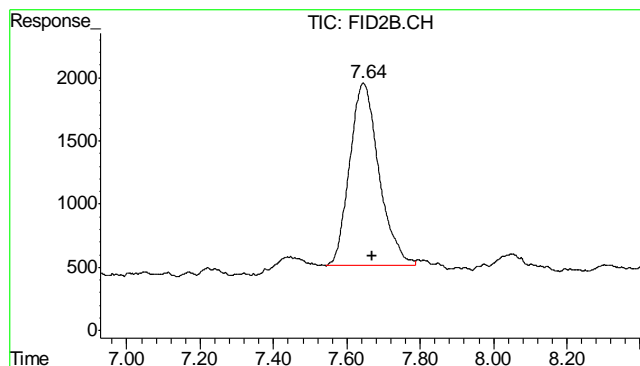
R.T.: 0.000 min  
Exp R.T.: 2.248 min  
Response: 0  
Conc: N.D.



#5 Benzene

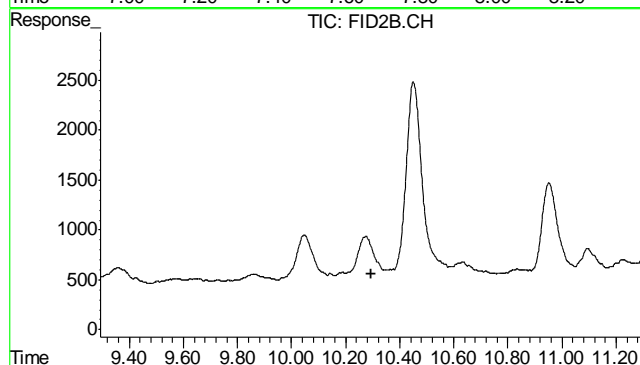
R.T.: 0.000 min  
Exp R.T.: 4.157 min  
Response: 0  
Conc: N.D.

11.21  
11



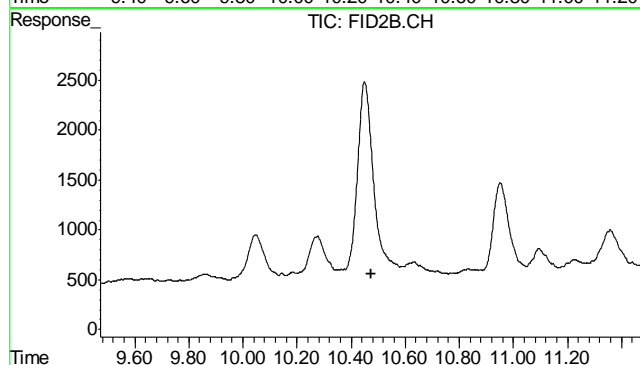
#6 Toluene

R.T.: 7.645 min  
Delta R.T.: -0.025 min  
Response: 79973  
Conc: 0.20 ug/L m



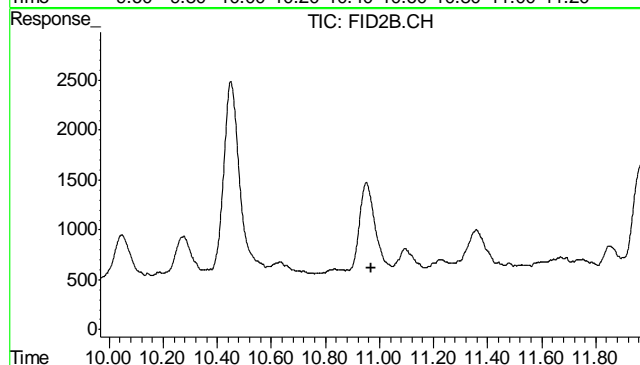
#7 Ethylbenzene

R.T.: 0.000 min  
Exp R.T. : 10.293 min  
Response: 0  
Conc: N.D.



#8 m,p-Xylene

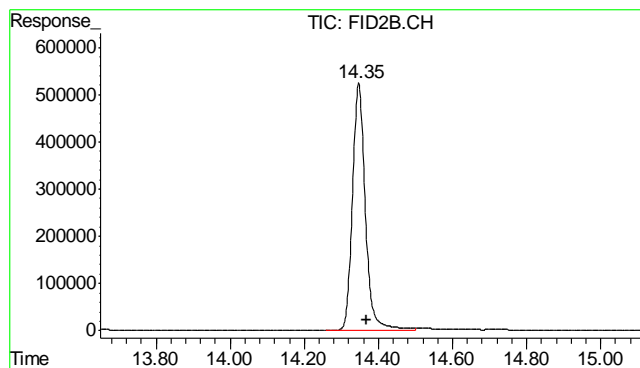
R.T.: 0.000 min  
Exp R.T. : 10.473 min  
Response: 0  
Conc: N.D.



#9 o-Xylene

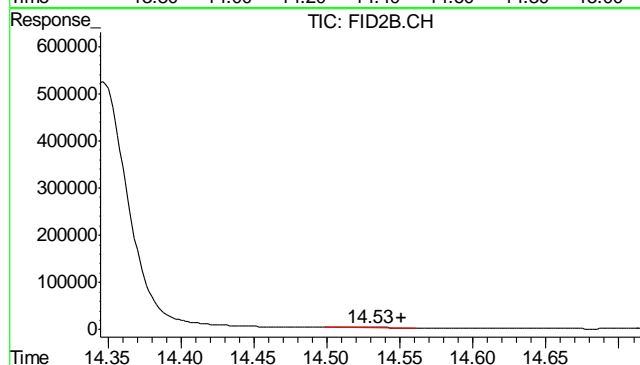
R.T.: 0.000 min  
Exp R.T. : 10.968 min  
Response: 0  
Conc: N.D.

11.21  
11



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

R.T.: 14.347 min  
Delta R.T.: -0.022 min  
Response: 12592934  
Conc: 77.48 %



#11 Naphthalene

R.T.: 14.528 min  
Delta R.T.: -0.023 min  
Response: 29298  
Conc: 0.15 ug/L m

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: D43723  
Account: XTOKRWR XTO Energy  
Project: XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7429-MB	FD22237.D	1	02/25/13	AV	02/25/13	OP7429	GFD1114

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

D43723-1

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

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	78% 35-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D43723  
**Account:** XTOKRWR XTO Energy  
**Project:** XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7429-BS	FD22239.D	1	02/25/13	AV	02/25/13	OP7429	GFD1114

The QC reported here applies to the following samples:

Method: SW846-8015B

D43723-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	579	87	48-130

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

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D43723  
**Account:** XTOKRWR XTO Energy  
**Project:** XTO Love Ranch 8

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7429-MS	FD22241.D	1	02/25/13	AV	02/25/13	OP7429	GFD1114
OP7429-MSD	FD22243.D	1	02/25/13	AV	02/25/13	OP7429	GFD1114
D43738-1	FD22246.D	1	02/25/13	AV	02/25/13	OP7429	GFD1114

The QC reported here applies to the following samples:

Method: SW846-8015B

D43723-1

CAS No.	Compound	D43738-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	90.1		773	590	65	613	68	4	20-168/30

CAS No.	Surrogate Recoveries	MS	MSD	D43738-1	Limits
84-15-1	o-Terphenyl	67%	69%	68%	35-130%

\* = Outside of Control Limits.

GC Semi-volatiles

Raw Data



Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2013\FEB\FD022513.SEC\FD22251.D Vial: 62  
Acq On : 2-25-2013 06:05:48 PM Operator: ashleyv  
Sample : D43723-1 Inst : FID5  
Misc : OP7429,GFD1114,30.10,,,1,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Feb 26 08:20:46 2013 Quant Results File: DRO-GFD983R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD983R.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Mon Feb 18 11:25:03 2013  
Response via : Initial Calibration  
DataAcq Meth : DRODUAL.M

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

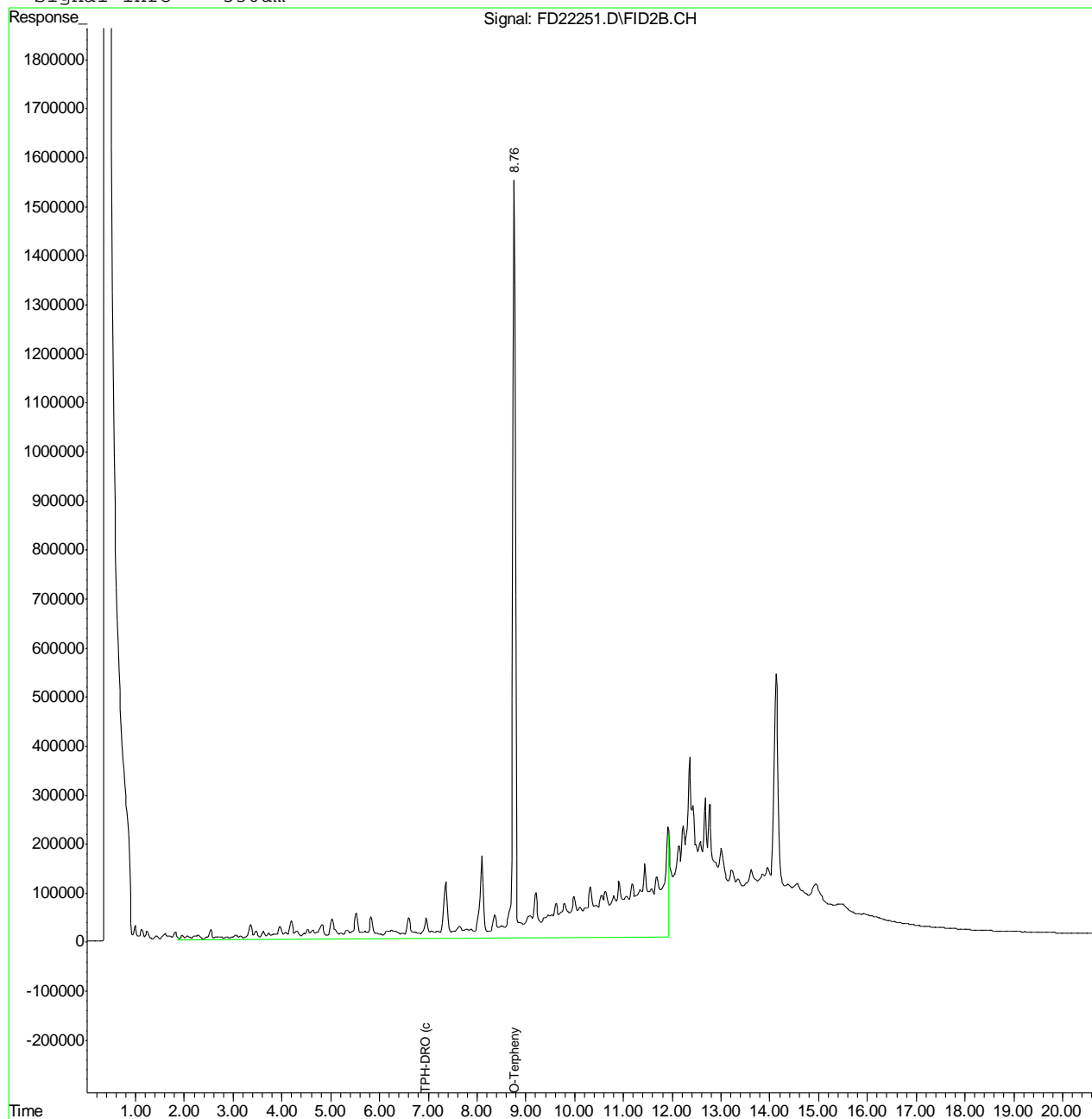
Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	8.76	53985452	1055.852 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	6.93	206178887	5578.654 mg/L

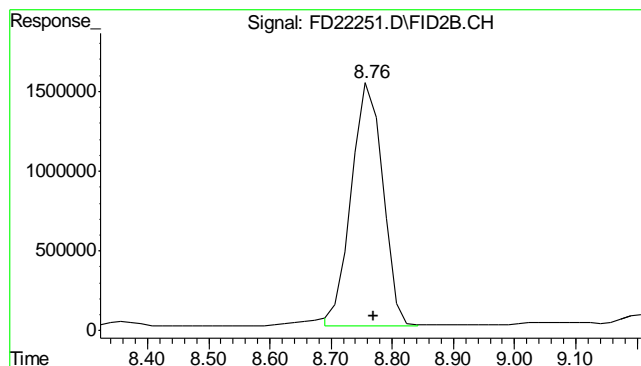
## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2013\FEB\FD022513.SEC\FD22251.D Vial: 62  
Acq On : 2-25-2013 06:05:48 PM Operator: ashleyv  
Sample : D43723-1 Inst : FID5  
Misc : OP7429,GFD1114,30.10,,,1,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Feb 26 8:22 2013 Quant Results File: DRO-GFD983R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD983R.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Mon Feb 18 11:25:03 2013  
Response via : Multiple Level Calibration  
DataAcq Meth : DRODUAL.M

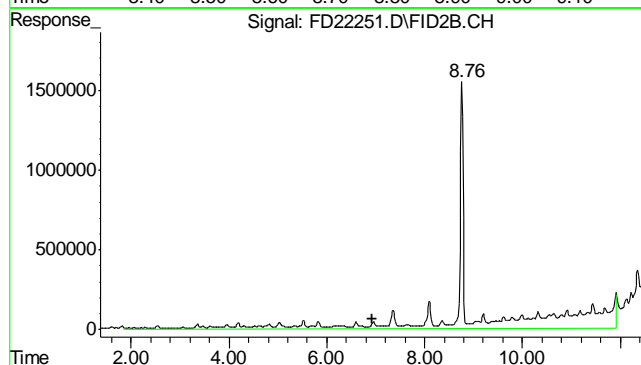
Volume Inj. : 1ul  
Signal Phase : RTX-5  
Signal Info : 530um





#1 O-Terphenyl

R.T.: 8.759 min  
 Delta R.T.: -0.011 min  
 Response: 53985452  
 Conc: 1055.85 mg/L m



#2 TPH-DRO (c10-c28)

R.T.: 6.935 min  
 Delta R.T.: 0.000 min  
 Response: 206178887  
 Conc: 5578.65 mg/L m

## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2013\FEB\FD022513.SEC\FD22237.D Vial: 53  
Acq On : 25 Feb 2013 12:14 pm Operator: ashleyv  
Sample : OP7429-MB Inst : FID5  
Misc : OP7429,GFD1114,30.00,,,1,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Feb 25 13:23:10 2013 Quant Results File: DRO-GFD983R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD983R.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Mon Feb 18 11:25:03 2013  
Response via : Initial Calibration  
DataAcq Meth : DRODUAL.M

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

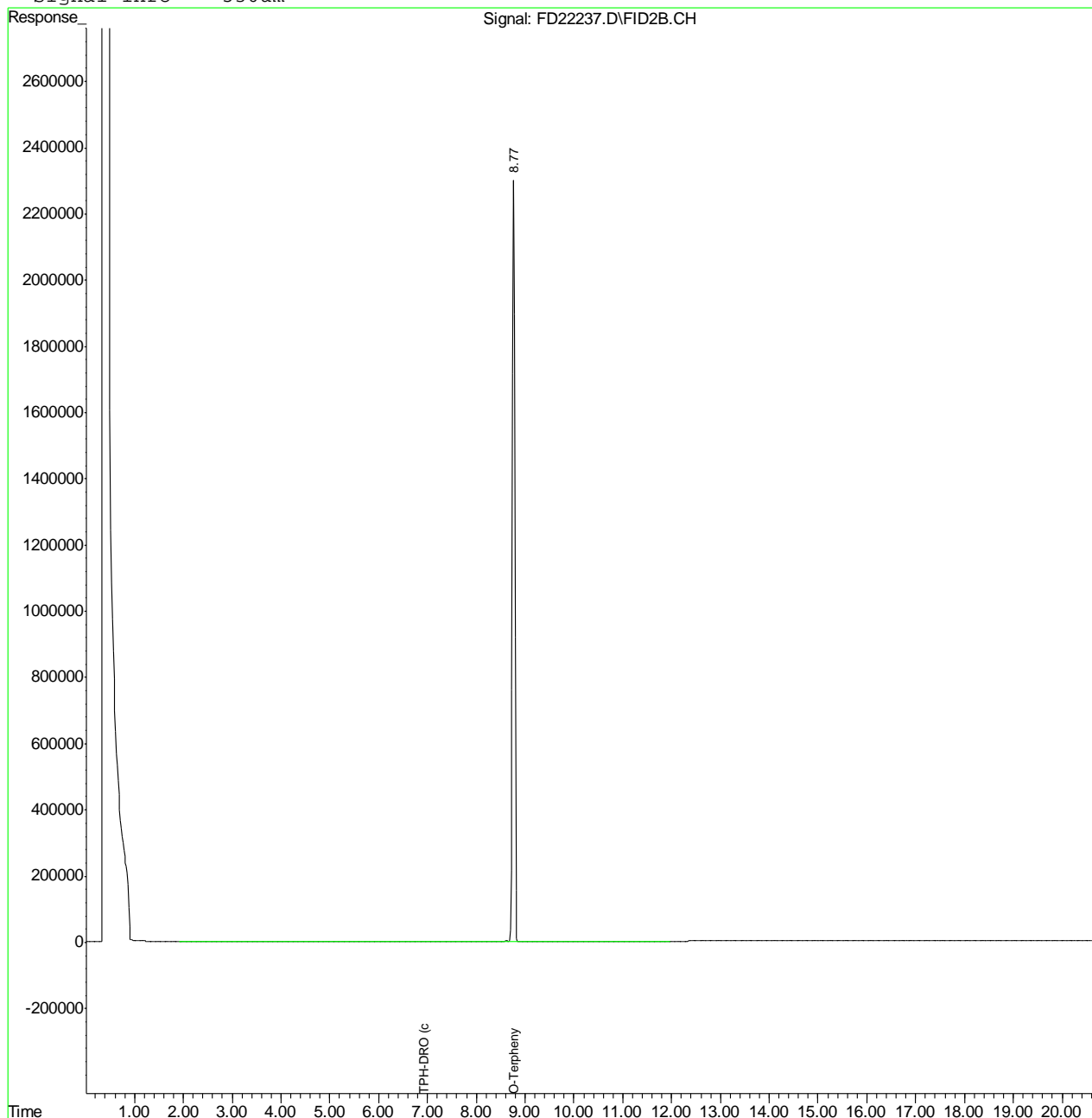
Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	8.77	79933931	1563.355 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	6.93	1273276	34.451 mg/L

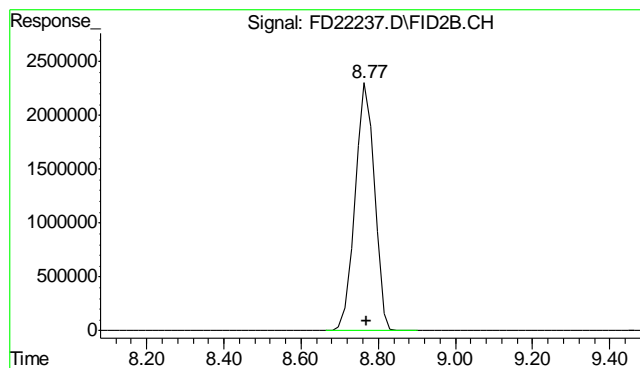
## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2013\FEB\FD022513.SEC\FD22237.D Vial: 53  
Acq On : 25 Feb 2013 12:14 pm Operator: ashleyv  
Sample : OP7429-MB Inst : FID5  
Misc : OP7429,GFD1114,30.00,,,1,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Feb 25 13:23 2013 Quant Results File: DRO-GFD983R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD983R.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Mon Feb 18 11:25:03 2013  
Response via : Multiple Level Calibration  
DataAcq Meth : DRODUAL.M

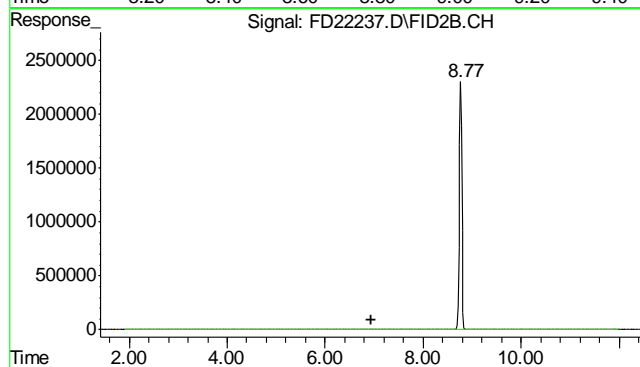
Volume Inj. : 1ul  
Signal Phase : RTX-5  
Signal Info : 530um





#1 O-Terphenyl

R.T.: 8.773 min  
Delta R.T.: 0.003 min  
Response: 79933931  
Conc: 1563.35 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 6.935 min  
Delta R.T.: 0.000 min  
Response: 1273276  
Conc: 34.45 mg/L m

13.2.1  
13

## 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: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9521  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 02/25/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.96	.57		
Antimony	3.0	.17	.12		
Arsenic	2.5	.44	.56		
Barium	1.0	.01	.11	0.13	<1.0
Beryllium	1.0	.13	.15		
Boron	5.0	.1	.06		
Cadmium	1.0	.06	.036	0.040	<1.0
Calcium	40	.54	9		
Chromium	1.0	.03	.03	0.060	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	-0.17	<1.0
Iron	7.0	.12	.87		
Lead	5.0	.19	.24	-0.24	<5.0
Lithium	0.20	.05	.054		
Magnesium	20	.65	.98		
Manganese	0.50	.12	.022		
Molybdenum	1.0	.21	.08		
Nickel	3.0	.05	.026	0.060	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	-0.010	<5.0
Silicon	5.0	.29	.37		
Silver	3.0	.04	.06	-0.020	<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	0.15	<3.0

Associated samples MP9521: D43723-1

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



BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9521  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9521  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 02/25/13

Metal	D43722-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	4400	5270	260	215.1(a)	75-125
Beryllium	anr				
Boron					
Cadmium	1.1	59.4	65.1	89.6	75-125
Calcium					
Chromium	11.9	71.2	65.1	91.1	75-125
Cobalt	anr				
Copper	33.0	84.3	65.1	78.8	75-125
Iron	anr				
Lead	38.1	135	130	78.0	75-125
Lithium					
Magnesium					
Manganese	anr				
Molybdenum					
Nickel	16.2	68.2	65.1	78.7	75-125
Phosphorus					
Potassium					
Selenium	0.0	120	130	91.3	75-125
Silicon					
Silver	0.0	23.4	26	89.9	75-125
Sodium					
Strontium					
Thallium	anr				
Tin					
Titanium					
Uranium					
Vanadium	anr				
Zinc	55.9	107	65.1	78.5	75-125

Associated samples MP9521: D43723-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9521  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9521  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 02/25/13

Metal	D43722-1 Original MSD		Spikelet ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	4400	6140	269	532.5(a)	15.2	20
Beryllium	anr					
Boron						
Cadmium	1.1	62.3	67.1	91.2	4.8	20
Calcium						
Chromium	11.9	74.8	67.1	93.7	4.9	20
Cobalt	anr					
Copper	33.0	87.4	67.1	81.0	3.6	20
Iron	anr					
Lead	38.1	140	134	79.3	3.6	20
Lithium						
Magnesium						
Manganese	anr					
Molybdenum						
Nickel	16.2	70.7	67.1	80.0	3.6	20
Phosphorus						
Potassium						
Selenium	0.0	121	134	89.2	0.8	20
Silicon						
Silver	0.0	24.5	26.9	91.2	4.6	20
Sodium						
Strontium						
Thallium	anr					
Tin						
Titanium						
Uranium						
Vanadium	anr					
Zinc	55.9	109	67.1	79.1	1.9	20

Associated samples MP9521: D43723-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9521  
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: D43723  
 Account: XTOKRWR - XTO Energy  
 Project: XTO Love Ranch 8

QC Batch ID: MP9521  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: mg/kg

Prep Date: 02/25/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	213	200	106.5	80-120
Beryllium	anr			
Boron				
Cadmium	46.9	50	93.8	80-120
Calcium				
Chromium	46.7	50	93.4	80-120
Cobalt	anr			
Copper	45.7	50	91.4	80-120
Iron	anr			
Lead	94.2	100	94.2	80-120
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	45.6	50	91.2	80-120
Phosphorus				
Potassium				
Selenium	95.2	100	95.2	80-120
Silicon				
Silver	18.8	20	94.0	80-120
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium	anr			
Zinc	45.8	50	91.6	80-120

Associated samples MP9521: D43723-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9521  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9521  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date: 02/25/13

Metal	D43722-1 Original    SDL 1:5		%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	35100	33900	3.5	0-10
Beryllium	anr			
Boron				
Cadmium	8.10	4.00	50.6 (a)	0-10
Calcium				
Chromium	96.5	98.5	11.4*(b)	0-10
Cobalt	anr			
Copper	256	244	0.9	0-10
Iron	anr			
Lead	249	283	13.6*(b)	0-10
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	127	143	12.5*(b)	0-10
Phosphorus				
Potassium				
Selenium	10.7	0.00	100.0(a)	0-10
Silicon				
Silver	1.20	0.00	NC	0-10
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium	anr			
Zinc	395	492	18.2*(b)	0-10

Associated samples MP9521: D43723-1

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

14.1.4  
14



SERIAL DILUTION RESULTS SUMMARY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9521  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

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

(b) Serial dilution indicates possible matrix interference.

14.1.4  
14

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9522  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 02/25/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.006	.06	0.018	<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 MP9522: D43723-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9522  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 02/25/13

Metal	D43722-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	10.9	136	130	96.1
Barium				
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron				
Lead	anr			
Magnesium				
Manganese				
Molybdenum	anr			
Nickel	anr			
Phosphorus	anr			
Potassium	anr			
Selenium	anr			
Silver				
Sodium	anr			
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP9522: D43723-1

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

14.2.2  
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9522  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 02/25/13

Metal	D43722-1 Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	10.9	156	134	108.1	13.7	20
Barium						
Beryllium						
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper	anr					
Iron						
Lead	anr					
Magnesium						
Manganese						
Molybdenum	anr					
Nickel	anr					
Phosphorus	anr					
Potassium	anr					
Selenium	anr					
Silver						
Sodium	anr					
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	anr					

Associated samples MP9522: D43723-1

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

14.2.2  
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9522  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 02/25/13

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

Associated samples MP9522: D43723-1

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: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9522  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: ug/l

Prep Date: 02/25/13

Metal	D43722-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	81.2	76.6	5.7	0-10	
Barium					
Beryllium					
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper	anr				
Iron					
Lead	anr				
Magnesium					
Manganese					
Molybdenum	anr				
Nickel	anr				
Phosphorus	anr				
Potassium	anr				
Selenium	anr				
Silver					
Sodium	anr				
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	anr				

Associated samples MP9522: D43723-1

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: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9527  
Matrix Type: SOLID

Methods: SW846 7471B  
Units: mg/kg

Prep Date: 02/26/13

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.083	.00088	.00075	0.00090	<0.083

Associated samples MP9527: D43723-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D43723  
 Account: XTOKRWR - XTO Energy  
 Project: XTO Love Ranch 8

QC Batch ID: MP9527  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 02/26/13

Metal	D43722-1 Original MS	Spikelot HGWSR1	% Rec	QC Limits
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Mercury	0.046	0.47	0.432	98.1	75-125
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Associated samples MP9527: D43723-1

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



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D43723  
 Account: XTOKRWR - XTO Energy  
 Project: XTO Love Ranch 8

QC Batch ID: MP9527  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 02/26/13

Metal	D43722-1		Spikelot		MSD	QC
	Original	MSD	HGWSR1	% Rec		
Mercury	0.046	0.46	0.432	95.7	2.2	20

Associated samples MP9527: D43723-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D43723  
 Account: XTOKRWR - XTO Energy  
 Project: XTO Love Ranch 8

QC Batch ID: MP9527  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 02/26/13

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.33	0.333	99.0	80-120

Associated samples MP9527: D43723-1

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9531  
Matrix Type: AQUEOUS

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

Prep Date: 02/26/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	100	130		
Antimony	150	18	18		
Arsenic	130	27	42		
Barium	50	4	9		
Beryllium	50	6.5	16		
Boron	250	22	22		
Cadmium	50	3	3		
Calcium	2000	42	80	-19	<2000
Chromium	50	1.5	2.8		
Cobalt	25	2	2.1		
Copper	50	6	15		
Iron	350	9.5	100		
Lead	250	12	15		
Lithium	10	14			
Magnesium	1000	110	110	-17	<1000
Manganese	25	6	6		
Molybdenum	50	11	11		
Nickel	150	2.5	2.9		
Phosphorus	500	70	300		
Potassium	5000	730	750		
Selenium	250	31	55		
Silicon	250	33			
Silver	150	2.5	4.9		
Sodium	2000	110	490	131	<2000
Strontium	25	1	7.5		
Thallium	50	15	43		
Tin	250	60			
Titanium	50	.5			
Uranium	250	23	23		
Vanadium	50	1.5	2.4		
Zinc	150	4	12		

Associated samples MP9531: D43723-1A

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9531  
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: D43723  
 Account: XTOKRWR - XTO Energy  
 Project: XTO Love Ranch 8

QC Batch ID: MP9531  
 Matrix Type: AQUEOUS

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

Prep Date: 02/26/13

Metal	D43722-2A Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	7360	141000	125000	106.9	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	190	133000	125000	106.2	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	1450000	1640000	125000	152.0(a)	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP9531: D43723-1A

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

14.4.2  
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9531  
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 amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9531  
Matrix Type: AQUEOUS

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

Prep Date: 02/26/13

Metal	D43722-2A Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	7360	138000	125000	104.5	2.2	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	190	131000	125000	104.6	1.5	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	1450000	1580000	125000	104.0	3.7	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP9531: D43723-1A

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

14.4.2  
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9531  
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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



SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D43723  
 Account: XTOKRWR - XTO Energy  
 Project: XTO Love Ranch 8

QC Batch ID: MP9531  
 Matrix Type: AQUEOUS

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

Prep Date: 02/26/13

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	132000	125000	105.6	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	133000	125000	106.4	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	137000	125000	109.6	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9531: D43723-1A

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

14.4.3  
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9531  
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: D43723  
 Account: XTOKRWR - XTO Energy  
 Project: XTO Love Ranch 8

QC Batch ID: MP9531  
 Matrix Type: AQUEOUS

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

Prep Date: 02/26/13

D43722-2A		QC		
Metal	Original	SDL 1:5	%DIF	Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	1470	1480	0.5	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	38.0	0.00	100.0(a)	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	289000	297000	2.9	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9531: D43723-1A

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

14.4.4  
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

QC Batch ID: MP9531  
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

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

## General Chemistry

### QC Data Summaries

Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP9438/GN19071	1.0	0.0	mg/kg	92.9	90.9	97.9	80-120%
Specific Conductivity	GP9427/GN19049	1.0	<1.0	umhos/cm	9992	9100	91.1	90-110%
pH	GN19031			su	8.00	7.95	99.3	99.3-100.7%

Associated Samples:  
Batch GP9427: D43723-1  
Batch GP9438: D43723-1  
Batch GN19031: D43723-1  
(\*) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP9438/GN19071	D43722-2	mg/kg	0.0	0.0	0.0	0-20%
Redox Potential Vs H2	GN19103	D43722-2	mv	162	162	0.0	0-20%

Associated Samples:  
Batch GP9438: D43723-1  
Batch GN19103: D43723-1  
(\*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP9438/GN19071	D43722-2	mg/kg	0.0	40.0	32.9	82.3	75-125%

Associated Samples:  
Batch GP9438: D43723-1  
(\*) Outside of QC limits  
(N) Matrix Spike Rec. outside of QC limits



MATRIX SPIKE DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D43723  
Account: XTOKRWR - XTO Energy  
Project: XTO Love Ranch 8

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP9438/GN19071	D43722-2	mg/kg	0.0	40.0	33.7	2.4	20%

Associated Samples:  
Batch GP9438: D43723-1  
(\*) Outside of QC limits  
(N) Matrix Spike Rec. outside of QC limits

15.4  
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