



09/26/12

## Technical Report for

**XTO Energy**

**T78X-12G**

**1007-06**

**Accutest Job Number: D38939**

**Sampling Date: 09/18/12**

### Report to:

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**Total number of pages in report: 135**



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

  
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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: D38939

T78X-12G

Project No: 1007-06

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
D38939-1	09/18/12	14:30 DS	09/20/12	SO	Soil	RP SUBLINER COMPOSITE
D38939-1A	09/18/12	14:30 DS	09/20/12	SO	Soil	RP SUBLINER COMPOSITE

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



## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** XTO Energy

**Job No** D38939

**Site:** T78X-12G

**Report Date** 9/26/2012 2:47:07 PM

On 09/20/2012, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2.0 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D38939 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:** V3V1202

- All samples were analyzed within the recommended method holding time.
- Sample(s) D38937-1MS, D38937-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

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

**Matrix** SO

**Batch ID:** OP6679

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38939-1MS, D38939-1MSD were used as the QC samples indicated.
- The RPD(s) for the MS and MSD recoveries of Naphthalene are outside control limits for sample OP6679-MSD. Variability of recovery may be due to sample matrix/homogeneity.

### Volatiles by GC By Method SW846 8015B

**Matrix** SO

**Batch ID:** GGB968

- All samples were analyzed within the recommended method holding time.
- Sample(s) D38937-1MS, D38937-1MSD 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:** OP6680

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38937-1MS, D38937-1MSD were used as the QC samples indicated.

## Metals By Method SW846 6010C

**Matrix** AQ

**Batch ID:** MP8480

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38940-1AMS, D38940-1AMSD, D38940-1ASDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Calcium, Sodium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

**Matrix** SO

**Batch ID:** MP8469

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38897-1MS, D38897-1MSD, D38897-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Cadmium, Silver, Chromium, Nickel, Zinc are outside control limits for sample MP8469-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP8469-SD1 for Chromium: Serial dilution indicates possible matrix interference.
- MP8469-SD1 for Zinc: Serial dilution indicates possible matrix interference.
- MP8469-SD1 for Nickel: Serial dilution indicates possible matrix interference.

## Metals By Method SW846 6020A

**Matrix** SO

**Batch ID:** MP8470

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38897-1MS, D38897-1MSD, D38897-1SDL were used as the QC samples for the metals analysis.

## Metals By Method SW846 7471B

**Matrix** SO

**Batch ID:** MP8479

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38939-1MS, D38939-1MSD were used as the QC samples for the metals analysis.

## Wet Chemistry By Method ASTM D1498-76M

**Matrix** SO

**Batch ID:** GN16882

- Sample(s) D38940-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

## Wet Chemistry By Method SM19 2540B M

**Matrix** SO

**Batch ID:** GN16857

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

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

**Matrix** SO

**Batch ID:** R14552

- The data for SW846 3060/7196A M meets quality control requirements.
- D38939-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

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

**Matrix** SO

**Batch ID:** GP8246

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D38939-1MS, D38939-1MSD, D38939-1DUP were used as the QC samples for the Chromium, Hexavalent analysis.
- The duplicate RPD(s) for Chromium, Hexavalent are outside control limits for sample GP8246-D1. RPD acceptable due to low duplicate and sample concentrations.

## Wet Chemistry By Method SW846 9045D

**Matrix** SO

**Batch ID:** GN16878

- The following samples were run outside of holding time for method SW846 9045D: D38939-1

## Wet Chemistry By Method USDA HANDBOOK 60

**Matrix** SO

**Batch ID:** MP8480

- D38939-1A 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:** D38939  
**Account:** XTO Energy  
**Project:** T78X-12G  
**Collected:** 09/18/12



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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### D38939-1 RP SUBLINER COMPOSITE

TPH-DRO (C10-C28)	29.9	14	9.3	mg/kg	SW846-8015B
Arsenic	6.6	0.11		mg/kg	SW846 6020A
Barium	914	1.1		mg/kg	SW846 6010C
Chromium	41.4	1.1		mg/kg	SW846 6010C
Copper	10.3	1.1		mg/kg	SW846 6010C
Lead	11.1	5.4		mg/kg	SW846 6010C
Nickel	18.5	3.3		mg/kg	SW846 6010C
Zinc	39.2	3.3		mg/kg	SW846 6010C
Specific Conductivity	835	1.0		umhos/cm	SM2510B-1997 MOD
Chromium, Trivalent <sup>a</sup>	41.4	2.1		mg/kg	SW846 3060/7196A M
Redox Potential Vs H2	179			mv	ASTM D1498-76M
pH	9.73			su	SW846 9045D

### D38939-1A RP SUBLINER COMPOSITE

Calcium	34.1	2.0		mg/l	SW846 6010C
Magnesium	10.6	1.0		mg/l	SW846 6010C
Sodium	145	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio <sup>b</sup>	5.56			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>	RP SUBLINER COMPOSITE	<b>Date Sampled:</b>	09/18/12
<b>Lab Sample ID:</b>	D38939-1	<b>Date Received:</b>	09/20/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	92.8
<b>Method:</b>	SW846 8260B		
<b>Project:</b>	T78X-12G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V20614.D	1	09/21/12	BD	n/a	n/a	V3V1202
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.04 g	5.0 ml	100 ul
Run #2			

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.057	0.029	mg/kg	
108-88-3	Toluene	ND	0.11	0.057	mg/kg	
100-41-4	Ethylbenzene	ND	0.11	0.022	mg/kg	
1330-20-7	Xylene (total)	ND	0.23	0.11	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	87%		64-130%
460-00-4	4-Bromofluorobenzene	107%		62-131%
17060-07-0	1,2-Dichloroethane-D4	88%		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>	RP SUBLINER COMPOSITE			<b>Date Sampled:</b>	09/18/12
<b>Lab Sample ID:</b>	D38939-1			<b>Date Received:</b>	09/20/12
<b>Matrix:</b>	SO - Soil			<b>Percent Solids:</b>	92.8
<b>Method:</b>	SW846 8270C BY SIM SW846 3546				
<b>Project:</b>	T78X-12G				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G11339.D	1	09/21/12	DC	09/21/12	OP6679	E3G529
Run #2							

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

## COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0090	0.0047	mg/kg	
120-12-7	Anthracene	ND	0.0090	0.0047	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0090	0.0047	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0090	0.0047	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0090	0.0047	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0090	0.0047	mg/kg	
218-01-9	Chrysene	ND	0.0090	0.0047	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0090	0.0047	mg/kg	
206-44-0	Fluoranthene	ND	0.0090	0.0047	mg/kg	
86-73-7	Fluorene	ND	0.0090	0.0047	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0090	0.0047	mg/kg	
91-20-3	Naphthalene	ND	0.013	0.011	mg/kg	
129-00-0	Pyrene	ND	0.0090	0.0047	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	59%		10-145%
321-60-8	2-Fluorobiphenyl	63%		10-130%
1718-51-0	Terphenyl-d14	74%		22-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

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## Report of Analysis

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<b>Client Sample ID:</b>	RP SUBLINER COMPOSITE			<b>Date Sampled:</b>	09/18/12
<b>Lab Sample ID:</b>	D38939-1			<b>Date Received:</b>	09/20/12
<b>Matrix:</b>	SO - Soil			<b>Percent Solids:</b>	92.8
<b>Method:</b>	SW846 8015B				
<b>Project:</b>	T78X-12G				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB17642.D	1	09/20/12	SK	n/a	n/a	GGB968
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	11	5.7	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	87%		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>	RP SUBLINER COMPOSITE			<b>Date Sampled:</b>	09/18/12
<b>Lab Sample ID:</b>	D38939-1			<b>Date Received:</b>	09/20/12
<b>Matrix:</b>	SO - Soil			<b>Percent Solids:</b>	92.8
<b>Method:</b>	SW846-8015B SW846 3546				
<b>Project:</b>	T78X-12G				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD17683.D	1	09/21/12	AV	09/21/12	OP6680	GFD904
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	29.9	14	9.3	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	70%		43-136%		

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

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

## Report of Analysis

<b>Client Sample ID:</b>	RP SUBLINER COMPOSITE	<b>Date Sampled:</b>	09/18/12
<b>Lab Sample ID:</b>	D38939-1	<b>Date Received:</b>	09/20/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	92.8
<b>Project:</b>	T78X-12G		

## Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	6.6	0.11	mg/kg	5	09/24/12	09/26/12 JB	SW846 6020A <sup>3</sup>	SW846 3050B <sup>5</sup>
Barium	914	1.1	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C <sup>2</sup>	SW846 3050B <sup>4</sup>
Cadmium	< 1.1	1.1	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C <sup>2</sup>	SW846 3050B <sup>4</sup>
Chromium	41.4	1.1	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C <sup>2</sup>	SW846 3050B <sup>4</sup>
Copper	10.3	1.1	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C <sup>2</sup>	SW846 3050B <sup>4</sup>
Lead	11.1	5.4	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C <sup>2</sup>	SW846 3050B <sup>4</sup>
Mercury	< 0.11	0.11	mg/kg	1	09/25/12	09/25/12 JM	SW846 7471B <sup>1</sup>	SW846 7471B <sup>6</sup>
Nickel	18.5	3.3	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C <sup>2</sup>	SW846 3050B <sup>4</sup>
Selenium	< 5.4	5.4	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C <sup>2</sup>	SW846 3050B <sup>4</sup>
Silver	< 3.3	3.3	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C <sup>2</sup>	SW846 3050B <sup>4</sup>
Zinc	39.2	3.3	mg/kg	1	09/24/12	09/25/12 JM	SW846 6010C <sup>2</sup>	SW846 3050B <sup>4</sup>

(1) Instrument QC Batch: MA2839

(2) Instrument QC Batch: MA2842

(3) Instrument QC Batch: MA2844

(4) Prep QC Batch: MP8469

(5) Prep QC Batch: MP8470

(6) Prep QC Batch: MP8479

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b>	RP SUBLINER COMPOSITE	<b>Date Sampled:</b>	09/18/12
<b>Lab Sample ID:</b>	D38939-1	<b>Date Received:</b>	09/20/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	92.8
<b>Project:</b>	T78X-12G		

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
<b>prep: DEPT.OF AG, BOOK N9</b>							
Specific Conductivity	835	1.0	umhos/cm	1	09/26/12	CJ	SM2510B-1997 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	09/25/12	CJ	SW846 3060A/7196A
Chromium, Trivalent <sup>a</sup>	41.4	2.1	mg/kg	1	09/25/12 21:44	JM	SW846 3060/7196A M
Redox Potential Vs H2	179		mv	1	09/21/12	JD	ASTM D1498-76M
Solids, Percent	92.8		%	1	09/21/12	SWT	SM19 2540B M
pH	9.73		su	1	09/21/12 14:25	JD	SW846 9045D

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

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	RP SUBLINER COMPOSITE	<b>Date Sampled:</b>	09/18/12
<b>Lab Sample ID:</b>	D38939-1A	<b>Date Received:</b>	09/20/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	92.8
<b>Project:</b>	T78X-12G		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	34.1	2.0	mg/l	1	09/24/12	09/25/12 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Magnesium	10.6	1.0	mg/l	1	09/24/12	09/25/12 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>
Sodium	145	2.0	mg/l	1	09/24/12	09/25/12 JM	SW846 6010C <sup>1</sup>	SW846 3010A/M <sup>2</sup>

(1) Instrument QC Batch: MA2842  
(2) Prep QC Batch: MP8480

RL = Reporting Limit

4.2  
4



Report of Analysis

<b>Client Sample ID:</b>	RP SUBLINER COMPOSITE	<b>Date Sampled:</b>	09/18/12
<b>Lab Sample ID:</b>	D38939-1A	<b>Date Received:</b>	09/20/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	92.8
<b>Project:</b>	T78X-12G		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	5.56		ratio	1	09/25/12 20:50	JM	USDA HANDBOOK 60

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

RL = Reporting Limit

## Misc. Forms

5

### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody



## CHAIN OF CUSTODY

PAGE 1 OF 1

4035 Youngfield Street, Wheat Ridge, CO 80033  
TEL: 303-425-6021 FAX: 303-425-6854  
www.accutest.com

FED-EX Tracking #		Bottle Order Control #	
Accutest Quote #		Accutest Job # <b>D38939</b>	
Client / Reporting Information		Project Information	
Company Name <b>KRW Consulting</b>		Project Name <b>XTO PCU T78X-12G</b>	
Street Address <b>8000 West 14th Street, Suite 200</b>		Street	
City <b>Lakewood, CO 80214</b>		City State	
Project Contact <b>Dwayne Knudson</b>		Billing Information (if different from Report to) Company Name <b>XTO Energy</b>	
Phone # <b>970-488-1098</b>		Street Address <b>21459 CR 5</b>	
Sampler(s) Name(s) <b>DAVID SANDERSON</b>		Client Purchase Order # <b>1007-06</b>	
Project Manager <b>Joe Hess</b>		City <b>Rifle, CO 81650</b>	
Attendant <b>Jessica Dooling</b>		Matrix Codes	
Collection		Requested Analysis (see TEST CODE sheet)	
Date <b>9-18-12</b>		DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WIP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank	
Time <b>14:30</b>		LAB USE ONLY	
Sampled By <b>DS</b>		01	
Matrix <b>SO</b>		f 9/20	
# of bottles <b>5</b>			
ACID			
NaOH			
HNO3			
H2SO4			
NONE			
DI Water			
MEQH			
ENCORE			
Bottleable			
Field ID / Point of Collection <b>RP SUBLINEAR COMPOSITE</b>			
MEQHD / Val #			
Turnaround Time (Business Days)		Data Deliverable Information	
Approved By (Accutest PM): / Date:		Comments / Special Instructions	
<input type="checkbox"/> Std. 10 Business Days <input checked="" type="checkbox"/> Std. 8 Business Days (By contract only) <input type="checkbox"/> 3 Day Emergency <input type="checkbox"/> 2 Day Emergency <input type="checkbox"/> 1 Day Emergency		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> COMMBN <input type="checkbox"/> COMMBN+ <input type="checkbox"/> State Forms Required <input type="checkbox"/> Send Forms to State <input type="checkbox"/> Report by Fax <input checked="" type="checkbox"/> Report by PDF ONLY <input type="checkbox"/> EDO Format Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial BN = Results/QC/Narrative (+ = chromatograms)	
Emergency & Rush TJA data available VIA Lablink		Please email to: <b>KRW Piceance Team</b>	
Relinquished by Sampler: <b>1. Tor. Alvarado</b>		Received By: <b>2. [Signature]</b>	
Date Time: <b>9-19-12 14:30</b>		Date Time: <b>9-20-12 12:15</b>	
Relinquished by Sampler: <b>3</b>		Received By: <b>4</b>	
Date Time:		Date Time:	
Relinquished by: <b>5</b>		Received By:	
Date Time:		Date Time:	
Custody Seal # <b>ADCO</b>		Intact <input checked="" type="checkbox"/> Not Intact <input type="checkbox"/>	
Preserved where applicable <input type="checkbox"/>		On Ice <input type="checkbox"/> Cooler Temp. <b>2.0</b>	

D38939: Chain of Custody

Page 1 of 2

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D38939

Client: KRW CONSULTING

Immediate Client Services Action Required: No

Date / Time Received: 9/20/2012 12:15:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XTO PCU T78X-12G

Airbill #'s: HDCO

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

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

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

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

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

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

Comments

Accutest Laboratories  
V:(303) 425-6021

4036 Youngfield Street  
F: (303) 425-6854

Wheat Ridge, CO  
www.accutest.com

## GC/MS Volatiles

### QC Data Summaries

Includes the following where applicable:

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

**Method Blank Summary**

Page 1 of 1

**Job Number:** D38939  
**Account:** XTOKRWR XTO Energy  
**Project:** T78X-12G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V1202-MB	3V20608.D	1	09/20/12	BD	n/a	n/a	V3V1202

The QC reported here applies to the following samples:

Method: SW846 8260B

D38939-1

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	92% 64-130%
460-00-4	4-Bromofluorobenzene	100% 62-131%
17060-07-0	1,2-Dichloroethane-D4	91% 70-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D38939

**Account:** XTOKRWR XTO Energy

**Project:** T78X-12G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V1202-BS	3V20609.D	1	09/20/12	BD	n/a	n/a	V3V1202

The QC reported here applies to the following samples:

Method: SW846 8260B

D38939-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	44.7	89	70-130
100-41-4	Ethylbenzene	50	46.6	93	70-130
108-88-3	Toluene	50	44.4	89	70-130
1330-20-7	Xylene (total)	150	147	98	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	92%	64-130%
460-00-4	4-Bromofluorobenzene	104%	62-131%
17060-07-0	1,2-Dichloroethane-D4	91%	70-130%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D38939  
**Account:** XTOKRWR XTO Energy  
**Project:** T78X-12G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D38937-1MS	3V20611.D	1	09/21/12	BD	n/a	n/a	V3V1202
D38937-1MSD	3V20612.D	1	09/21/12	BD	n/a	n/a	V3V1202
D38937-1	3V20610.D	1	09/21/12	BD	n/a	n/a	V3V1202

The QC reported here applies to the following samples:

Method: SW846 8260B

D38939-1

CAS No.	Compound	D38937-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3130	2890	92	2890	92	0	64-139/30
100-41-4	Ethylbenzene	ND		3130	3020	96	3030	97	0	68-136/30
108-88-3	Toluene	85.7	J	3130	2750	85	2790	86	1	60-130/30
1330-20-7	Xylene (total)	156	J	9390	9520	100	9530	100	0	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D38937-1	Limits
2037-26-5	Toluene-D8	85%	86%	87%	64-130%
460-00-4	4-Bromofluorobenzene	112%	111%	107%	62-131%
17060-07-0	1,2-Dichloroethane-D4	86%	87%	89%	70-130%

\* = Outside of Control Limits.



GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3092012.S\  
Data File : 3V20614.D  
Acq On : 21 Sep 2012 2:35 am  
Operator : BRETD  
Sample : D38939-1  
Misc : MS4691,V3V1202,5.041,,100,5,1  
ALS Vial : 34 Sample Multiplier: 1

Quant Time: Sep 21 09:52:34 2012  
Quant Method : C:\msdchem\1\METHODS\V3AP1160TVH1160SOIL.M  
Quant Title : 8260  
QLast Update : Fri Aug 24 10:57:50 2012  
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.863	168	260364	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.659	114	395748	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.296	117	403141	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.289	152	239812	50.00	ug/l	0.00

System Monitoring Compounds						
33) 1,2-Dichloroethane-d4	12.251	102	25656	43.76	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	87.52%
61) Toluene-d8	14.054	98	457922	43.51	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	87.02%
69) 4-Bromofluorobenzene	16.246	95	219863	53.38	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	106.76%

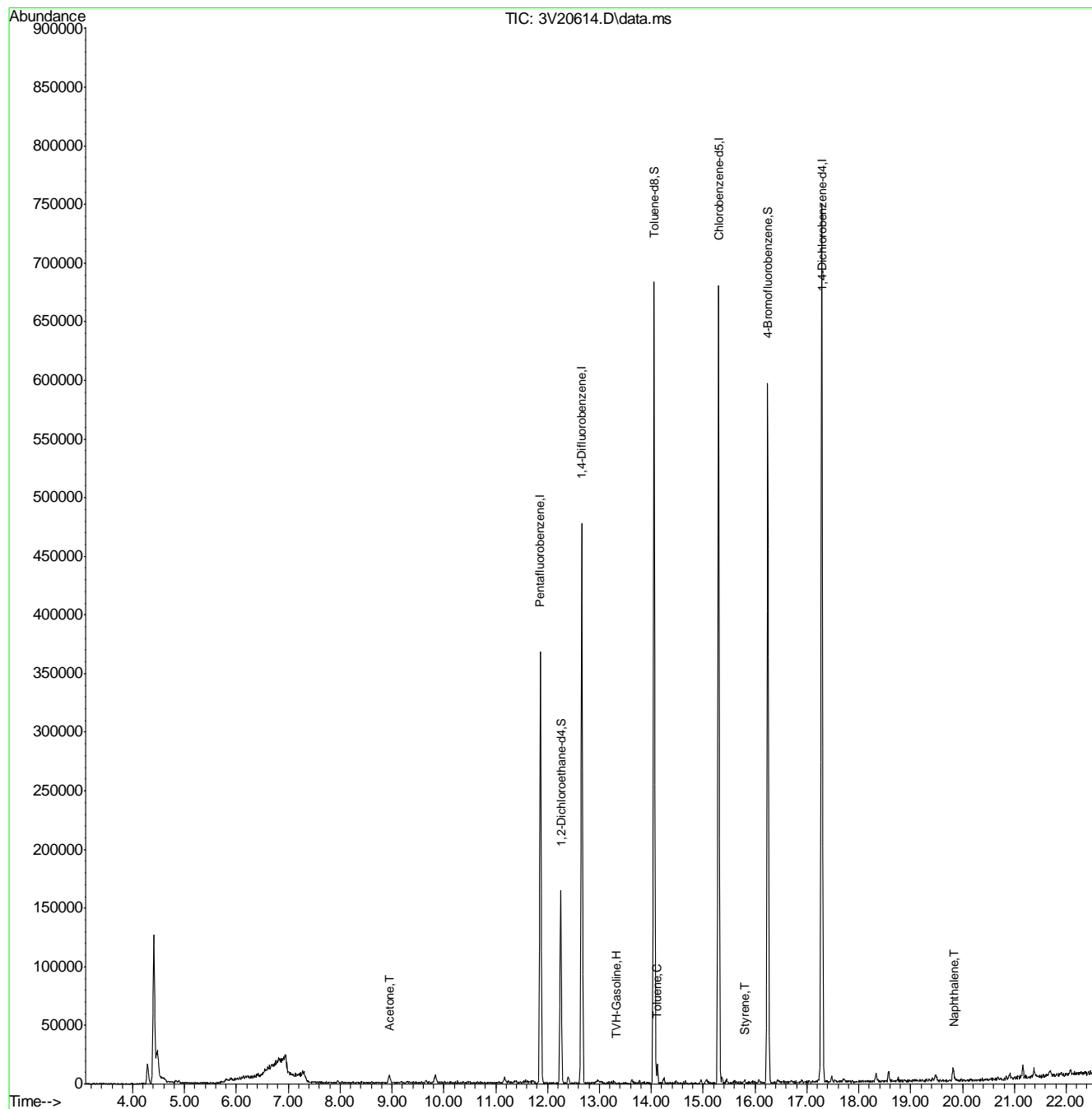
Target Compounds					Qvalue
1) TVH-Gasoline	13.329	TIC	66218m	2.33	ug/l
15) Acetone	8.943	58	2962	1.40	ug/l # 73
62) Toluene	14.115	92	3507	0.34	ug/l # 83
71) Styrene	15.794	104	197	0.23	ug/l 76
91) Naphthalene	19.840	128	4793	0.39	ug/l 100

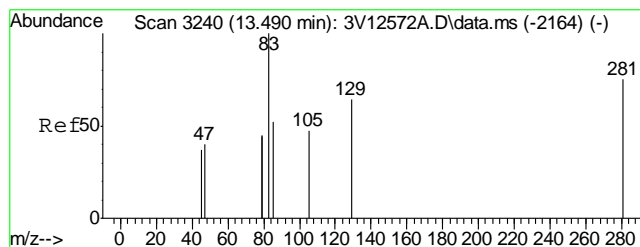
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3092012.S\  
Data File : 3V20614.D  
Acq On : 21 Sep 2012 2:35 am  
Operator : BRETD  
Sample : D38939-1  
Misc : MS4691,V3V1202,5.041,,100,5,1  
ALS Vial : 34 Sample Multiplier: 1

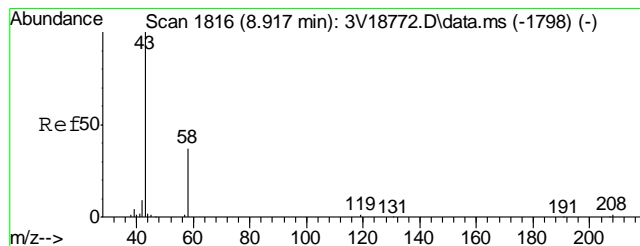
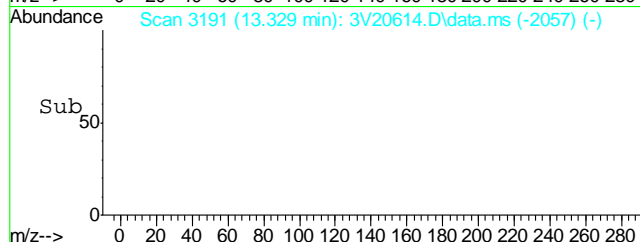
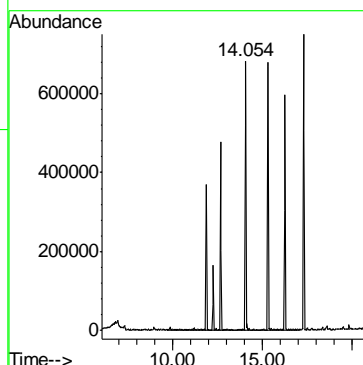
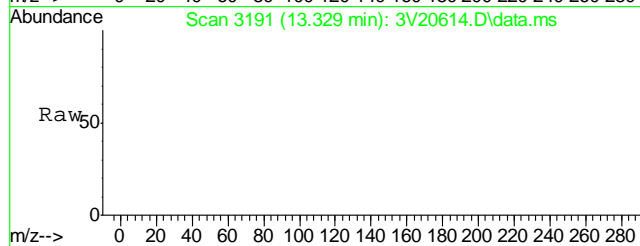
Quant Time: Sep 21 09:52:34 2012  
Quant Method : C:\msdchem\1\METHODS\V3AP1160TVH1160SOIL.M  
Quant Title : 8260  
QLast Update : Fri Aug 24 10:57:50 2012  
Response via : Initial Calibration





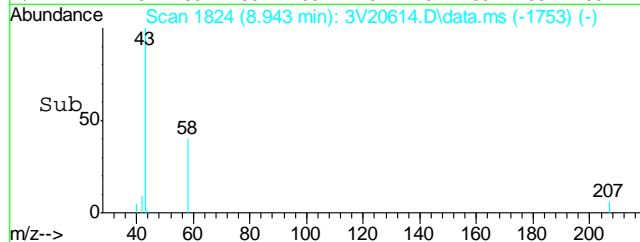
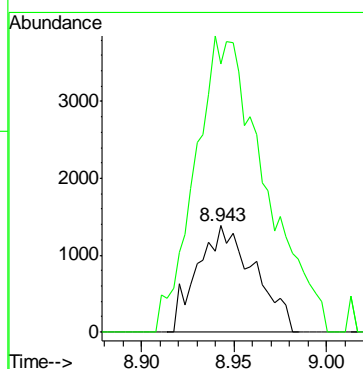
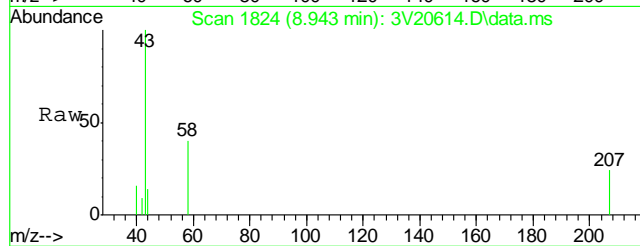
#1  
TVH-Gasoline  
Concen: 2.33 ug/l m  
RT: 13.329 min Scan# 3191  
Delta R.T. 0.000 min  
Lab File: 3V20614.D  
Acq: 21 Sep 2012 2:35 am

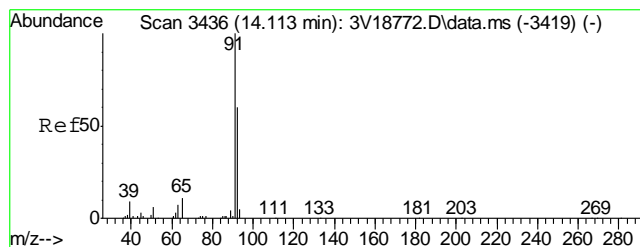
Tgt Ion:TIC Resp: 66218



#15  
Acetone  
Concen: 1.40 ug/l  
RT: 8.943 min Scan# 1824  
Delta R.T. 0.029 min  
Lab File: 3V20614.D  
Acq: 21 Sep 2012 2:35 am

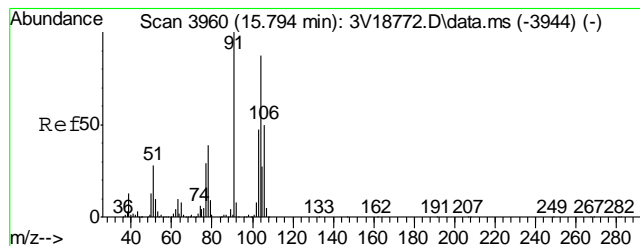
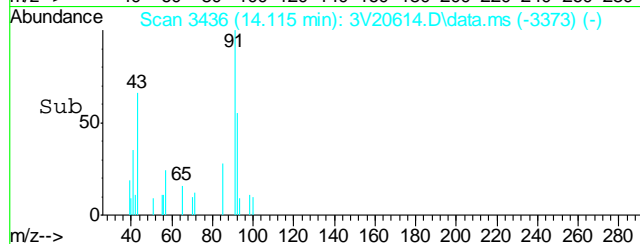
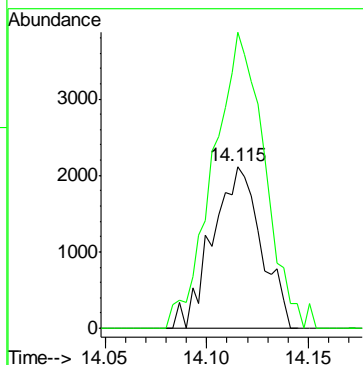
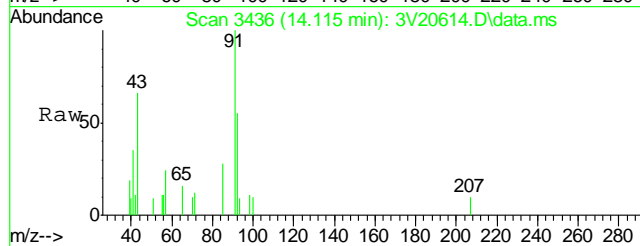
Tgt Ion: 58 Resp: 2962  
Ion Ratio Lower Upper  
58 100  
43 339.3 267.0 307.0#





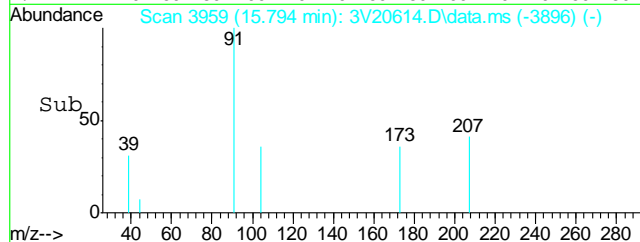
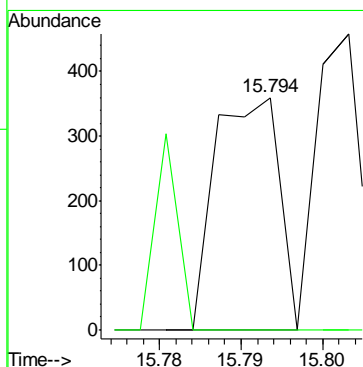
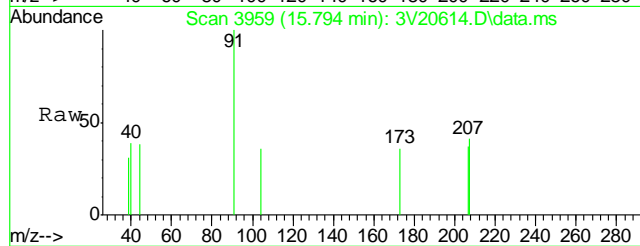
#62  
Toluene  
Concen: 0.34 ug/l  
RT: 14.115 min Scan# 3436  
Delta R.T. 0.003 min  
Lab File: 3V20614.D  
Acq: 21 Sep 2012 2:35 am

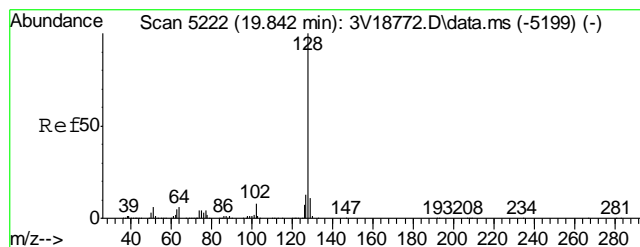
Tgt Ion: 92 Resp: 3507  
Ion Ratio Lower Upper  
92 100  
91 193.9 150.2 190.2#



#71  
Styrene  
Concen: 0.23 ug/l  
RT: 15.794 min Scan# 3959  
Delta R.T. 0.004 min  
Lab File: 3V20614.D  
Acq: 21 Sep 2012 2:35 am

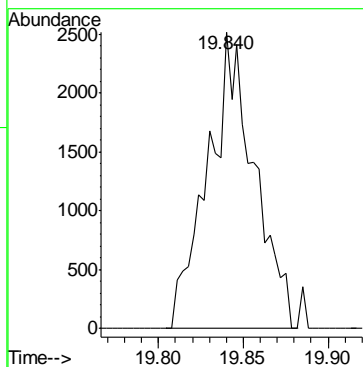
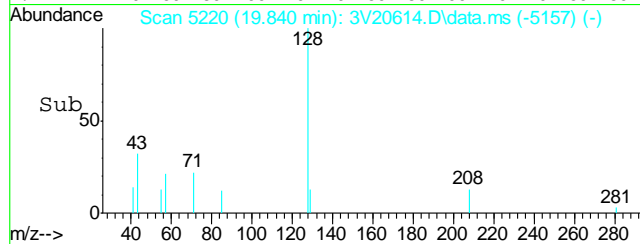
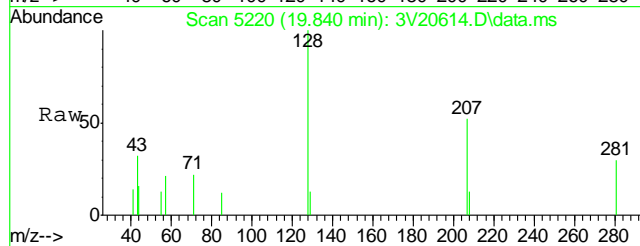
Tgt Ion: 104 Resp: 197  
Ion Ratio Lower Upper  
104 100  
78 29.9 25.4 65.4





#91  
Naphthalene  
Concen: 0.39 ug/l  
RT: 19.840 min Scan# 5220  
Delta R.T. 0.003 min  
Lab File: 3V20614.D  
Acq: 21 Sep 2012 2:35 am

Tgt Ion:128 Resp: 4793



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3092012.S\  
Data File : 3V20608.D  
Acq On : 20 Sep 2012 11:27 pm  
Operator : BRETD  
Sample : MB  
Misc : MS4691,V3V1202,5.00,,100,5,1  
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Sep 21 09:45:41 2012  
Quant Method : C:\msdchem\1\METHODS\V3AP1160TVH1160SOIL.M  
Quant Title : 8260  
QLast Update : Fri Aug 24 10:57:50 2012  
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.866	168	250434	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.659	114	381856	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.296	117	363216	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.286	152	203473	50.00	ug/l	0.00

## System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.254	102	25748	45.66	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	91.32%
61) Toluene-d8	14.054	98	434148	45.79	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	91.58%
69) 4-Bromofluorobenzene	16.246	95	185202	49.91	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	99.82%

## Target Compounds

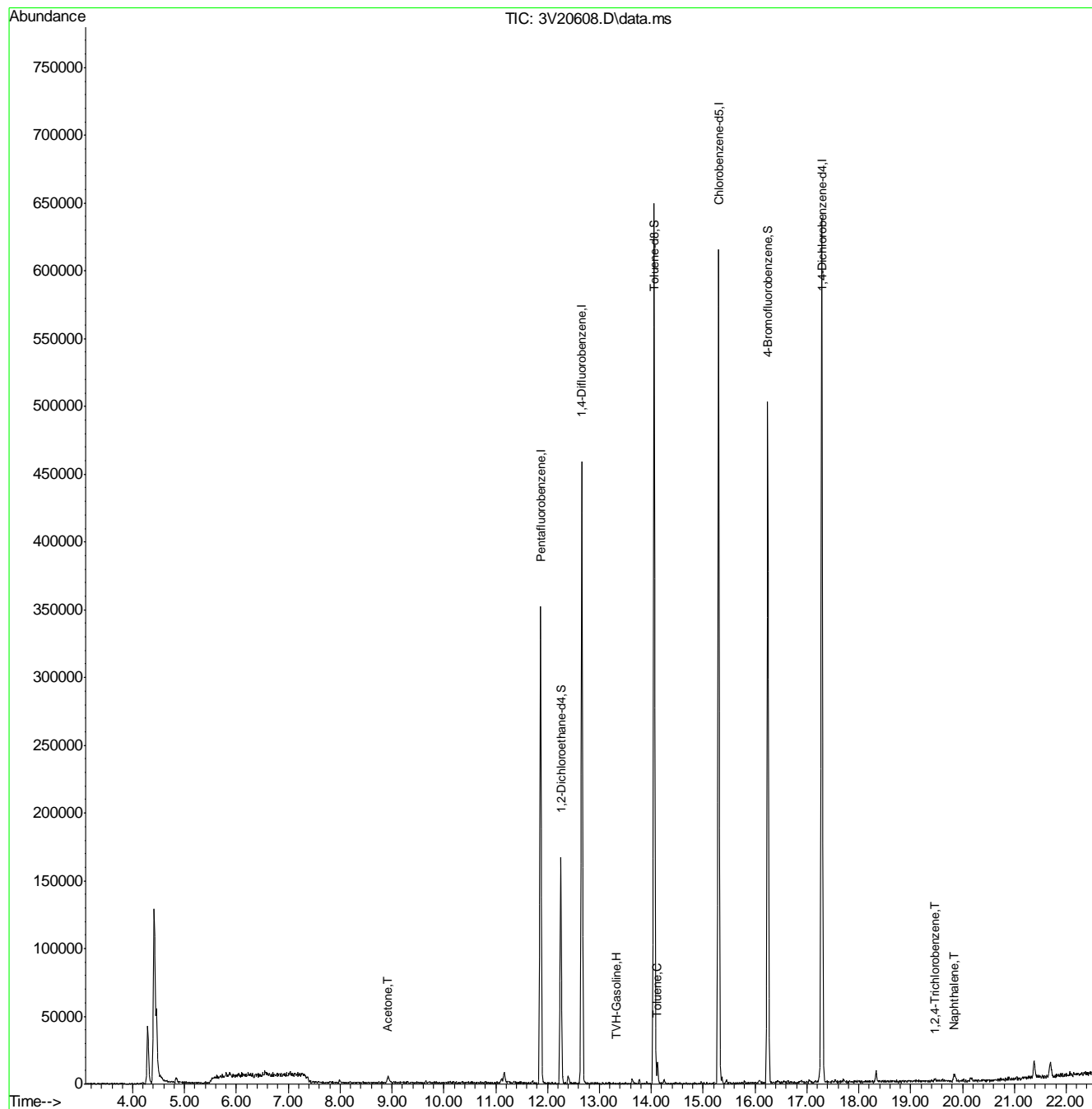
					Qvalue
1) TVH-Gasoline	13.329	TIC	6460m	0.23	ug/l
15) Acetone	8.924	58	2648	0.80	ug/l # 80
62) Toluene	14.115	92	3487	0.38	ug/l 100
90) 1,2,4-Trichlorobenzene	19.471	180	1322	0.29	ug/l # 87
91) Naphthalene	19.840	128	8748	0.84	ug/l 100

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

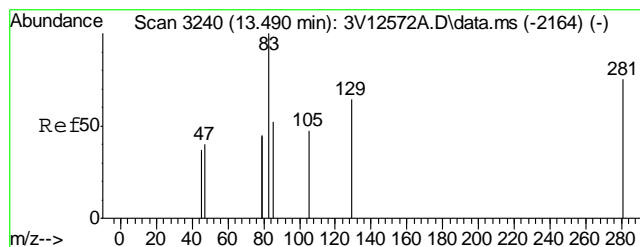
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3092012.S\  
Data File : 3V20608.D  
Acq On : 20 Sep 2012 11:27 pm  
Operator : BRETD  
Sample : MB  
Misc : MS4691,V3V1202,5.00,,100,5,1  
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Sep 21 09:45:41 2012  
Quant Method : C:\msdchem\1\METHODS\V3AP1160TVH1160SOIL.M  
Quant Title : 8260  
QLast Update : Fri Aug 24 10:57:50 2012  
Response via : Initial Calibration

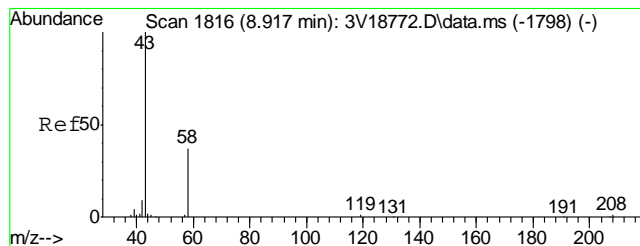
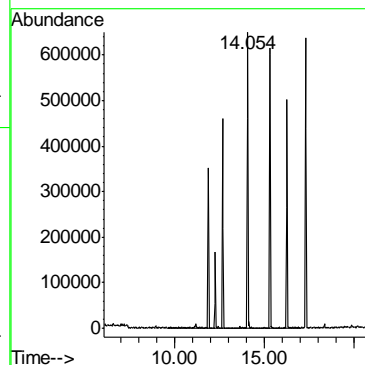
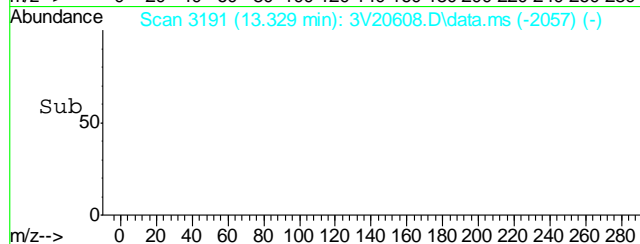
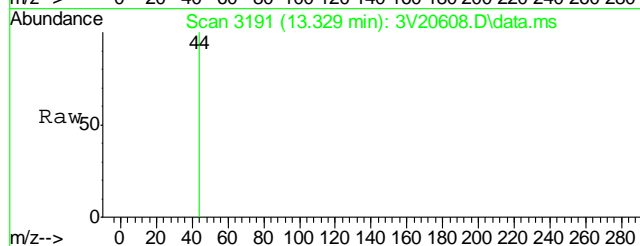






#1  
TVH-Gasoline  
Concen: 0.23 ug/l m  
RT: 13.329 min Scan# 3191  
Delta R.T. 0.000 min  
Lab File: 3V20608.D  
Acq: 20 Sep 2012 11:27 pm

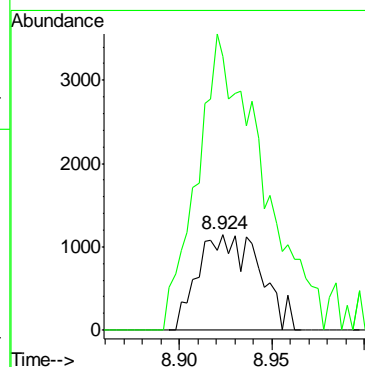
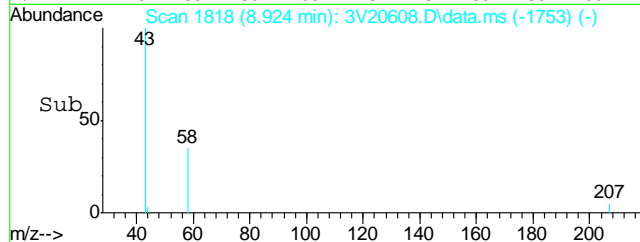
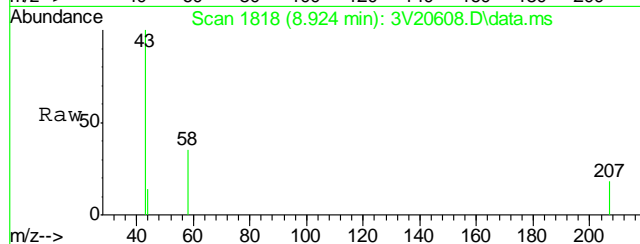
Tgt Ion:TIC Resp: 6460

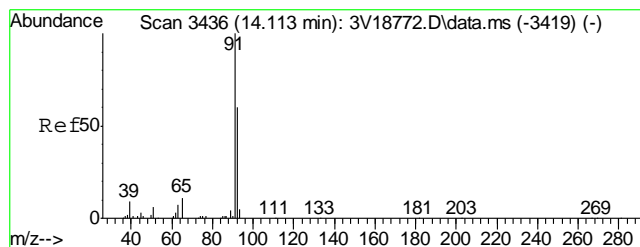


#15  
Acetone  
Concen: 0.80 ug/l  
RT: 8.924 min Scan# 1818  
Delta R.T. 0.010 min  
Lab File: 3V20608.D  
Acq: 20 Sep 2012 11:27 pm

Tgt Ion: 58 Resp: 2648

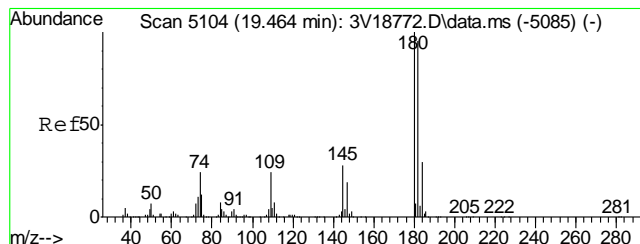
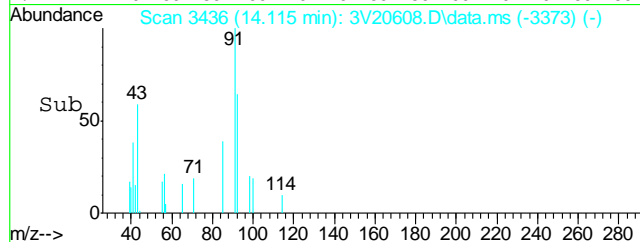
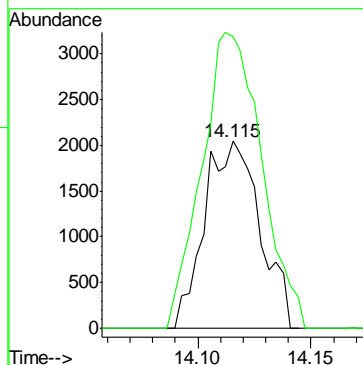
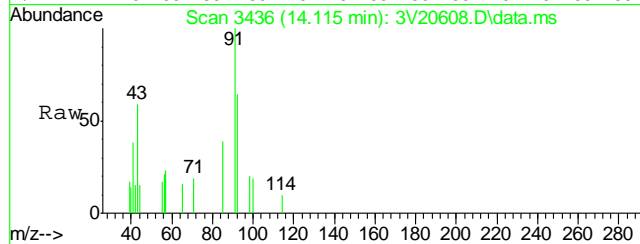
Ion	Ratio	Lower	Upper
58	100		
43	325.6	267.0	307.0#





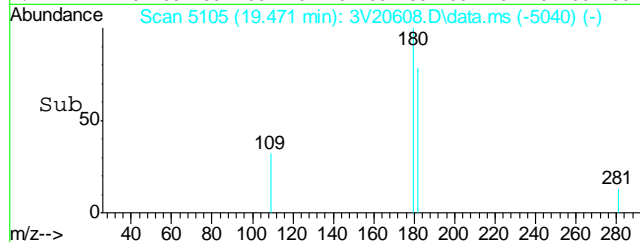
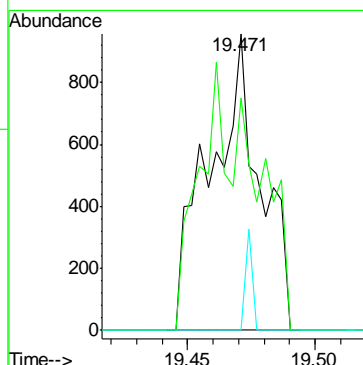
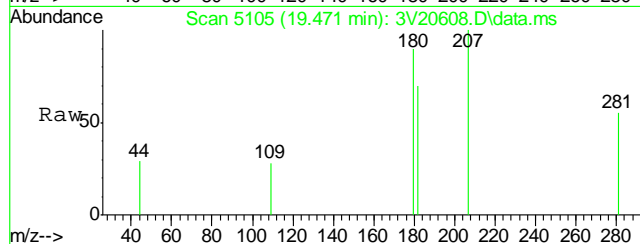
#62  
Toluene  
Concen: 0.38 ug/l  
RT: 14.115 min Scan# 3436  
Delta R.T. 0.003 min  
Lab File: 3V20608.D  
Acq: 20 Sep 2012 11:27 pm

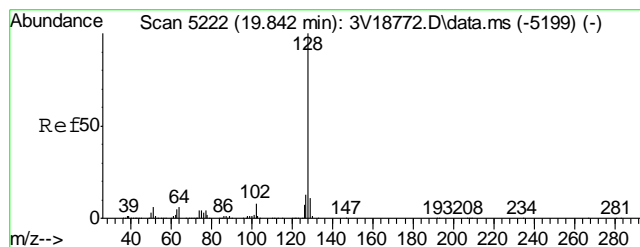
Tgt Ion: 92 Resp: 3487  
Ion Ratio Lower Upper  
92 100  
91 170.7 150.2 190.2



#90  
1,2,4-Trichlorobenzene  
Concen: 0.29 ug/l  
RT: 19.471 min Scan# 5105  
Delta R.T. 0.009 min  
Lab File: 3V20608.D  
Acq: 20 Sep 2012 11:27 pm

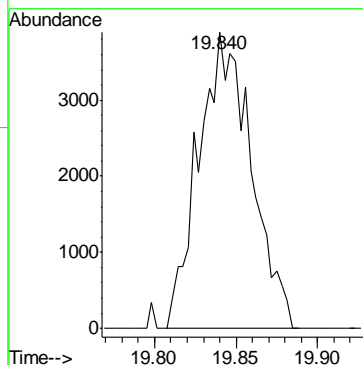
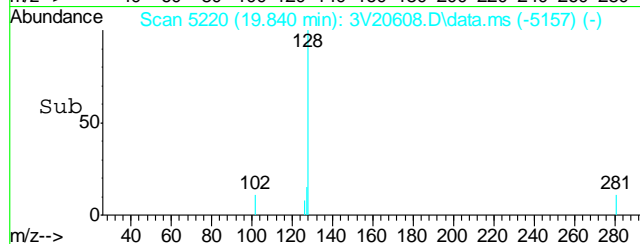
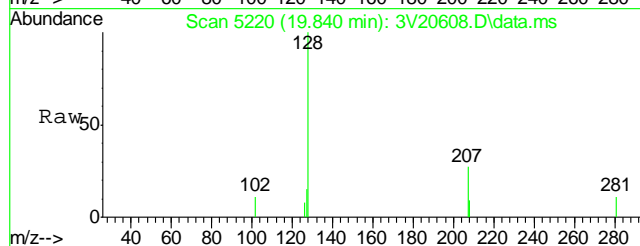
Tgt Ion: 180 Resp: 1322  
Ion Ratio Lower Upper  
180 100  
182 99.4 76.4 114.6  
145 4.8 22.9 34.3#





#91  
Naphthalene  
Concen: 0.84 ug/l  
RT: 19.840 min Scan# 5220  
Delta R.T. 0.003 min  
Lab File: 3V20608.D  
Acq: 20 Sep 2012 11:27 pm

Tgt Ion:128 Resp: 8748



## 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:** D38939  
**Account:** XTOKRWR XTO Energy  
**Project:** T78X-12G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6679-MB	3G11337.D	1	09/21/12	DC	09/21/12	OP6679	E3G529

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D38939-1

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

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	91% 10-145%
321-60-8	2-Fluorobiphenyl	94% 10-130%
1718-51-0	Terphenyl-d14	101% 22-130%

8.1.1

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## Blank Spike Summary

Page 1 of 1

**Job Number:** D38939  
**Account:** XTOKRWR XTO Energy  
**Project:** T78X-12G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6679-BS	3G11338.D	1	09/21/12	DC	09/21/12	OP6679	E3G529

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D38939-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	82.8	99	34-130
120-12-7	Anthracene	83.3	87.0	104	35-130
56-55-3	Benzo(a)anthracene	83.3	69.2	83	36-130
50-32-8	Benzo(a)pyrene	83.3	70.6	85	36-130
205-99-2	Benzo(b)fluoranthene	83.3	55.2	66	35-130
207-08-9	Benzo(k)fluoranthene	83.3	88.2	106	37-130
218-01-9	Chrysene	83.3	86.4	104	40-130
53-70-3	Dibenzo(a,h)anthracene	83.3	75.0	90	32-130
206-44-0	Fluoranthene	83.3	78.6	94	38-130
86-73-7	Fluorene	83.3	78.4	94	35-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	74.2	89	28-130
91-20-3	Naphthalene	83.3	86.6	104	35-130
129-00-0	Pyrene	83.3	81.0	97	37-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	93%	10-145%
321-60-8	2-Fluorobiphenyl	94%	10-130%
1718-51-0	Terphenyl-d14	97%	22-130%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D38939  
**Account:** XTOKRWR XTO Energy  
**Project:** T78X-12G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6679-MS	3G11340.D	1	09/21/12	DC	09/21/12	OP6679	E3G529
OP6679-MSD	3G11341.D	1	09/21/12	DC	09/21/12	OP6679	E3G529
D38939-1	3G11339.D	1	09/21/12	DC	09/21/12	OP6679	E3G529

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D38939-1

CAS No.	Compound	D38939-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		89.8	73.1	81	64.3	72	13	10-155/30
120-12-7	Anthracene	ND		89.8	84.6	94	85.1	95	1	10-155/30
56-55-3	Benzo(a)anthracene	ND		89.8	74.2	83	79.2	88	7	10-175/30
50-32-8	Benzo(a)pyrene	ND		89.8	70.9	79	74.0	83	4	10-164/30
205-99-2	Benzo(b)fluoranthene	ND		89.8	59.8	67	65.3	73	9	10-165/30
207-08-9	Benzo(k)fluoranthene	ND		89.8	81.5	91	84.9	95	4	10-178/30
218-01-9	Chrysene	ND		89.8	83.7	93	86.7	97	4	10-147/30
53-70-3	Dibenzo(a,h)anthracene	ND		89.8	67.9	76	66.9	75	1	10-144/30
206-44-0	Fluoranthene	ND		89.8	82.5	92	87.3	97	6	10-207/30
86-73-7	Fluorene	ND		89.8	79.9	89	72.7	81	9	10-163/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		89.8	67.2	75	66.4	74	1	10-180/30
91-20-3	Naphthalene	ND		89.8	77.9	87	55.3	62	34* a	10-198/30
129-00-0	Pyrene	ND		89.8	84.2	94	88.5	99	5	10-189/30

CAS No.	Surrogate Recoveries	MS	MSD	D38939-1	Limits
4165-60-0	Nitrobenzene-d5	67%	51%	59%	10-145%
321-60-8	2-Fluorobiphenyl	68%	59%	63%	10-130%
1718-51-0	Terphenyl-d14	75%	82%	74%	22-130%

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

\* = Outside of Control Limits.

GC/MS Semi-volatiles

Raw Data

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## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\092112\  
 Data File : 3g11339.D  
 Acq On : 21 Sep 2012 2:32 pm  
 Operator : DONC  
 Sample : D38939-1  
 Misc : OP6679,E3G529,30.09,,,1,1  
 ALS Vial : 6 Sample Multiplier: 1

Quant Time: Sep 24 10:38:33 2012  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G511.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Thu Sep 06 09:42:23 2012  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.922	136	186993	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.640	164	117269	4.0000	ug/mL	0.00
15) Phenanthrene-d10	9.121	188	198798	4.0000	ug/mL	0.00
19) Chrysene-d12	11.753	240	179581	4.0000	ug/mL	0.00
24) Perylene-d12	13.188	264	115722	4.0000	ug/mL	0.01

## System Monitoring Compounds

2) Nitrobenzene-d5	5.223	82	543569	29.5454	ug/mL	0.00
Spiked Amount 50.000	Range	25 - 135	Recovery	=	59.10%	
7) 2-Fluorobiphenyl	6.966	172	1542530	31.6216	ug/mL	0.00
Spiked Amount 50.000	Range	25 - 135	Recovery	=	63.24%	
21) Terphenyl-d14	10.704	244	1006501	37.1974	ug/mL	0.00
Spiked Amount 50.000	Range	25 - 135	Recovery	=	74.40%	

## Target Compounds

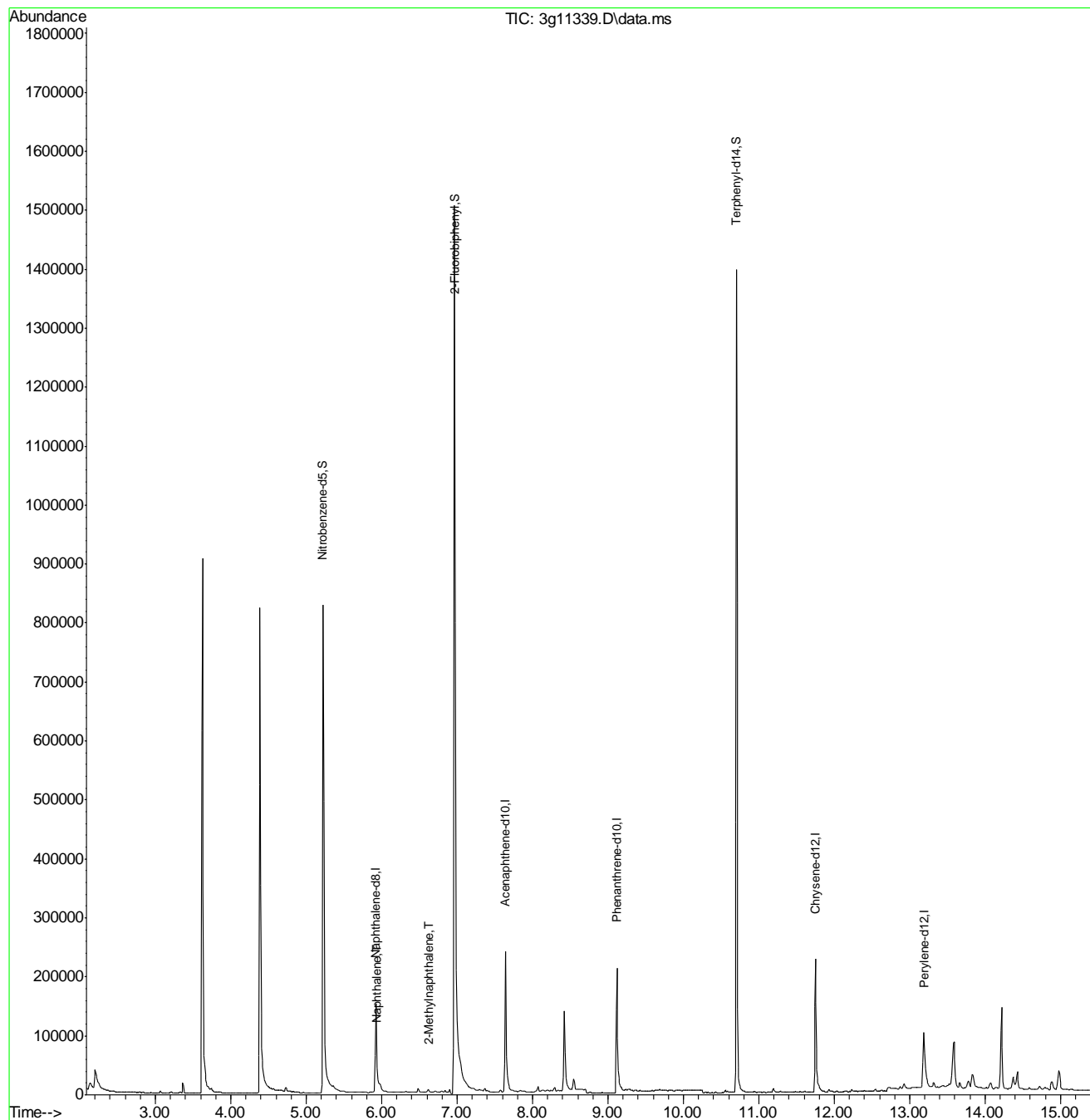
					Qvalue
3) N-Nitrosodimethylamine	2.843	74	89	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D. d	
5) Naphthalene	5.934	128	2827	0.0543	ug/mL 85
8) 2-Methylnaphthalene	6.620	142	3574	0.1031	ug/mL 95
9) 1-Methylnaphthalene	6.719	142	1547	N.D.	
10) Acenaphthylene	7.498	152	106	N.D.	
11) Acenaphthene	7.994	154	192	N.D.	
12) Dibenzofuran	7.840	168	929	N.D.	
13) Fluorene	8.183	166	1213	N.D.	
14) Diphenylamine	0.000	169	0	N.D. d	
16) Phenanthrene	0.000	178	0	N.D. d	
17) Anthracene	9.232	178	597	N.D.	
18) Fluoranthene	10.332	202	1428	N.D.	
20) Pyrene	10.553	202	3280	N.D.	
22) Benzo(a)anthracene	11.759	228	2749	N.D.	
23) Chrysene	11.759	228	2749	N.D.	
25) Benzo(b)fluoranthene	12.778	252	1156	N.D.	
26) Benzo(k)fluoranthene	12.778	252	1156	N.D.	
27) Benzo(a)pyrene	13.073	252	731	N.D.	
28) Indeno(1,2,3-cd)pyrene	14.503	276	337	N.D.	
29) Dibenz(a,h)anthracene	14.545	278	187	N.D.	
30) Benzo(g,h,i)perylene	14.892	276	446	N.D.	

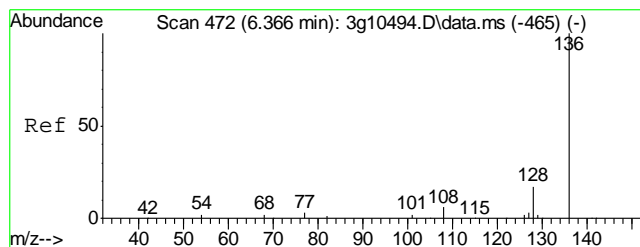
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\092112\  
Data File : 3g11339.D  
Acq On : 21 Sep 2012 2:32 pm  
Operator : DONC  
Sample : D38939-1  
Misc : OP6679,E3G529,30.09,,,1,1  
ALS Vial : 6 Sample Multiplier: 1

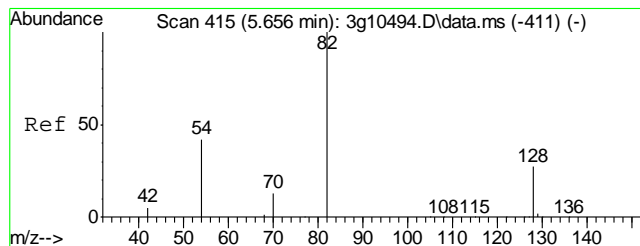
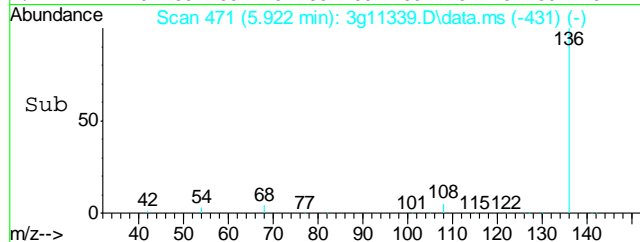
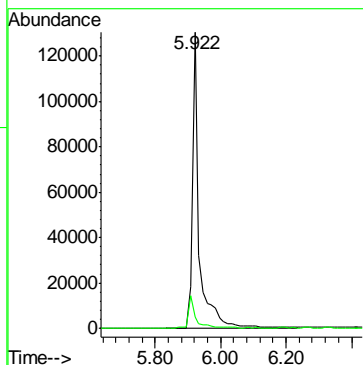
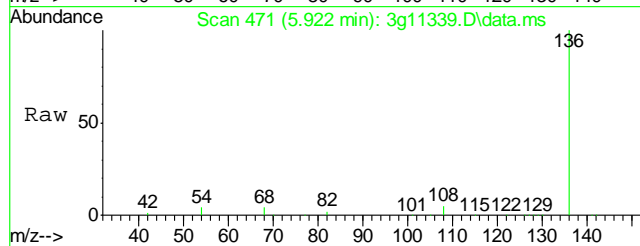
Quant Time: Sep 24 10:38:33 2012  
Quant Method : C:\msdchem\1\METHODS\SIMPE3G511.M  
Quant Title : PAHSIM BASE  
QLast Update : Thu Sep 06 09:42:23 2012  
Response via : Initial Calibration





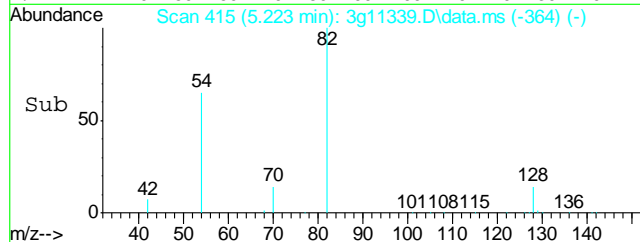
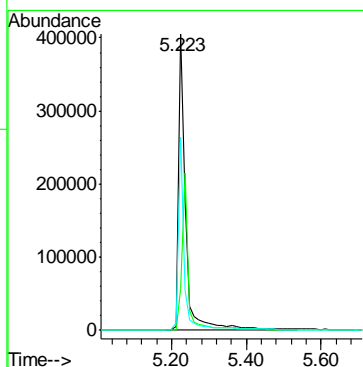
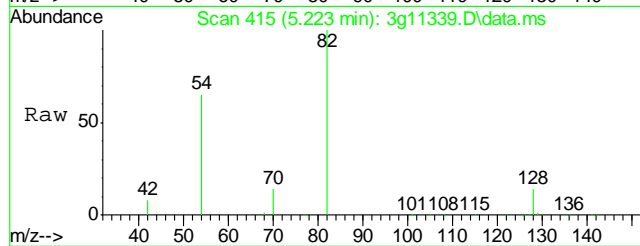
#1  
Naphthalene-d8  
Concen: 4.0000 ug/mL  
RT: 5.922 min Scan# 471  
Delta R.T. -0.000 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

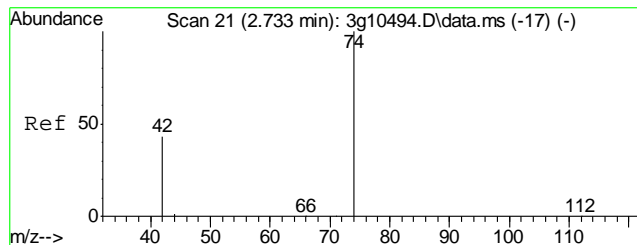
Tgt Ion: 136 Resp: 186993  
Ion Ratio Lower Upper  
136 100  
68 11.2 0.0 30.4



#2  
Nitrobenzene-d5  
Concen: 29.5454 ug/mL  
RT: 5.223 min Scan# 415  
Delta R.T. 0.000 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

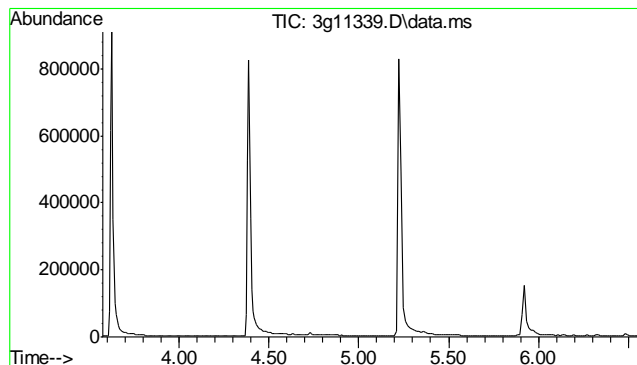
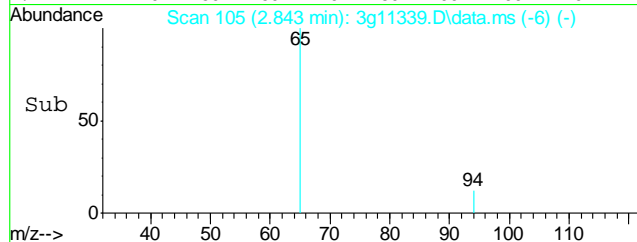
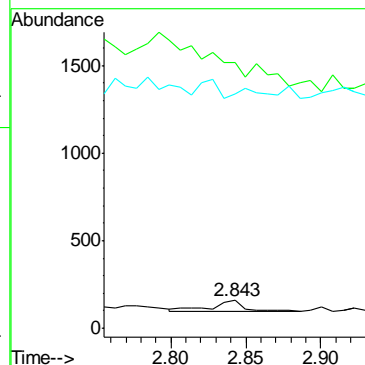
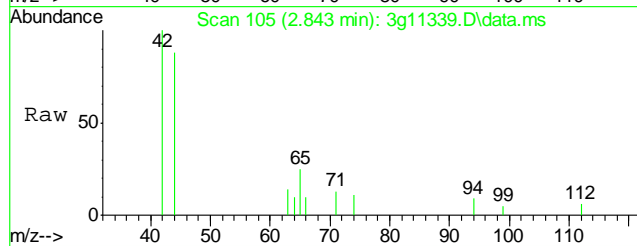
Tgt Ion: 82 Resp: 543569  
Ion Ratio Lower Upper  
82 100  
128 49.8 19.7 59.7  
54 54.8 28.6 68.6





#3  
N-Nitrosodimethylamine  
Concen: Below ug/mL  
RT: 2.843 min Scan# 105  
Delta R.T. 0.218 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

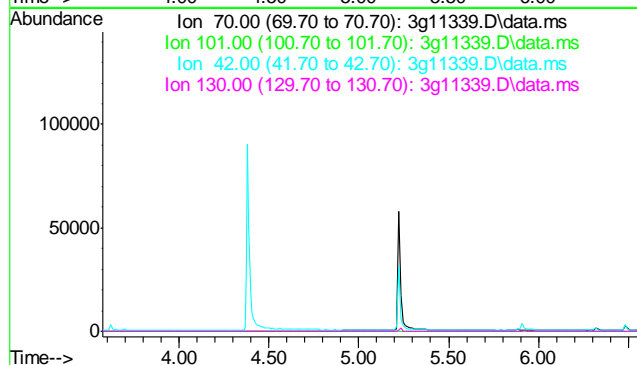
Tgt Ion: 74 Resp: 89  
Ion Ratio Lower Upper  
74 100  
42 0.0 33.3 73.3#  
44 0.0 0.0 23.5

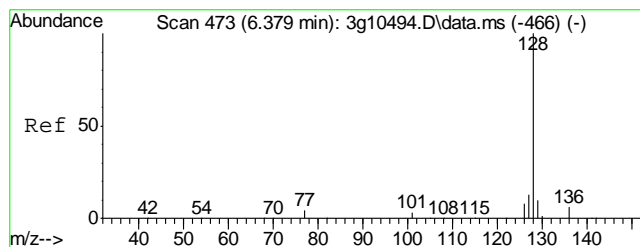


#4  
N-Nitrosodi-propylamine  
Concen: N.D. ug/mL  
Expected RT: 5.07 min

Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

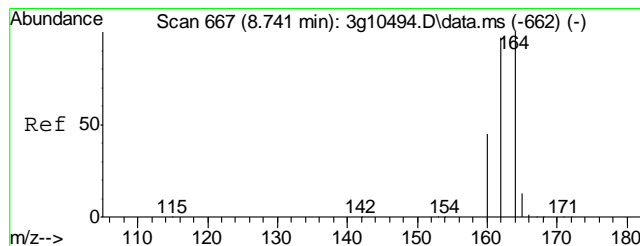
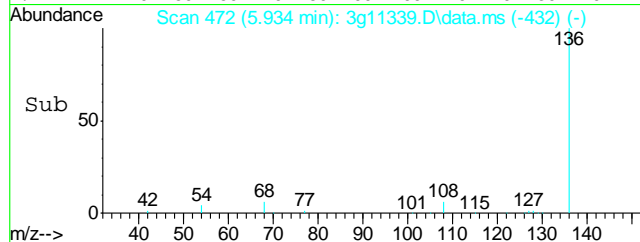
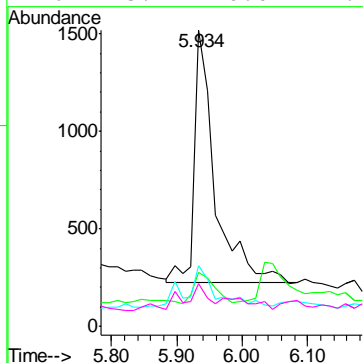
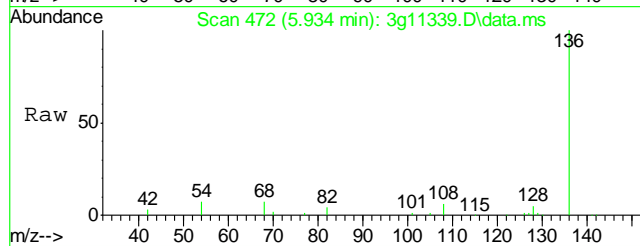
Tgt Ion: 70  
Sig Exp Ratio  
70 100  
101 10.3  
42 47.6  
130 20.0





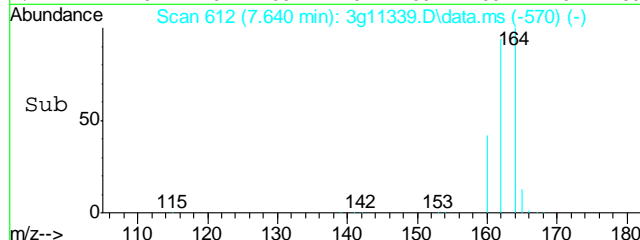
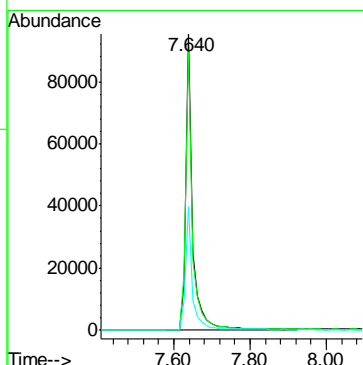
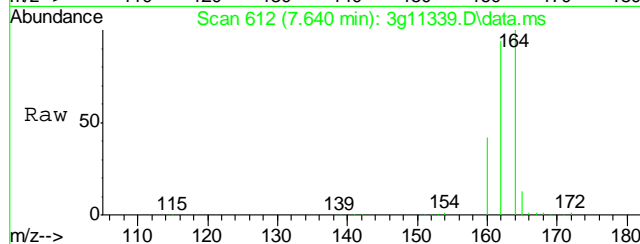
#5  
Naphthalene  
Concen: 0.0543 ug/mL  
RT: 5.934 min Scan# 472  
Delta R.T. -0.000 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

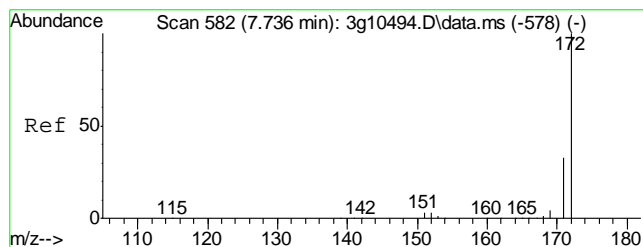
Tgt Ion	Ratio	Lower	Upper
128	100		
129	11.9	0.0	30.8
127	23.2	0.0	33.4
126	13.2	0.0	27.7



#6  
Acenaphthene-d10  
Concen: 4.0000 ug/mL  
RT: 7.640 min Scan# 612  
Delta R.T. -0.000 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

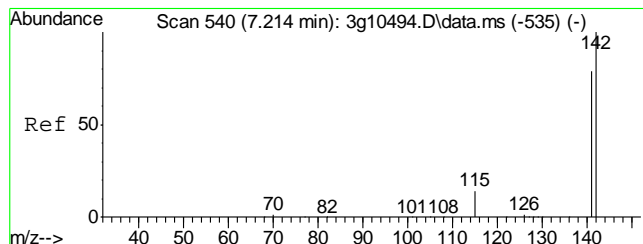
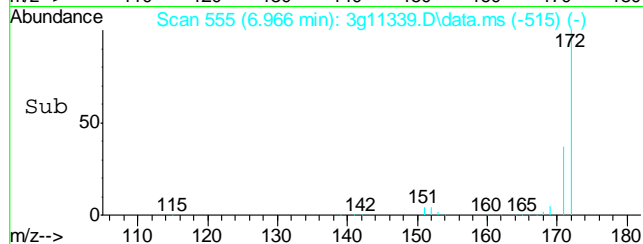
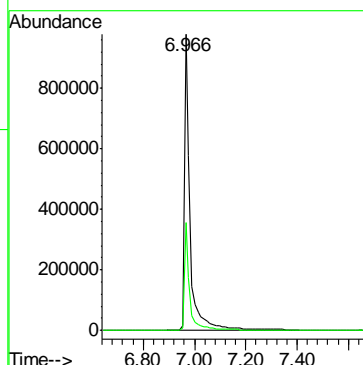
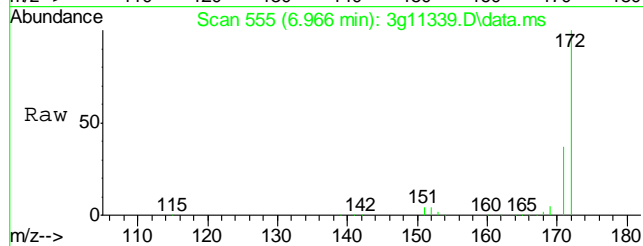
Tgt Ion	Ratio	Lower	Upper
164	100		
162	96.5	73.5	113.5
160	42.9	21.8	61.8





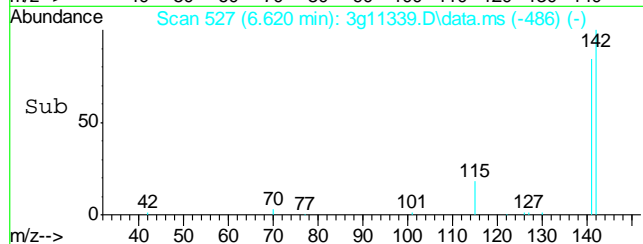
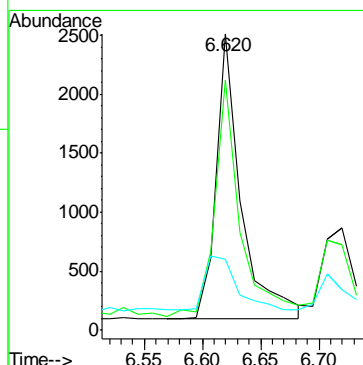
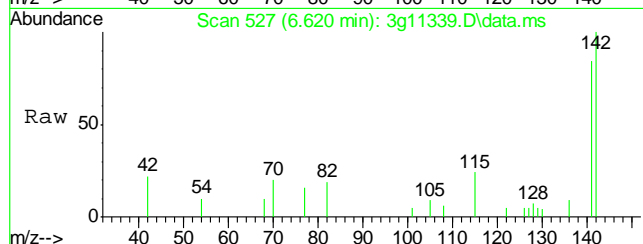
#7  
2-Fluorobiphenyl  
Concen: 31.6216 ug/mL  
RT: 6.966 min Scan# 555  
Delta R.T. -0.000 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

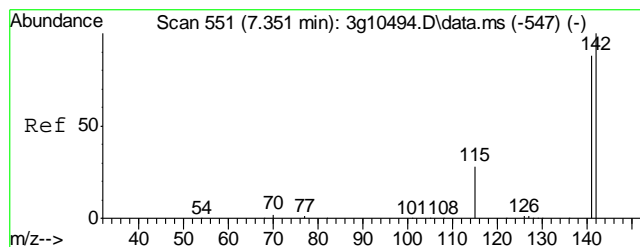
Tgt Ion: 172 Resp: 1542530  
Ion Ratio Lower Upper  
172 100  
171 33.9 13.6 53.6



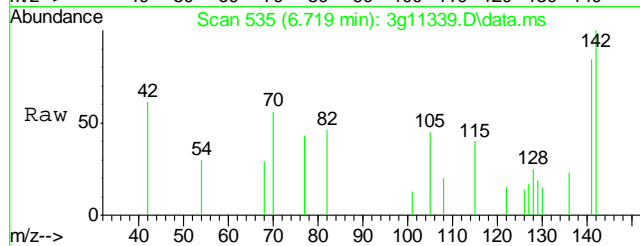
#8  
2-Methylnaphthalene  
Concen: 0.1031 ug/mL  
RT: 6.620 min Scan# 527  
Delta R.T. 0.012 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

Tgt Ion: 142 Resp: 3574  
Ion Ratio Lower Upper  
142 100  
141 84.6 64.5 104.5  
115 23.8 13.6 53.6

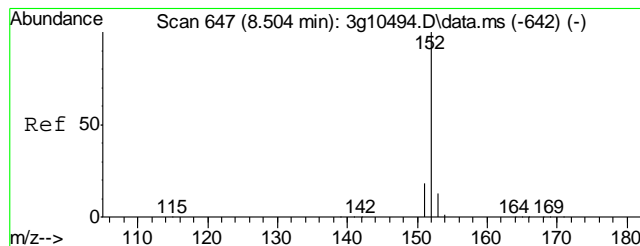
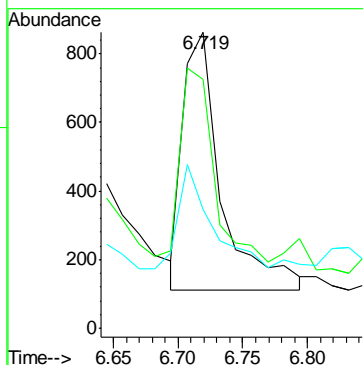
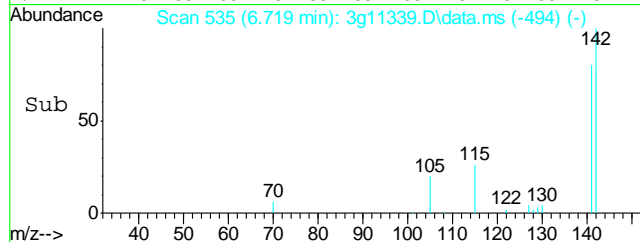




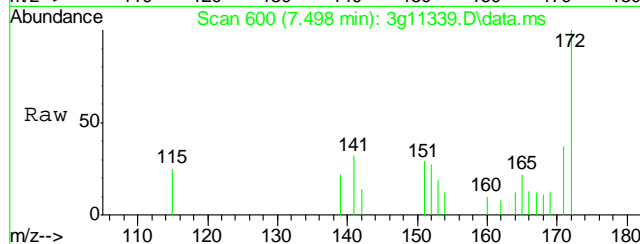
#9  
1-Methylnaphthalene  
Concen: Below ug/mL m  
RT: 6.719 min Scan# 535  
Delta R.T. 0.012 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm



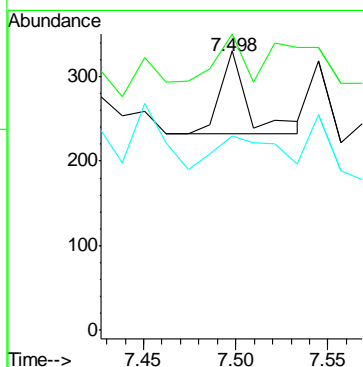
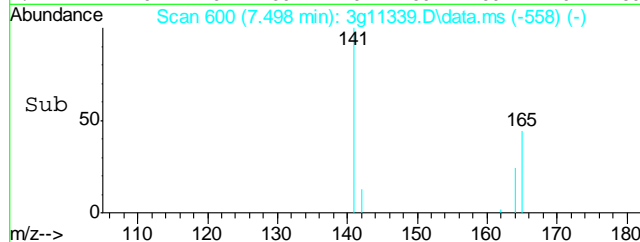
Tgt Ion:142 Resp: 1547  
Ion Ratio Lower Upper  
142 100  
141 195.5 67.8 107.8#  
115 54.9 11.0 51.0#

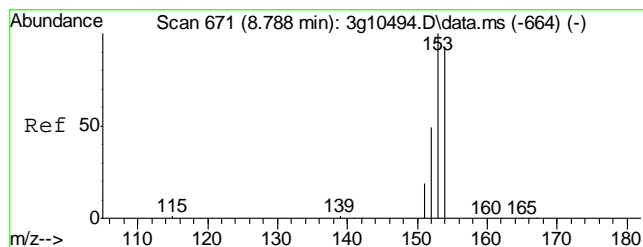


#10  
Acenaphthylene  
Concen: Below ug/mL  
RT: 7.498 min Scan# 600  
Delta R.T. -0.000 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm



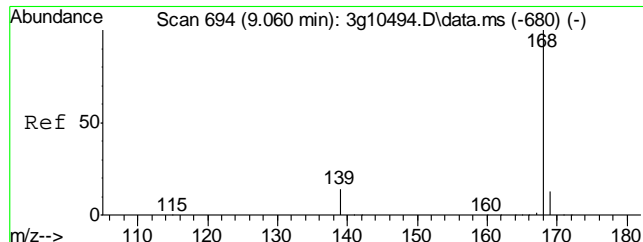
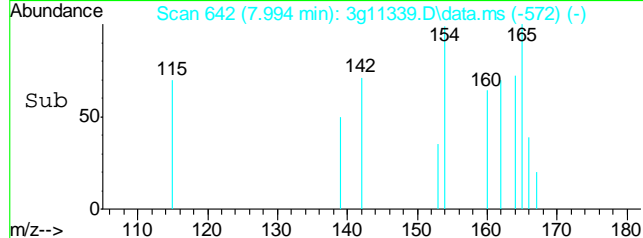
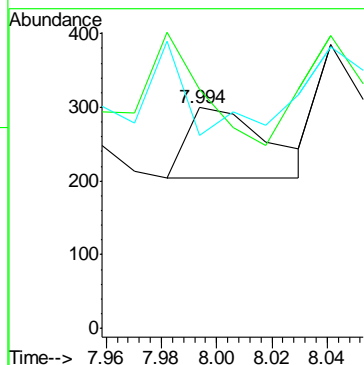
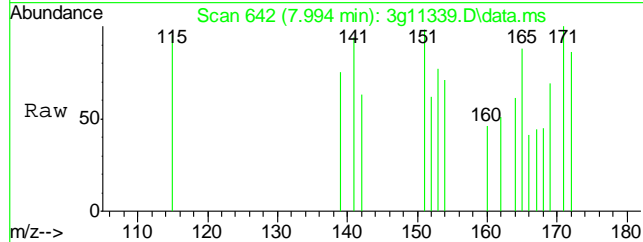
Tgt Ion:152 Resp: 106  
Ion Ratio Lower Upper  
152 100  
151 0.0 0.0 39.2  
153 85.8 0.0 33.2#





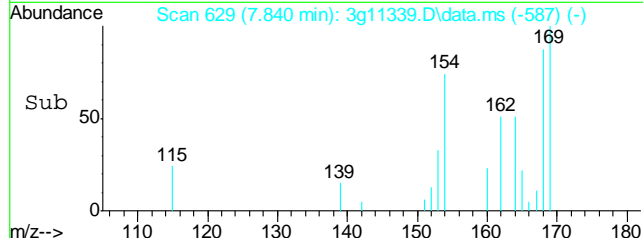
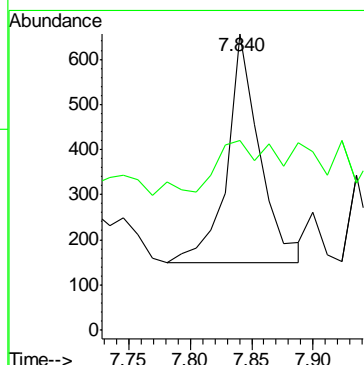
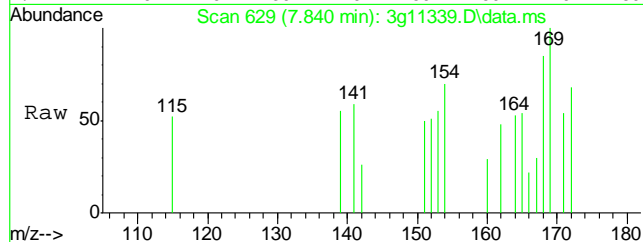
#11  
Acenaphthene  
Concen: Below ug/mL  
RT: 7.994 min Scan# 642  
Delta R.T. 0.331 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

Tgt Ion	Ratio	Lower	Upper
154	100		
153	94.8	84.8	124.8
152	44.8	29.9	69.9

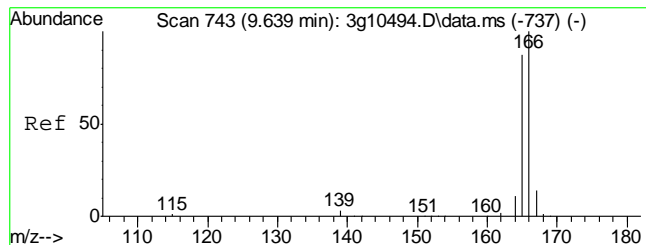


#12  
Dibenzofuran  
Concen: Below ug/mL  
RT: 7.840 min Scan# 629  
Delta R.T. -0.000 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

Tgt Ion	Ratio	Lower	Upper
168	100		
139	24.8	7.6	47.6

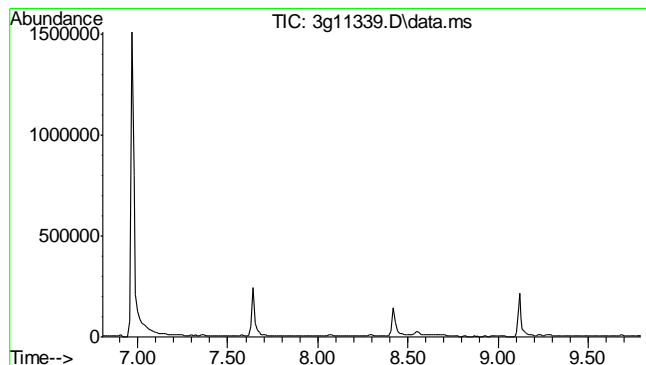
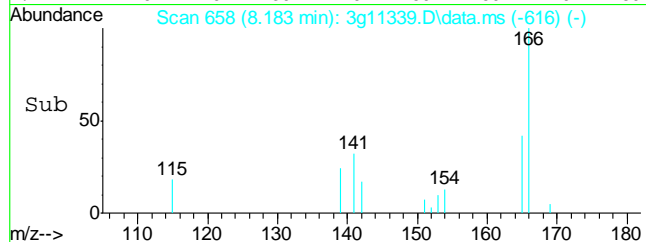
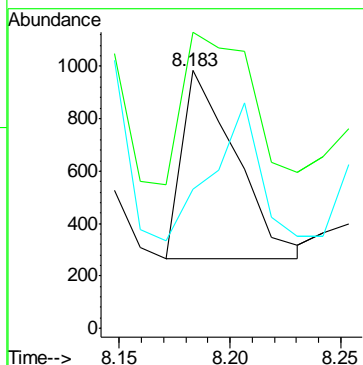
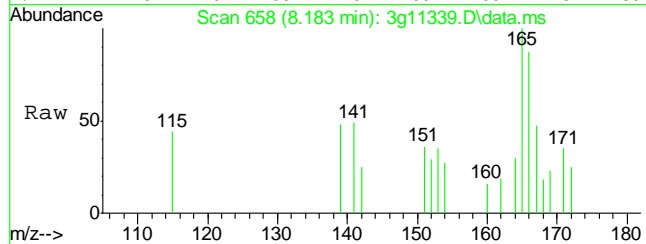






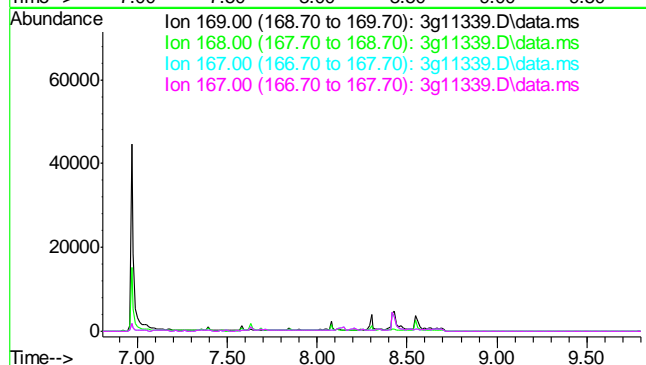
#13  
Fluorene  
Concen: Below ug/mL  
RT: 8.183 min Scan# 658  
Delta R.T. -0.000 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

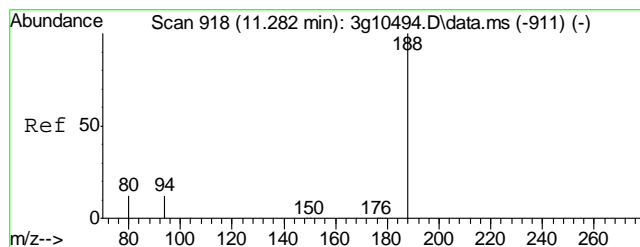
Tgt Ion: 166 Resp: 1213  
Ion Ratio Lower Upper  
166 100  
165 131.9 71.1 111.1#  
167 86.0 0.0 33.3#



#14  
Diphenylamine  
Concen: N.D. ug/mL  
Expected RT: 8.30 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

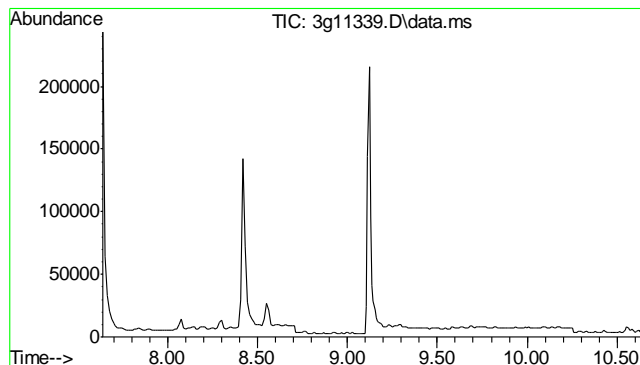
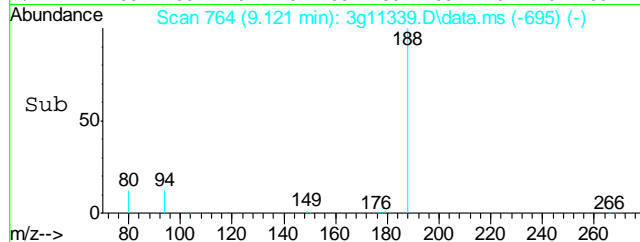
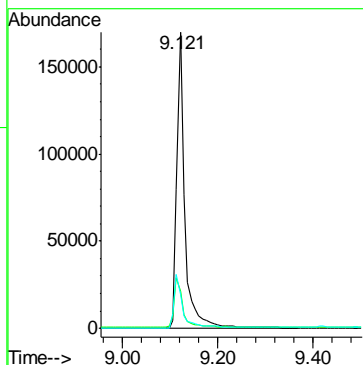
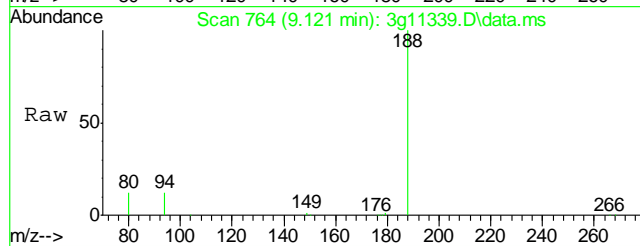
Tgt Ion: 169  
Sig Exp Ratio  
169 100  
168 61.0  
167 32.9  
167 32.9





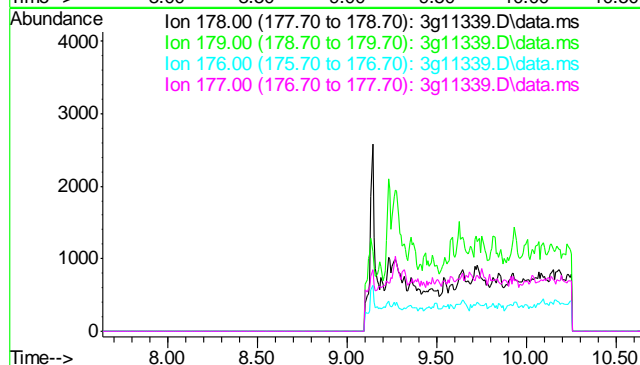
#15  
Phenanthrene-d10  
Concen: 4.0000 ug/mL  
RT: 9.121 min Scan# 764  
Delta R.T. -0.000 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

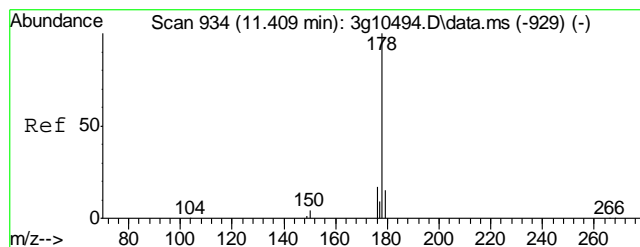
Tgt Ion: 188	Resp: 198798
Ion Ratio	Lower Upper
188	100
94	17.2 0.0 33.9
80	21.1 0.0 35.5



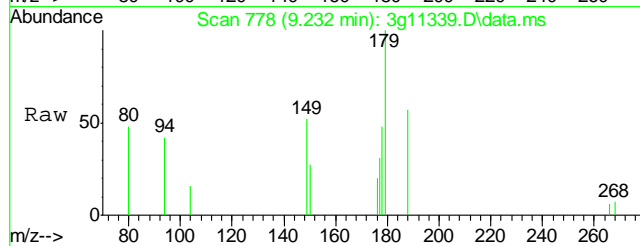
#16  
Phenanthrene  
Concen: N.D. ug/mL  
Expected RT: 9.14 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

Tgt Ion: 178	
Sig	Exp Ratio
178	100
179	15.3
176	18.5
177	10.5

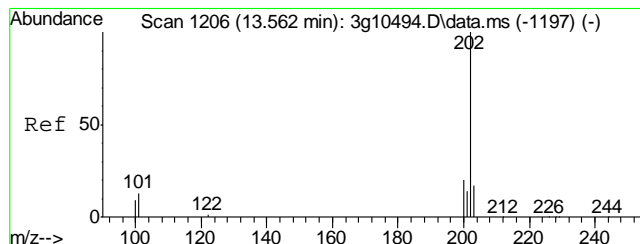
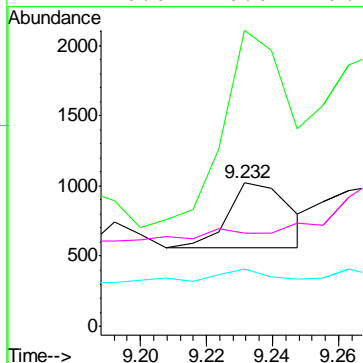
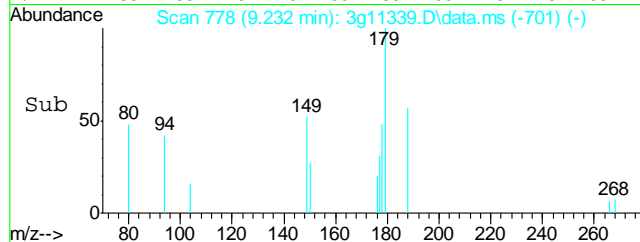




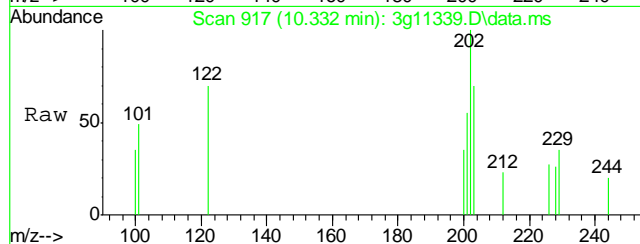
#17  
 Anthracene  
 Concen: Below ug/mL  
 RT: 9.232 min Scan# 778  
 Delta R.T. 0.039 min  
 Lab File: 3g11339.D  
 Acq: 21 Sep 12 2:32 pm



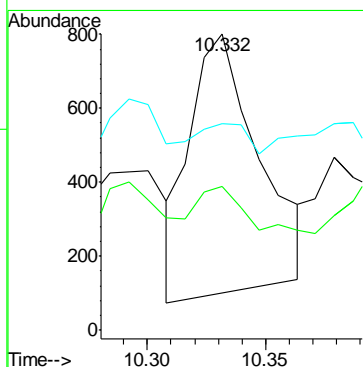
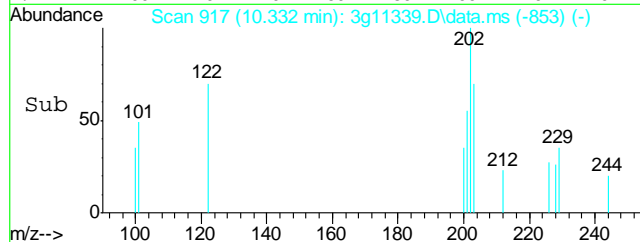
Tgt Ion:	178	Resp:	597
Ion Ratio	Lower	Upper	
178	100		
179	300.8	0.0	35.2#
176	0.0	0.0	37.7
177	0.0	0.0	29.0

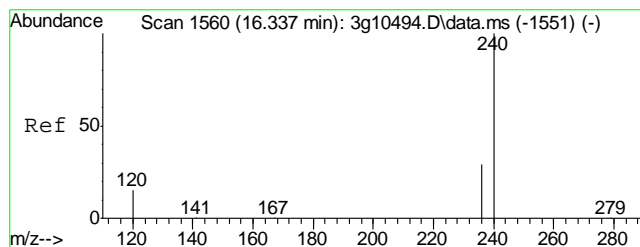


#18  
 Fluoranthene  
 Concen: Below ug/mL  
 RT: 10.332 min Scan# 917  
 Delta R.T. 0.008 min  
 Lab File: 3g11339.D  
 Acq: 21 Sep 12 2:32 pm



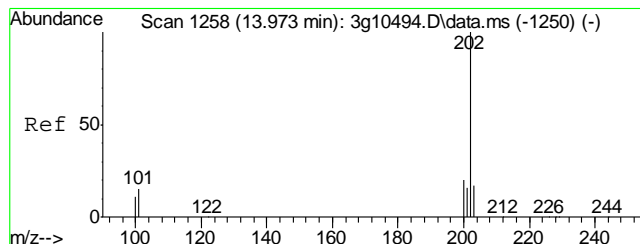
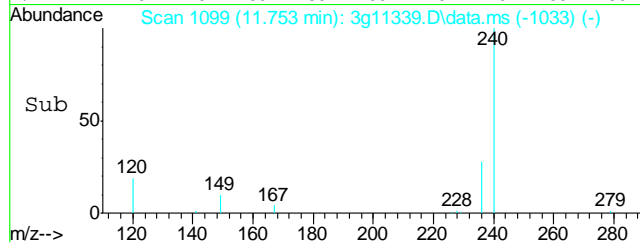
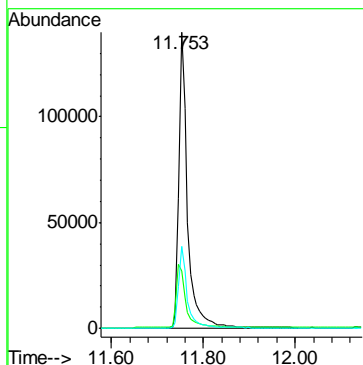
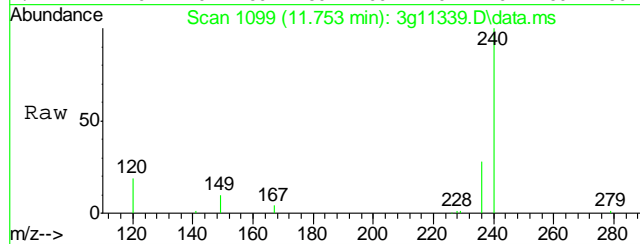
Tgt Ion:	202	Resp:	1428
Ion Ratio	Lower	Upper	
202	100		
101	31.1	0.0	33.0
203	0.0	0.0	37.4





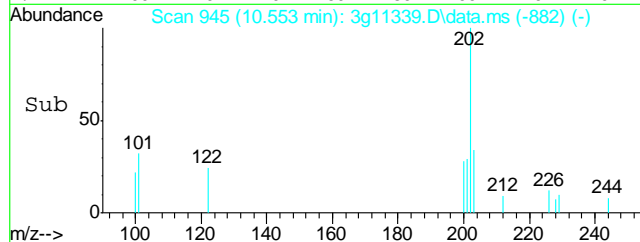
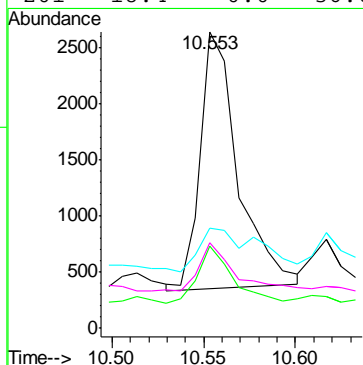
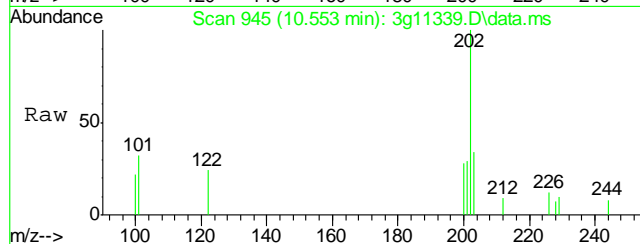
#19  
Chrysene-d12  
Concen: 4.0000 ug/mL  
RT: 11.753 min Scan# 1099  
Delta R.T. -0.000 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

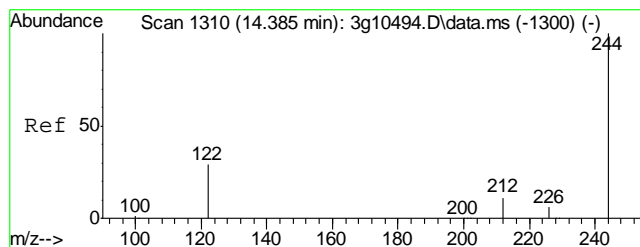
Tgt Ion:	240	Resp:	179581
Ion Ratio	Lower	Upper	
240	100		
120	22.9	0.0	36.2
236	27.1	8.8	48.8



#20  
Pyrene  
Concen: Below ug/mL  
RT: 10.553 min Scan# 945  
Delta R.T. 0.000 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

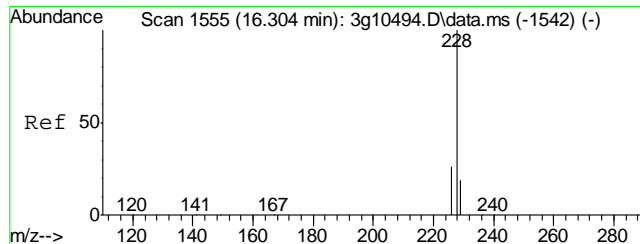
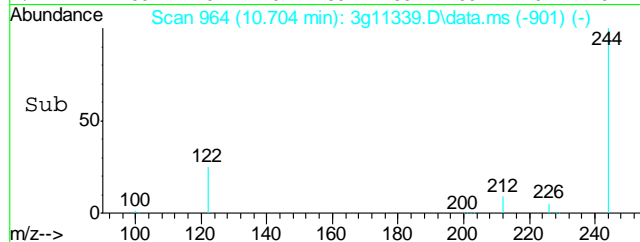
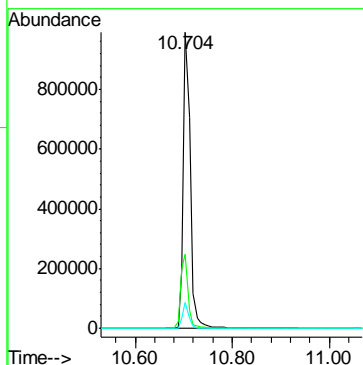
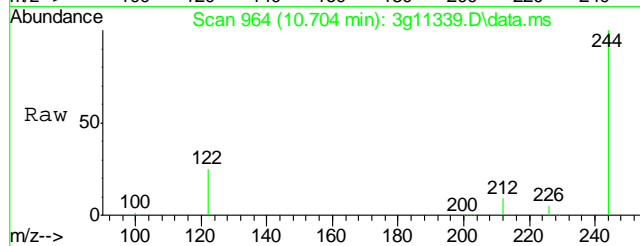
Tgt Ion:	202	Resp:	3280
Ion Ratio	Lower	Upper	
202	100		
200	20.2	0.1	40.1
203	27.0	0.0	37.8
201	18.4	0.0	36.6





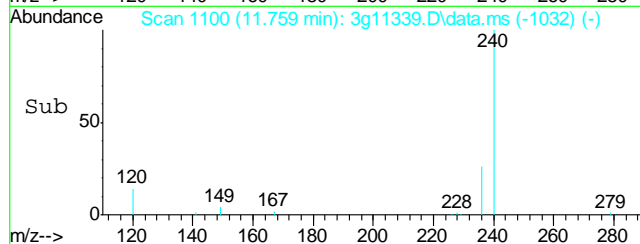
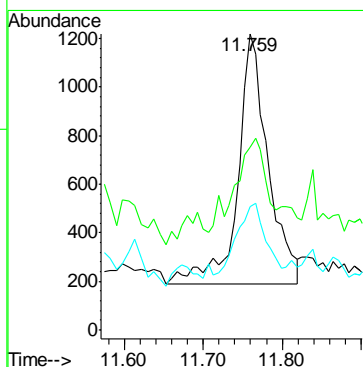
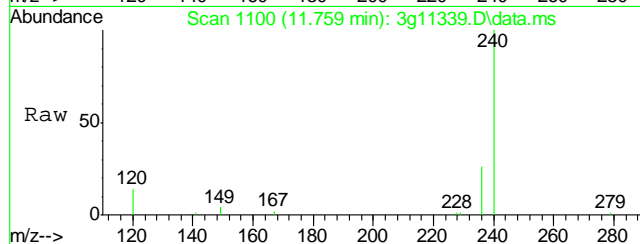
#21  
Terphenyl-d14  
Concen: 37.1974 ug/mL  
RT: 10.704 min Scan# 964  
Delta R.T. -0.000 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

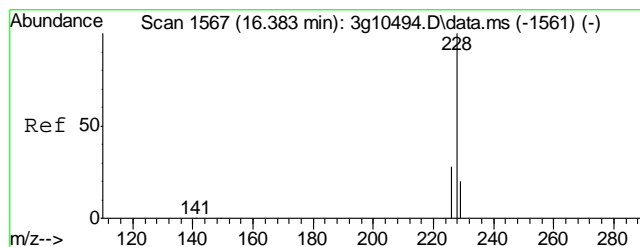
Tgt Ion	Ratio	Lower	Upper
244	100		
122	26.5	1.3	41.3
212	8.0	0.0	28.8



#22  
Benzo(a)anthracene  
Concen: Below ug/mL  
RT: 11.759 min Scan# 1100  
Delta R.T. 0.020 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

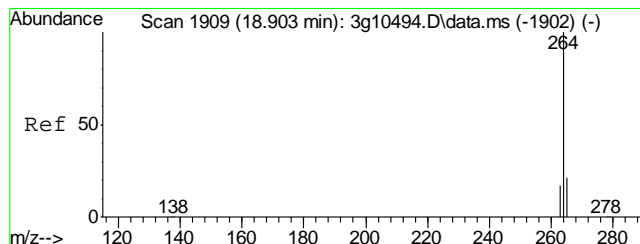
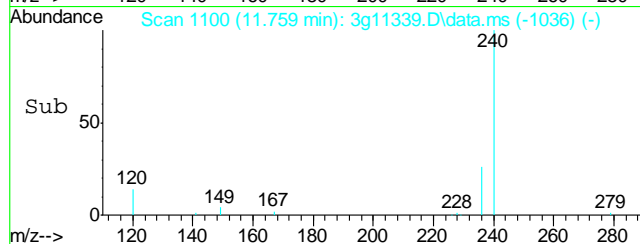
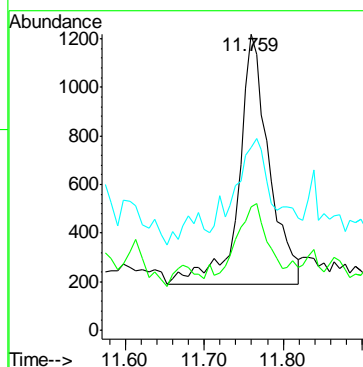
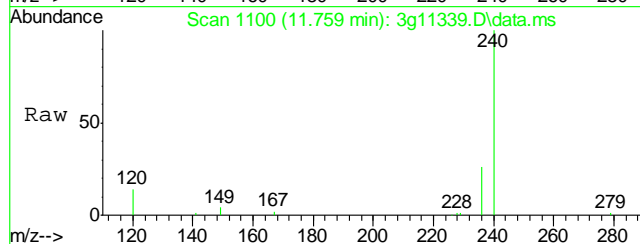
Tgt Ion	Ratio	Lower	Upper
228	100		
229	37.0	0.0	39.6
226	27.9	6.6	46.6





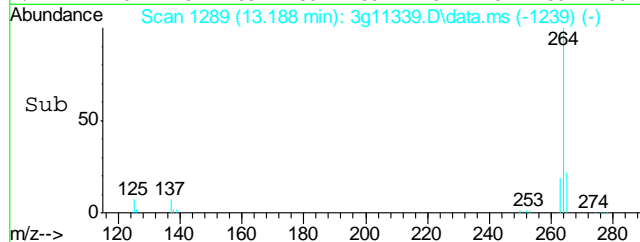
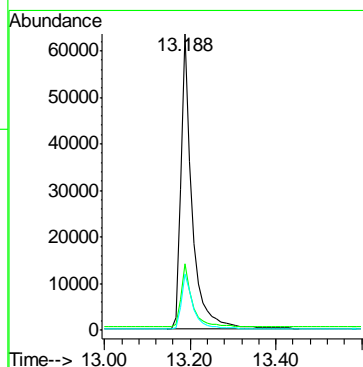
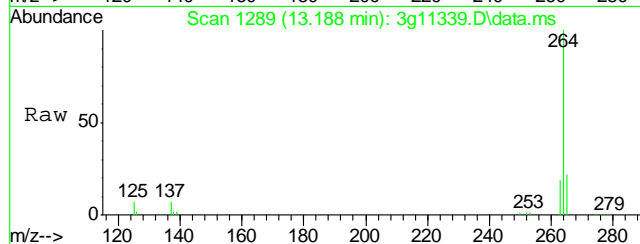
#23  
Chrysene  
Concen: Below ug/mL  
RT: 11.759 min Scan# 1100  
Delta R.T. -0.013 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

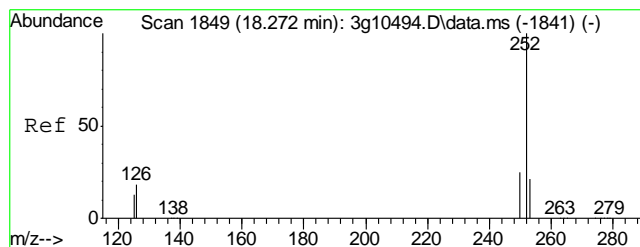
Tgt Ion	Ratio	Lower	Upper
228	100		
226	28.0	8.6	48.6
229	37.0	0.0	39.4



#24  
Perylene-d12  
Concen: 4.0000 ug/mL  
RT: 13.188 min Scan# 1289  
Delta R.T. 0.010 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

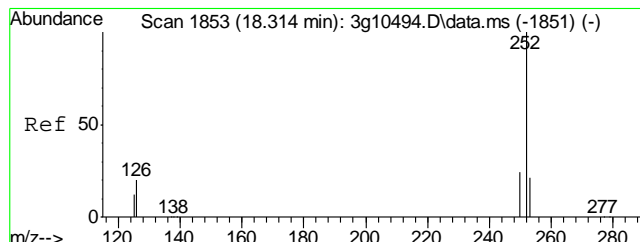
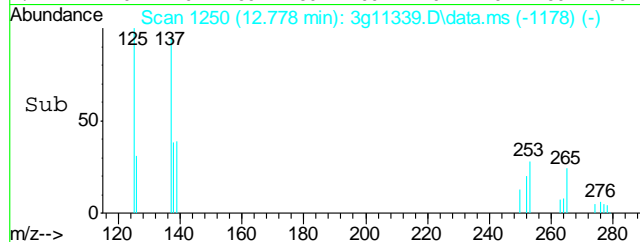
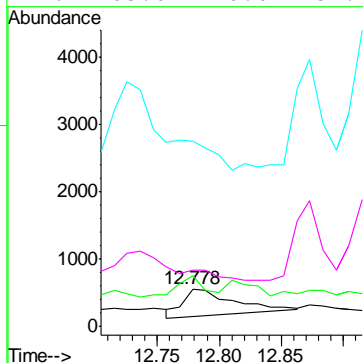
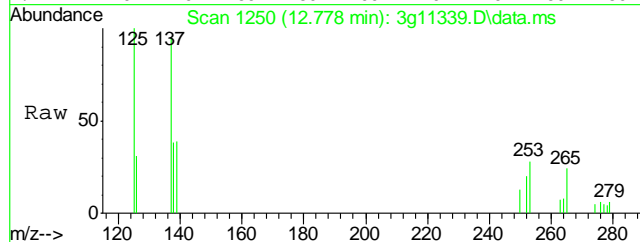
Tgt Ion	Ratio	Lower	Upper
264	100		
265	21.2	1.0	41.0
263	20.0	0.0	39.0





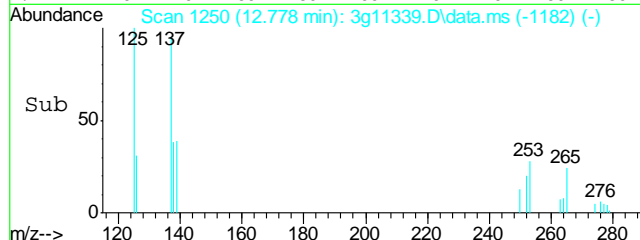
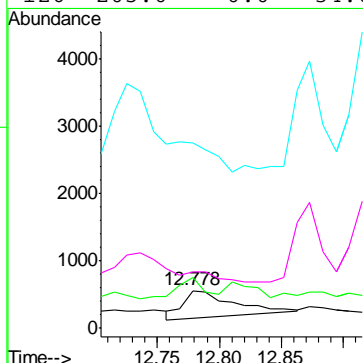
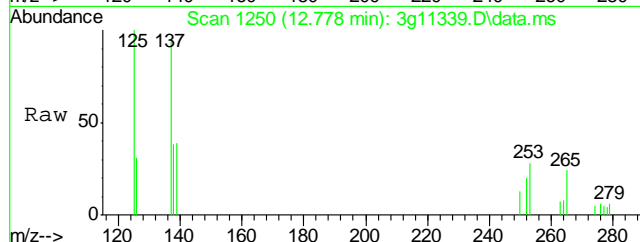
#25  
Benzo(b)fluoranthene  
Concen: Below ug/mL  
RT: 12.778 min Scan# 1250  
Delta R.T. 0.000 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

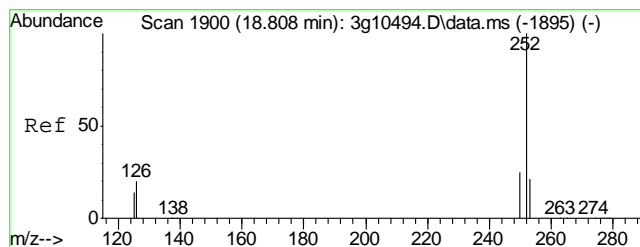
Tgt Ion	Ratio	Lower	Upper
252	100		
253	56.5	2.9	42.9#
125	408.5	0.0	31.5#
126	205.0	0.0	34.7#



#26  
Benzo(k)fluoranthene  
Concen: Below ug/mL  
RT: 12.778 min Scan# 1250  
Delta R.T. -0.021 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

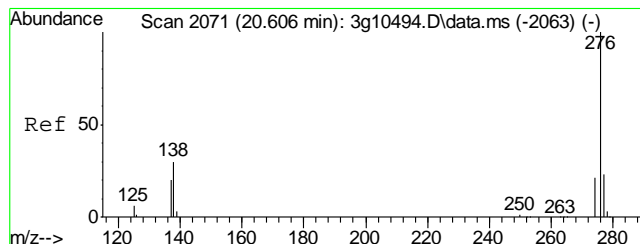
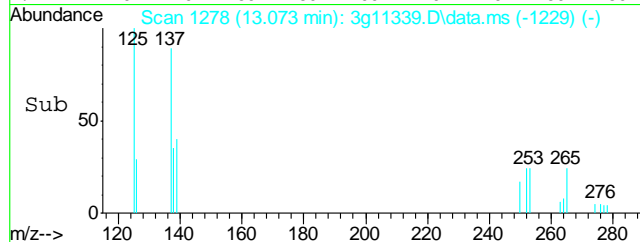
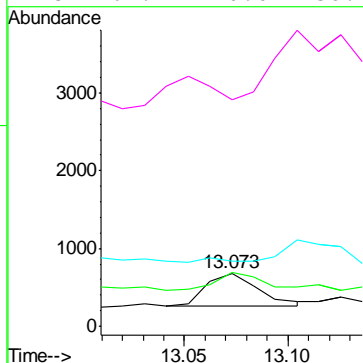
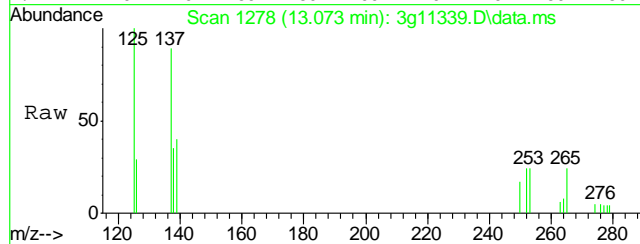
Tgt Ion	Ratio	Lower	Upper
252	100		
253	56.5	1.8	41.8#
125	408.5	0.0	31.0#
126	205.0	0.0	34.0#





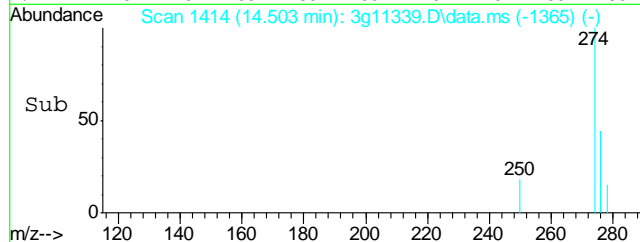
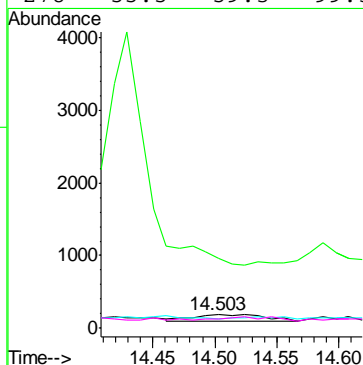
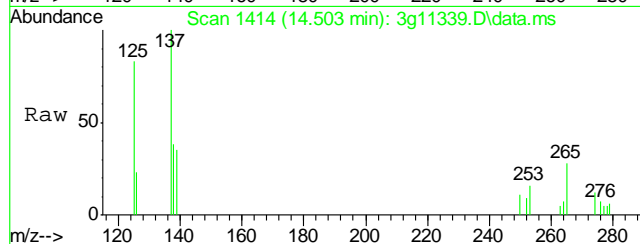
#27  
Benzo(a)pyrene  
Concen: Below ug/mL  
RT: 13.073 min Scan# 1278  
Delta R.T. -0.041 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

Tgt Ion:	252	Resp:	731
Ion Ratio	Lower	Upper	
252	100		
253	66.8	1.4	41.4#
126	97.7	0.0	33.6#
125	267.4	0.0	30.7#

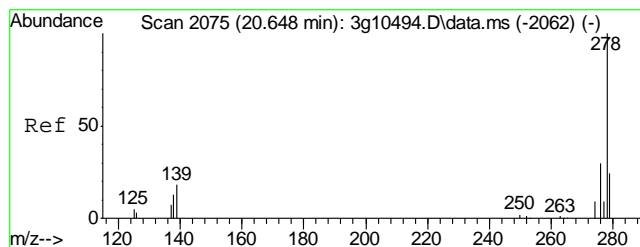


#28  
Indeno(1,2,3-cd)pyrene  
Concen: Below ug/mL  
RT: 14.503 min Scan# 1414  
Delta R.T. 0.011 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

Tgt Ion:	276	Resp:	337
Ion Ratio	Lower	Upper	
276	100		
138	0.0	5.3	45.3#
277	23.1	5.0	45.0
278	55.5	59.3	99.3#

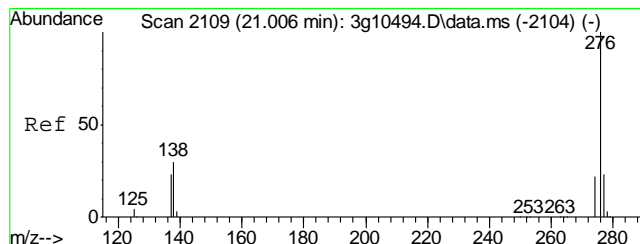
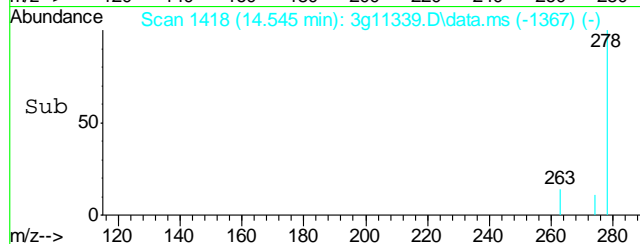
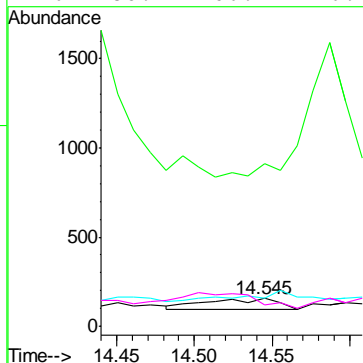
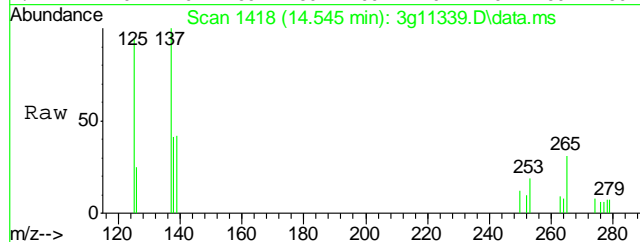






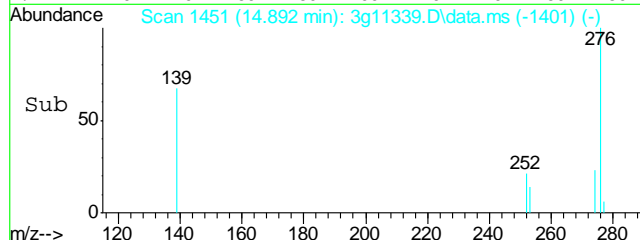
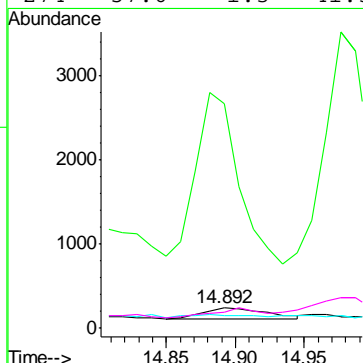
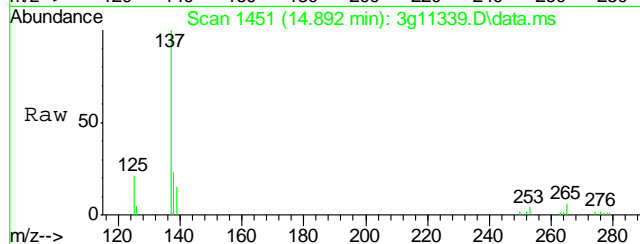
#29  
Dibenz(a,h)anthracene  
Concen: Below ug/mL  
RT: 14.545 min Scan# 1418  
Delta R.T. 0.032 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

Tgt Ion: 278 Resp: 187  
Ion Ratio Lower Upper  
278 100  
139 0.0 0.0 38.4  
279 85.0 3.1 43.1#  
276 180.2 106.1 146.1#



#30  
Benzo(g,h,i)perylene  
Concen: Below ug/mL  
RT: 14.892 min Scan# 1451  
Delta R.T. 0.021 min  
Lab File: 3g11339.D  
Acq: 21 Sep 12 2:32 pm

Tgt Ion: 276 Resp: 446  
Ion Ratio Lower Upper  
276 100  
138 970.2 1.3 41.3#  
277 26.2 3.4 43.4  
274 57.6 1.3 41.3#



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\092112\  
 Data File : 3g11337.D  
 Acq On : 21 Sep 2012 1:44 pm  
 Operator : DONC  
 Sample : OP6679-MB  
 Misc : OP6679,E3G529,30.00,,,1,1  
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Sep 24 10:36:09 2012  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G511.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Thu Sep 06 09:42:23 2012  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.922	136	190751	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.640	164	108766	4.0000	ug/mL	0.00
15) Phenanthrene-d10	9.129	188	171152	4.0000	ug/mL	0.00
19) Chrysene-d12	11.759	240	163898	4.0000	ug/mL	0.00
24) Perylene-d12	13.199	264	106480	4.0000	ug/mL	0.02

## System Monitoring Compounds

2) Nitrobenzene-d5	5.236	82	850564	45.3211	ug/mL	0.01
Spiked Amount 50.000	Range 25 - 135		Recovery =	90.64%		
7) 2-Fluorobiphenyl	6.978	172	2129853	47.0749	ug/mL	0.01
Spiked Amount 50.000	Range 25 - 135		Recovery =	94.14%		
21) Terphenyl-d14	10.712	244	1243282	50.3449	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	100.68%		

## Target Compounds

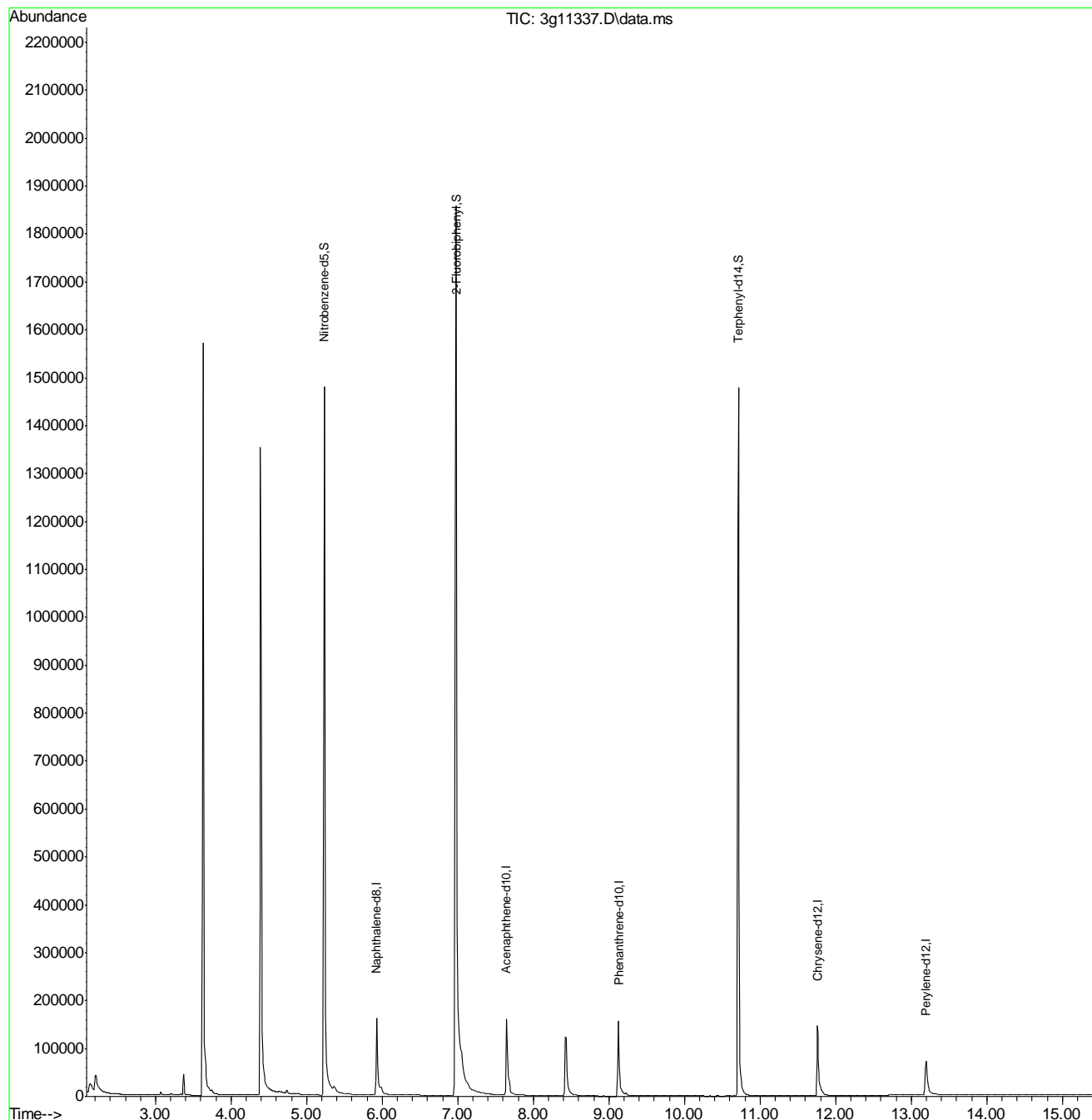
					Qvalue
3) N-Nitrosodimethylamine	0.000	74	0	N.D.	d
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.947	128	338	N.D.	
8) 2-Methylnaphthalene	6.620	142	236	N.D.	
9) 1-Methylnaphthalene	6.719	142	79	N.D.	
10) Acenaphthylene	0.000	152	0	N.D.	
11) Acenaphthene	7.640	154	494	N.D.	
12) Dibenzofuran	7.852	168	152	N.D.	
13) Fluorene	0.000	166	0	N.D.	d
14) Diphenylamine	0.000	169	0	N.D.	d
16) Phenanthrene	9.145	178	639	N.D.	
17) Anthracene	9.200	178	288	N.D.	
18) Fluoranthene	10.427	202	355	N.D.	
20) Pyrene	10.427	202	355	N.D.	
22) Benzo(a)anthracene	11.759	228	767	N.D.	
23) Chrysene	11.759	228	767	N.D.	
25) Benzo(b)fluoranthene	12.820	252	1932	N.D.	
26) Benzo(k)fluoranthene	12.820	252	1932	N.D.	
27) Benzo(a)pyrene	13.189	252	573	N.D.	
28) Indeno(1,2,3-cd)pyrene	14.514	276	61	N.D.	
29) Dibenz(a,h)anthracene	14.566	278	153	N.D.	
30) Benzo(g,h,i)perylene	14.903	276	88	N.D.	

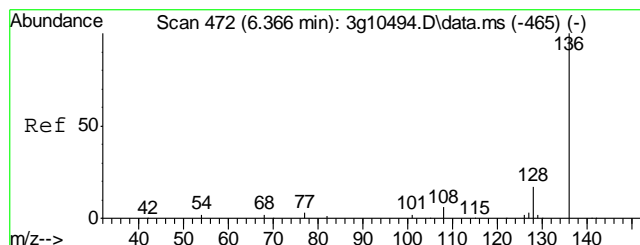
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\092112\  
Data File : 3g11337.D  
Acq On : 21 Sep 2012 1:44 pm  
Operator : DONC  
Sample : OP6679-MB  
Misc : OP6679,E3G529,30.00,,,1,1  
ALS Vial : 4 Sample Multiplier: 1

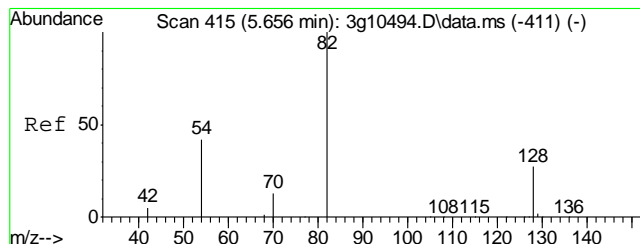
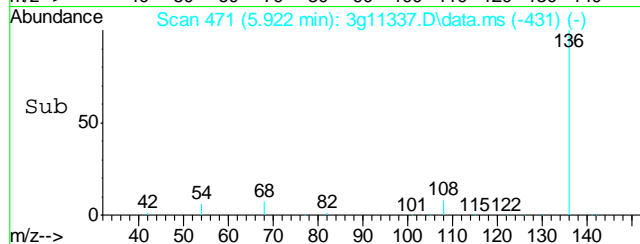
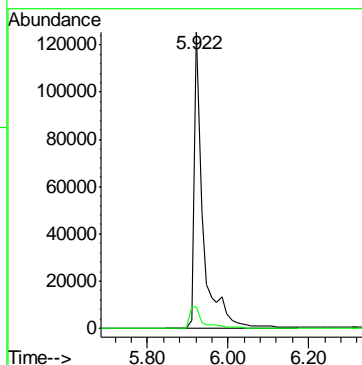
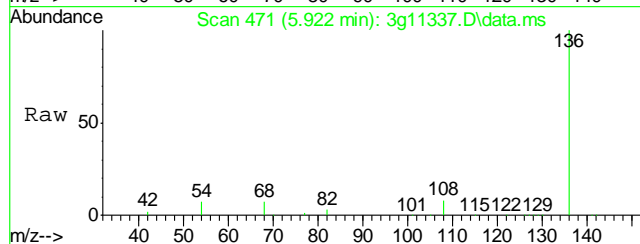
Quant Time: Sep 24 10:36:09 2012  
Quant Method : C:\msdchem\1\METHODS\SIMPE3G511.M  
Quant Title : PAHSIM BASE  
QLast Update : Thu Sep 06 09:42:23 2012  
Response via : Initial Calibration





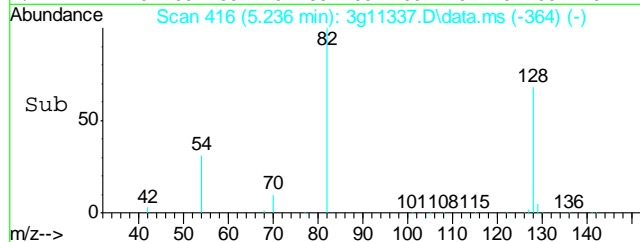
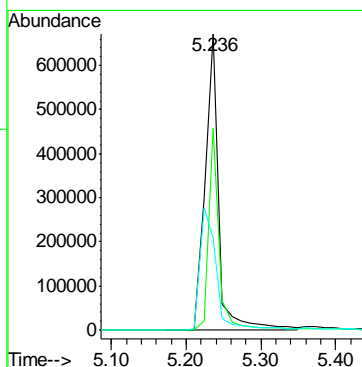
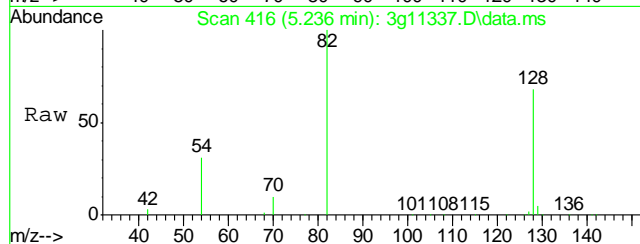
#1  
Naphthalene-d8  
Concen: 4.0000 ug/mL  
RT: 5.922 min Scan# 471  
Delta R.T. -0.000 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

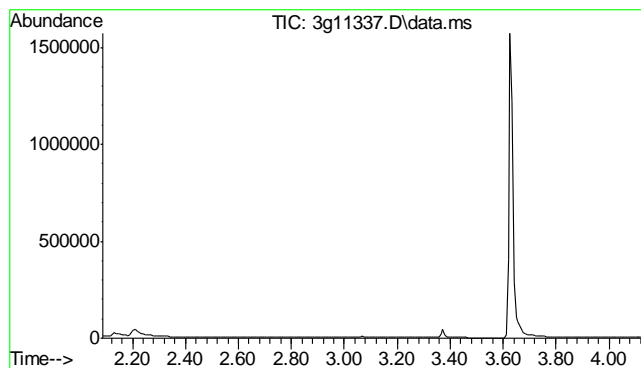
Tgt Ion:	136	Resp:	190751
Ion Ratio	Lower	Upper	
136	100		
68	10.6	0.0	30.4



#2  
Nitrobenzene-d5  
Concen: 45.3211 ug/mL  
RT: 5.236 min Scan# 416  
Delta R.T. 0.013 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

Tgt Ion:	82	Resp:	850564
Ion Ratio	Lower	Upper	
82	100		
128	53.1	19.7	59.7
54	49.1	28.6	68.6

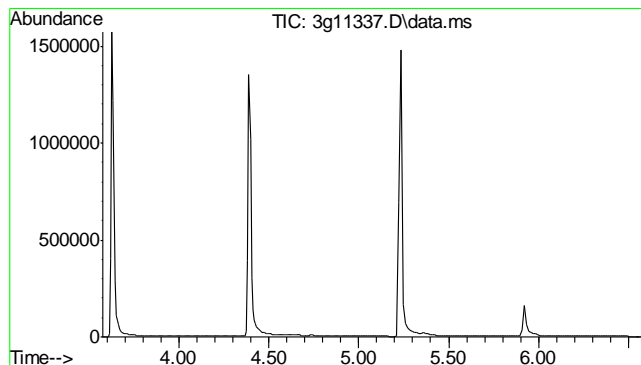
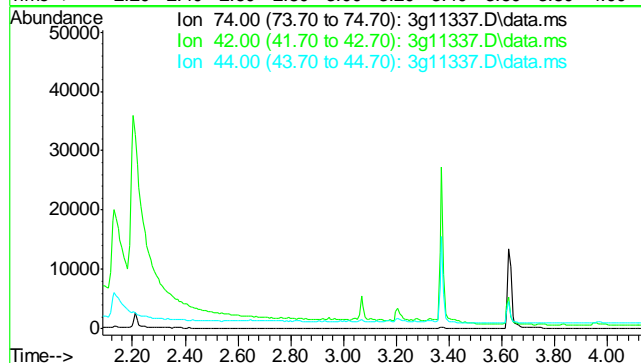




#3  
N-Nitrosodimethylamine  
Concen: N.D. ug/mL  
Expected RT: 2.62 min

Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

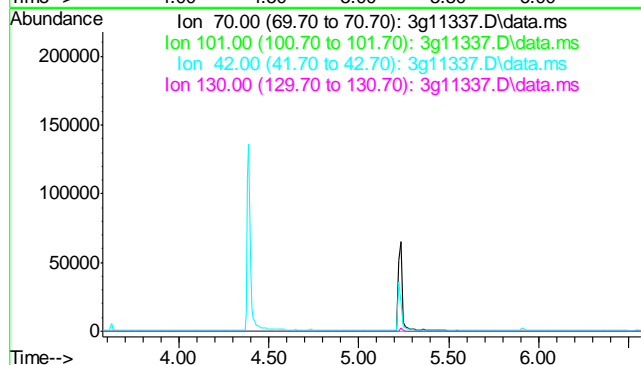
Tgt Ion:	74
Sig	Exp Ratio
74	100
42	53.3
44	3.5

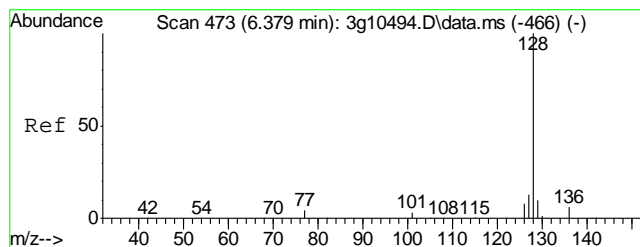


#4  
N-Nitrosodi-propylamine  
Concen: N.D. ug/mL  
Expected RT: 5.07 min

Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

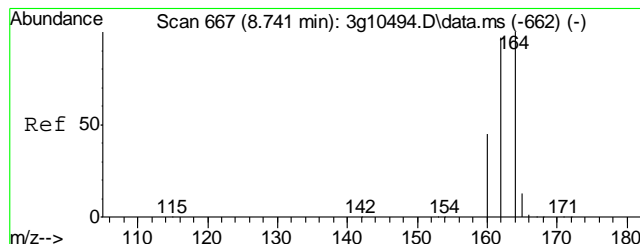
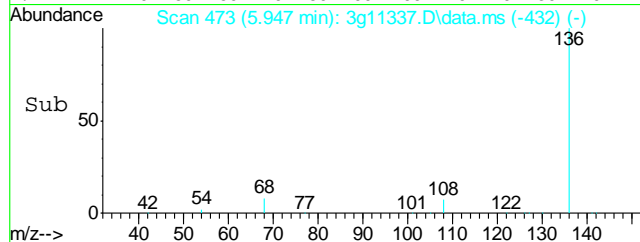
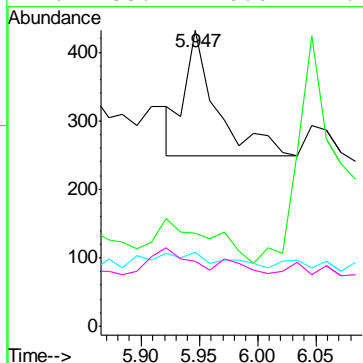
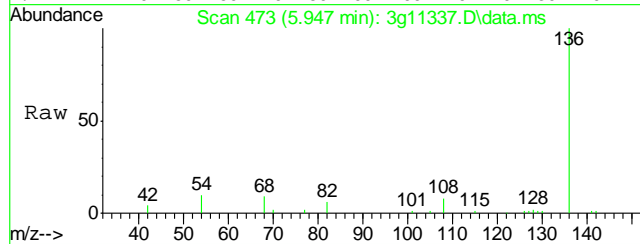
Tgt Ion:	70
Sig	Exp Ratio
70	100
101	10.3
42	47.6
130	20.0





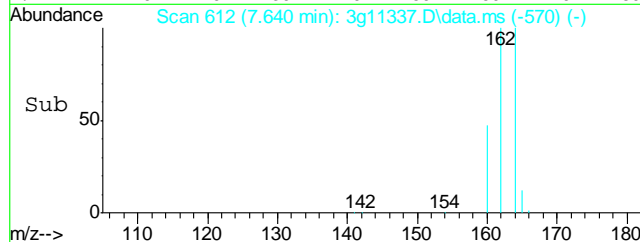
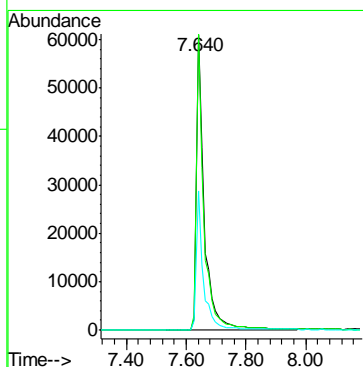
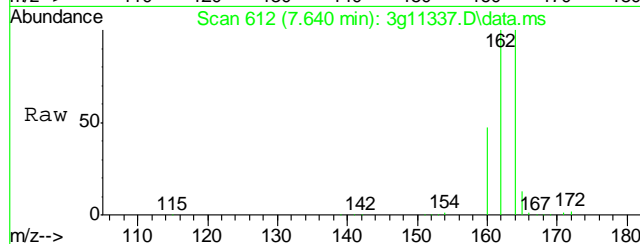
#5  
Naphthalene  
Concen: Below ug/mL  
RT: 5.947 min Scan# 473  
Delta R.T. 0.012 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

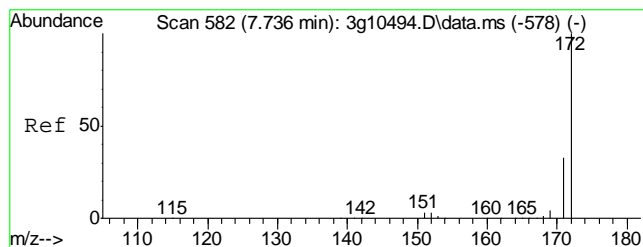
Tgt Ion:128 Resp: 338  
Ion Ratio Lower Upper  
128 100  
129 62.7 0.0 30.8#  
127 52.4 0.0 33.4#  
126 33.1 0.0 27.7#



#6  
Acenaphthene-d10  
Concen: 4.0000 ug/mL  
RT: 7.640 min Scan# 612  
Delta R.T. -0.000 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

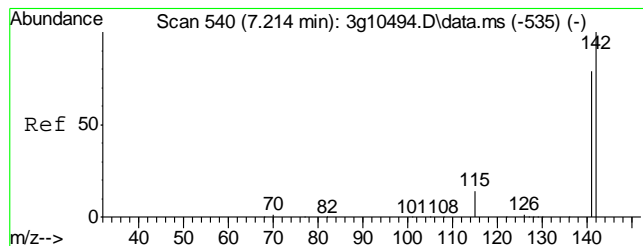
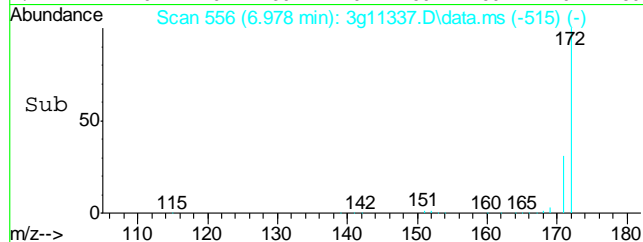
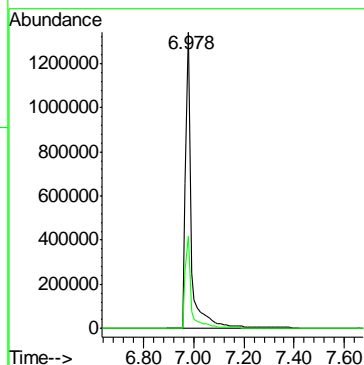
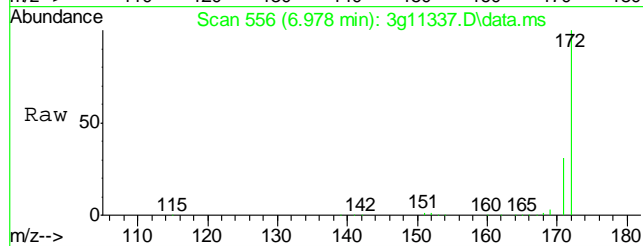
Tgt Ion:164 Resp: 108766  
Ion Ratio Lower Upper  
164 100  
162 95.6 73.5 113.5  
160 42.3 21.8 61.8





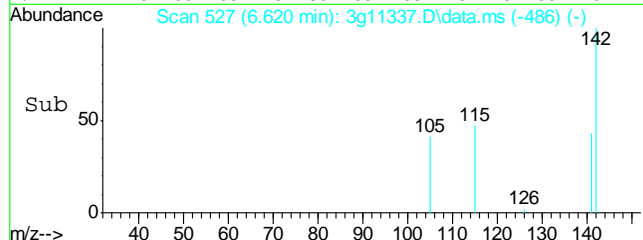
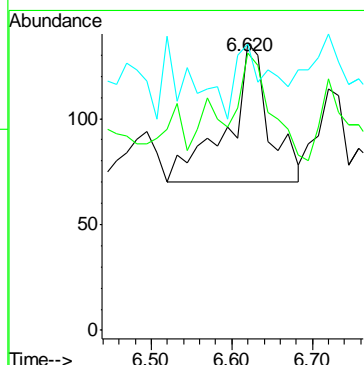
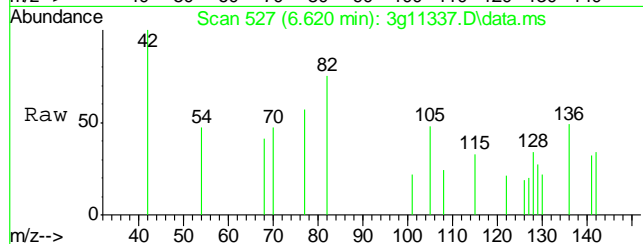
#7  
2-Fluorobiphenyl  
Concen: 47.0749 ug/mL  
RT: 6.978 min Scan# 556  
Delta R.T. 0.012 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

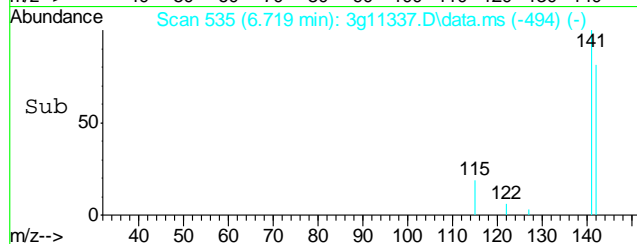
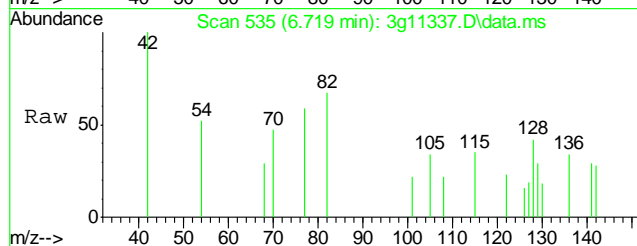
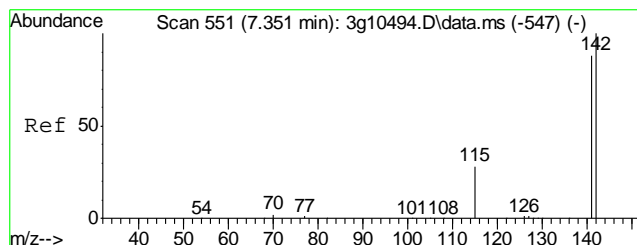
Tgt Ion:172 Resp: 2129853  
Ion Ratio Lower Upper  
172 100  
171 33.5 13.6 53.6



#8  
2-Methylnaphthalene  
Concen: Below ug/mL  
RT: 6.620 min Scan# 527  
Delta R.T. 0.012 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

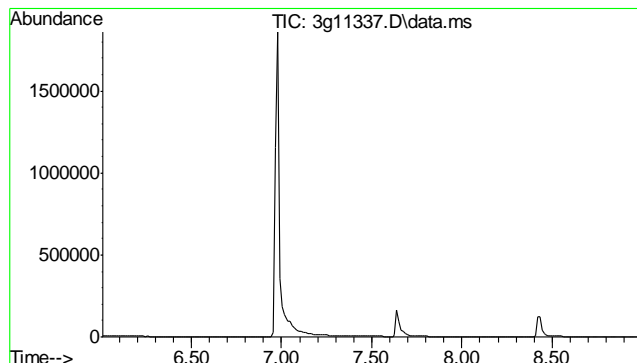
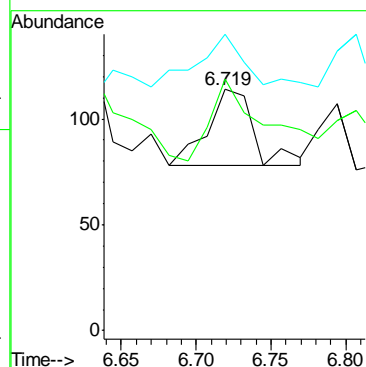
Tgt Ion:142 Resp: 236  
Ion Ratio Lower Upper  
142 100  
141 57.6 64.5 104.5#  
115 0.0 13.6 53.6#





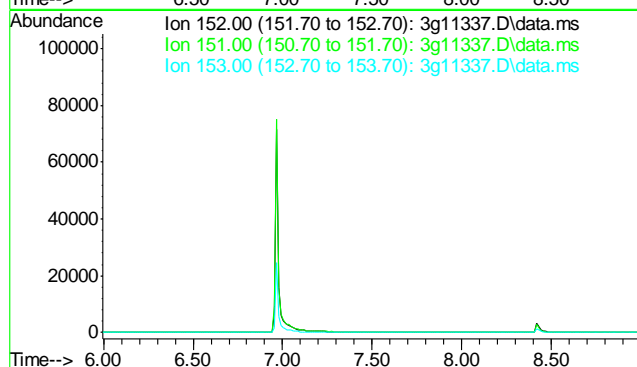
#9  
1-Methylnaphthalene  
Concen: Below ug/mL  
RT: 6.719 min Scan# 535  
Delta R.T. 0.012 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

Tgt Ion: 142	Resp: 79
Ion Ratio	Lower Upper
142	100
141	130.4 67.8 107.8#
115	0.0 11.0 51.0#

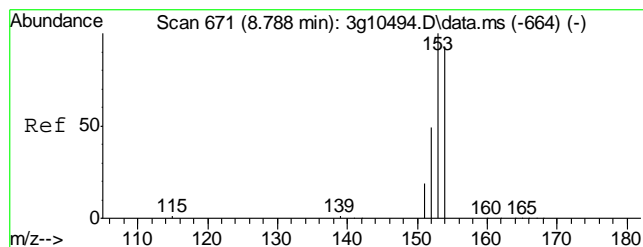


#10  
Acenaphthylene  
Concen: N.D. ug/mL  
Expected RT: 7.50 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

Tgt Ion: 152	
Sig	Exp Ratio
152	100
151	19.2
153	13.2

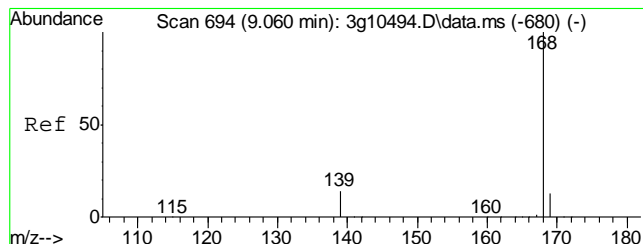
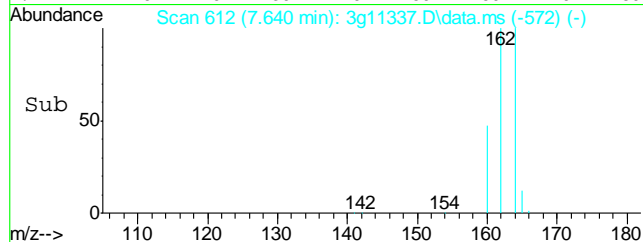
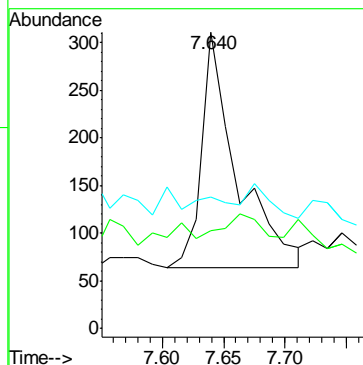
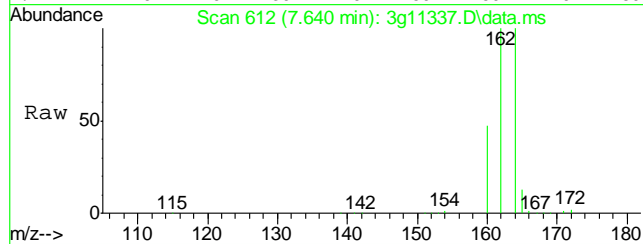






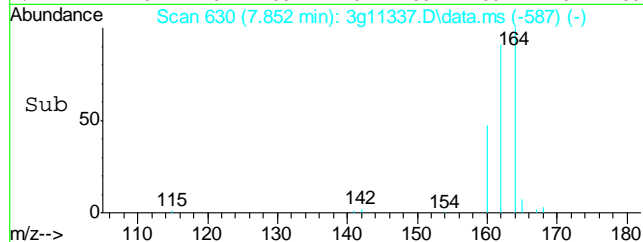
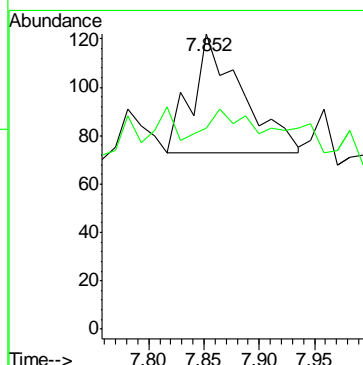
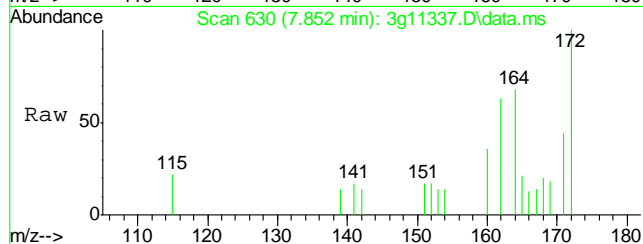
#11  
Acenaphthene  
Concen: Below ug/mL  
RT: 7.640 min Scan# 612  
Delta R.T. -0.024 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

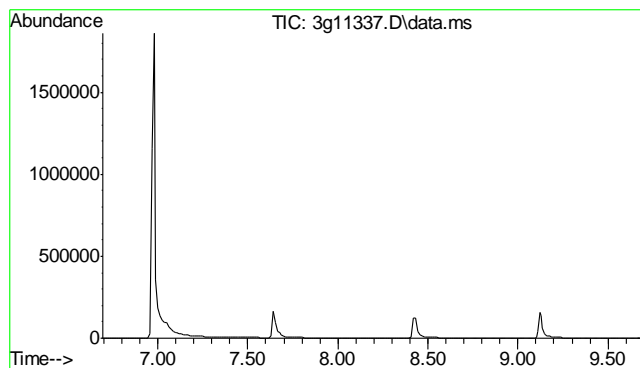
Tgt Ion:154 Resp: 494  
Ion Ratio Lower Upper  
154 100  
153 10.1 84.8 124.8#  
152 7.7 29.9 69.9#



#12  
Dibenzofuran  
Concen: Below ug/mL  
RT: 7.852 min Scan# 630  
Delta R.T. 0.012 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

Tgt Ion:168 Resp: 152  
Ion Ratio Lower Upper  
168 100  
139 11.8 7.6 47.6

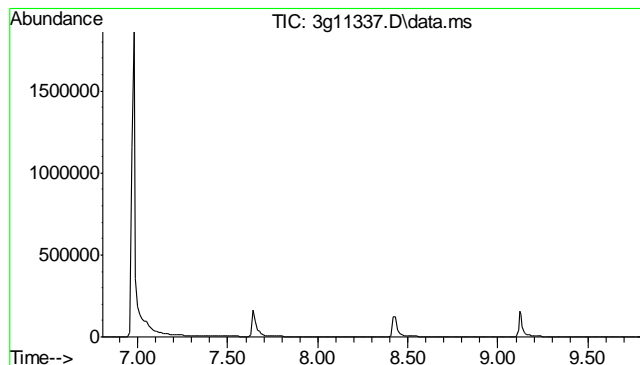
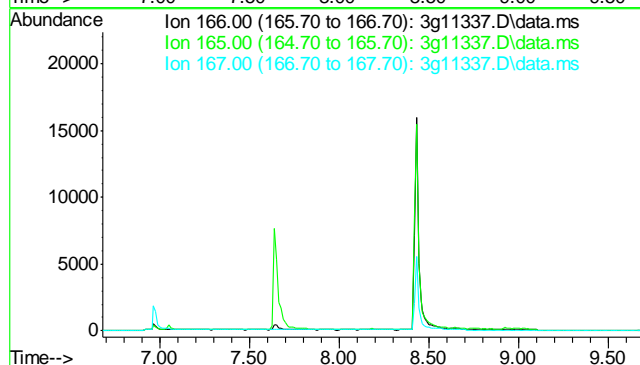




#13  
Fluorene  
Concen: N.D. ug/mL  
Expected RT: 8.18 min

Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

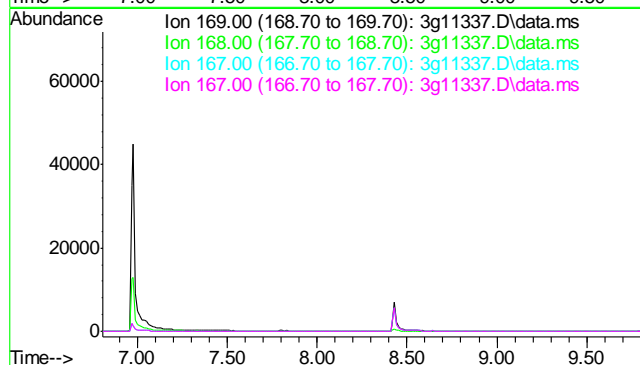
Tgt Ion:	166
Sig	Exp Ratio
166	100
165	91.1
167	13.3

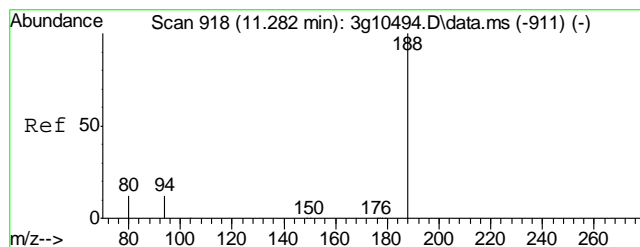


#14  
Diphenylamine  
Concen: N.D. ug/mL  
Expected RT: 8.30 min

Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

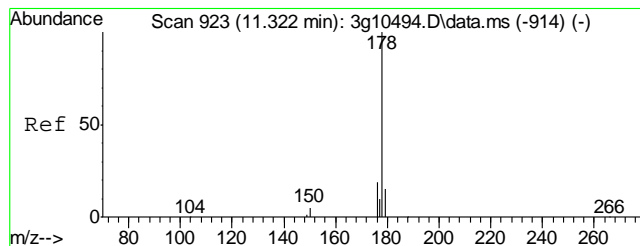
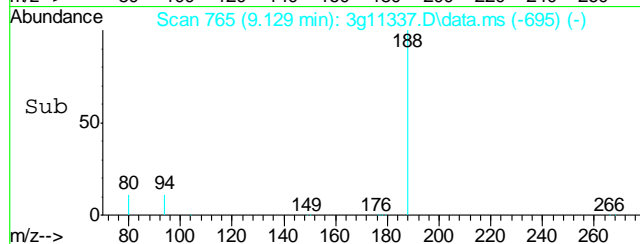
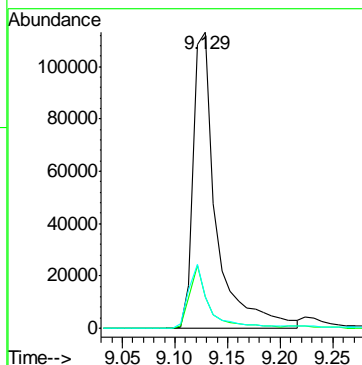
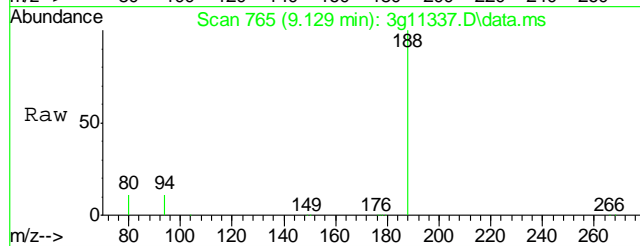
Tgt Ion:	169
Sig	Exp Ratio
169	100
168	61.0
167	32.9
167	32.9





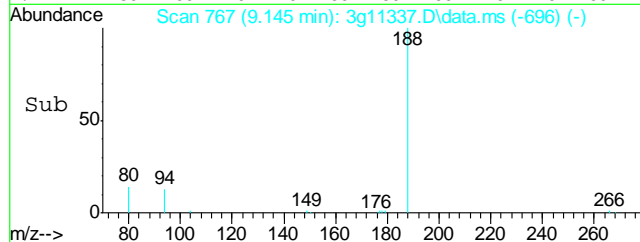
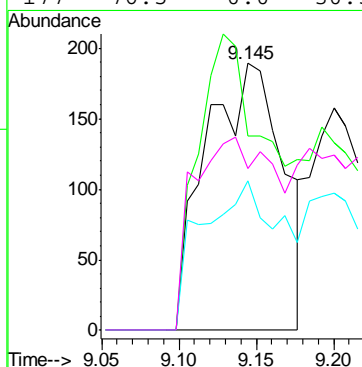
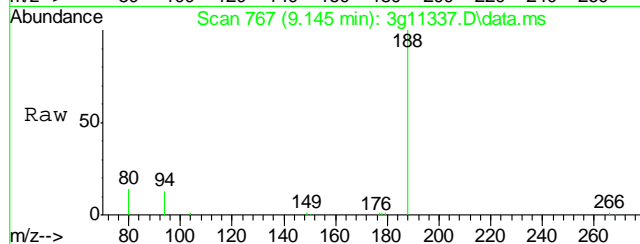
#15  
Phenanthrene-d10  
Concen: 4.0000 ug/mL  
RT: 9.129 min Scan# 765  
Delta R.T. 0.008 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

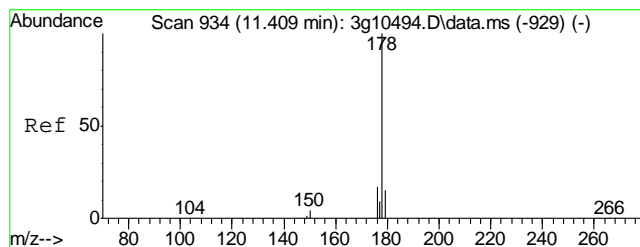
Tgt Ion	Ratio	Lower	Upper
188	100		
94	17.4	0.0	33.9
80	19.4	0.0	35.5



#16  
Phenanthrene  
Concen: Below ug/mL  
RT: 9.145 min Scan# 767  
Delta R.T. 0.008 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

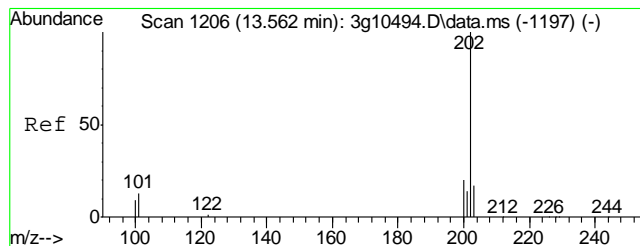
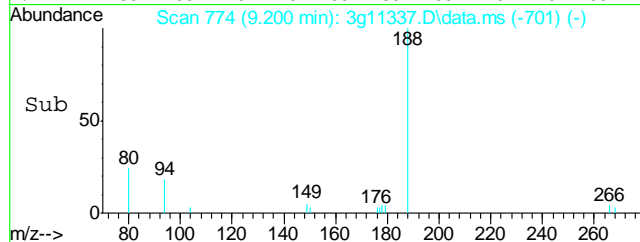
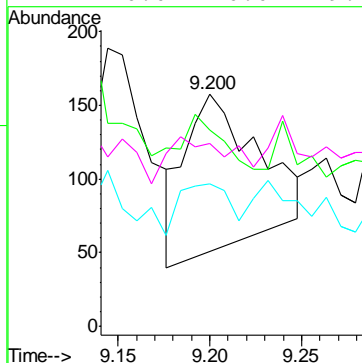
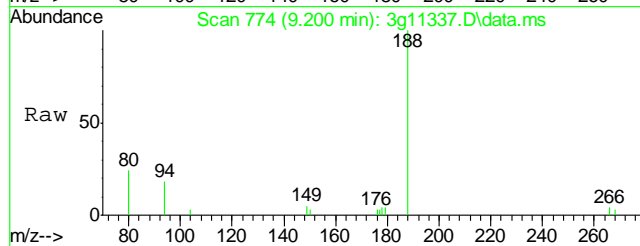
Tgt Ion	Ratio	Lower	Upper
178	100		
179	96.7	0.0	35.3#
176	47.1	0.0	38.5#
177	76.5	0.0	30.5#





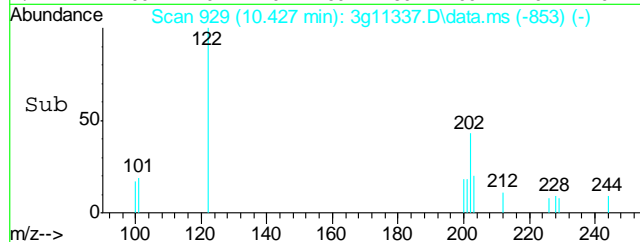
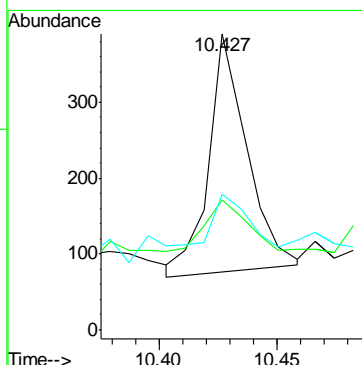
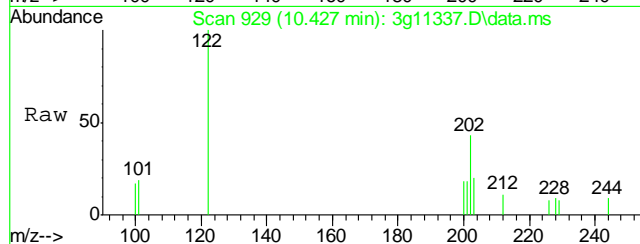
#17  
Anthracene  
Concen: Below ug/mL  
RT: 9.200 min Scan# 774  
Delta R.T. 0.008 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

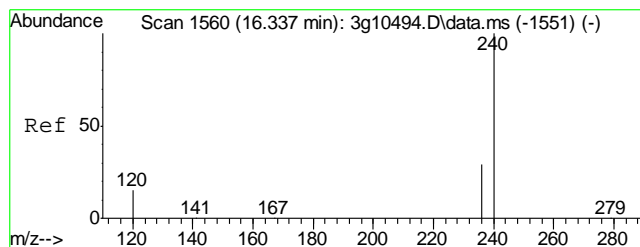
Tgt Ion: 178 Resp: 288  
Ion Ratio Lower Upper  
178 100  
179 0.0 0.0 35.2  
176 27.8 0.0 37.7  
177 0.0 0.0 29.0



#18  
Fluoranthene  
Concen: Below ug/mL  
RT: 10.427 min Scan# 929  
Delta R.T. 0.103 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

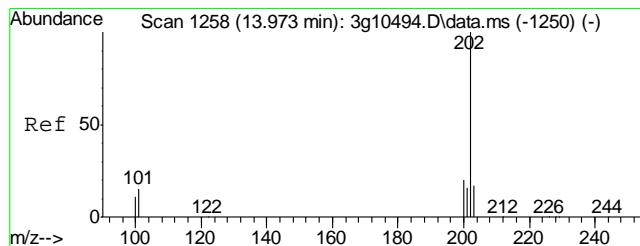
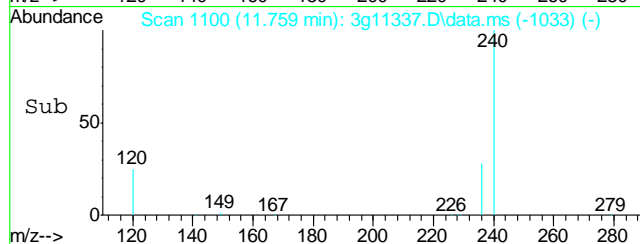
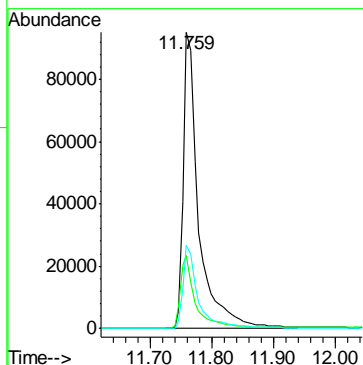
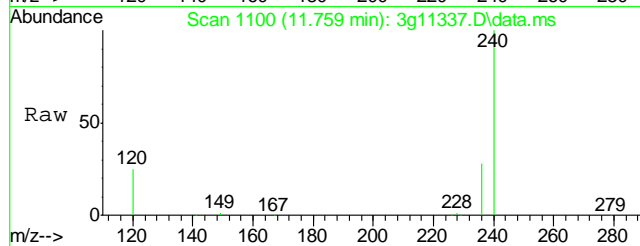
Tgt Ion: 202 Resp: 355  
Ion Ratio Lower Upper  
202 100  
101 23.1 0.0 33.0  
203 18.9 0.0 37.4





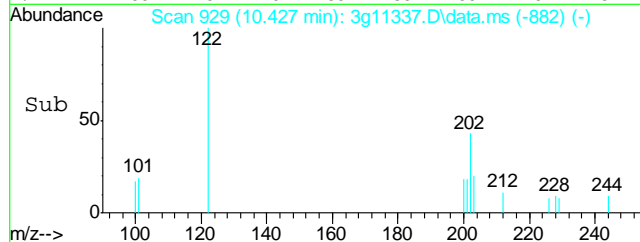
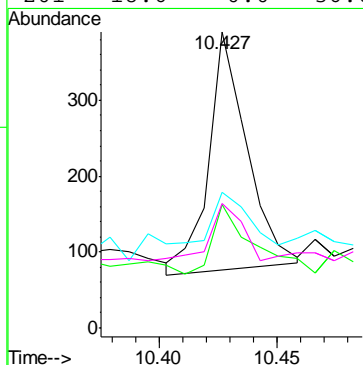
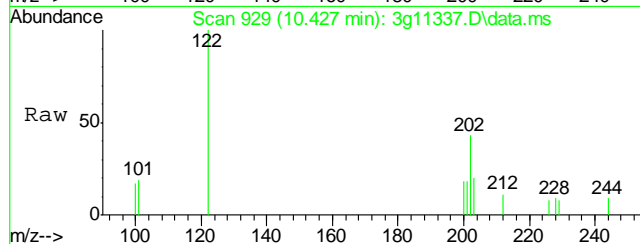
#19  
Chrysene-d12  
Concen: 4.0000 ug/mL  
RT: 11.759 min Scan# 1100  
Delta R.T. 0.007 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

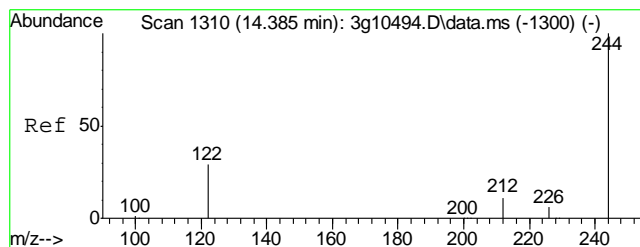
Tgt Ion:	240	Resp:	163898
Ion Ratio	Lower	Upper	
240	100		
120	23.7	0.0	36.2
236	27.4	8.8	48.8



#20  
Pyrene  
Concen: Below ug/mL  
RT: 10.427 min Scan# 929  
Delta R.T. -0.126 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

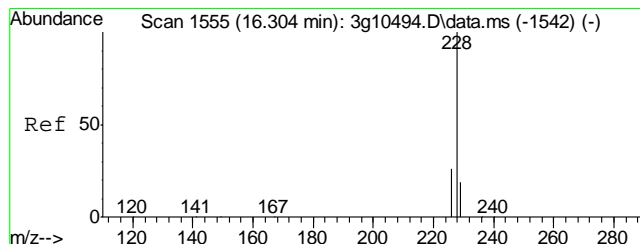
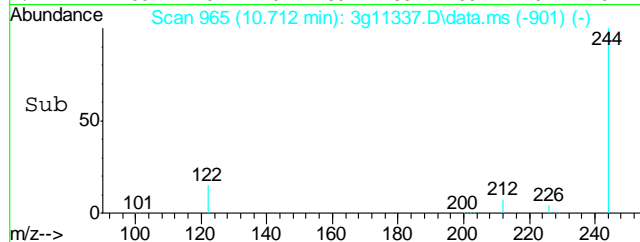
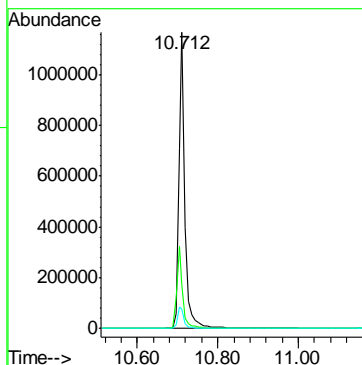
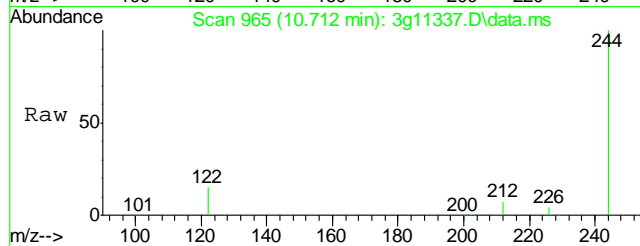
Tgt Ion:	202	Resp:	355
Ion Ratio	Lower	Upper	
202	100		
200	31.3	0.1	40.1
203	18.9	0.0	37.8
201	18.6	0.0	36.6





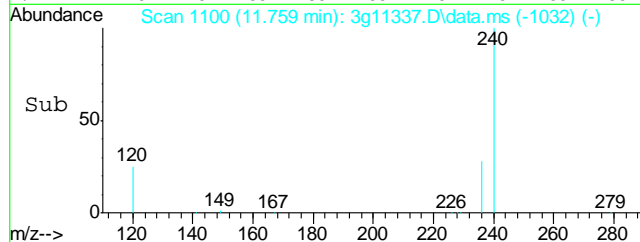
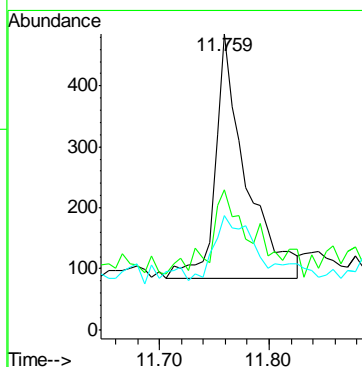
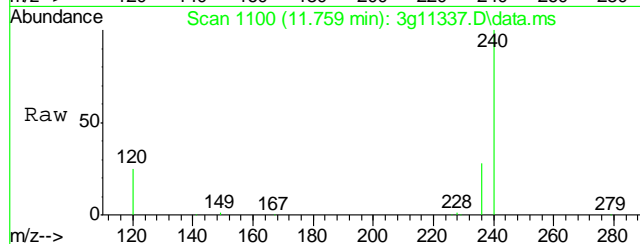
#21  
Terphenyl-d14  
Concen: 50.3449 ug/mL  
RT: 10.712 min Scan# 965  
Delta R.T. 0.008 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

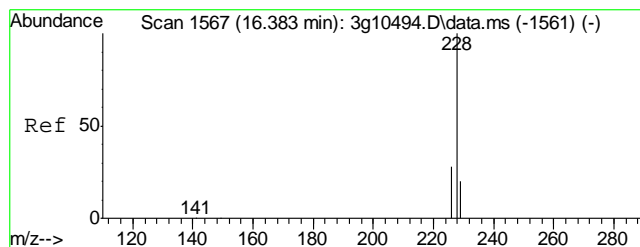
Tgt Ion: 244 Resp: 1243282  
Ion Ratio Lower Upper  
244 100  
122 27.4 1.3 41.3  
212 8.1 0.0 28.8



#22  
Benzo(a)anthracene  
Concen: Below ug/mL  
RT: 11.759 min Scan# 1100  
Delta R.T. 0.020 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

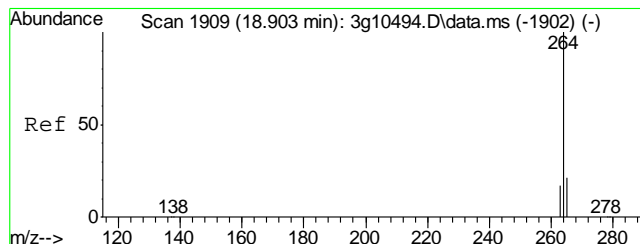
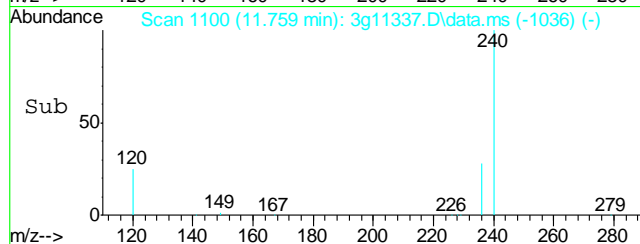
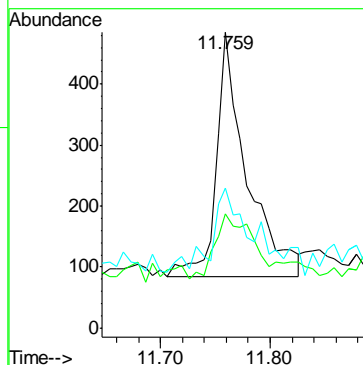
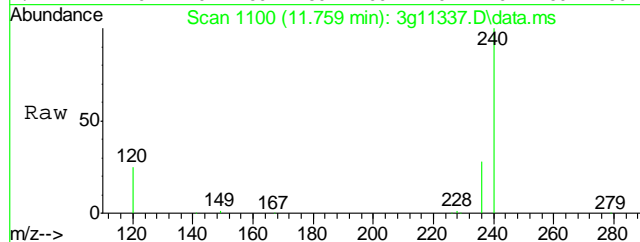
Tgt Ion: 228 Resp: 767  
Ion Ratio Lower Upper  
228 100  
229 43.8 0.0 39.6#  
226 35.3 6.6 46.6





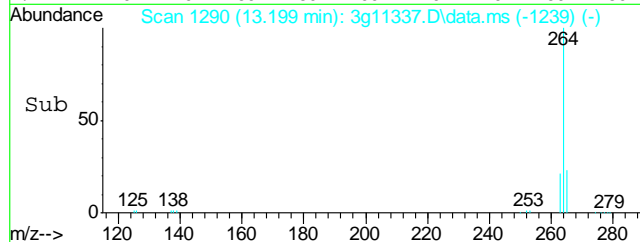
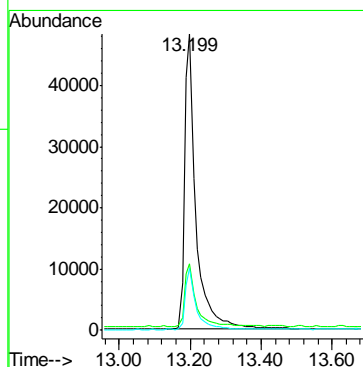
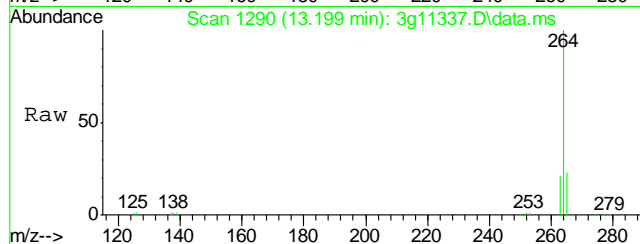
#23  
Chrysene  
Concen: Below ug/mL  
RT: 11.759 min Scan# 1100  
Delta R.T. -0.013 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

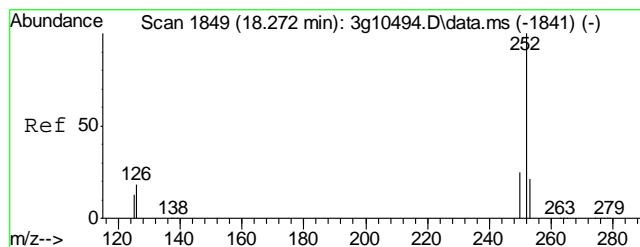
Tgt Ion:	228	Resp:	767
Ion Ratio	100	Lower	Upper
228	100		
226	35.3	8.6	48.6
229	43.8	0.0	39.4



#24  
Perylene-d12  
Concen: 4.0000 ug/mL  
RT: 13.199 min Scan# 1290  
Delta R.T. 0.021 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

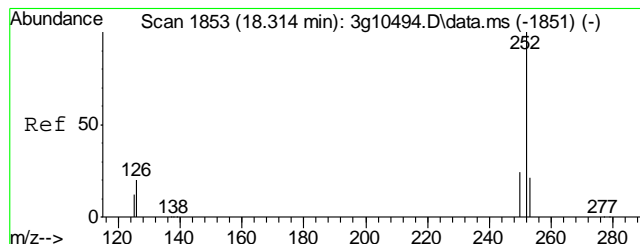
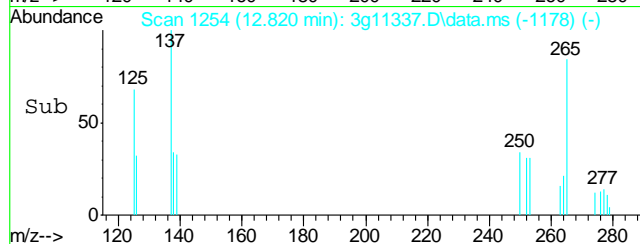
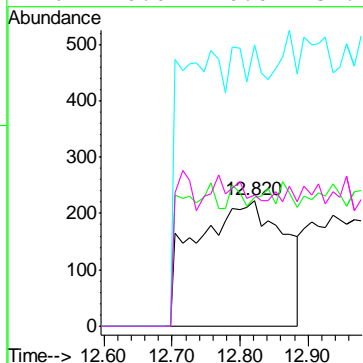
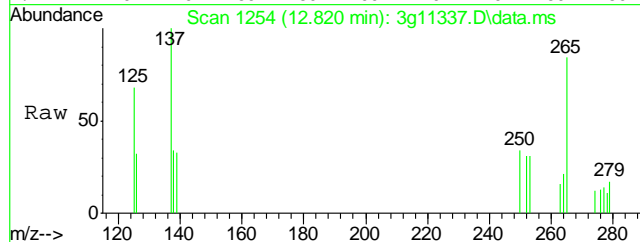
Tgt Ion:	264	Resp:	106480
Ion Ratio	100	Lower	Upper
264	100		
265	20.9	1.0	41.0
263	19.9	0.0	39.0





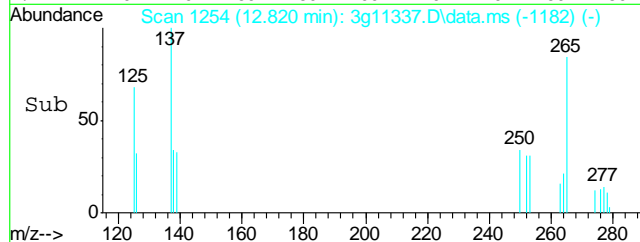
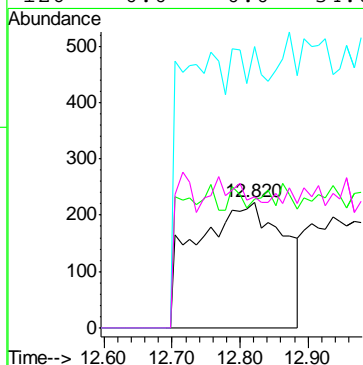
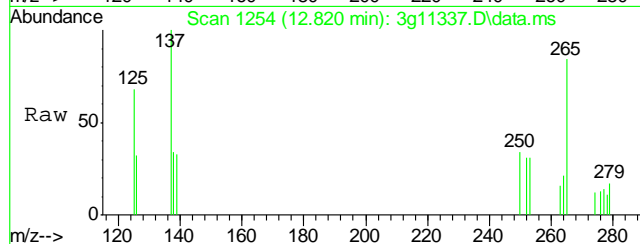
#25  
Benzo(b)fluoranthene  
Concen: Below ug/mL  
RT: 12.820 min Scan# 1254  
Delta R.T. 0.042 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

Tgt Ion	Ratio	Lower	Upper
252	100		
253	0.0	2.9	42.9#
125	0.0	0.0	31.5
126	0.0	0.0	34.7

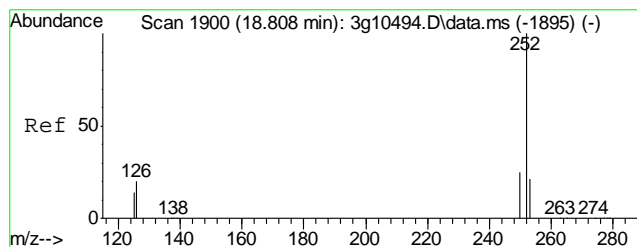


#26  
Benzo(k)fluoranthene  
Concen: Below ug/mL  
RT: 12.820 min Scan# 1254  
Delta R.T. 0.021 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

Tgt Ion	Ratio	Lower	Upper
252	100		
253	0.0	1.8	41.8#
125	0.0	0.0	31.0
126	0.0	0.0	34.0

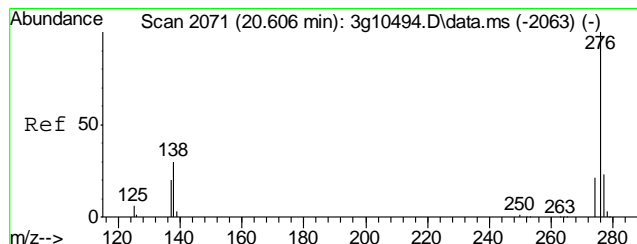
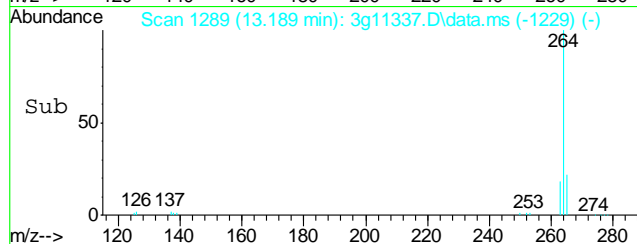
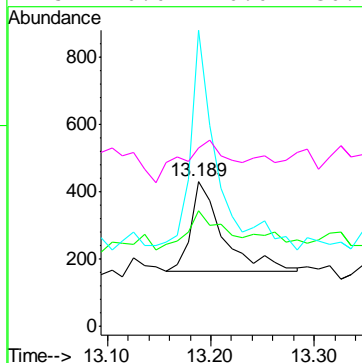
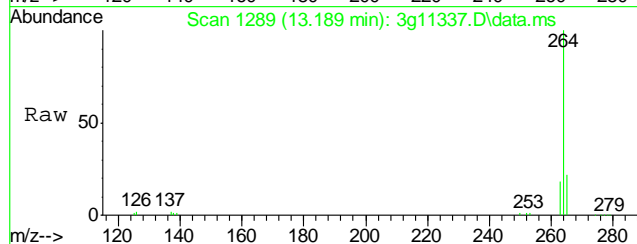






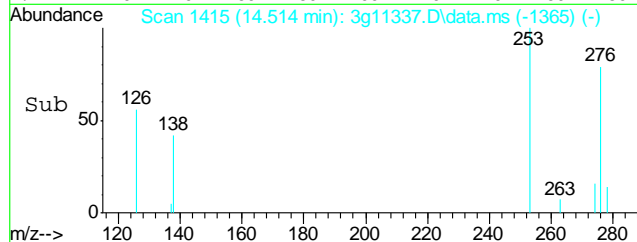
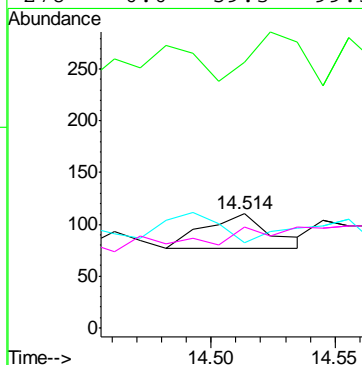
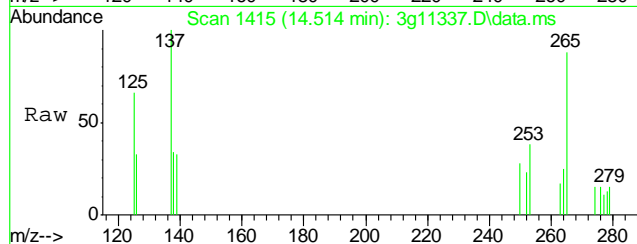
#27  
Benzo(a)pyrene  
Concen: Below ug/mL  
RT: 13.189 min Scan# 1289  
Delta R.T. 0.075 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

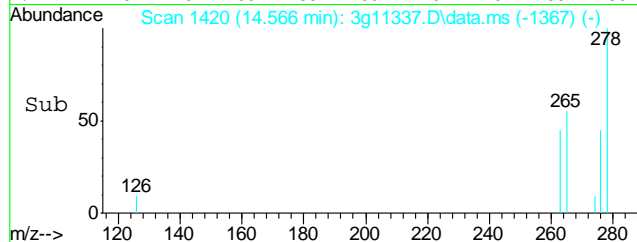
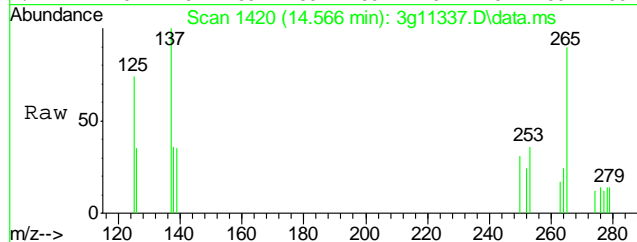
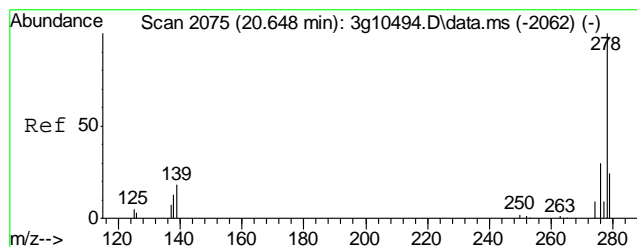
Tgt Ion	Ratio	Lower	Upper
252	100		
253	33.9	1.4	41.4
126	205.1	0.0	33.6#
125	0.0	0.0	30.7



#28  
Indeno(1,2,3-cd)pyrene  
Concen: Below ug/mL  
RT: 14.514 min Scan# 1415  
Delta R.T. 0.022 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

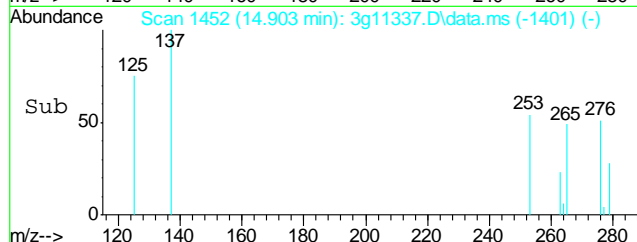
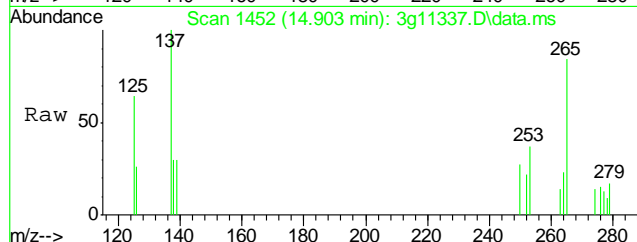
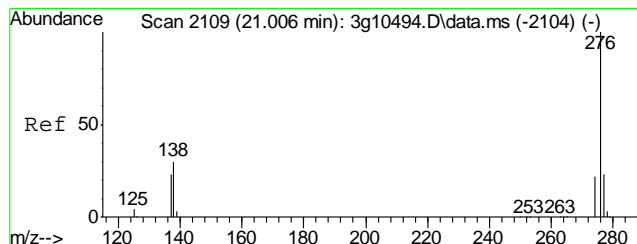
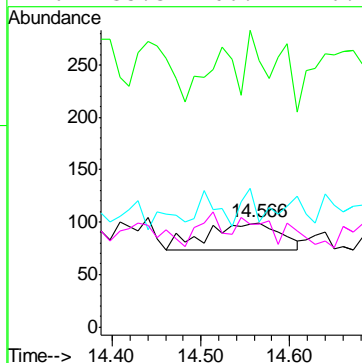
Tgt Ion	Ratio	Lower	Upper
276	100		
138	121.3	5.3	45.3#
277	0.0	5.0	45.0#
278	0.0	59.3	99.3#





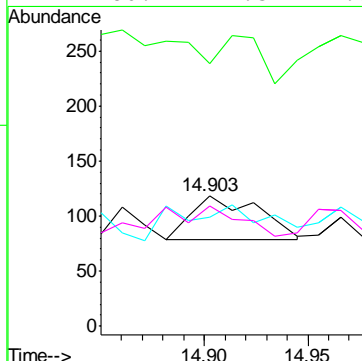
#29  
Dibenz(a,h)anthracene  
Concen: Below ug/mL  
RT: 14.566 min Scan# 1420  
Delta R.T. 0.053 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

Tgt Ion	Ratio	Lower	Upper
278	100		
139	45.8	0.0	38.4#
279	38.6	3.1	43.1
276	35.3	106.1	146.1#



#30  
Benzo(g,h,i)perylene  
Concen: Below ug/mL  
RT: 14.903 min Scan# 1452  
Delta R.T. 0.032 min  
Lab File: 3g11337.D  
Acq: 21 Sep 12 1:44 pm

Tgt Ion	Ratio	Lower	Upper
276	100		
138	0.0	1.3	41.3#
277	110.2	3.4	43.4#
274	80.7	1.3	41.3#



## GC Volatiles

### QC Data Summaries

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Includes the following where applicable:

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

Method Blank Summary

Job Number: D38939  
Account: XTOKRWR XTO Energy  
Project: T78X-12G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB968-MB	GB17636.D	1	09/20/12	SK	n/a	n/a	GGB968

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

D38939-1

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

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	90% 60-140%

10.1.1  
10

Blank Spike Summary

Job Number: D38939  
Account: XTOKRWR XTO Energy  
Project: T78X-12G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB968-BS	GB17637.D	1	09/20/12	SK	n/a	n/a	GGB968

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

D38939-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	129	117	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	104%	60-140%

\* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D38939  
Account: XTOKRWR XTO Energy  
Project: T78X-12G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D38937-1MS	GB17639.D	1	09/20/12	SK	n/a	n/a	GGB968
D38937-1MSD	GB17640.D	1	09/20/12	SK	n/a	n/a	GGB968
D38937-1	GB17638.D	1	09/20/12	SK	n/a	n/a	GGB968

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

D38939-1

CAS No.	Compound	D38937-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	7.98	J	138	163	113	163	113	0	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D38937-1	Limits
120-82-1	1,2,4-Trichlorobenzene	97%	93%	89%	60-140%

\* = Outside of Control Limits.

GC Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\092012\GB17642.D\FID1A.CH Vial: 9  
 Signal #2 : Y:\1\DATA\092012\GB17642.D\FID2B.CH  
 Acq On : 20 Sep 2012 8:48 pm Operator: StephK  
 Sample : D38939-1, 50X Inst : GC/MS Ins  
 Misc : GC3124,GGB968,5.041,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Sep 21 09:17:27 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Thu Sep 20 16:54:28 2012  
 Response via : Initial Calibration  
 DataAcq Meth : TVB4.M

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

	Compound	R.T.	Response	Conc	Units
-----					
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.37	2719889	86.803	%
10) S	1,2,4-Trichlorobenzene (P)	14.37	14699210	90.441	%
Target Compounds					
1) H	TVH-Gasoline	7.23	3667011	<MDL	mg/L
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T	Benzene	0.00	0	N.D.	ug/L d
6) T	Toluene	7.66	227753	0.575	ug/L
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	0.00	0	N.D.	ug/L d
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.55	220587	1.118	ug/L

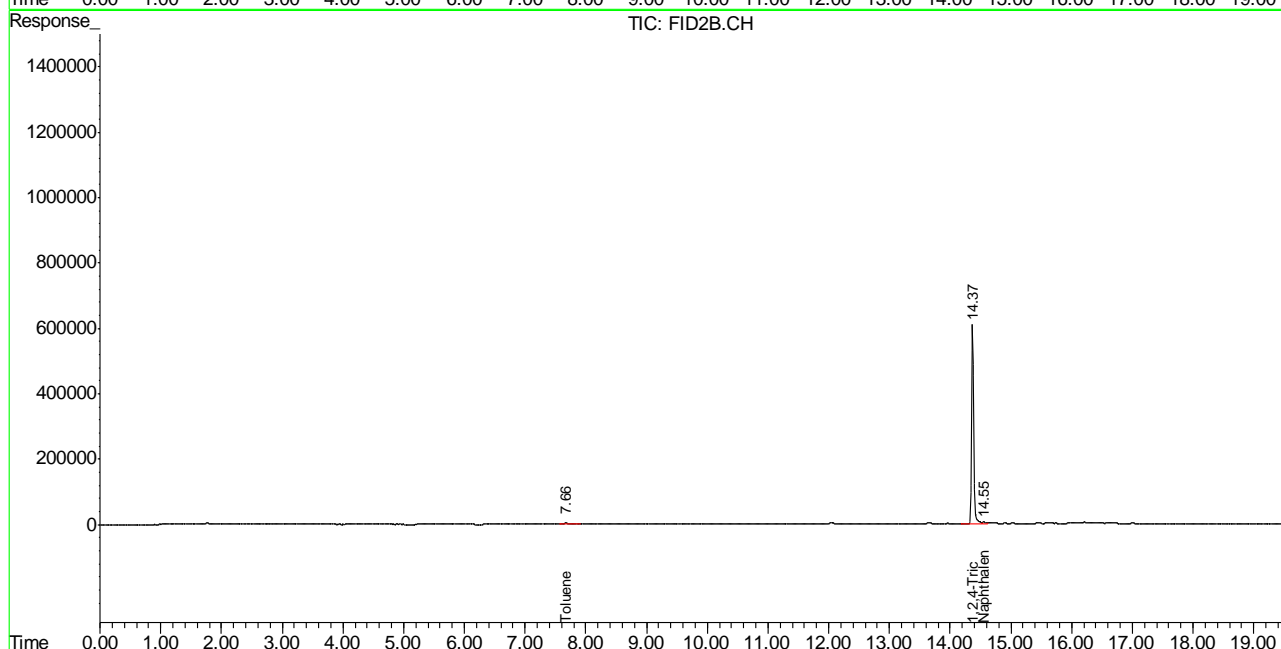
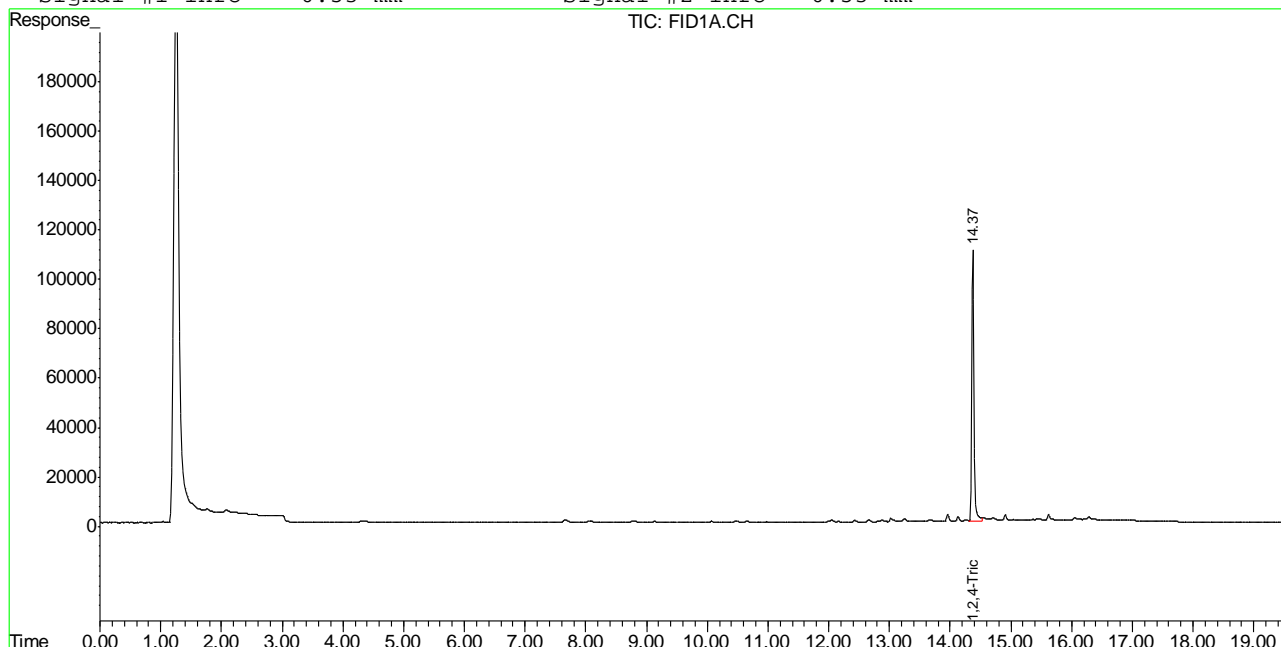


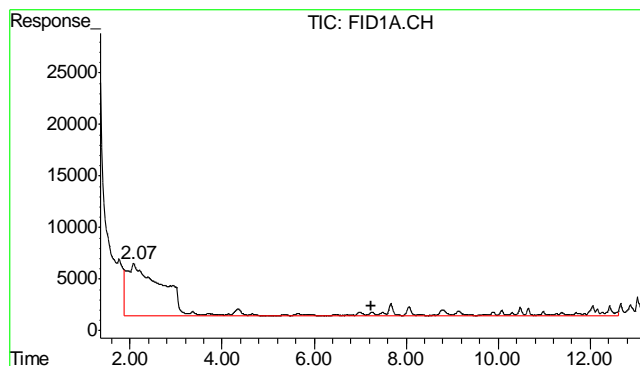
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\092012\GB17642.D\FID1A.CH Vial: 9  
 Signal #2 : Y:\1\DATA\092012\GB17642.D\FID2B.CH  
 Acq On : 20 Sep 2012 8:48 pm Operator: StephK  
 Sample : D38939-1, 50X Inst : GC/MS Ins  
 Misc : GC3124,GGB968,5.041,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Sep 21 8:26 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Thu Sep 20 16:54:28 2012  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TVB4.M

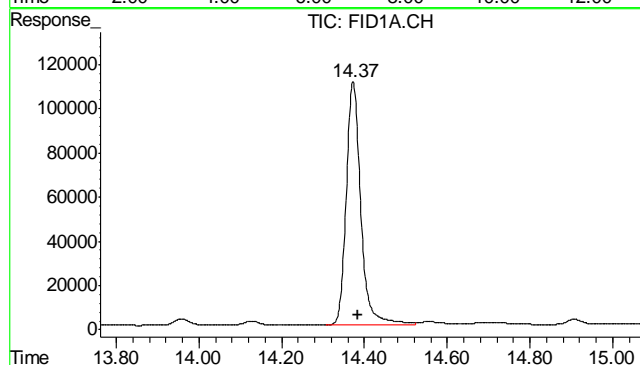
Volume Inj. :  
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





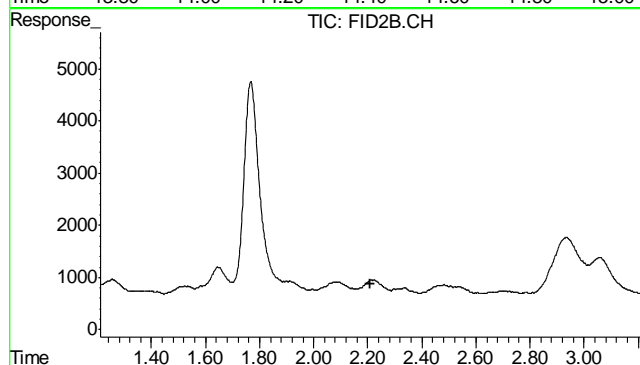
#1 TVH-Gasoline

R.T.: 7.230 min  
Delta R.T.: 0.000 min  
Response: 3667011  
Conc: N.D.



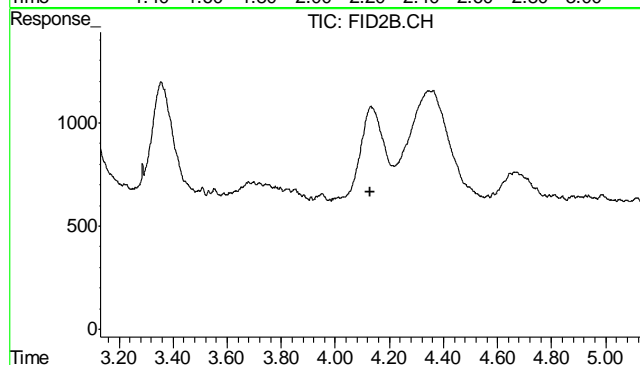
#2 1,2,4-Trichlorobenzene

R.T.: 14.373 min  
Delta R.T.: -0.012 min  
Response: 2719889  
Conc: 86.80 %



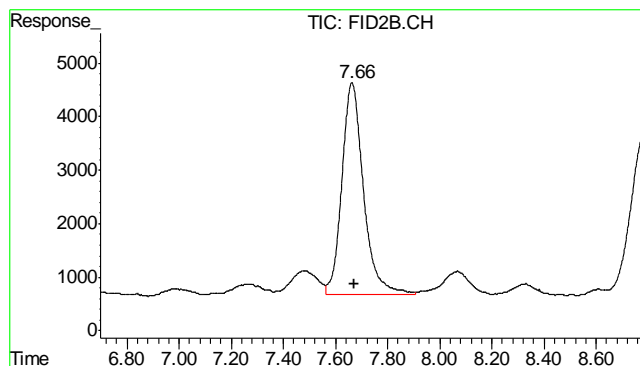
#4 Methyl-t-butyl-ether

R.T.: 0.000 min  
Exp R.T.: 2.210 min  
Response: 0  
Conc: N.D.



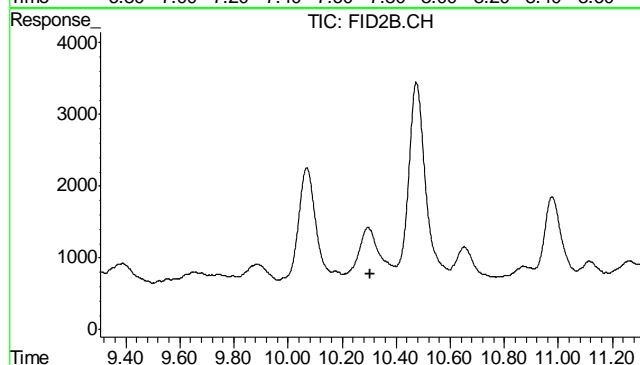
#5 Benzene

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



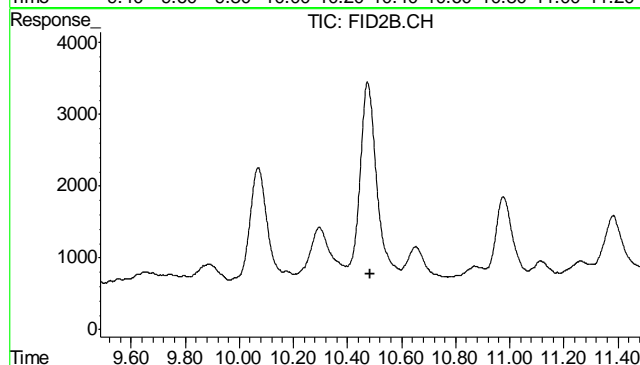
#6 Toluene

R.T.: 7.663 min  
Delta R.T.: -0.011 min  
Response: 227753  
Conc: 0.57 ug/L



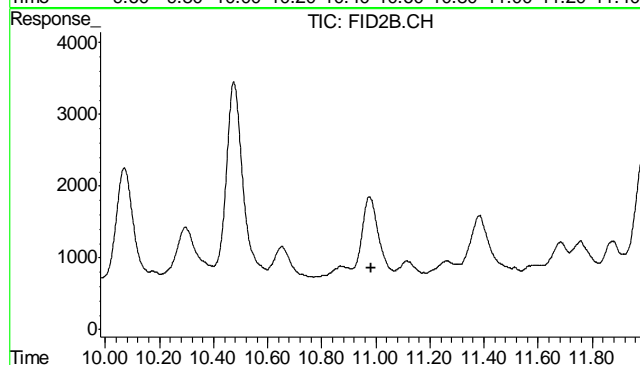
#7 Ethylbenzene

R.T.: 0.000 min  
Exp R.T.: 10.306 min  
Response: 0  
Conc: N.D.



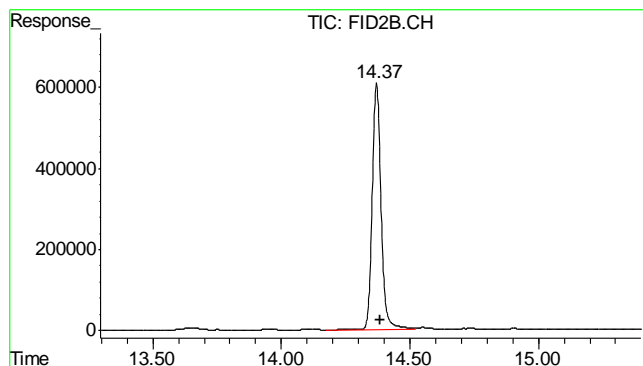
#8 m,p-Xylene

R.T.: 0.000 min  
Exp R.T.: 10.486 min  
Response: 0  
Conc: N.D.



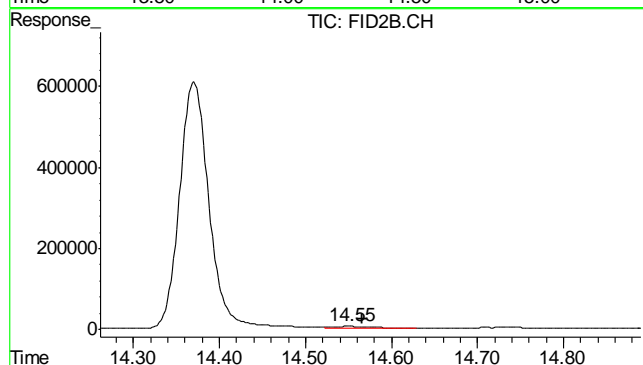
#9 o-Xylene

R.T.: 0.000 min  
Exp R.T.: 10.981 min  
Response: 0  
Conc: N.D.



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

R.T.: 14.370 min  
Delta R.T.: -0.013 min  
Response: 14699210  
Conc: 90.44 %



#11 Naphthalene

R.T.: 14.551 min  
Delta R.T.: -0.014 min  
Response: 220587  
Conc: 1.12 ug/L

11.1.1  
11

## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\092012\GB17636.D\FID1A.CH Vial: 3  
 Signal #2 : Y:\1\DATA\092012\GB17636.D\FID2B.CH  
 Acq On : 20 Sep 2012 5:14 pm Operator: StephK  
 Sample : MB Inst : GC/MS Ins  
 Misc : GC3124,GGB968,5.000,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Sep 21 09:17:03 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Thu Sep 20 16:54:28 2012  
 Response via : Initial Calibration  
 DataAcq Meth : TVB4.M

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

	Compound	R.T.	Response	Conc	Units
-----					
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.36	2815908	89.867	%
10) S	1,2,4-Trichlorobenzene (P)	14.36	15243477	93.790	%
Target Compounds					
1) H	TVH-Gasoline	7.23	3807955	<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	252179	0.636	ug/L
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	0.00	0	N.D.	ug/L d
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.54	181892	0.922	ug/L

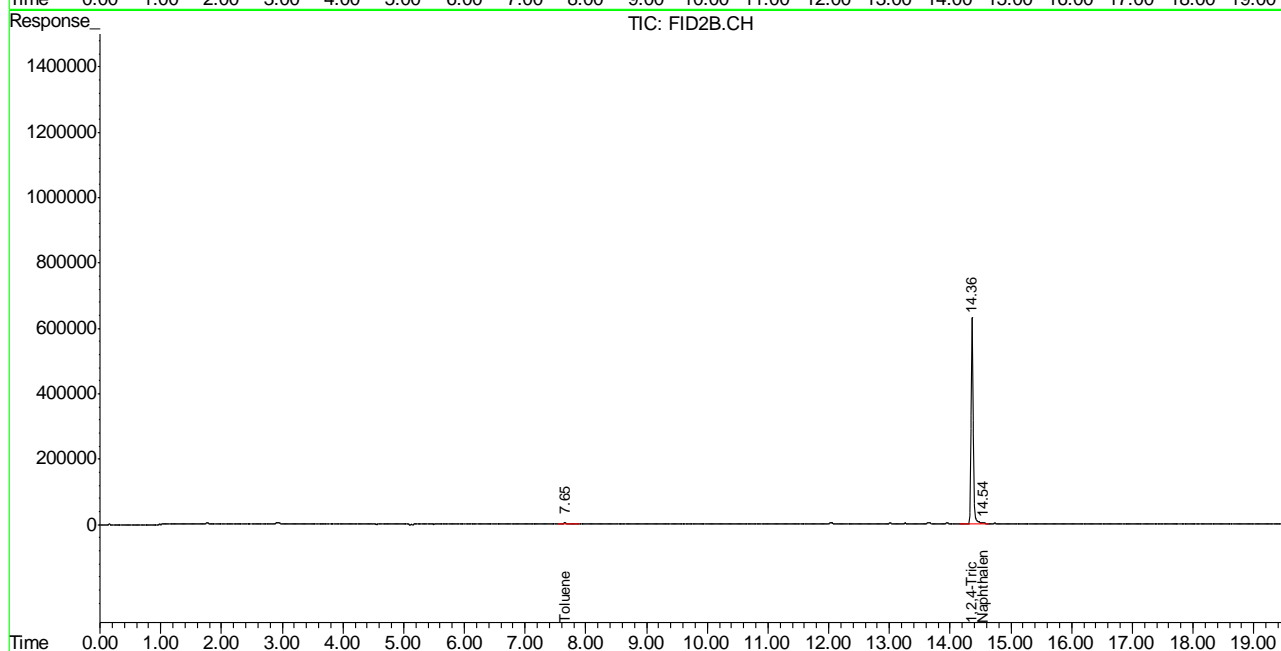
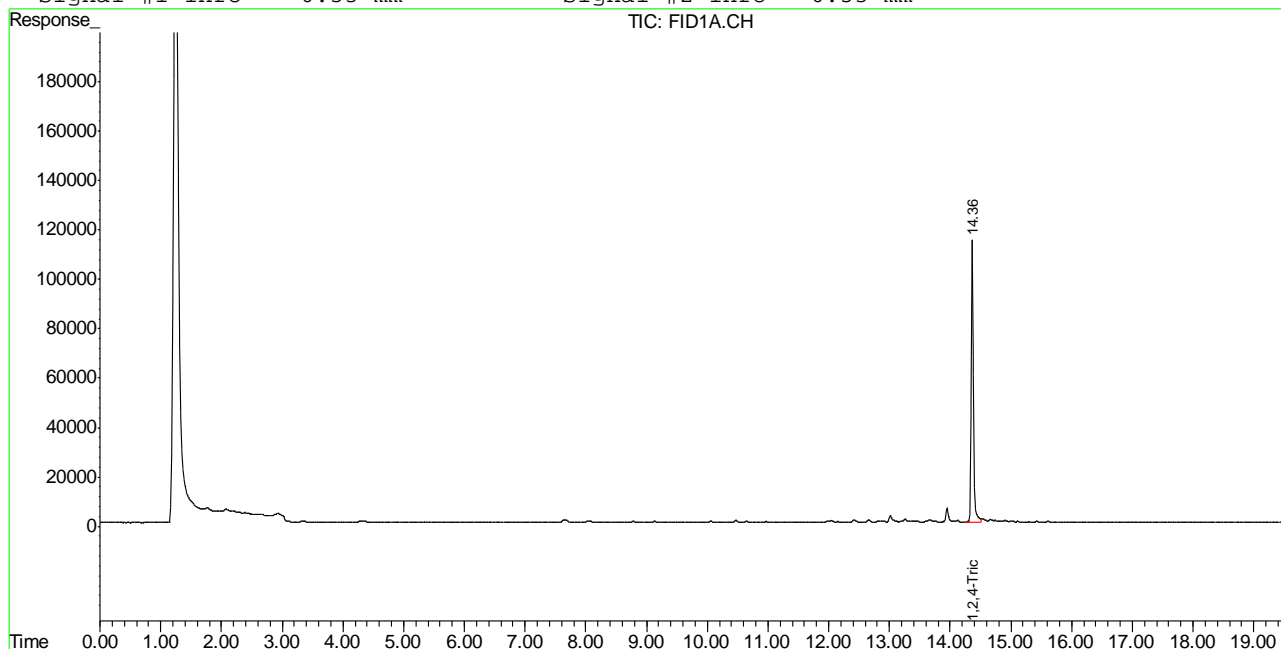
-----  
 (f)=RT Delta > 1/2 Window (m)=manual int.  
 GB17636.D TB868GB868SOIL.M Fri Sep 21 09:20:54 2012 GC

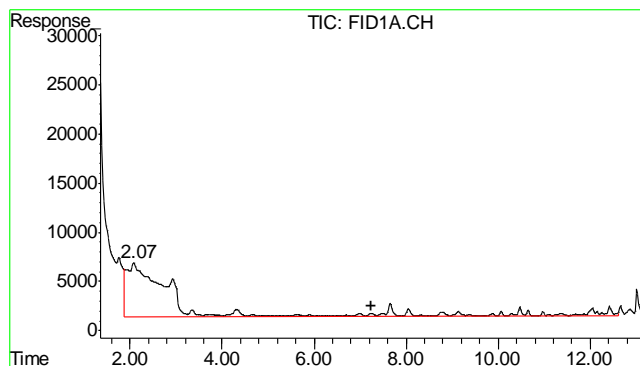
## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\092012\GB17636.D\FID1A.CH Vial: 3  
Signal #2 : Y:\1\DATA\092012\GB17636.D\FID2B.CH  
Acq On : 20 Sep 2012 5:14 pm Operator: StephK  
Sample : MB Inst : GC/MS Ins  
Misc : GC3124,GGB968,5.000,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Sep 21 8:25 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Thu Sep 20 16:54:28 2012  
Response via : Multiple Level Calibration  
DataAcq Meth : TVB4.M

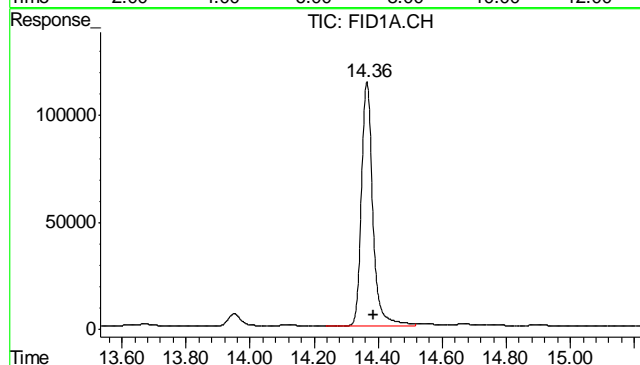
Volume Inj. :  
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





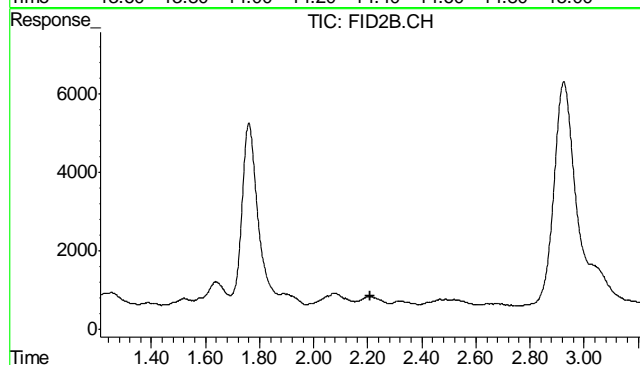
#1 TVH-Gasoline

R.T.: 7.230 min  
Delta R.T.: 0.000 min  
Response: 3807955  
Conc: N.D.



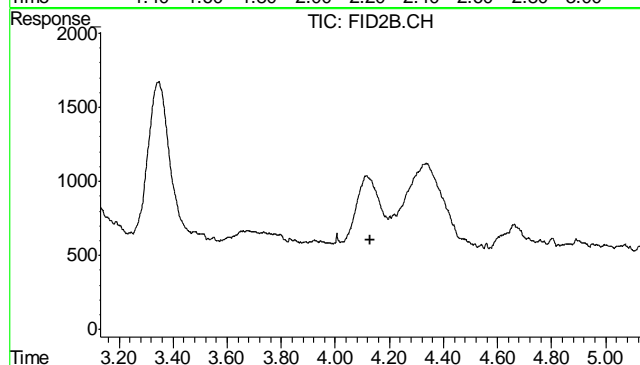
#2 1,2,4-Trichlorobenzene

R.T.: 14.365 min  
Delta R.T.: -0.020 min  
Response: 2815908  
Conc: 89.87 %



#4 Methyl-t-butyl-ether

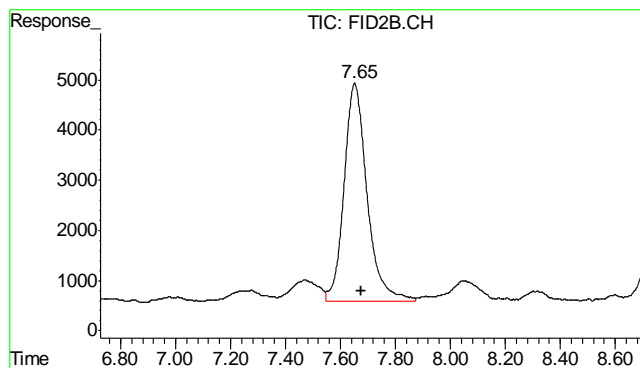
R.T.: 0.000 min  
Exp R.T.: 2.210 min  
Response: 0  
Conc: N.D.



#5 Benzene

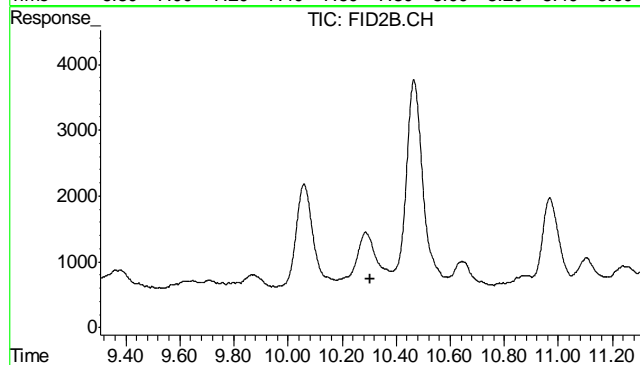
R.T.: 0.000 min  
Exp R.T.: 4.131 min  
Response: 0  
Conc: N.D.

11.21  
11



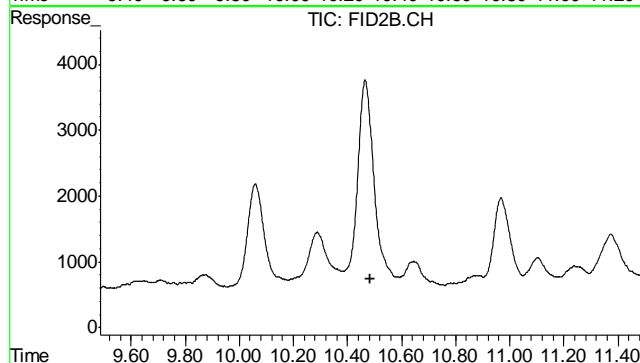
#6 Toluene

R.T.: 7.652 min  
Delta R.T.: -0.022 min  
Response: 252179  
Conc: 0.64 ug/L



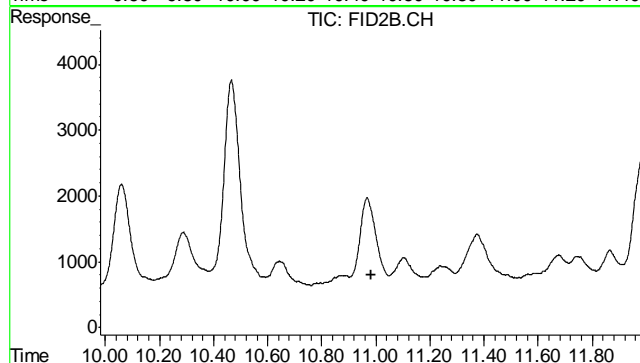
#7 Ethylbenzene

R.T.: 0.000 min  
Exp R.T.: 10.306 min  
Response: 0  
Conc: N.D.



#8 m,p-Xylene

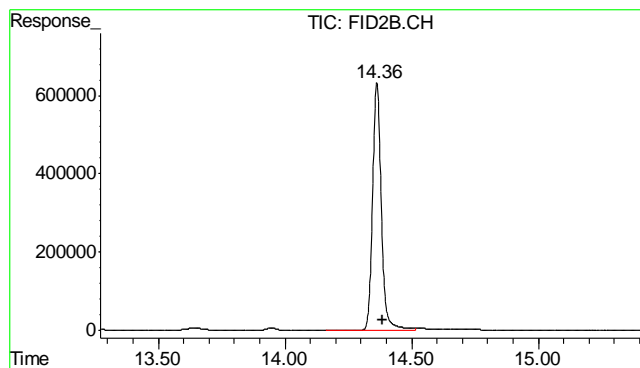
R.T.: 0.000 min  
Exp R.T.: 10.486 min  
Response: 0  
Conc: N.D.



#9 o-Xylene

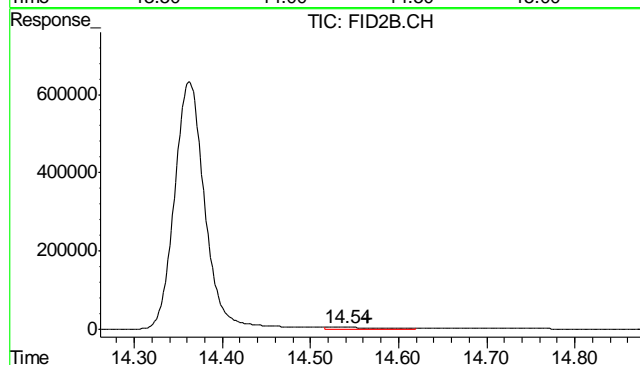
R.T.: 0.000 min  
Exp R.T.: 10.981 min  
Response: 0  
Conc: N.D.





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

R.T.: 14.363 min  
Delta R.T.: -0.020 min  
Response: 15243477  
Conc: 93.79 %



#11 Naphthalene

R.T.: 14.540 min  
Delta R.T.: -0.026 min  
Response: 181892  
Conc: 0.92 ug/L

11.2.1  
11

## GC Semi-volatiles

### QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D38939  
Account: XTOKRWR XTO Energy  
Project: T78X-12G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6680-MB	FD17667.D	1	09/21/12	AV	09/21/12	OP6680	GFD904

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

D38939-1

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

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	83% 43-136%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D38939  
**Account:** XTOKRWR XTO Energy  
**Project:** T78X-12G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6680-BS	FD17669.D	1	09/21/12	AV	09/21/12	OP6680	GFD904

The QC reported here applies to the following samples:

Method: SW846-8015B

D38939-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	540	81	58-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	88%	43-136%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D38939  
**Account:** XTOKRWR XTO Energy  
**Project:** T78X-12G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6680-MS	FD17671.D	1	09/21/12	AV	09/21/12	OP6680	GFD904
OP6680-MSD	FD17673.D	1	09/21/12	AV	09/21/12	OP6680	GFD904
D38937-1	FD17675.D	1	09/21/12	AV	09/21/12	OP6680	GFD904

The QC reported here applies to the following samples:

Method: SW846-8015B

D38939-1

CAS No.	Compound	D38937-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	766		750	1300	71	1200	58	8	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D38937-1	Limits
84-15-1	o-Terphenyl	80%	68%	80%	43-136%

\* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\SEPTEMBER\FD092112\FD17683.D Vial: 11  
Acq On : 9-21-2012 06:19:45 PM Operator: ashleyv  
Sample : D38939-1 Inst : FID5  
Misc : OP6680,GFD904,30.16,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Sep 24 08:41:34 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Thu Sep 20 09:45:06 2012  
Response via : Initial Calibration  
DataAcq Meth : DRODUAL.M

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

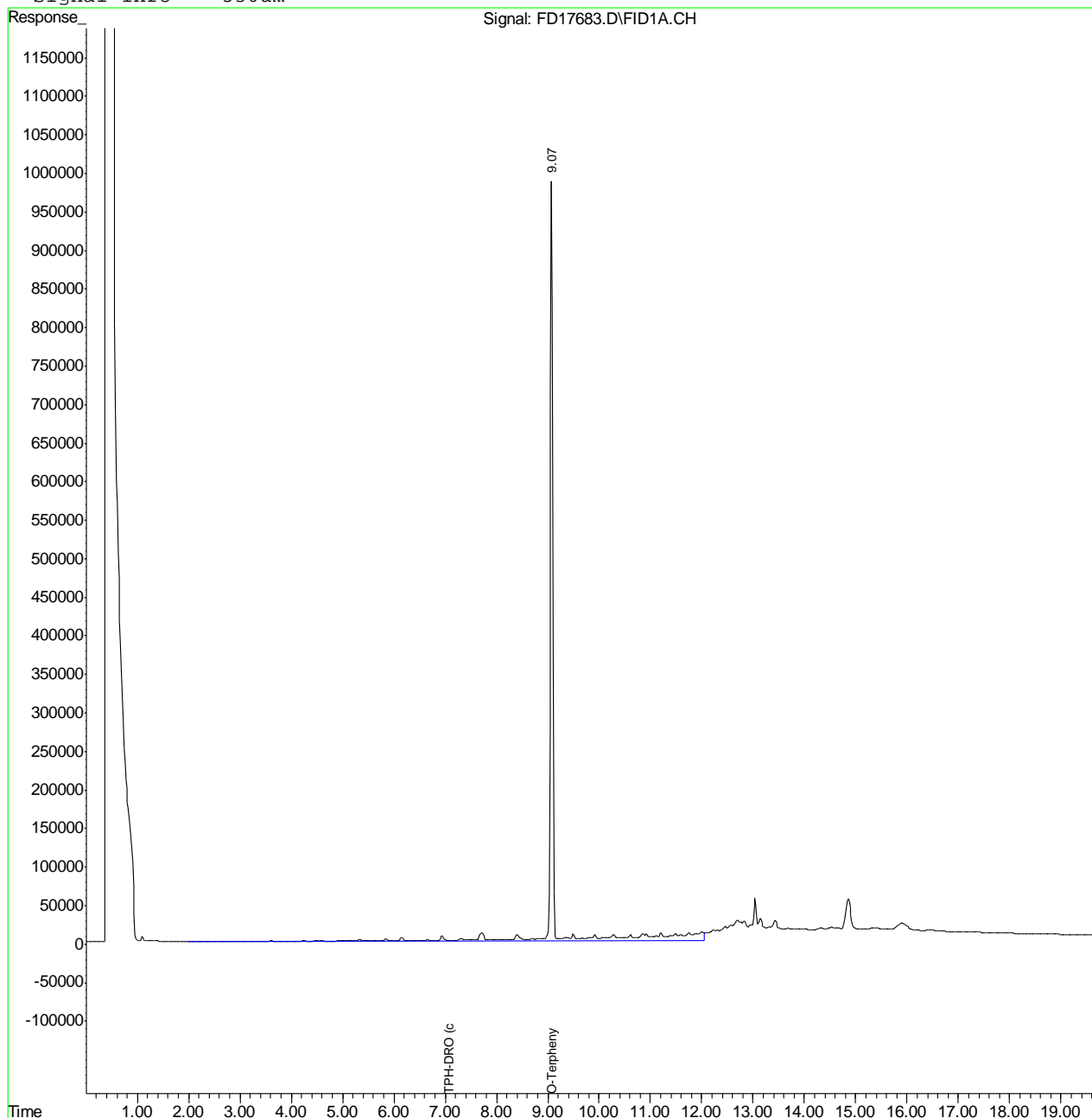
Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	9.08	33043290	699.499 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	7.08	16094638	417.985 mg/L

Quantitation Report (QT Reviewed)

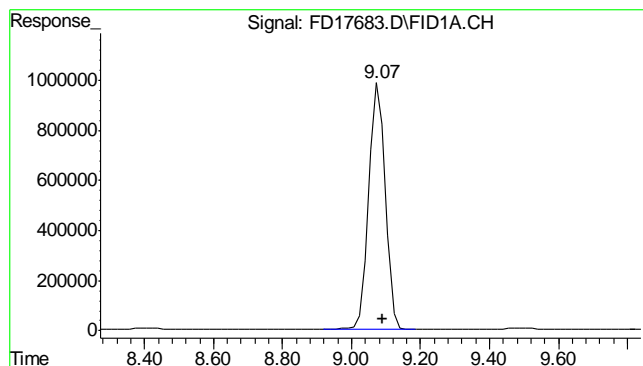
Data File : C:\MSDCHEM\2\DATA\2012\SEPTEMBER\FD092112\FD17683.D Vial: 11  
 Acq On : 9-21-2012 06:19:45 PM Operator: ashleyv  
 Sample : D38939-1 Inst : FID5  
 Misc : OP6680,GFD904,30.16,,,2,1 Multiplr: 1.00  
 IntFile : autoint1.e  
 Quant Time: Sep 24 8:42 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)  
 Title : 8015B TEH  
 Last Update : Thu Sep 20 09:45:06 2012  
 Response via : Multiple Level Calibration  
 DataAcq Meth : DRODUAL.M

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

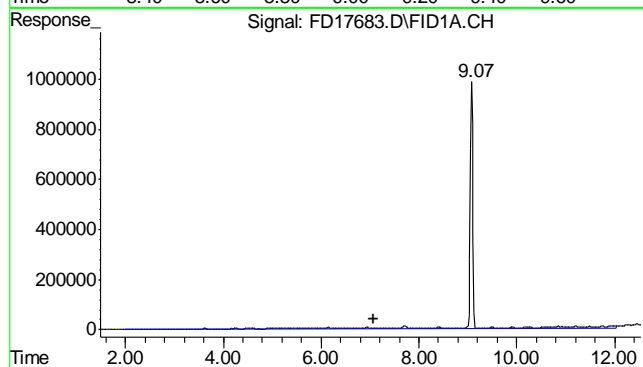






#1 O-Terphenyl

R.T.: 9.082 min  
 Delta R.T.: -0.008 min  
 Response: 33043290  
 Conc: 699.50 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 7.075 min  
 Delta R.T.: 0.000 min  
 Response: 16094638  
 Conc: 417.99 mg/L m

13.1.1  
 13

## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\SEPTEMBER\FD092112\FD17667.D Vial: 3  
Acq On : 21 Sep 2012 11:08 am Operator: ashleyv  
Sample : OP6680-MB Inst : FID5  
Misc : OP6680,GFD904,30.00,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Sep 24 08:29:42 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Thu Sep 20 09:45:06 2012  
Response via : Initial Calibration  
DataAcq Meth : DRODUAL.M

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

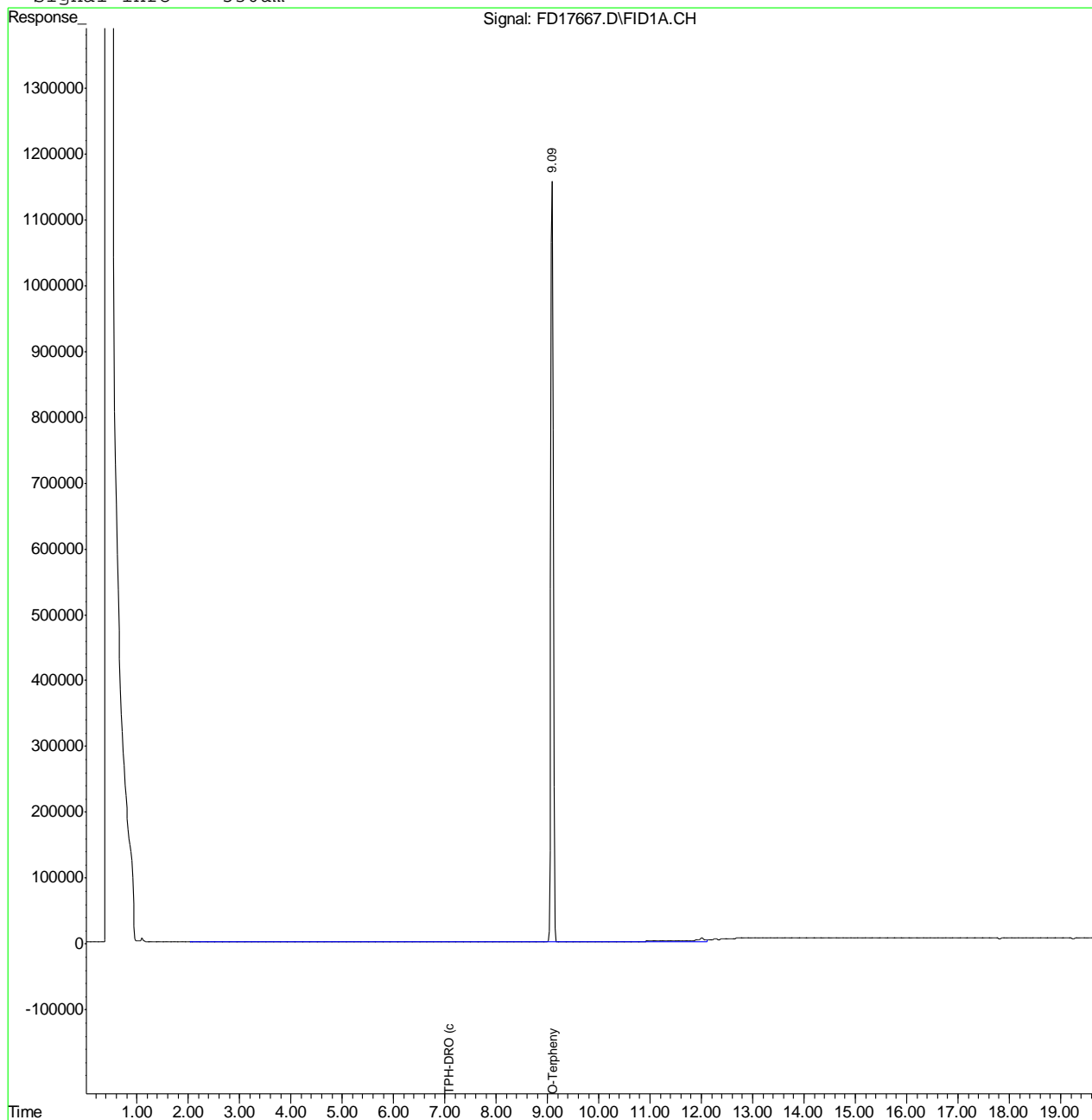
Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	9.10	39395781	833.976 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	7.08	2216184	57.555 mg/L

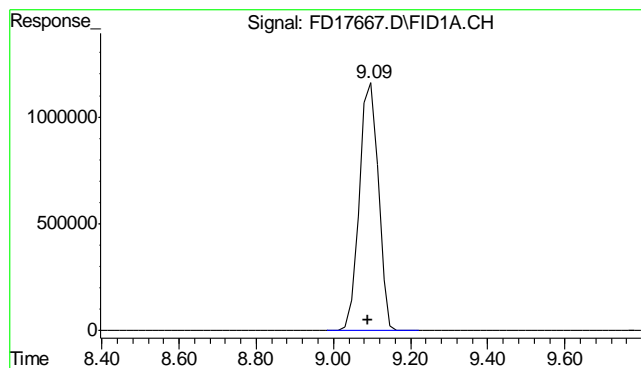
## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\SEPTEMBER\FD092112\FD17667.D Vial: 3  
Acq On : 21 Sep 2012 11:08 am Operator: ashleyv  
Sample : OP6680-MB Inst : FID5  
Misc : OP6680,GFD904,30.00,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Sep 24 8:29 2012 Quant Results File: DRO-GFD823F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD823F.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Thu Sep 20 09:45:06 2012  
Response via : Multiple Level Calibration  
DataAcq Meth : DRODUAL.M

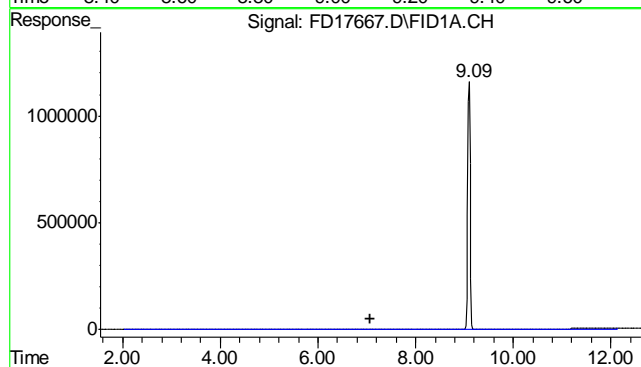
Volume Inj. : 1ul  
Signal Phase : RTX-5  
Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.099 min  
Delta R.T.: 0.009 min  
Response: 39395781  
Conc: 833.98 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 7.075 min  
Delta R.T.: 0.000 min  
Response: 2216184  
Conc: 57.56 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: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8469  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 09/24/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.96	.57		
Antimony	3.0	.17	.12		
Arsenic	2.5	.44	.56		
Barium	1.0	.01	.11	0.090	<1.0
Beryllium	1.0	.13	.15		
Boron	5.0	.1	.06		
Cadmium	1.0	.06	.036	0.0	<1.0
Calcium	40	.54	9		
Chromium	1.0	.03	.03	0.020	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	-0.080	<1.0
Iron	7.0	.12	.87		
Lead	5.0	.19	.24	0.10	<5.0
Lithium	0.20	.05	.054		
Magnesium	20	.65	.98		
Manganese	0.50	.12	.022		
Molybdenum	1.0	.21	.08		
Nickel	3.0	.05	.026	-0.020	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	-0.41	<5.0
Silicon	5.0	.29	.37		
Silver	3.0	.04	.06	-0.13	<3.0
Sodium	40	.59	1.9		
Strontium	5.0	.004	.017		
Thallium	1.0	.29	.53		
Tin	5.0	1.2	2		
Titanium	1.0	.01	.038		
Uranium	5.0	.22	.26		
Vanadium	1.0	.02	.036		
Zinc	3.0	.05	.37	0.090	<3.0

Associated samples MP8469: D38939-1

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8469  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8469  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 09/24/12

Metal	D38897-1 Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	500	692	233	90.9	75-125
Beryllium					
Boron					
Cadmium	0.18	52.9	58.3	90.4	75-125
Calcium	anr				
Chromium	65.2	121	58.3	89.4	75-125
Cobalt					
Copper	12.1	67.4	58.3	94.8	75-125
Iron					
Lead	9.6	117	117	92.1	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	22.5	71.6	58.3	84.2	75-125
Phosphorus					
Potassium					
Selenium	0.0	104	117	89.2	75-125
Silicon					
Silver	0.069	22.5	23.3	96.2	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	41.1	89.9	58.3	83.7	75-125

Associated samples MP8469: D38939-1

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



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8469  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8469  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 09/24/12

Metal	D38897-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	500	738	233	110.6	6.4	20
Beryllium						
Boron						
Cadmium	0.18	53.2	58.3	91.0	0.6	20
Calcium	anr					
Chromium	65.2	124	58.3	94.5	2.4	20
Cobalt						
Copper	12.1	65.9	58.3	92.3	2.3	20
Iron						
Lead	9.6	115	117	90.4	1.7	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	22.5	71.3	58.3	83.7	0.4	20
Phosphorus						
Potassium						
Selenium	0.0	105	117	90.0	1.0	20
Silicon						
Silver	0.069	22.7	23.3	97.0	0.9	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	41.1	89.4	58.3	82.8	0.6	20

Associated samples MP8469: D38939-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8469  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

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

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8469  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 09/24/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	182	200	91.0	80-120
Beryllium				
Boron				
Cadmium	47.3	50	94.6	80-120
Calcium	anr			
Chromium	50.3	50	100.6	80-120
Cobalt				
Copper	44.4	50	88.8	80-120
Iron				
Lead	98.4	100	98.4	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	47.5	50	95.0	80-120
Phosphorus				
Potassium				
Selenium	93.7	100	93.7	80-120
Silicon				
Silver	19.7	20	98.5	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	45.6	50	91.2	80-120

Associated samples MP8469: D38939-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8469  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8469  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date: 09/24/12

Metal	D38897-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	4370	4600	9.4	0-10
Beryllium				
Boron				
Cadmium	1.60	0.00	100.0(a)	0-10
Calcium	anr			
Chromium	570	671	11.1*(b)	0-10
Cobalt				
Copper	106	102	4.5	0-10
Iron				
Lead	84.3	89.0	5.6	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	197	229	16.1*(b)	0-10
Phosphorus				
Potassium				
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.600	0.00	100.0(a)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	400	418	16.2*(b)	0-10

Associated samples MP8469: D38939-1

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

14.1.4  
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8469  
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: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8470  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 09/24/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.006	.06	0.0024	<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 MP8470: D38939-1

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: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8470  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 09/24/12

Metal	D38897-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	6.7	124	117	100.6
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8470: D38939-1

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: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8470  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 09/24/12

Metal	D38897-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	6.7	123	117	99.7	0.8	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP8470: D38939-1

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: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8470  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: mg/kg

Prep Date: 09/24/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	103	100	103.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8470: D38939-1

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: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8470  
Matrix Type: SOLID

Methods: SW846 6020A  
Units: ug/l

Prep Date: 09/24/12

Metal	D38897-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	58.3	56.1	3.7	0-10	
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP8470: D38939-1

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: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8479  
Matrix Type: SOLID

Methods: SW846 7471B  
Units: mg/kg

Prep Date: 09/25/12

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.0009	0.00063	<0.10

Associated samples MP8479: D38939-1

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: D38939  
 Account: XTOKRWR - XTO Energy  
 Project: T78X-12G

QC Batch ID: MP8479  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 09/25/12

Metal	D38939-1 Original MS		Spikelot HGWSR1	% Rec	QC Limits
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Mercury	0.021	0.45	0.431	99.5	75-125
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Associated samples MP8479: D38939-1

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: D38939  
 Account: XTOKRWR - XTO Energy  
 Project: T78X-12G

QC Batch ID: MP8479  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 09/25/12

Metal	D38939-1 Original MSD		Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.021	0.45	0.431	99.5	0.0	

Associated samples MP8479: D38939-1

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: D38939  
 Account: XTOKRWR - XTO Energy  
 Project: T78X-12G

QC Batch ID: MP8479  
 Matrix Type: SOLID

Methods: SW846 7471B  
 Units: mg/kg

Prep Date: 09/25/12

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

Associated samples MP8479: D38939-1

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: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8480  
Matrix Type: AQUEOUS

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

Prep Date: 09/24/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	48	130		
Antimony	150	8.5	18		
Arsenic	130	22	42		
Barium	50	.5	9		
Beryllium	50	6.5	16		
Boron	250	5	22		
Cadmium	50	3	3		
Calcium	2000	27	80	24.0	<2000
Chromium	50	1.5	2.8		
Cobalt	25	2	2.1		
Copper	50	6	15		
Iron	350	6	100		
Lead	250	9.5	15		
Lithium	10	2.5			
Magnesium	1000	33	110	2.5	<1000
Manganese	25	6	6		
Molybdenum	50	11	11		
Nickel	150	2.5	2.9		
Phosphorus	500	70	300		
Potassium	5000	310	750		
Selenium	250	24	55		
Silicon	250	15			
Silver	150	2	4.9		
Sodium	2000	30	490	585	<2000
Strontium	25	.2	7.5		
Thallium	50	15	43		
Tin	250	60			
Titanium	50	.5			
Uranium	250	11	23		
Vanadium	50	1	2.4		
Zinc	150	2.5	12		

Associated samples MP8480: D38939-1A

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8480  
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: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8480  
Matrix Type: AQUEOUS

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

Prep Date: 09/24/12

Metal	D38940-1A Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	1050000	1270000	125000	176.0(a)	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	0.00	125000	125000	100.0	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	818000	1000000	125000	145.6(a)	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP8480: D38939-1A

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: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8480  
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: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8480  
Matrix Type: AQUEOUS

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

Prep Date: 09/24/12

Metal	D38940-1A Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	1050000	1310000	125000	208.0(a)	3.1	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	0.00	127000	125000	101.6	1.6	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	818000	1040000	125000	177.6(a)	3.9	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP8480: D38939-1A

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: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8480  
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.

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8480  
Matrix Type: AQUEOUS

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

Prep Date: 09/24/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	137000	125000	109.6	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	127000	125000	101.6	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	132000	125000	105.6	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8480: D38939-1A

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: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8480  
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: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8480  
Matrix Type: AQUEOUS

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

Prep Date: 09/24/12

Metal	D38940-1A Original SDL 1:5		%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	210000	216000	2.6	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	0.00	0.00	NC	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	164000	167000	2.4	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8480: D38939-1A

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

14.4.4  
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

QC Batch ID: MP8480  
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

14.4.4  
14

## General Chemistry

### QC Data Summaries

Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP8246/GN16921	1.0	0.0	mg/kg	60.7	66.4	109.0	80-120%
Specific Conductivity	GP8271/GN16934			umhos/cm	99.9	9980	99.9	90-110%
pH	GN16878			su	8.00su	7.96	99.5	99.3-100.7%

Associated Samples:  
Batch GP8246: D38939-1  
Batch GP8271: D38939-1  
Batch GN16878: D38939-1  
(\*) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP8246/GN16921	D38939-1	mg/kg	0.0	0.0	31.4(a)	0-20%
Redox Potential Vs H2	GN16882	D38940-1	mv	13.5	13.0	3.8	0-20%

Associated Samples:

Batch GP8246: D38939-1

Batch GN16882: D38939-1

(\*) Outside of QC limits

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

MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP8246/GN16921	D38939-1	mg/kg	0.0	40	39.5	98.8	75-125%

Associated Samples:  
Batch GP8246: D38939-1  
(\*) Outside of QC limits  
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D38939  
Account: XTOKRWR - XTO Energy  
Project: T78X-12G

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP8246/GN16921	D38939-1	mg/kg	0.0	40	40.4	2.2	

Associated Samples:  
Batch GP8246: D38939-1  
(\*) Outside of QC limits  
(N) Matrix Spike Rec. outside of QC limits