



12/13/11

## Technical Report for

**KRW Consulting, Inc.**

**XOM FRU 297-17A**

**1108-13A**

**Accutest Job Number: D29644**

**Sampling Date: 11/18/11**

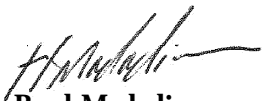
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**Total number of pages in report: 137**



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

  
**Brad Madadian**  
**Laboratory Director**

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

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

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Test results relate only to samples analyzed.

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Sample Summary

KRW Consulting, Inc.

Job No: D29644

XOM FRU 297-17A  
Project No: 1108-13A

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D29644-1	11/18/11	10:25	RR	11/19/11	SO	Soil	RESERVE PIT MIX BLEND 11-8+ 11-9
D29644-1R	11/18/11	10:25	RR	11/19/11	SO	Soil	RESERVE PIT MIX BLEND 11-8+ 11-9
D29644-1RA	11/18/11	10:25	RR	11/19/11	SO	Soil	RESERVE PIT MIX BLEND 11-8+ 11-9

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

## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** KRW Consulting, Inc.

**Job No** D29644

**Site:** XOM FRU 297-17A

**Report Dat** 12/13/2011 3:42:35 PM

On 11/19/2011, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2.1 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D29644 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:** V3V848

- All samples were analyzed within the recommended method holding time.
- Sample(s) D29644-1MS, D29644-1MSD 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:** OP4929

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D29647-1RMS, D29647-1RMSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### Volatiles by GC By Method SW846 8015B

**Matrix** SO

**Batch ID:** GGB794

- All samples were analyzed within the recommended method holding time.
- Sample(s) D29577-1MS, D29577-1MSD 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:** OP4885

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29644-1MS, D29644-1MSD were used as the QC samples indicated.

## Metals By Method SW846 6010B

**Matrix** AQ

**Batch ID:** MP6373

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29787-1MS, D29787-1MSD 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:** MP6361

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29760-1MS, D29760-1MSD, D29760-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Barium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The serial dilution RPD(s) for Cadmium, Selenium, Silver are outside control limits for sample MP6361-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- The serial dilution RPD(s) for Chromium, Nickel, Zinc are outside control limits for sample MP6361-SD1. Serial dilution indicates possible matrix interference.
- D29644-1R for Selenium: Elevated detection limit due to dilution required for possible matrix interference.

## Metals By Method SW846 6020

**Matrix** SO

**Batch ID:** MP6362

- All samples were digested and analyzed within the recommended method holding time.
- Sample(s) D29759-1MS, D29759-1MSD, D29759-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Arsenic are outside control limits for sample MP6362-SD1. Serial dilution indicates possible matrix interference.
- MP6362-MB1 for Arsenic: All sample results < RL or > 10x MB concentration.

## Metals By Method SW846 7471A

**Matrix** SO

**Batch ID:** MP6363

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D25269-9MS, D25269-9MSD were used as the QC samples for the metals analysis.

## Wet Chemistry By Method ASTM D1498-76M

**Matrix** SO

**Batch ID:** GN12695

- Sample(s) D29644-1RDUP were used as the QC samples for the Redox Potential Vs H2 analysis.

## Wet Chemistry By Method SM19 2540B M

**Matrix** SO

**Batch ID:** GN12598

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

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

**Matrix** SO

**Batch ID:** R11033

- The data for SW846 3060/7196A M meets quality control requirements.
- D29644-1R for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

**Wet Chemistry By Method SW846 3060A/7196A****Matrix** SO**Batch ID:** M:GP13883

- The data for SW846 3060A/7196A meets quality control requirements.
- D29644-1R for Chromium, Hexavalent: Analysis performed at Accutest Laboratories, Marlborough, MA.

**Wet Chemistry By Method SW846 9045C****Matrix** SO**Batch ID:** GN12694

- The following sample was run outside of holding time for method SW846 9045C: D29644-1R.

**Wet Chemistry By Method USDA HANDBOOK 60****Matrix** SO**Batch ID:** MP6373

- D29644-1RA for Sodium Adsorption Ratio: Calculated as:  $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

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

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

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

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Accutest Mountain States**Job No** D29644**Site:** KRWCCOL: XOM FRU 297-17A**Report Date** 12/12/2011 11:28:21 AM

1 Sample(s) was collected on 11/18/2011 and were received at Accutest on 11/19/2011 properly preserved, at 1.6 Deg. C and intact. These Samples received an Accutest job number of D29644. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

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

**Matrix** SO**Batch ID:** GP13883

- All samples were distilled within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29653-14DUP, D29653-14MS were used as the QC samples for Chromium, Hexavalent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(D29644).



## Sample Results

## Report of Analysis

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## Report of Analysis

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**Client Sample ID:** RESERVE PIT MIX BLEND 11-8+ 11-9**Lab Sample ID:** D29644-1**Date Sampled:** 11/18/11**Matrix:** SO - Soil**Date Received:** 11/19/11**Method:** SW846 8260B**Percent Solids:** 82.9**Project:** XOM FRU 297-17A

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V14682.D	1	11/21/11	DC	n/a	n/a	V3V848
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.09 g	5.0 ml	100 ul
Run #2			

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	70	31	ug/kg	
108-88-3	Toluene	ND	140	70	ug/kg	
100-41-4	Ethylbenzene	ND	140	35	ug/kg	
1330-20-7	Xylene (total)	ND	280	140	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	101%		61-130%
460-00-4	4-Bromofluorobenzene	109%		53-131%
17060-07-0	1,2-Dichloroethane-D4	111%		62-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

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<b>Client Sample ID:</b>	RESERVE PIT MIX BLEND 11-8+ 11-9					<b>Date Sampled:</b>	11/18/11
<b>Lab Sample ID:</b>	D29644-1					<b>Date Received:</b>	11/19/11
<b>Matrix:</b>	SO - Soil					<b>Percent Solids:</b>	82.9
<b>Method:</b>	SW846 8015B						
<b>Project:</b>	XOM FRU 297-17A						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13989.D	1	11/21/11	SK	n/a	n/a	GGB794
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	8.53	14	7.0	mg/kg	J
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	93%		60-140%		

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

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

Accutest Laboratories

## Report of Analysis

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<b>Client Sample ID:</b>	RESERVE PIT MIX BLEND 11-8+ 11-9			<b>Date Sampled:</b>	11/18/11
<b>Lab Sample ID:</b>	D29644-1			<b>Date Received:</b>	11/19/11
<b>Matrix:</b>	SO - Soil			<b>Percent Solids:</b>	82.9
<b>Method:</b>	SW846-8015B SW846 3546				
<b>Project:</b>	XOM FRU 297-17A				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD11777.D	1	11/28/11	TR	11/21/11	OP4885	GFD599
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	390	16	10	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	61%		61-142%		

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>	RESERVE PIT MIX BLEND 11-8+ 11-9	<b>Date Sampled:</b>	11/18/11
<b>Lab Sample ID:</b>	D29644-1R	<b>Date Received:</b>	11/19/11
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	82.9
<b>Method:</b>	SW846 8270C BY SIM SW846 3546		
<b>Project:</b>	XOM FRU 297-17A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G07244.D	20	12/13/11	DC	11/30/11	OP4929	E3G266
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	160	130	ug/kg	
120-12-7	Anthracene	ND	160	140	ug/kg	
56-55-3	Benzo(a)anthracene	ND	400	210	ug/kg	
50-32-8	Benzo(a)pyrene	ND	400	290	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	400	300	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	400	180	ug/kg	
218-01-9	Chrysene	ND	400	180	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	400	300	ug/kg	
206-44-0	Fluoranthene	ND	160	160	ug/kg	
86-73-7	Fluorene	ND	160	140	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	480	440	ug/kg	
91-20-3	Naphthalene	ND	160	150	ug/kg	
129-00-0	Pyrene	ND	160	150	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	48%		10-145%
321-60-8	2-Fluorobiphenyl	65%		10-130%
1718-51-0	Terphenyl-d14	61%		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

## Report of Analysis

**Client Sample ID:** RESERVE PIT MIX BLEND 11-8+ 11-9**Lab Sample ID:** D29644-1R**Matrix:** SO - Soil**Project:** XOM FRU 297-17A**Date Sampled:** 11/18/11**Date Received:** 11/19/11**Percent Solids:** 82.9**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.2	0.48	mg/kg	5	11/30/11	11/30/11 GJ	SW846 6020 <sup>1</sup>	SW846 3050B <sup>5</sup>
Barium	6310	12	mg/kg	10	11/30/11	12/01/11 JB	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Cadmium	< 1.2	1.2	mg/kg	1	11/30/11	11/30/11 JB	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Chromium	33.6	1.2	mg/kg	1	11/30/11	11/30/11 JB	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Copper	12.5	1.2	mg/kg	1	11/30/11	11/30/11 JB	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Lead	14.2	6.0	mg/kg	1	11/30/11	11/30/11 JB	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Mercury	< 0.12	0.12	mg/kg	1	11/30/11	11/30/11 JB	SW846 7471A <sup>3</sup>	SW846 7471A <sup>6</sup>
Nickel	18.8	3.6	mg/kg	1	11/30/11	11/30/11 JB	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Selenium <sup>a</sup>	< 60	60	mg/kg	10	11/30/11	12/01/11 JB	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Silver	< 3.6	3.6	mg/kg	1	11/30/11	11/30/11 JB	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>
Zinc	42.2	3.6	mg/kg	1	11/30/11	11/30/11 JB	SW846 6010B <sup>2</sup>	SW846 3050B <sup>4</sup>

(1) Instrument QC Batch: MA2010

(2) Instrument QC Batch: MA2011

(3) Instrument QC Batch: MA2012

(4) Prep QC Batch: MP6361

(5) Prep QC Batch: MP6362

(6) Prep QC Batch: MP6363

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

## Report of Analysis

**Client Sample ID:** RESERVE PIT MIX BLEND 11-8+ 11-9**Lab Sample ID:** D29644-1R**Matrix:** SO - Soil**Project:** XOM FRU 297-17A**Date Sampled:** 11/18/11**Date Received:** 11/19/11**Percent Solids:** 82.9

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent <sup>a</sup>	0.62	0.47	mg/kg	1	12/06/11 15:25	AMA	SW846 3060A/7196A
Chromium, Trivalent <sup>b</sup>	33.0	1.7	mg/kg	1	12/06/11 15:25	AMA	SW846 3060/7196A M
Redox Potential Vs H2	204		mv	1	11/29/11	JD	ASTM D1498-76M
Specific Conductivity	4960	1.0	umhos/cm	1	12/01/11	JD	DEPT.OF AG, BOOK N9
pH	12.40		su	1	11/29/11 15:00	JD	SW846 9045C

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

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

RL = Reporting Limit

## Report of Analysis

**Client Sample ID:** RESERVE PIT MIX BLEND 11-8+ 11-9**Lab Sample ID:** D29644-1RA**Matrix:** SO - Soil**Project:** XOM FRU 297-17A**Date Sampled:** 11/18/11**Date Received:** 11/19/11**Percent Solids:** 82.9

## SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	41.9	2.0	mg/l	1	12/01/11	12/02/11 JB	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>3</sup>
Magnesium	< 1.0	1.0	mg/l	1	12/01/11	12/02/11 JB	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>3</sup>
Sodium	544	2.0	mg/l	1	12/01/11	12/07/11 JB	SW846 6010B <sup>2</sup>	EPA 200.7 <sup>3</sup>

(1) Instrument QC Batch: MA2020

(2) Instrument QC Batch: MA2034

(3) Prep QC Batch: MP6373

RL = Reporting Limit



## Report of Analysis

**Client Sample ID:** RESERVE PIT MIX BLEND 11-8+ 11-9**Lab Sample ID:** D29644-1RA**Matrix:** SO - Soil**Project:** XOM FRU 297-17A**Date Sampled:** 11/18/11**Date Received:** 11/19/11**Percent Solids:** 82.9**General Chemistry**

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	23.0		ratio	1	12/07/11 18:30	JB	USDA HANDBOOK 60

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

RL = Reporting Limit

## Misc. Forms

### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Mountain States  
4036 Youngfield Street Wheat Ridge, Co 80033  
TEL. 303-425-6021 877-737-4521  
FAX 303-425-6021

[illegible]

## D29644: Chain of Custody

Page 1 of 3

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D29644

Client: KRW CONSULTING INC

Immediate Client Services Action Required: No

Date / Time Received: 11/19/2011 9:00:00 AM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XOM FRU 297-17A

Airbill #'s: Fedex

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

**Job Change Order: D29644\_11/29/2011**

<b>Requested</b>	11/29/2011	<b>Received Date:</b>	11/19/2011
<b>Account Name:</b>	KRW Consulting, Inc.	<b>Due Date:</b>	11/23/2011
<b>Project</b>	XOM FRU 297-17A	<b>Deliverable:</b>	COMMBN+
<b>CSR:</b>	RR	<b>TAT (Days):</b>	10

**Sample #:** D29644-1  
**Change:** Please log the remainder of table 910 to an R sample and analyze on a standard turn. Thank you.

RESERVE PIT MIX BLEND 11-8+11-9

**Above Changes Per:** Dwayne Knudson - Client **Date:** 11/29/2011

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

Page 1 of 1

## GC/MS Volatiles

5

### QC Data Summaries

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Includes the following where applicable:

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

**Method Blank Summary**

Page 1 of 1

**Job Number:** D29644**Account:** KRWCCOL KRW Consulting, Inc.**Project:** XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V848-MB	3V14680.D	1	11/21/11	DC	n/a	n/a	V3V848

**The QC reported here applies to the following samples:****Method:** SW846 8260B

D29644-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	22	ug/kg	
100-41-4	Ethylbenzene	ND	100	25	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	105% 61-130%
460-00-4	4-Bromofluorobenzene	102% 53-131%
17060-07-0	1,2-Dichloroethane-D4	107% 62-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D29644

**Account:** KRWCCOL KRW Consulting, Inc.

**Project:** XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V848-BS	3V14681.D	1	11/21/11	DC	n/a	n/a	V3V848

The QC reported here applies to the following samples:

Method: SW846 8260B

D29644-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	58.1	116	70-130
100-41-4	Ethylbenzene	50	56.3	113	70-130
108-88-3	Toluene	50	53.7	107	70-130
1330-20-7	Xylene (total)	150	169	113	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	103%	61-130%
460-00-4	4-Bromofluorobenzene	114%	53-131%
17060-07-0	1,2-Dichloroethane-D4	110%	62-130%



# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D29644

**Account:** KRWCCOL KRW Consulting, Inc.

**Project:** XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D29644-1MS	3V14683.D	1	11/21/11	DC	n/a	n/a	V3V848
D29644-1MSD	3V14684.D	1	11/21/11	DC	n/a	n/a	V3V848
D29644-1	3V14682.D	1	11/21/11	DC	n/a	n/a	V3V848

The QC reported here applies to the following samples:

Method: SW846 8260B

D29644-1

CAS No.	Compound	D29644-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3480	3810	110	3990	115	5	70-134/30
100-41-4	Ethylbenzene	ND		3480	3660	105	3900	112	6	70-137/30
108-88-3	Toluene	ND		3480	3460	99	3710	107	7	70-130/30
1330-20-7	Xylene (total)	ND		10400	11000	105	11600	111	5	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D29644-1	Limits
2037-26-5	Toluene-D8	100%	101%	101%	61-130%
460-00-4	4-Bromofluorobenzene	113%	116%	109%	53-131%
17060-07-0	1,2-Dichloroethane-D4	108%	100%	111%	62-130%

GC/MS Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3112111.S\  
Data File : 3V14682.D  
Acq On : 21 Nov 2011 3:16 pm  
Operator : DONC  
Sample : D29644-1, 50x  
Misc : MS2987,V3V848,5.089,,100,5,1  
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 22 08:22:18 2011  
Quant Method : C:\msdchem\1\METHODS\V3AP830TVH830.M  
Quant Title : 8260  
QLast Update : Mon Nov 07 14:42:41 2011  
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.886	168	297221	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.682	114	496205	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.316	117	461298	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.309	152	259217	50.00	ug/l	0.00

System Monitoring Compounds						
33) 1,2-Dichloroethane-d4	12.277	102	43636	55.58	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	111.16%
61) Toluene-d8	14.071	98	697941	50.72	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	101.44%
69) 4-Bromofluorobenzene	16.266	95	243657	54.42	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	108.84%

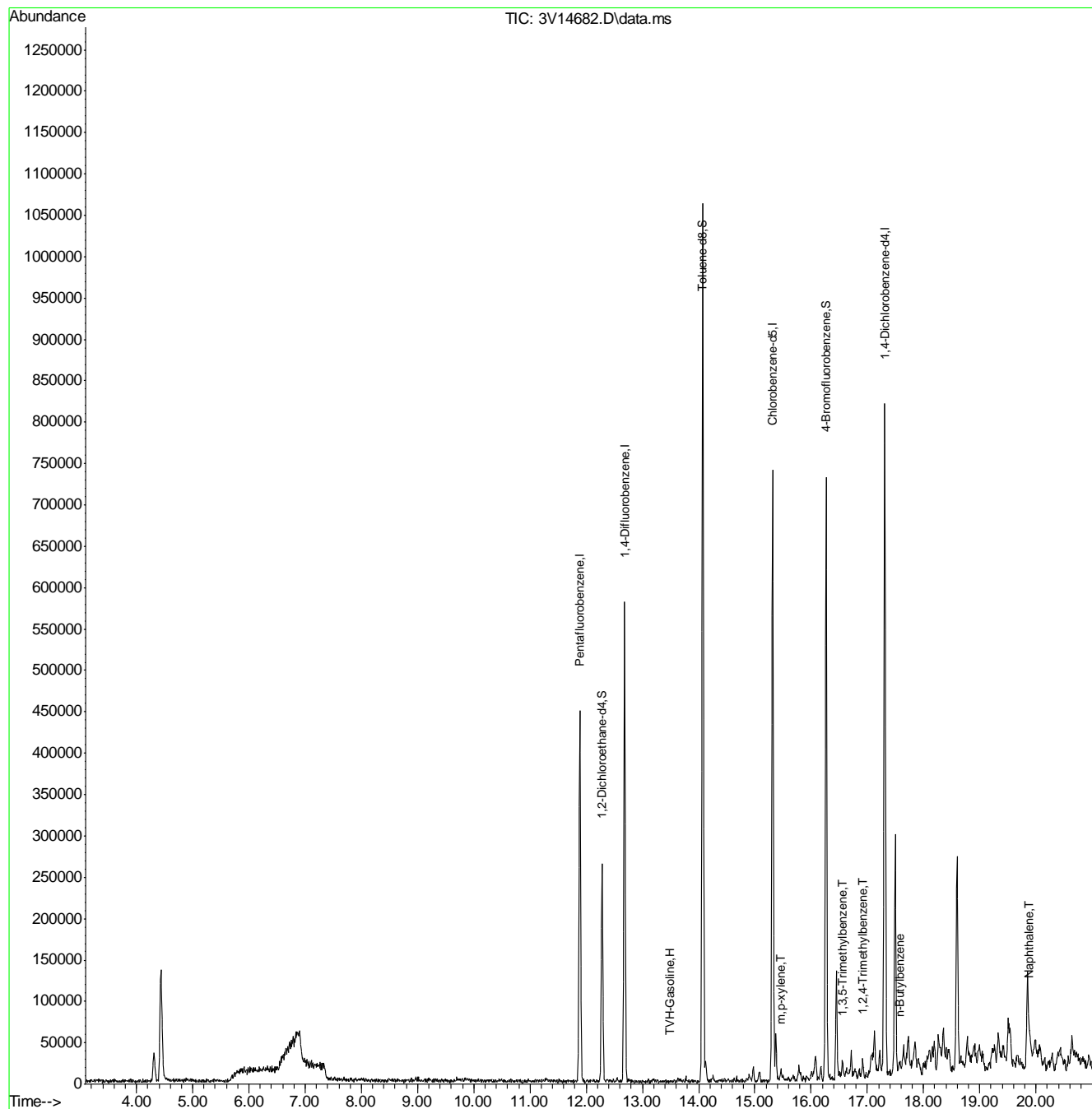
Target Compounds					Qvalue
1) TVH-Gasoline	13.491	TIC	821973m	59.24	ug/l
72) m,p-xylene	15.457	106	3713	0.44	ug/l # 85
80) 1,3,5-Trimethylbenzene	16.552	105	6046	0.48	ug/l 95
82) 1,2,4-Trimethylbenzene	16.917	105	6675	0.43	ug/l 89
88) n-Butylbenzene	17.566	91	4154	0.27	ug/l # 84
91) Naphthalene	19.886	128	46918	3.28	ug/l 100

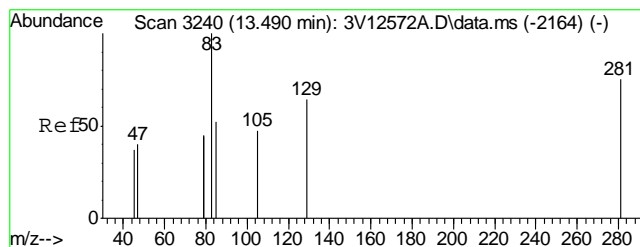
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3112111.S\  
Data File : 3V14682.D  
Acq On : 21 Nov 2011 3:16 pm  
Operator : DONC  
Sample : D29644-1, 50x  
Misc : MS2987,V3V848,5.089,,100,5,1  
ALS Vial : 5 Sample Multiplier: 1

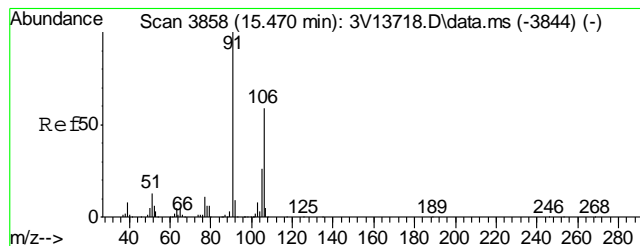
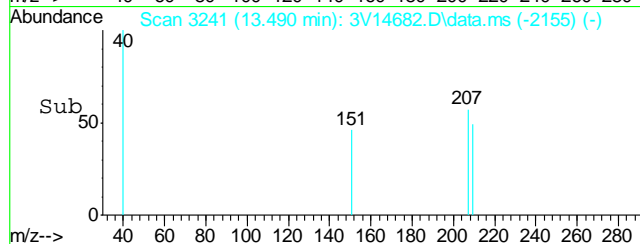
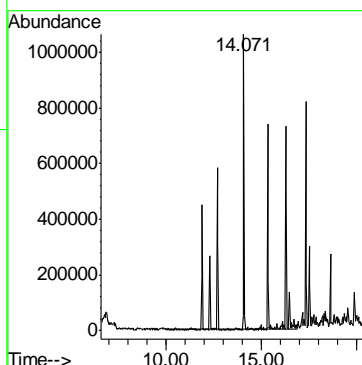
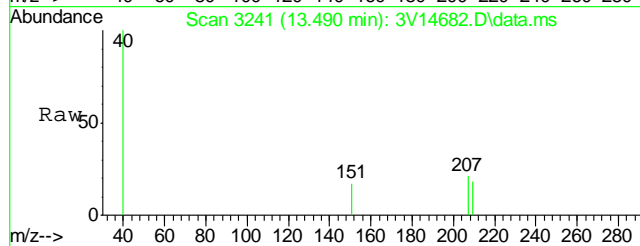
Quant Time: Nov 22 08:22:18 2011  
Quant Method : C:\msdchem\1\METHODS\V3AP830TVH830.M  
Quant Title : 8260  
QLast Update : Mon Nov 07 14:42:41 2011  
Response via : Initial Calibration





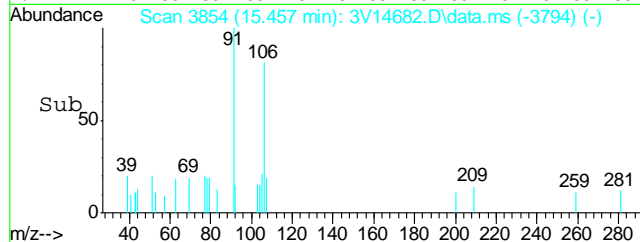
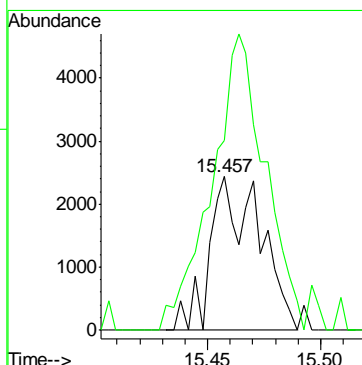
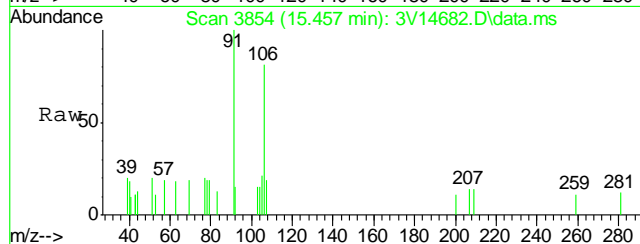
#1  
TVH-Gasoline  
Concen: 59.24 ug/l m  
RT: 13.491 min Scan# 3241  
Delta R.T. 0.000 min  
Lab File: 3V14682.D  
Acq: 21 Nov 2011 3:16 pm

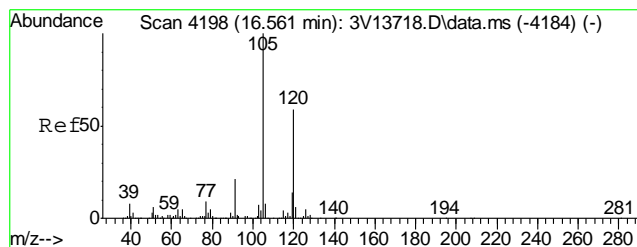
Tgt Ion:TIC Resp: 821973



#72  
m,p-xylene  
Concen: 0.44 ug/l  
RT: 15.457 min Scan# 3854  
Delta R.T. -0.009 min  
Lab File: 3V14682.D  
Acq: 21 Nov 2011 3:16 pm

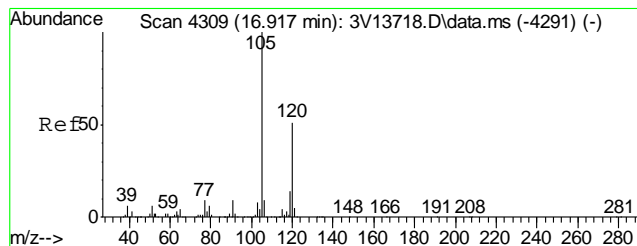
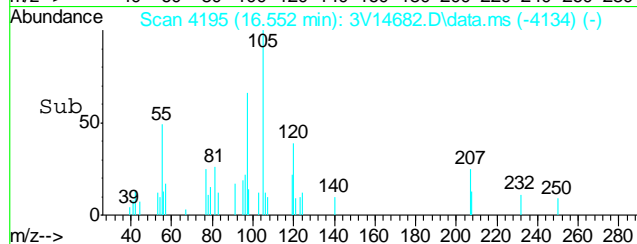
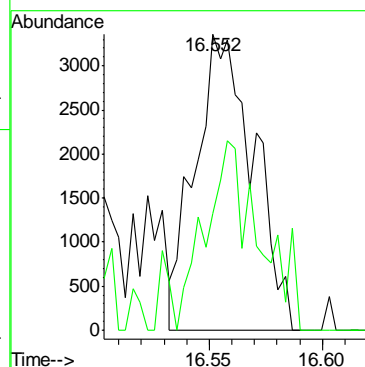
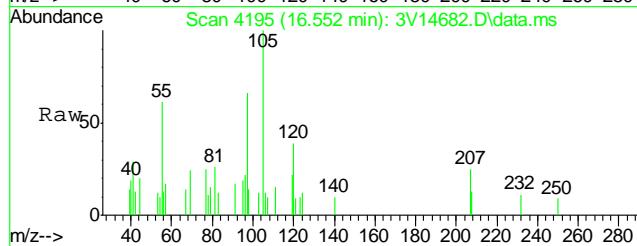
Tgt Ion:106 Resp: 3713  
Ion Ratio Lower Upper  
106 100  
91 206.8 164.7 204.7#





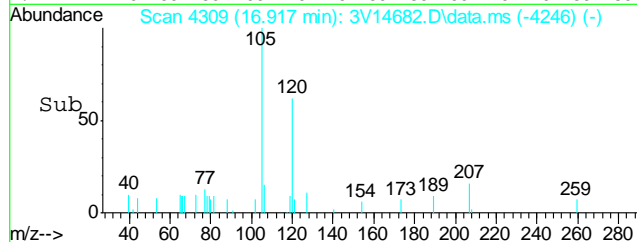
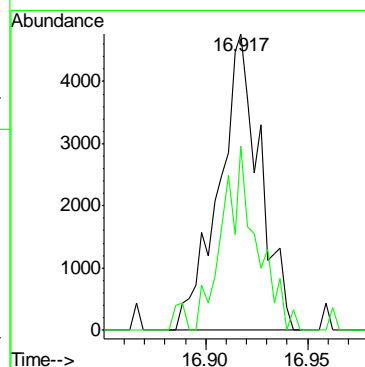
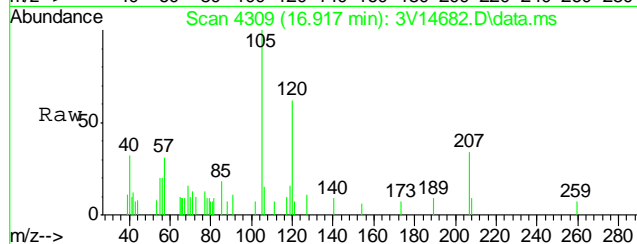
#80  
1,3,5-Trimethylbenzene  
Concen: 0.48 ug/l  
RT: 16.552 min Scan# 4195  
Delta R.T. -0.005 min  
Lab File: 3V14682.D  
Acq: 21 Nov 2011 3:16 pm

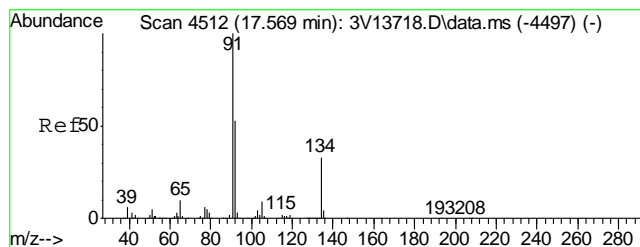
Tgt Ion	Ratio	Lower	Upper
105	100		
120	58.7	43.8	65.8



#82  
1,2,4-Trimethylbenzene  
Concen: 0.43 ug/l  
RT: 16.917 min Scan# 4309  
Delta R.T. 0.003 min  
Lab File: 3V14682.D  
Acq: 21 Nov 2011 3:16 pm

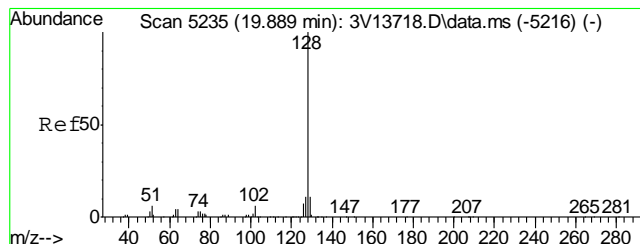
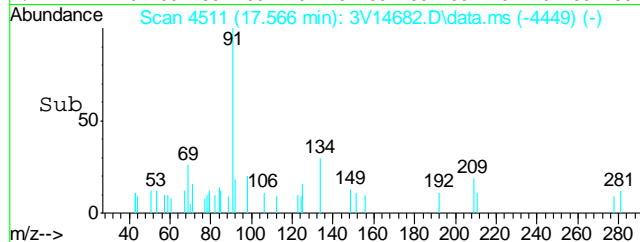
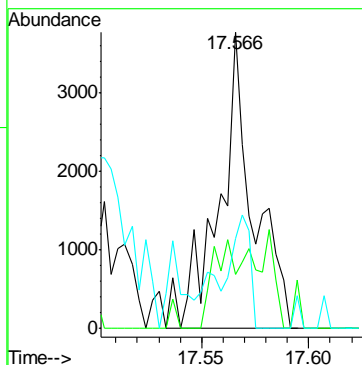
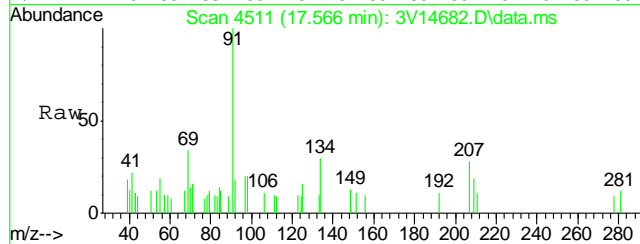
Tgt Ion	Ratio	Lower	Upper
105	100		
120	51.3	47.8	71.6





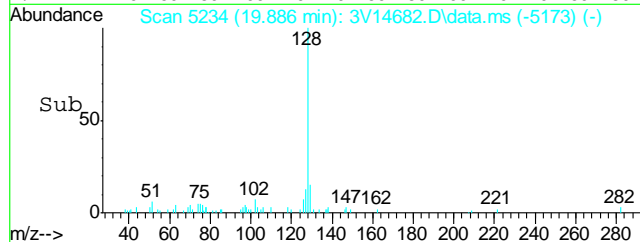
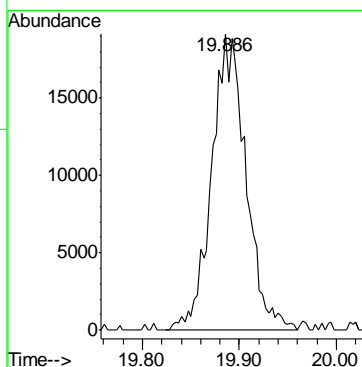
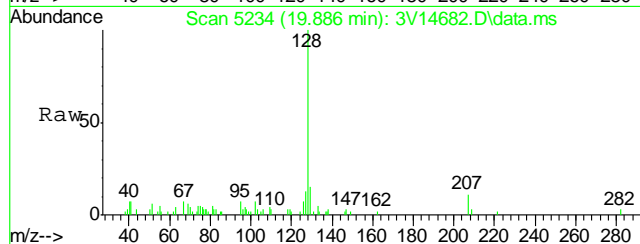
#88  
n-Butylbenzene  
Concen: 0.27 ug/l  
RT: 17.566 min Scan# 4511  
Delta R.T. 0.000 min  
Lab File: 3V14682.D  
Acq: 21 Nov 2011 3:16 pm

Tgt Ion	Ratio	Lower	Upper
91	100		
92	42.8	41.5	62.3
134	20.8	25.4	38.0



#91  
Naphthalene  
Concen: 3.28 ug/l  
RT: 19.886 min Scan# 5234  
Delta R.T. -0.003 min  
Lab File: 3V14682.D  
Acq: 21 Nov 2011 3:16 pm

Tgt Ion: 128 Resp: 46918



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3112111.S\  
Data File : 3V14680.D  
Acq On : 21 Nov 2011 2:11 pm  
Operator : DONC  
Sample : MB, MEB112111  
Misc : MS2987,V3V848,5,,100,5,1  
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 22 08:19:59 2011  
Quant Method : C:\msdchem\1\METHODS\V3AP830TVH830.M  
Quant Title : 8260  
QLast Update : Mon Nov 07 14:42:41 2011  
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.887	168	289638	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.683	114	495822	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.314	117	436642	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.307	152	228943	50.00	ug/l	0.00

## System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.282	102	41028	53.62	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	107.24%
61) Toluene-d8	14.072	98	686411	52.70	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	105.40%
69) 4-Bromofluorobenzene	16.264	95	216209	51.01	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	102.02%

## Target Compounds

					Qvalue
1) TVH-Gasoline	13.491	TIC	174727m	22.29	ug/l
91) Naphthalene	19.893	128	18848	1.49	ug/l

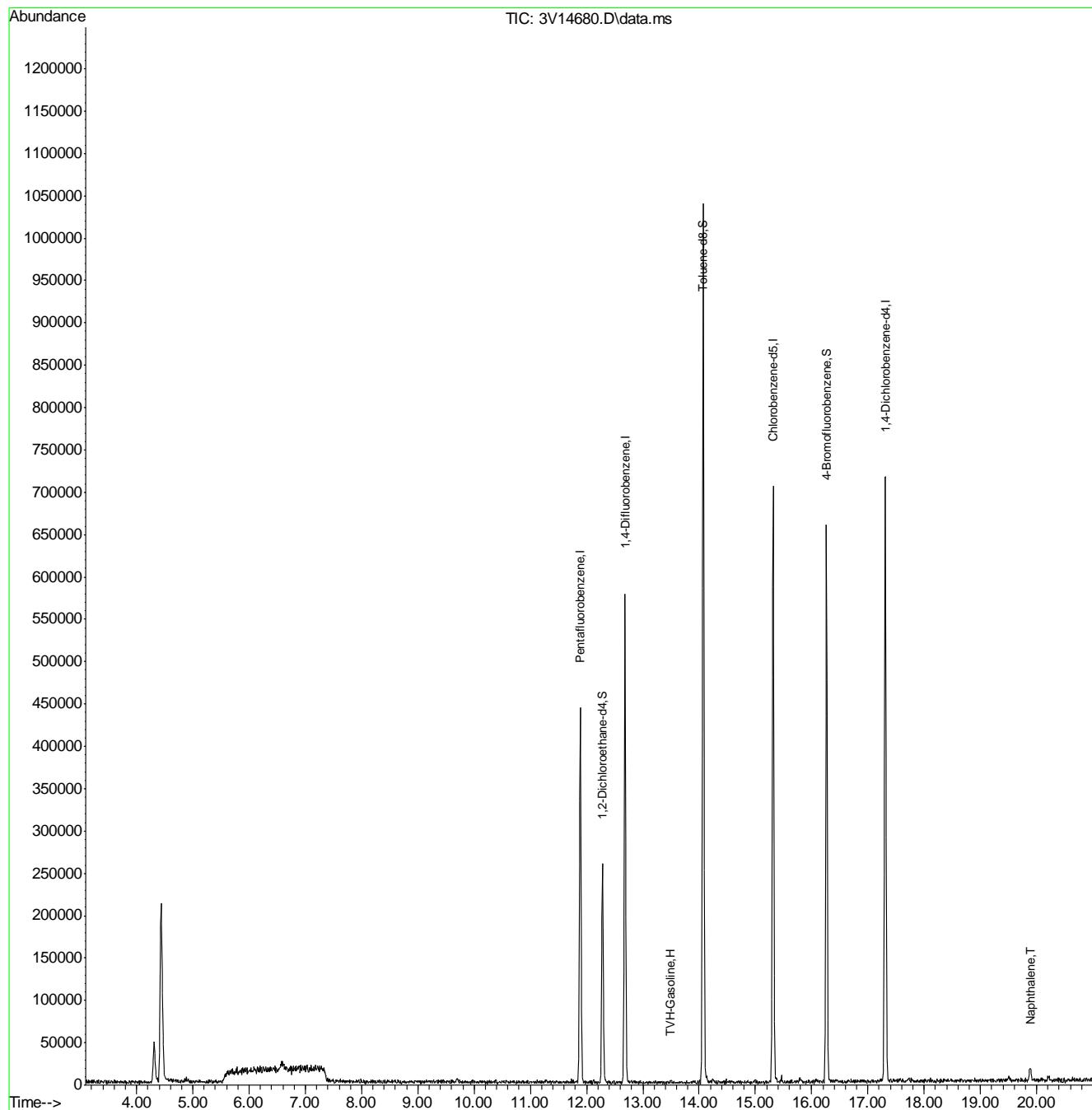
(#) = qualifier out of range (m) = manual integration (+) = signals summed

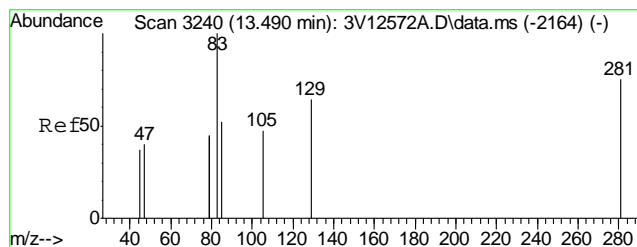


## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3112111.S\  
Data File : 3V14680.D  
Acq On : 21 Nov 2011 2:11 pm  
Operator : DONC  
Sample : MB, MEB112111  
Misc : MS2987,V3V848,5,,100,5,1  
ALS Vial : 3 Sample Multiplier: 1

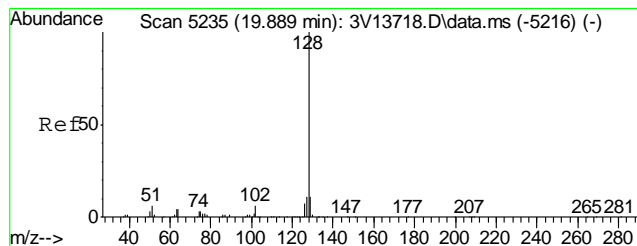
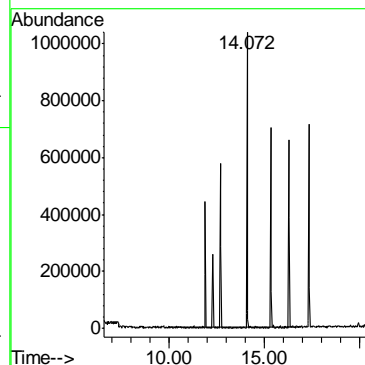
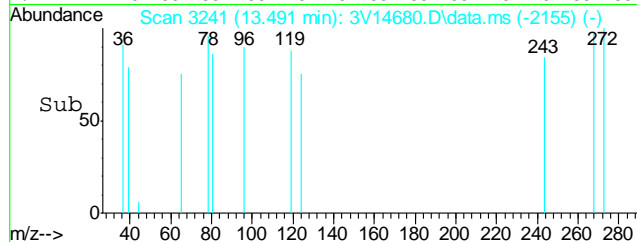
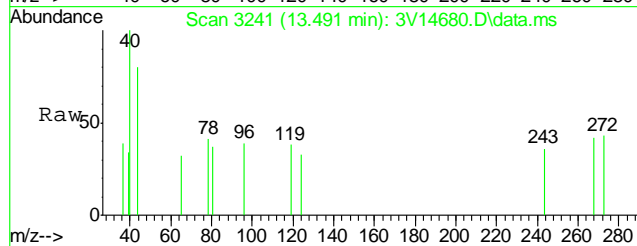
Quant Time: Nov 22 08:19:59 2011  
Quant Method : C:\msdchem\1\METHODS\V3AP830TVH830.M  
Quant Title : 8260  
QLast Update : Mon Nov 07 14:42:41 2011  
Response via : Initial Calibration





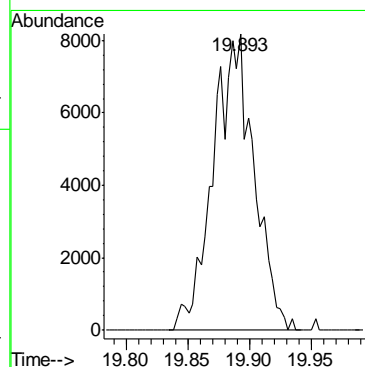
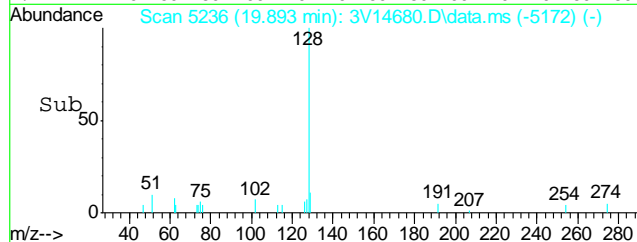
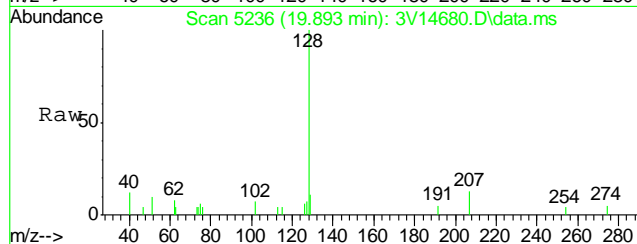
#1  
TVH-Gasoline  
Concen: 22.29 ug/l m  
RT: 13.491 min Scan# 3241  
Delta R.T. 0.000 min  
Lab File: 3V14680.D  
Acq: 21 Nov 2011 2:11 pm

Tgt Ion:TIC Resp: 174727



#91  
Naphthalene  
Concen: 1.49 ug/l  
RT: 19.893 min Scan# 5236  
Delta R.T. 0.004 min  
Lab File: 3V14680.D  
Acq: 21 Nov 2011 2:11 pm

Tgt Ion:128 Resp: 18848



## 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:** D29644**Account:** KRWCCOL KRW Consulting, Inc.**Project:** XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4929-MB	3G07152.D	1	12/07/11	DC	11/30/11	OP4929	E3G262

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

D29644-1R

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	6.7	5.3	ug/kg	
120-12-7	Anthracene	ND	6.7	6.0	ug/kg	
56-55-3	Benzo(a)anthracene	ND	17	8.7	ug/kg	
50-32-8	Benzo(a)pyrene	ND	17	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	17	12	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	17	7.3	ug/kg	
218-01-9	Chrysene	ND	17	7.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	17	12	ug/kg	
206-44-0	Fluoranthene	ND	6.7	6.7	ug/kg	
86-73-7	Fluorene	ND	6.7	5.7	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	20	18	ug/kg	
91-20-3	Naphthalene	ND	6.7	6.3	ug/kg	
129-00-0	Pyrene	ND	6.7	6.3	ug/kg	

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	92% 10-145%
321-60-8	2-Fluorobiphenyl	88% 10-130%
1718-51-0	Terphenyl-d14	101% 22-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D29644

**Account:** KRWCCOL KRW Consulting, Inc.

**Project:** XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4929-BS	3G07153.D	1	12/07/11	DC	11/30/11	OP4929	E3G262

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D29644-1R

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	61.9	74	34-130
120-12-7	Anthracene	83.3	69.7	84	35-130
56-55-3	Benzo(a)anthracene	83.3	72.0	86	36-130
50-32-8	Benzo(a)pyrene	83.3	62.3	75	36-130
205-99-2	Benzo(b)fluoranthene	83.3	66.7	80	35-130
207-08-9	Benzo(k)fluoranthene	83.3	70.4	84	37-130
218-01-9	Chrysene	83.3	67.9	81	40-130
53-70-3	Dibenzo(a,h)anthracene	83.3	64.0	77	32-130
206-44-0	Fluoranthene	83.3	58.9	71	38-130
86-73-7	Fluorene	83.3	70.1	84	35-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	60.6	73	28-130
91-20-3	Naphthalene	83.3	65.2	78	35-130
129-00-0	Pyrene	83.3	70.9	85	37-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	77%	10-145%
321-60-8	2-Fluorobiphenyl	72%	10-130%
1718-51-0	Terphenyl-d14	91%	22-130%

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D29644  
**Account:** KRWCCOL KRW Consulting, Inc.  
**Project:** XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4929-MS	3G07154.D	1	12/07/11	DC	11/30/11	OP4929	E3G262
OP4929-MSD	3G07155.D	1	12/07/11	DC	11/30/11	OP4929	E3G262
D29647-1R <sup>a</sup>	3G07176.D	5	12/08/11	DC	11/30/11	OP4929	E3G262

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D29644-1R

CAS No.	Compound	D29647-1R ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		92.2	72.3	78	68.0	74	6	10-155/30
120-12-7	Anthracene	ND		92.2	65.9	71	61.6	67	7	10-155/30
56-55-3	Benzo(a)anthracene	ND		92.2	71.8	78	74.4	81	4	10-175/30
50-32-8	Benzo(a)pyrene	ND		92.2	57.0	62	62.2	67	9	10-164/30
205-99-2	Benzo(b)fluoranthene	ND		92.2	67.5	73	67.4	73	0	10-165/30
207-08-9	Benzo(k)fluoranthene	ND		92.2	69.2	75	72.6	79	5	10-178/30
218-01-9	Chrysene	ND		92.2	72.0	78	74.1	80	3	10-147/30
53-70-3	Dibenzo(a,h)anthracene	ND		92.2	64.8	70	68.8	74	6	10-144/30
206-44-0	Fluoranthene	ND		92.2	94.0	102	83.4	90	12	10-207/30
86-73-7	Fluorene	79.5		92.2	139	65	130	55	7	10-163/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		92.2	62.7	68	64.7	70	3	10-180/30
91-20-3	Naphthalene	ND		92.2	89.5	97	85.4	92	5	10-198/30
129-00-0	Pyrene	ND		92.2	61.4	67	68.9	75	12	10-189/30

CAS No.	Surrogate Recoveries	MS	MSD	D29647-1R	Limits
4165-60-0	Nitrobenzene-d5	82%	83%	78%	10-145%
321-60-8	2-Fluorobiphenyl	68%	67%	71%	10-130%
1718-51-0	Terphenyl-d14	62%	66%	71%	22-130%

(a) Elevated RL due to matrix interference.



GC/MS Semi-volatiles

Raw Data

∞

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121311\  
 Data File : 3g07244.D  
 Acq On : 13 Dec 2011 12:57 pm  
 Operator : DONC  
 Sample : D29644-1R,20  
 Misc : OP4929,E3G266,30.05,,,1,20  
 ALS Vial : 20 Sample Multiplier: 1

Quant Time: Dec 13 14:27:27 2011  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G265.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Tue Dec 13 09:07:03 2011  
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
-----						
Internal Standards						
1) Naphthalene-d8	6.869	136	264186	4.00	ug/mL	-0.01
6) Acenaphthene-d10	9.311	164	188319	4.00	ug/mL	-0.02
14) Phenanthrene-d10	11.889	188	330314	4.00	ug/mL	-0.02
18) Chrysene-d12	16.950	240	429919	4.00	ug/mL	-0.03
23) Perylene-d12	19.553	264	359529	4.00	ug/mL	-0.02
System Monitoring Compounds						
2) Nitrobenzene-d5	6.146	82	64692	1.21	ug/mL	-0.01
7) 2-Fluorobiphenyl	8.271	172	112555	1.61	ug/mL	-0.02
20) Terphenyl-d14	14.991	244	134759	1.53	ug/mL	-0.04
Target Compounds					Qvalue	
3) N-Nitrosodimethylamine	0.000		0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000		0	N.D.	d	
5) Naphthalene	6.894	128	7879	0.10	ug/mL	92
8) 2-Methylnaphthalene	7.728	142	25028	0.42	ug/mL	96
9) 1-Methylnaphthalene	7.881	142	8286m	0.16	ug/mL	
10) Acenaphthylene	0.000		0	N.D.	d	
11) Acenaphthene	0.000		0	N.D.	d	
12) Fluorene	10.209	166	9317	0.14	ug/mL#	11
13) Diphenylamine	0.000		0	N.D.	d	
15) Phenanthrene	11.920	178	16862	0.16	ug/mL	98
16) Anthracene	0.000		0	N.D.	d	
17) Fluoranthene	14.176	202	4581	0.04	ug/mL#	51
19) Pyrene	14.587	202	4778	0.03	ug/mL#	77
21) Benzo(a)anthracene	16.917	228	5032	0.04	ug/mL	67
22) Chrysene	16.990	228	5736	0.04	ug/mL	94
24) Benzo(b)fluoranthene	18.901	252	6355m	0.06	ug/mL	
25) Benzo(k)fluoranthene	18.932	252	3655m	0.02	ug/mL	
26) Benzo(a)pyrene	19.448	252	2959	0.03	ug/mL	95
27) Indeno(1,2,3-cd)pyrene	21.298	276	2490m	0.04	ug/mL	
28) Dibenz(a,h)anthracene	21.340	278	2498	0.03	ug/mL	94
29) Benzo(g,h,i)perylene	21.751	276	3829	0.03	ug/mL	91
-----						

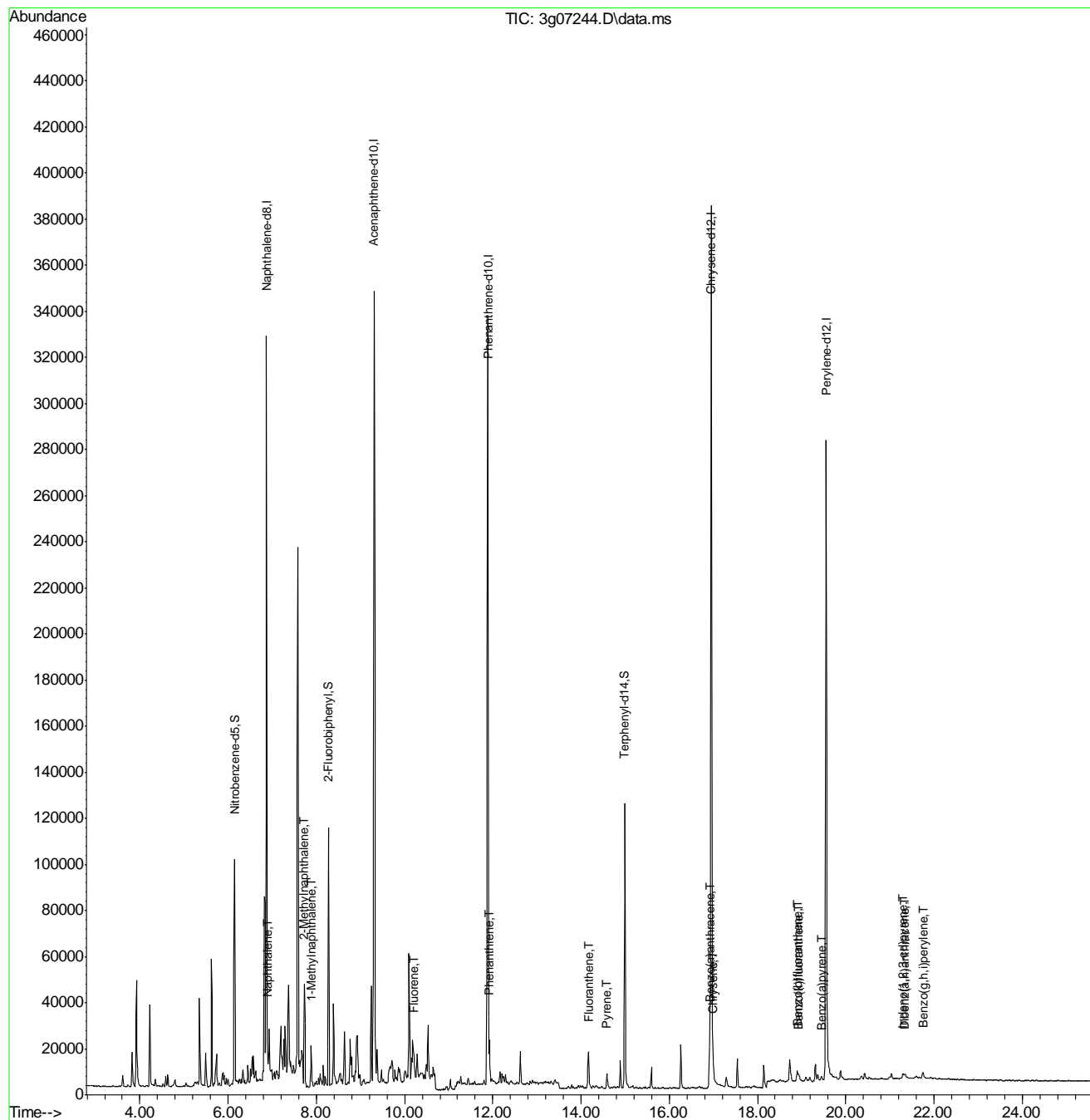
(#) = qualifier out of range (m) = manual integration (+) = signals summed

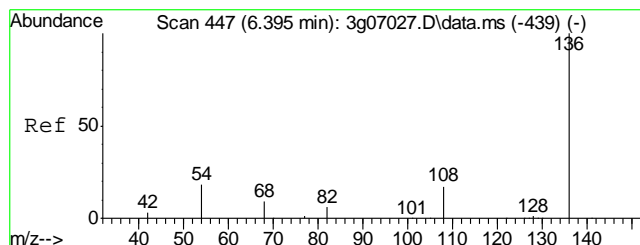


## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121311\  
Data File : 3g07244.D  
Acq On : 13 Dec 2011 12:57 pm  
Operator : DONC  
Sample : D29644-1R,20  
Misc : OP4929,E3G266,30.05,,,1,20  
ALS Vial : 20 Sample Multiplier: 1

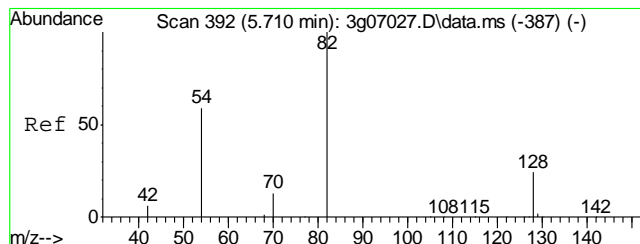
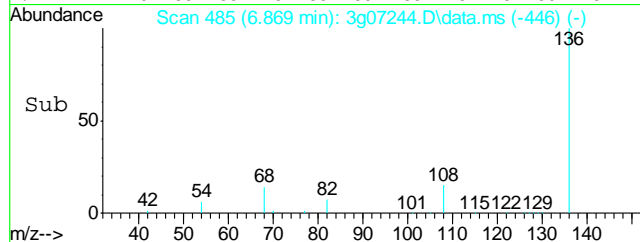
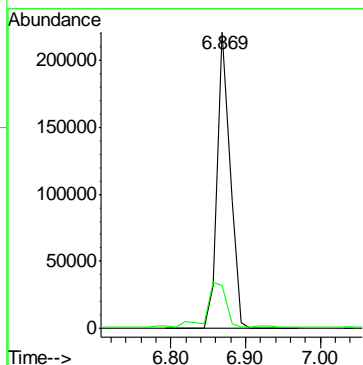
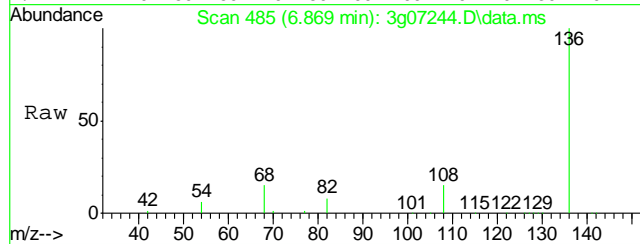
Quant Time: Dec 13 14:27:27 2011  
Quant Method : C:\msdchem\1\METHODS\SIMPE3G265.M  
Quant Title : PAHSIM BASE  
QLast Update : Tue Dec 13 09:07:03 2011  
Response via : Initial Calibration





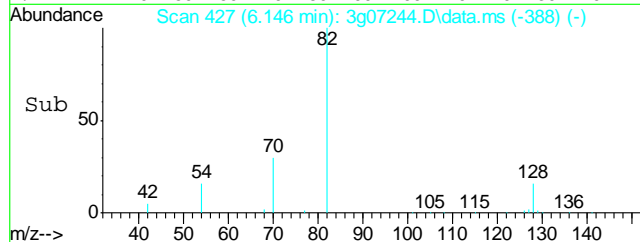
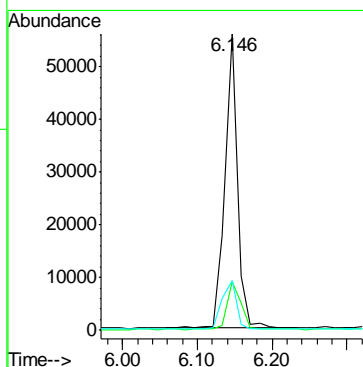
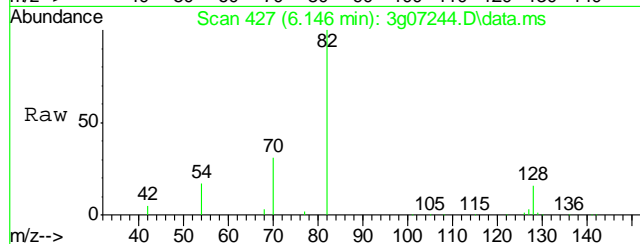
#1  
Naphthalene-d8  
Concen: 4.00 ug/mL  
RT: 6.869 min Scan# 485  
Delta R.T. -0.012 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

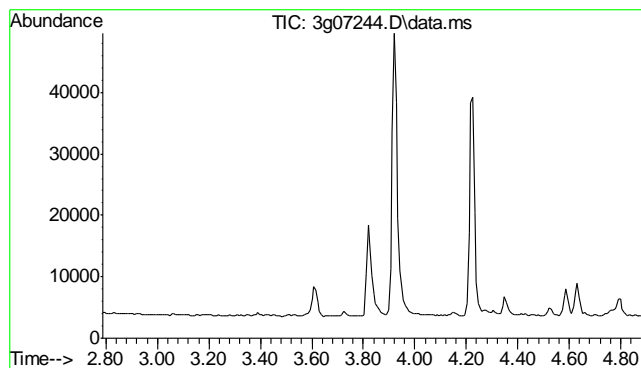
Tgt Ion	Ratio	Lower	Upper
136	100		
68	23.4	1.0	41.0



#2  
Nitrobenzene-d5  
Concen: 1.21 ug/mL  
RT: 6.146 min Scan# 427  
Delta R.T. -0.012 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

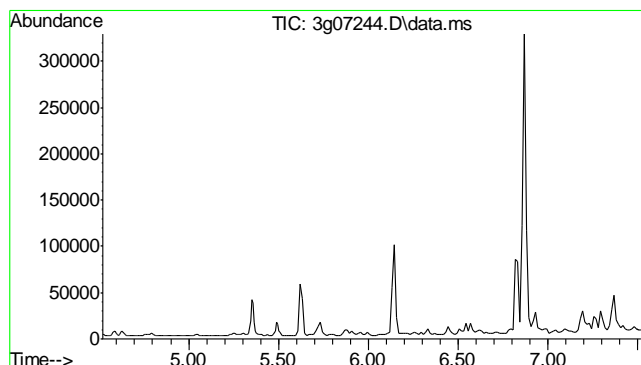
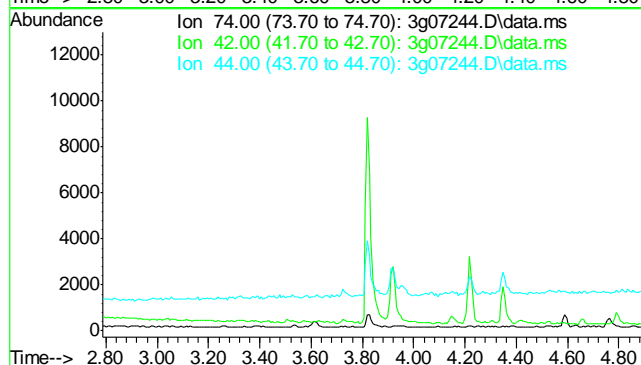
Tgt Ion	Ratio	Lower	Upper
82	100		
128	17.6	0.0	38.8
54	19.5	0.0	39.1





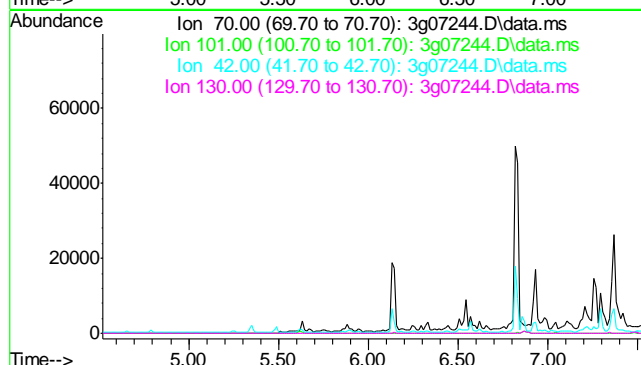
#3  
 N-Nitrosodimethylamine  
 Concen: N.D. ug/mL  
 Expected RT: 3.38 min  
  
 Lab File: 3g07244.D  
 Acq: 13 Dec 11 12:57 pm

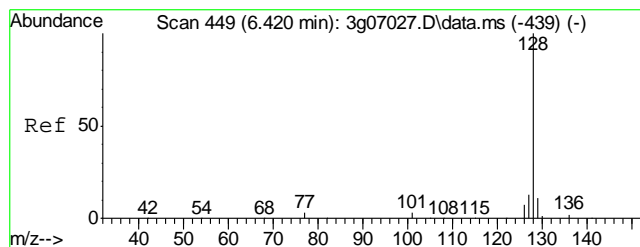
Tgt Ion	Exp Ratio
74	100
42	21.8
44	1.6



#4  
 N-Nitrosodi-propylamine  
 Concen: N.D. ug/mL  
 Expected RT: 6.02 min  
  
 Lab File: 3g07244.D  
 Acq: 13 Dec 11 12:57 pm

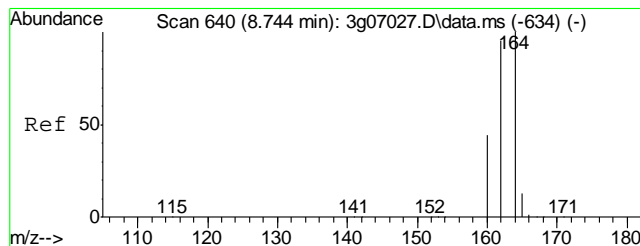
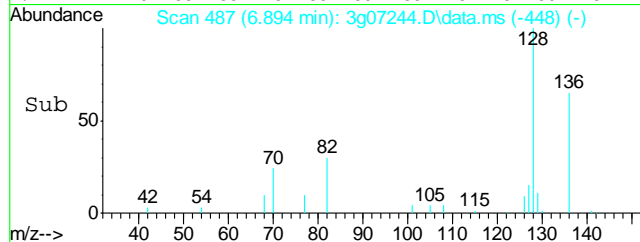
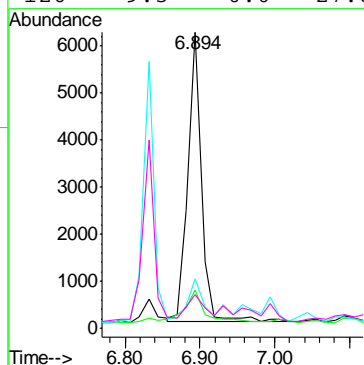
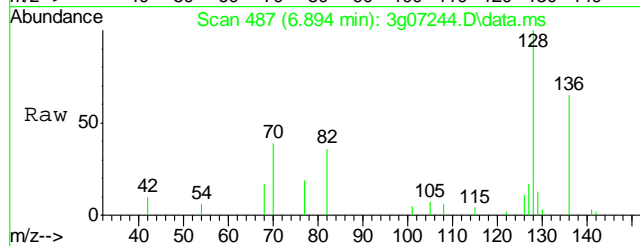
Tgt Ion	Exp Ratio
70	100
101	7.7
42	19.0
130	8.9





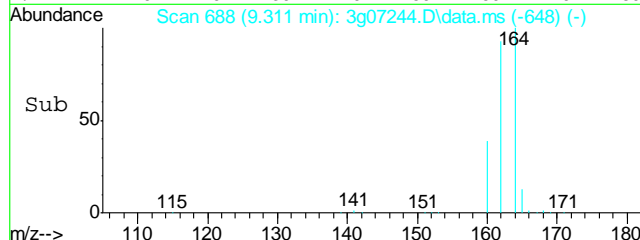
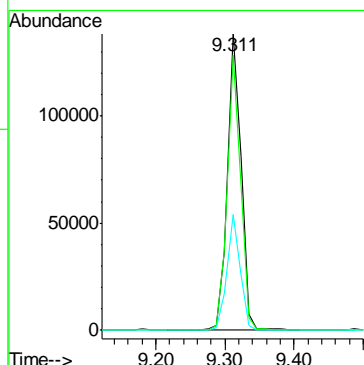
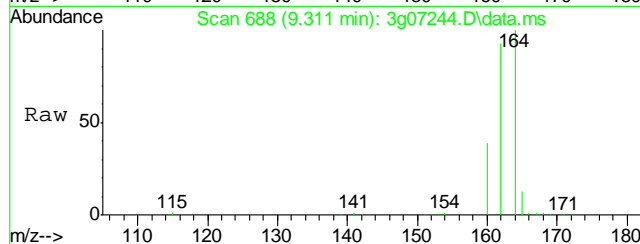
#5  
Naphthalene  
Concen: 0.10 ug/mL  
RT: 6.894 min Scan# 487  
Delta R.T. -0.012 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

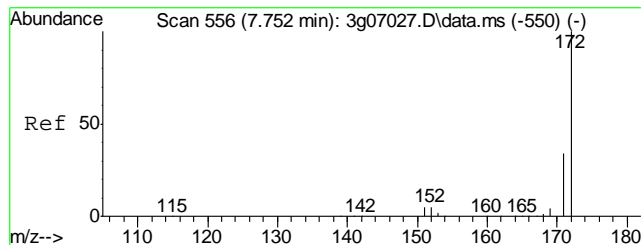
Tgt Ion	Ratio	Lower	Upper
128	100		
129	18.0	0.0	30.9
127	13.6	0.0	33.7
126	9.5	0.0	27.8



#6  
Acenaphthene-d10  
Concen: 4.00 ug/mL  
RT: 9.311 min Scan# 688  
Delta R.T. -0.024 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

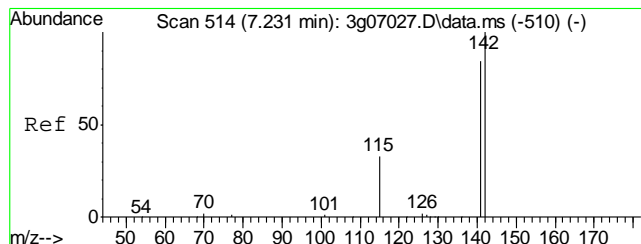
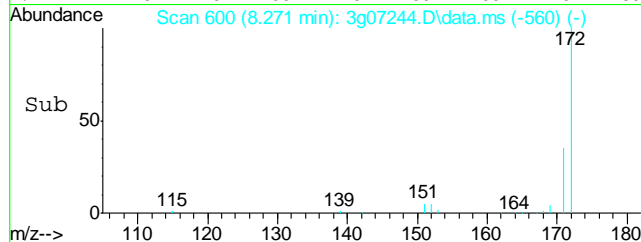
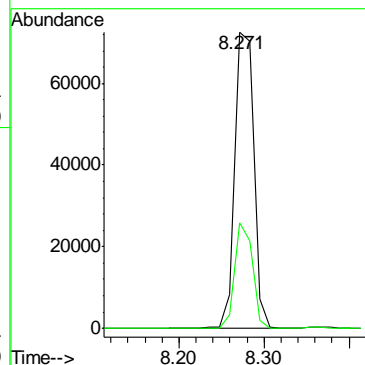
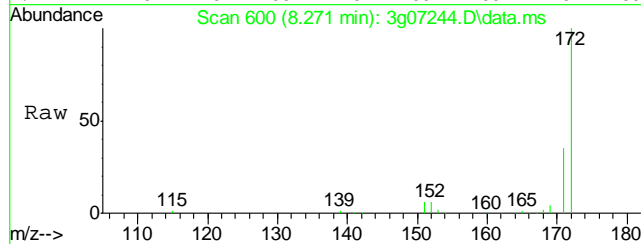
Tgt Ion	Ratio	Lower	Upper
164	100		
162	90.5	72.2	112.2
160	37.5	18.4	58.4





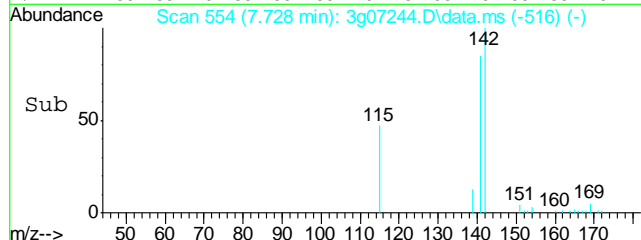
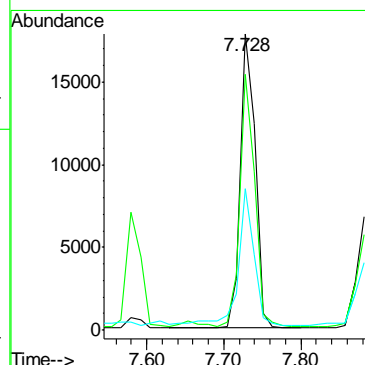
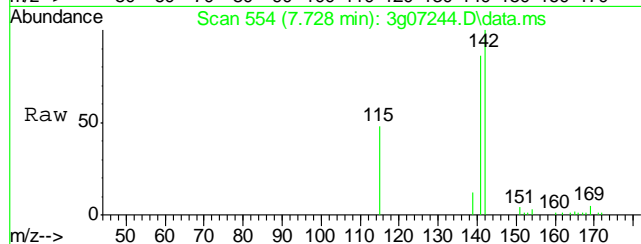
#7  
2-Fluorobiphenyl  
Concen: 1.61 ug/mL  
RT: 8.271 min Scan# 600  
Delta R.T. -0.024 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

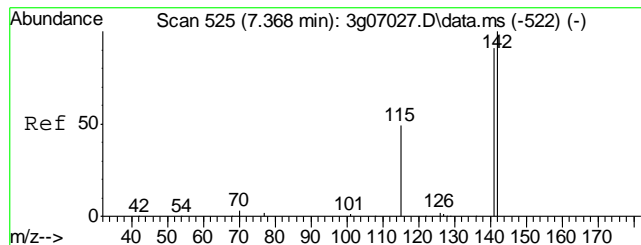
Tgt Ion:172	Resp:	112555
Ion Ratio	Lower	Upper
172	100	
171	32.8	12.5 52.5



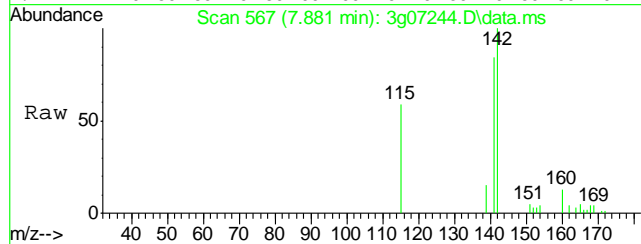
#8  
2-Methylnaphthalene  
Concen: 0.42 ug/mL  
RT: 7.728 min Scan# 554  
Delta R.T. -0.023 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

Tgt Ion:142	Resp:	25028
Ion Ratio	Lower	Upper
142	100	
141	83.9	61.6 101.6
115	48.8	23.7 63.7

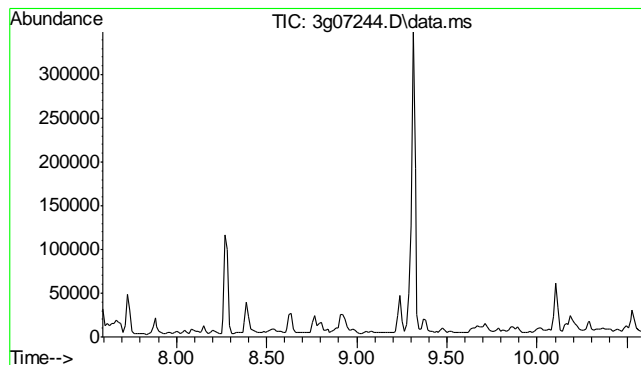
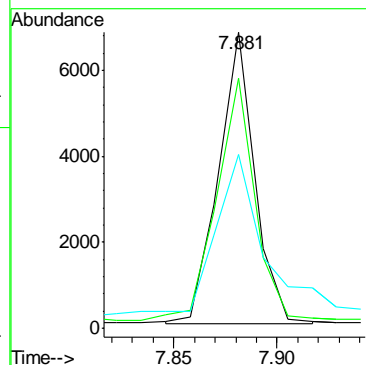
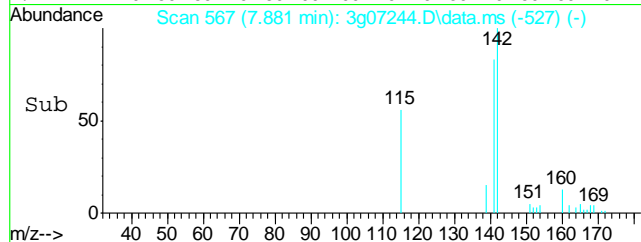




#9  
1-Methylnaphthalene  
Concen: 0.16 ug/mL m  
RT: 7.881 min Scan# 567  
Delta R.T. -0.012 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

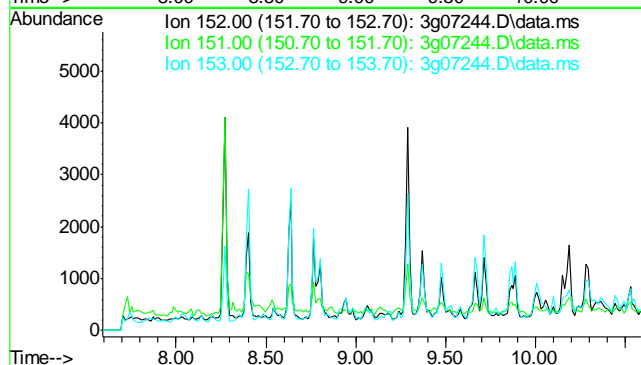


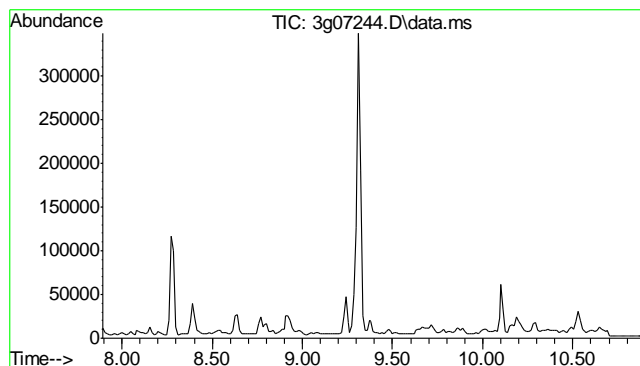
Tgt Ion: 142 Resp: 8286  
Ion Ratio Lower Upper  
142 100  
141 254.4 67.8 101.8#  
115 147.5 36.1 54.1#



#10  
Acenaphthylene  
Concen: N.D. ug/mL  
Expected RT: 9.09 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

Tgt Ion: 152  
Sig Exp Ratio  
152 100  
151 18.8  
153 12.9

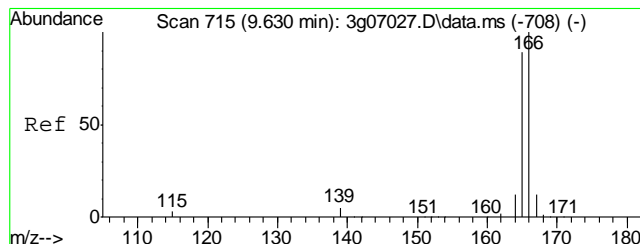
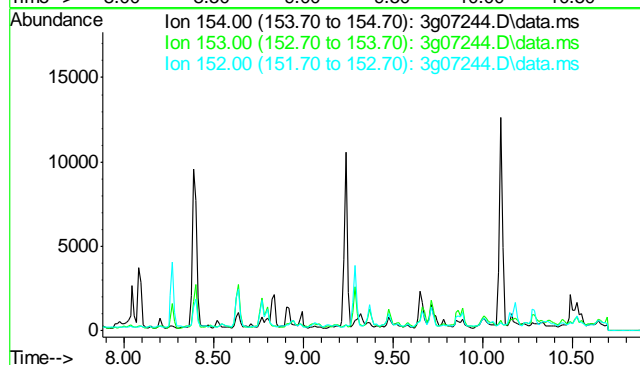




#11  
 Acenaphthene  
 Concen: N.D. ug/mL  
 Expected RT: 9.38 min  
  
 Lab File: 3g07244.D  
 Acq: 13 Dec 11 12:57 pm

Tgt Ion: 154  

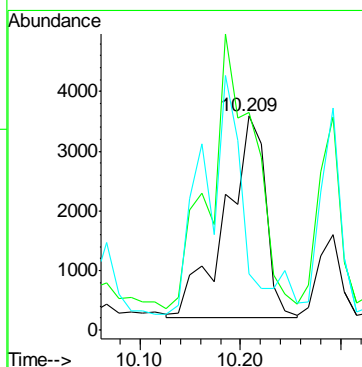
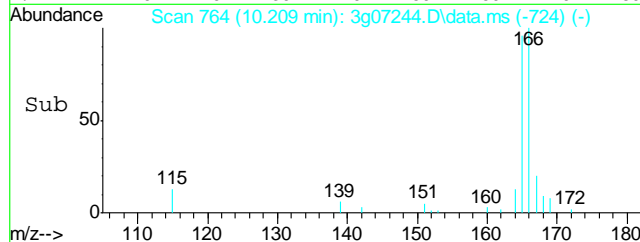
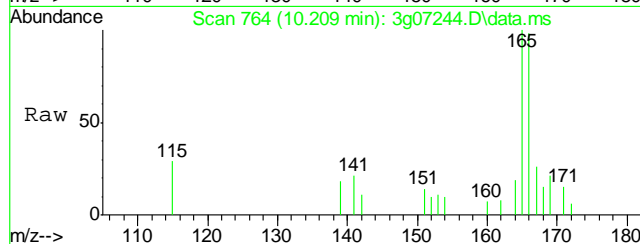
Sig	Exp Ratio
154	100
153	102.5
152	49.2

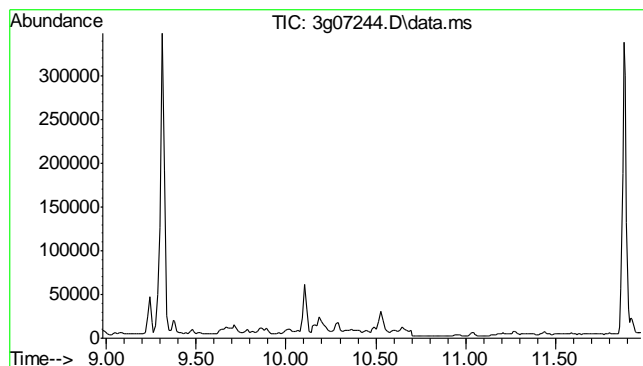


#12  
 Fluorene  
 Concen: 0.14 ug/mL  
 RT: 10.209 min Scan# 764  
 Delta R.T. -0.023 min  
 Lab File: 3g07244.D  
 Acq: 13 Dec 11 12:57 pm

Tgt Ion: 166 Resp: 9317  

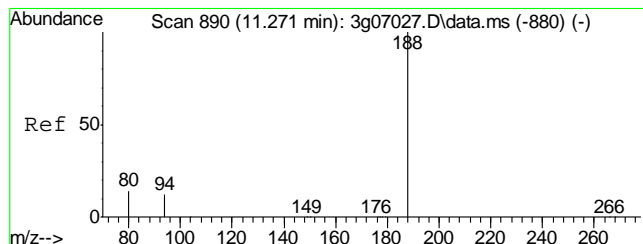
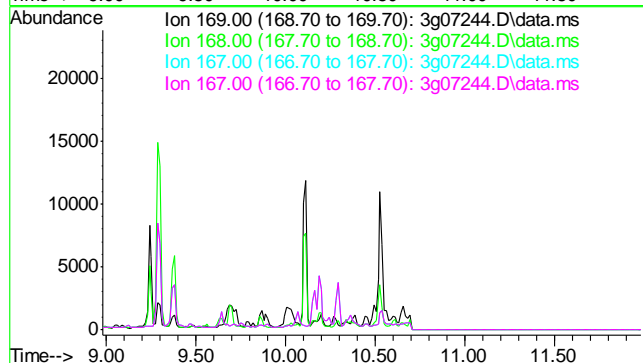
Ion	Ratio	Lower	Upper
166	100		
165	149.8	70.5	110.5#
167	120.3	0.0	33.2#





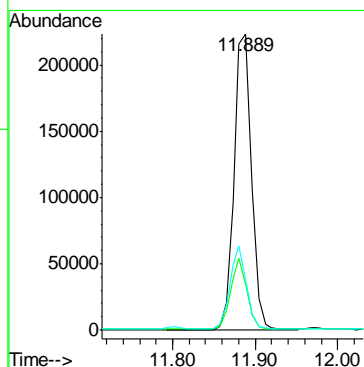
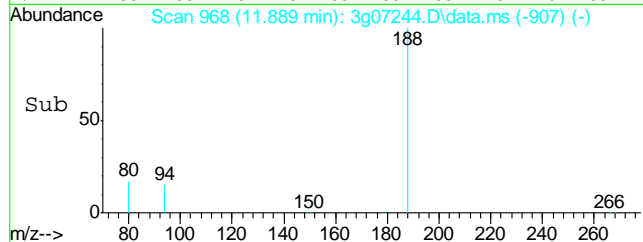
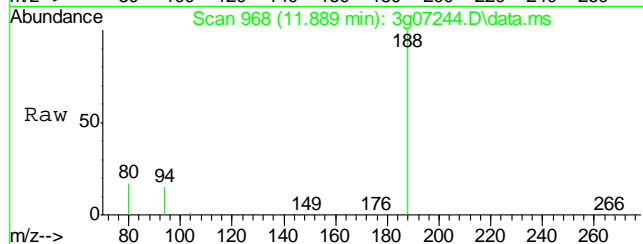
#13  
 Diphenylamine  
 Concen: N.D. ug/mL  
 Expected RT: 10.48 min  
  
 Lab File: 3g07244.D  
 Acq: 13 Dec 11 12:57 pm

Tgt Ion: 169  
 Sig Exp Ratio  
 169 100  
 168 61.5  
 167 33.7  
 167 33.7

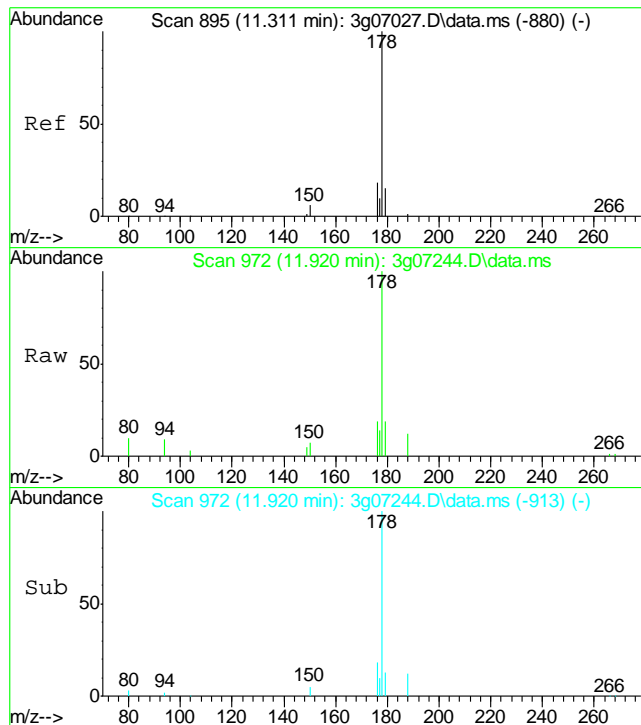


#14  
 Phenanthrene-d10  
 Concen: 4.00 ug/mL  
 RT: 11.889 min Scan# 968  
 Delta R.T. -0.016 min  
 Lab File: 3g07244.D  
 Acq: 13 Dec 11 12:57 pm

Tgt Ion: 188 Resp: 330314  
 Ion Ratio Lower Upper  
 188 100  
 94 22.2 5.1 45.1  
 80 26.4 9.8 49.8

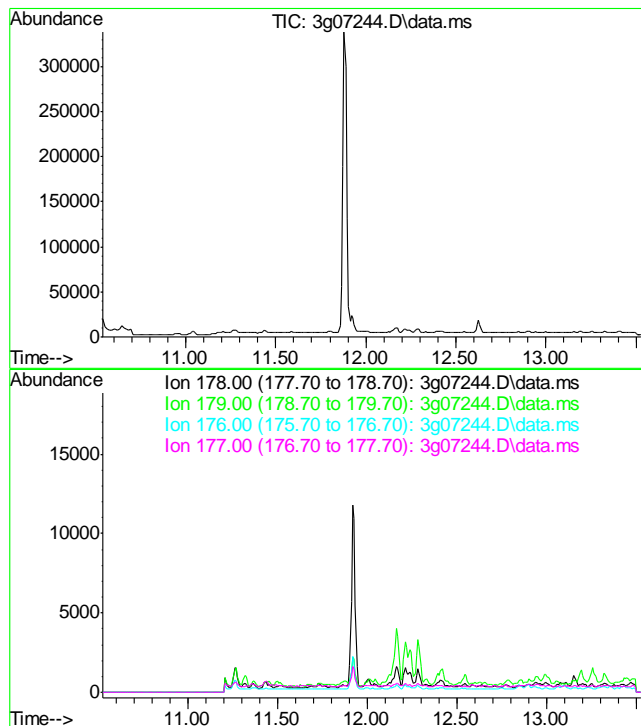
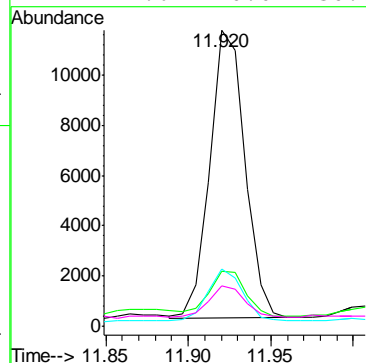






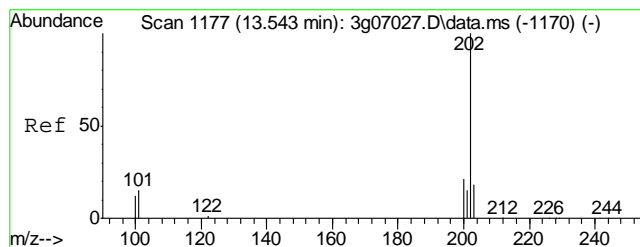
#15  
Phenanthrene  
Concen: 0.16 ug/mL  
RT: 11.920 min Scan# 972  
Delta R.T. -0.032 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

Tgt Ion:	178	Resp:	16862
Ion Ratio	Lower	Upper	
178	100		
179	16.0	0.0	35.2
176	18.3	0.0	38.6
177	11.6	0.0	30.0



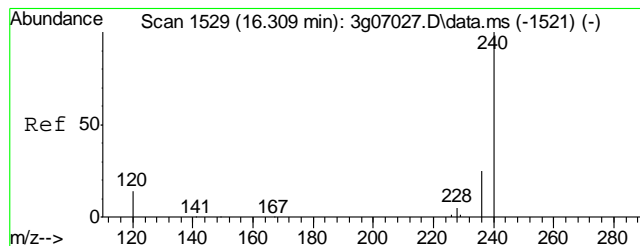
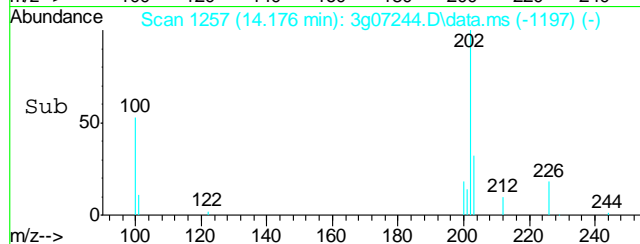
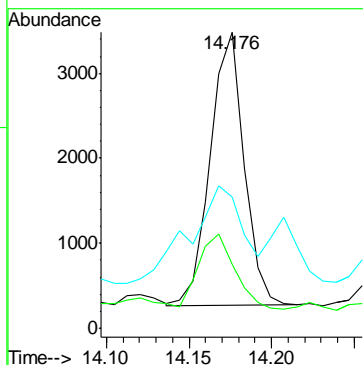
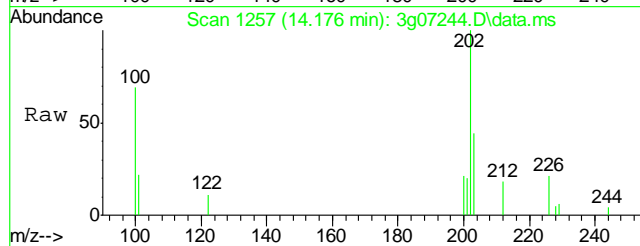
#16  
Anthracene  
Concen: N.D. ug/mL  
Expected RT: 12.03 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

Tgt Ion:	178
Sig	Exp Ratio
178	100
179	14.9
176	17.9
177	8.5



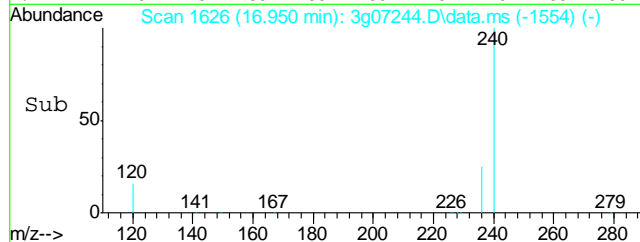
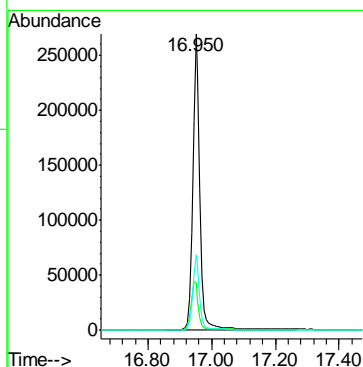
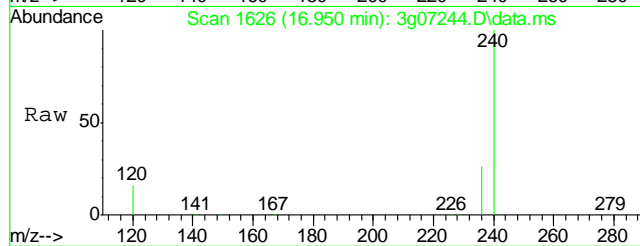
#17  
Fluoranthene  
Concen: 0.04 ug/mL  
RT: 14.176 min Scan# 1257  
Delta R.T. -0.023 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

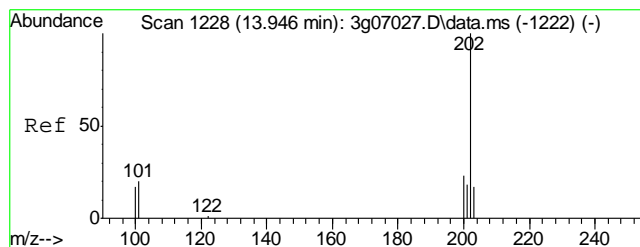
Tgt Ion	Ratio	Lower	Upper
202	100		
101	30.9	2.3	42.3
203	56.4	0.0	37.1#



#18  
Chrysene-d12  
Concen: 4.00 ug/mL  
RT: 16.950 min Scan# 1626  
Delta R.T. -0.026 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

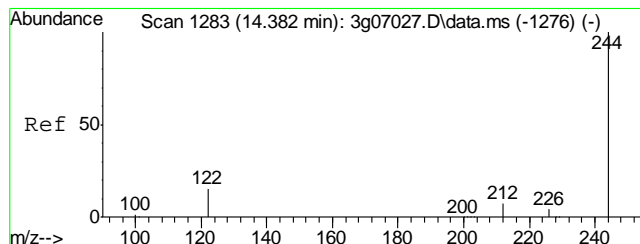
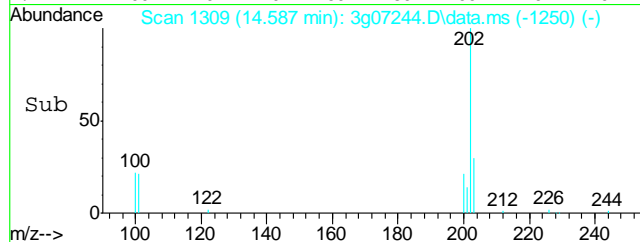
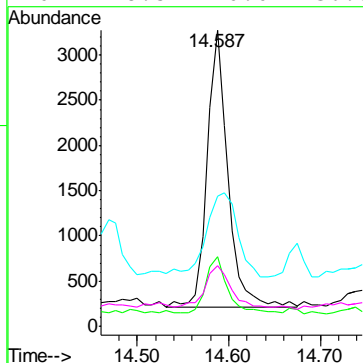
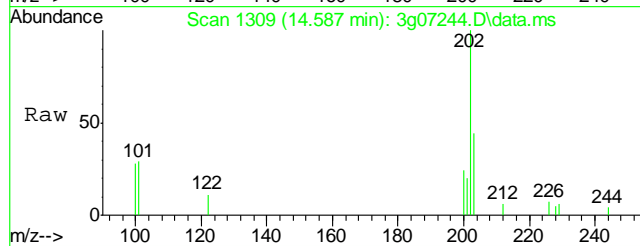
Tgt Ion	Ratio	Lower	Upper
240	100		
120	16.3	0.5	40.5
236	24.8	5.9	45.9





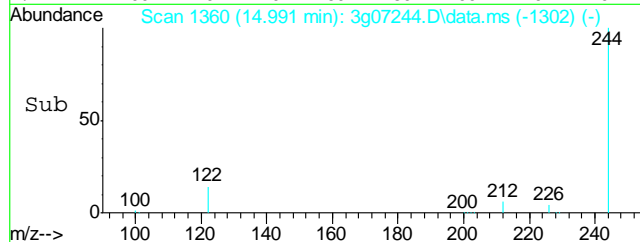
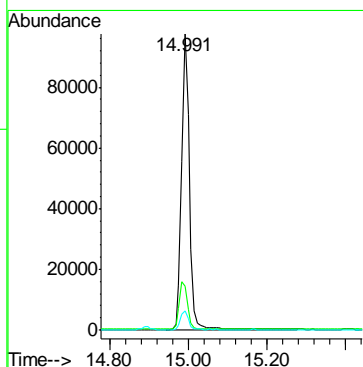
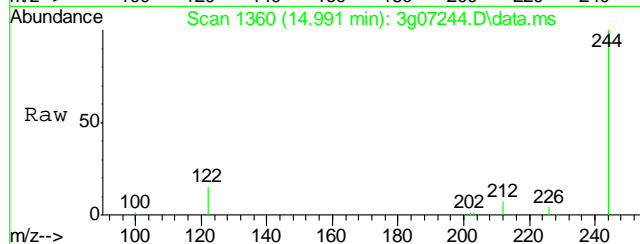
#19  
Pyrene  
Concen: 0.03 ug/mL  
RT: 14.587 min Scan# 1309  
Delta R.T. -0.032 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

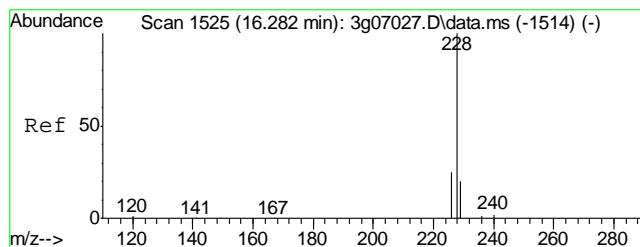
Tgt Ion:	202	Resp:	4778
Ion Ratio	Lower	Upper	
202	100		
200	20.9	0.2	40.2
203	46.4	0.0	37.5#
201	18.5	0.0	36.5



#20  
Terphenyl-d14  
Concen: 1.53 ug/mL  
RT: 14.991 min Scan# 1360  
Delta R.T. -0.039 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

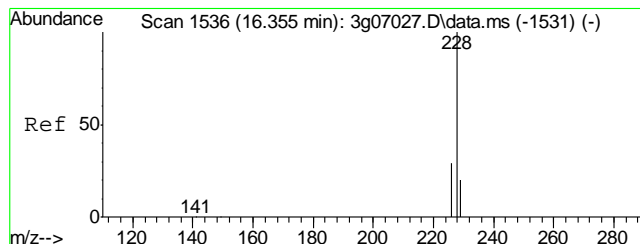
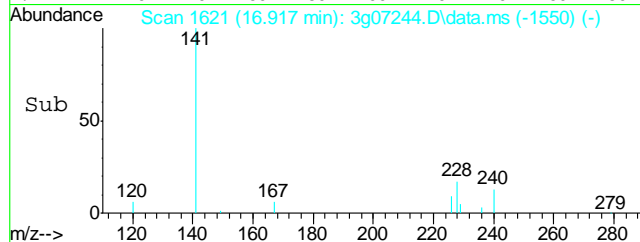
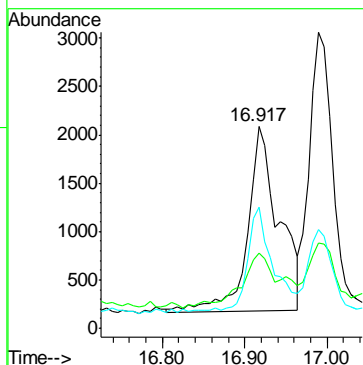
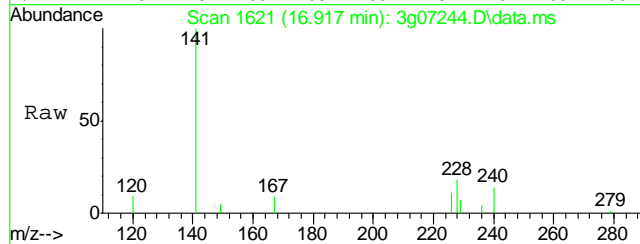
Tgt Ion:	244	Resp:	134759
Ion Ratio	Lower	Upper	
244	100		
122	17.1	0.0	40.0
212	6.7	0.0	27.3





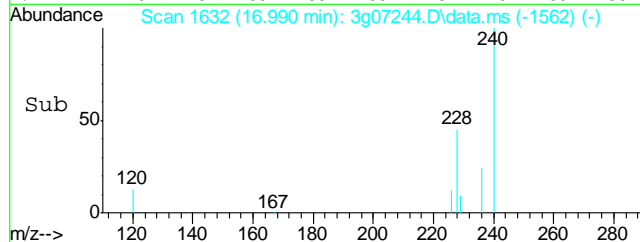
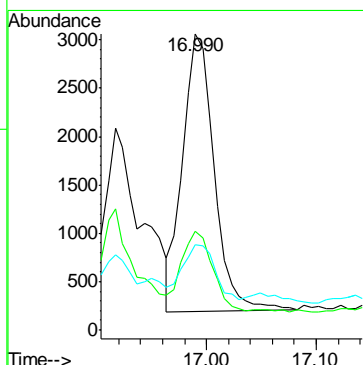
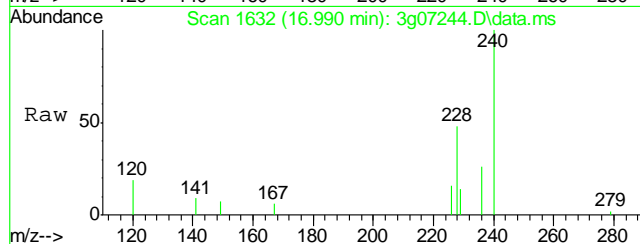
#21  
Benzo(a)anthracene  
Concen: 0.04 ug/mL  
RT: 16.917 min Scan# 1621  
Delta R.T. -0.033 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

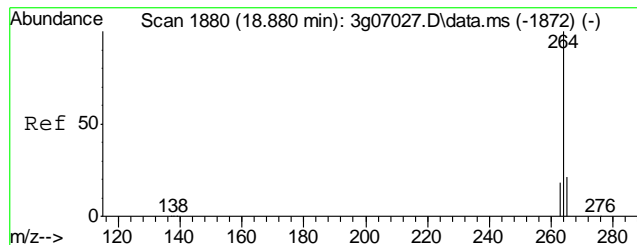
Tgt Ion	Ratio	Lower	Upper
228	100		
229	30.5	0.0	39.4
226	46.3	6.4	46.4



#22  
Chrysene  
Concen: 0.04 ug/mL  
RT: 16.990 min Scan# 1632  
Delta R.T. -0.040 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

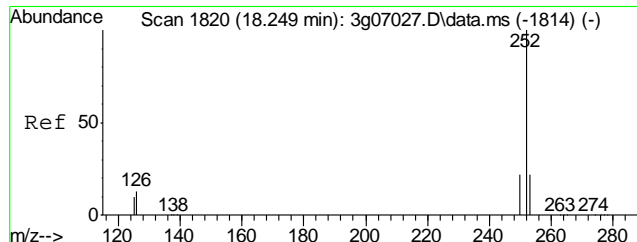
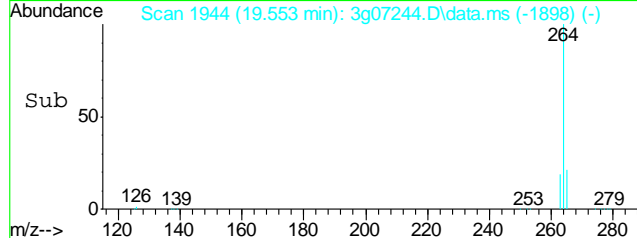
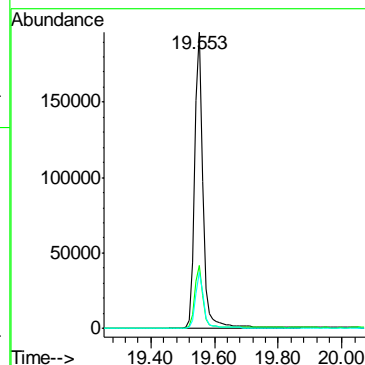
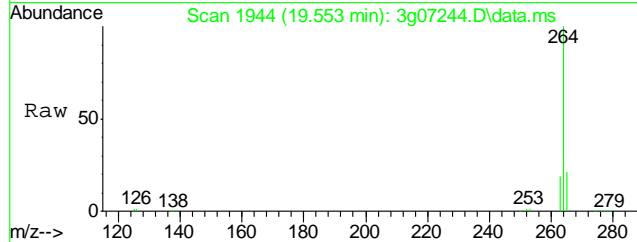
Tgt Ion	Ratio	Lower	Upper
228	100		
226	28.3	8.5	48.5
229	25.3	0.0	39.3





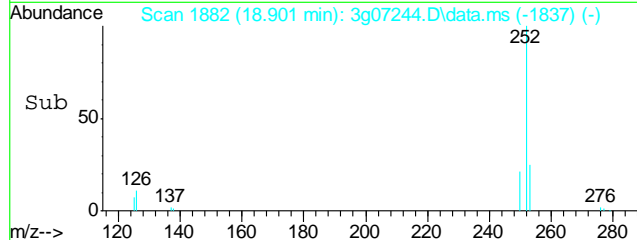
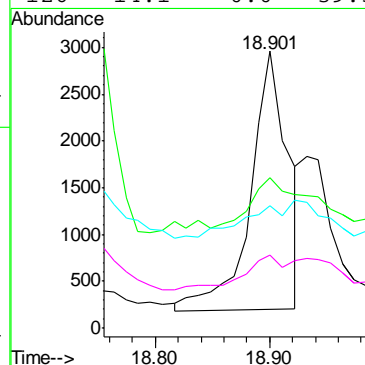
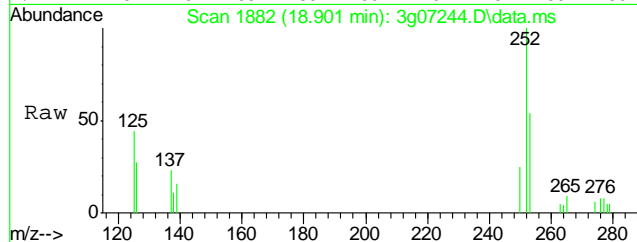
#23  
Perylene-d12  
Concen: 4.00 ug/mL  
RT: 19.553 min Scan# 1944  
Delta R.T. -0.021 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

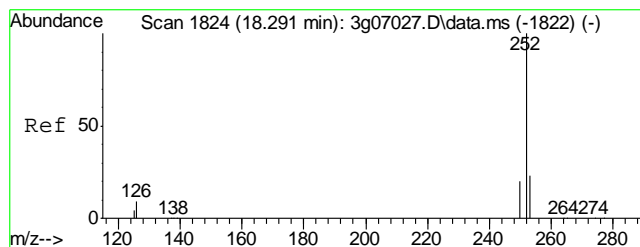
Tgt Ion:	264	Resp:	359529
Ion Ratio	Lower	Upper	
264	100		
265	21.3	0.8	40.8
263	18.7	0.0	39.1



#24  
Benzo(b)fluoranthene  
Concen: 0.06 ug/mL m  
RT: 18.901 min Scan# 1882  
Delta R.T. -0.031 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

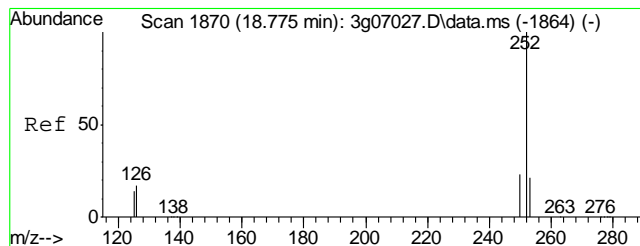
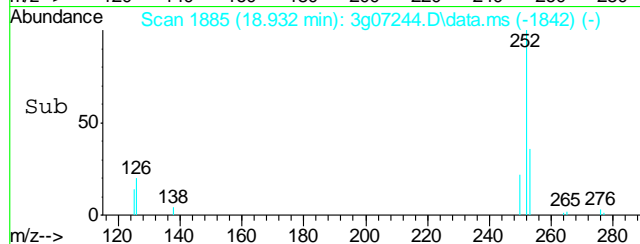
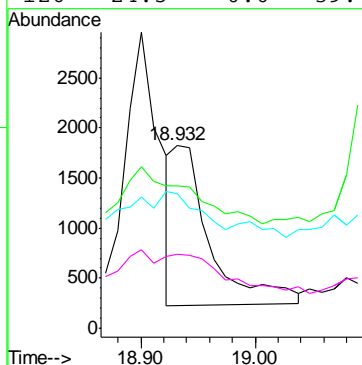
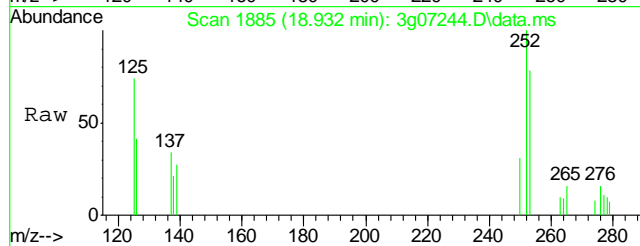
Tgt Ion:	252	Resp:	6355
Ion Ratio	Lower	Upper	
252	100		
253	36.3	5.6	45.6
125	25.9	0.0	33.5
126	14.1	0.0	39.5





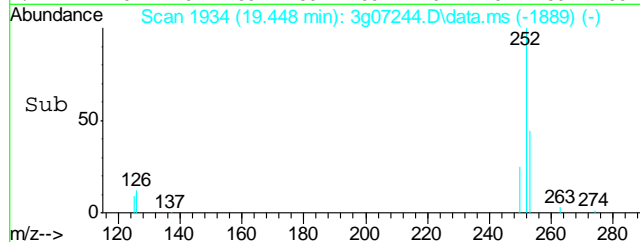
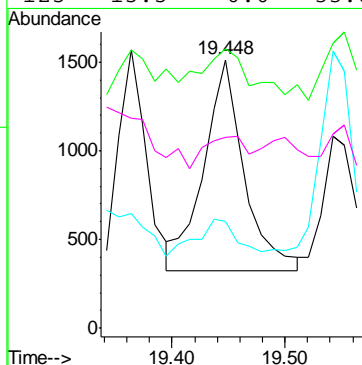
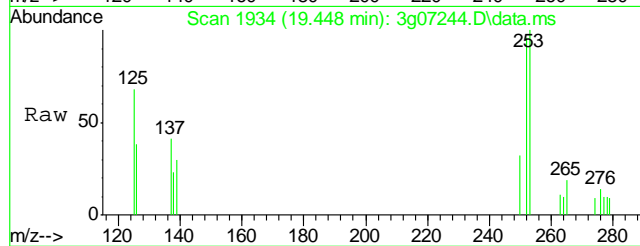
#25  
Benzo(k)fluoranthene  
Concen: 0.02 ug/mL m  
RT: 18.932 min Scan# 1885  
Delta R.T. -0.053 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

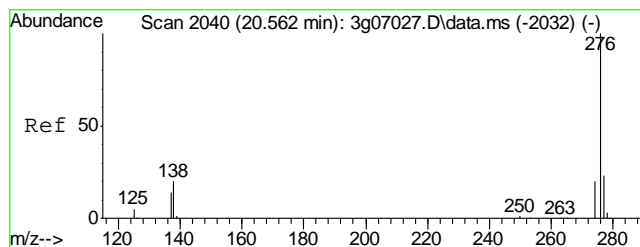
Tgt Ion	Ratio	Lower	Upper
252	100		
253	63.1	0.0	39.2#
125	45.0	0.0	32.2#
126	24.5	0.0	39.4



#26  
Benzo(a)pyrene  
Concen: 0.03 ug/mL  
RT: 19.448 min Scan# 1934  
Delta R.T. -0.031 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

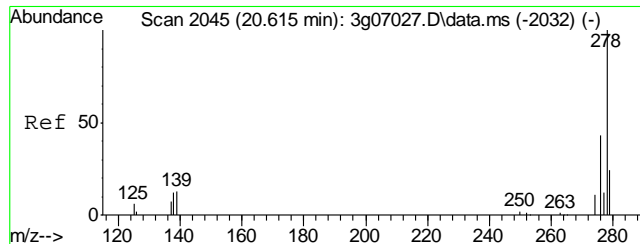
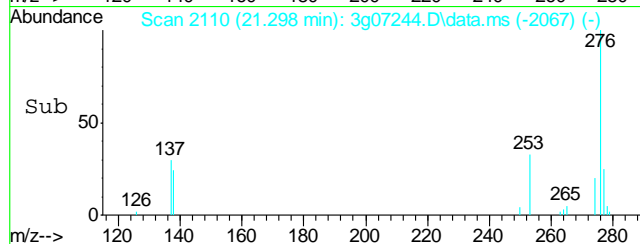
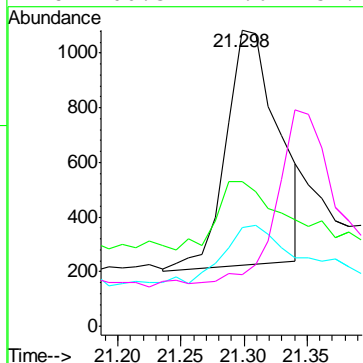
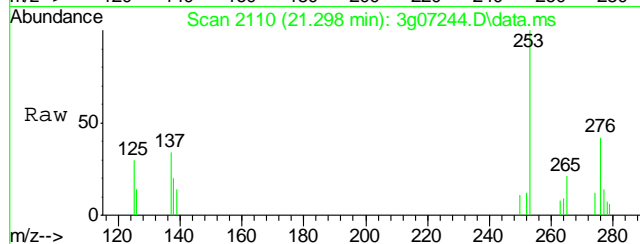
Tgt Ion	Ratio	Lower	Upper
252	100		
253	26.1	1.4	41.4
126	19.6	0.0	39.1
125	15.5	0.0	33.8





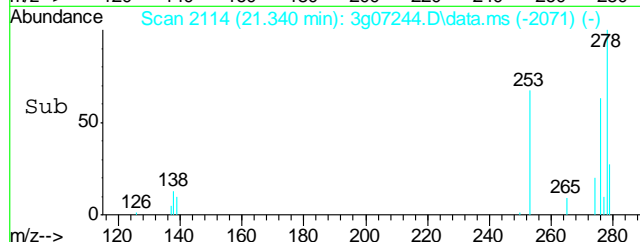
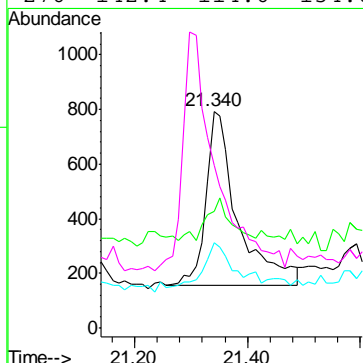
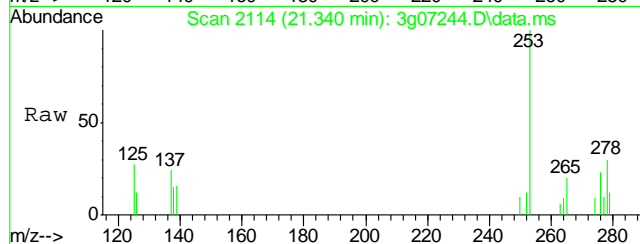
#27  
 Indeno(1,2,3-cd)pyrene  
 Concen: 0.04 ug/mL m  
 RT: 21.298 min Scan# 2110  
 Delta R.T. -0.052 min  
 Lab File: 3g07244.D  
 Acq: 13 Dec 11 12:57 pm

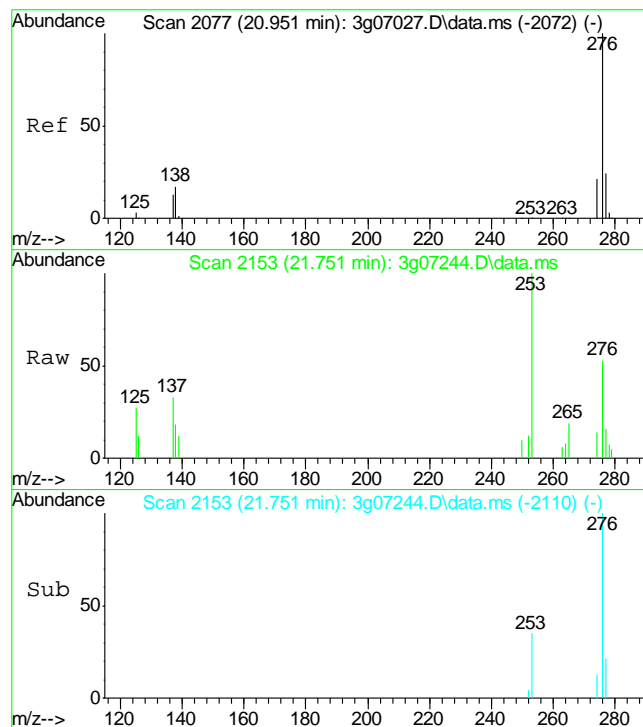
Tgt Ion:	276	Resp:	2490
Ion Ratio	Lower	Upper	
276	100		
138	41.7	4.1	44.1
277	39.8	24.0	64.0
278	100.3	111.6	151.6#



#28  
 Dibenz(a,h)anthracene  
 Concen: 0.03 ug/mL  
 RT: 21.340 min Scan# 2114  
 Delta R.T. -0.052 min  
 Lab File: 3g07244.D  
 Acq: 13 Dec 11 12:57 pm

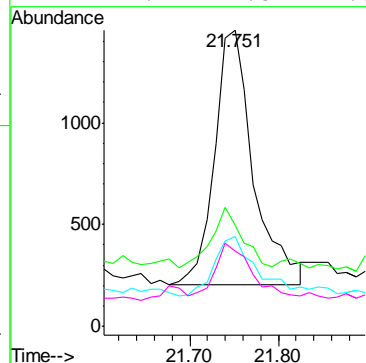
Tgt Ion:	278	Resp:	2498
Ion Ratio	Lower	Upper	
278	100		
139	18.7	2.4	42.4
279	23.3	3.4	43.4
276	142.4	114.6	154.6





#29  
Benzo(g,h,i)perylene  
Concen: 0.03 ug/mL  
RT: 21.751 min Scan# 2153  
Delta R.T. -0.052 min  
Lab File: 3g07244.D  
Acq: 13 Dec 11 12:57 pm

Tgt Ion:	276	Resp:	3829
Ion Ratio	Lower	Upper	
276	100		
138	18.5	6.6	46.6
277	27.8	3.7	43.7
274	22.4	1.5	41.5





## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\120711\  
 Data File : 3g07152.D  
 Acq On : 7 Dec 2011 9:58 pm  
 Operator : DONC  
 Sample : OP4929-MB  
 Misc : OP4929,E3G262,30,,,1,1  
 ALS Vial : 16 Sample Multiplier: 1

Quant Time: Dec 08 09:47:15 2011  
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G262.M  
 Quant Title : PAHSIM BASE  
 QLast Update : Thu Dec 08 09:26:11 2011  
 Response via : Initial Calibration

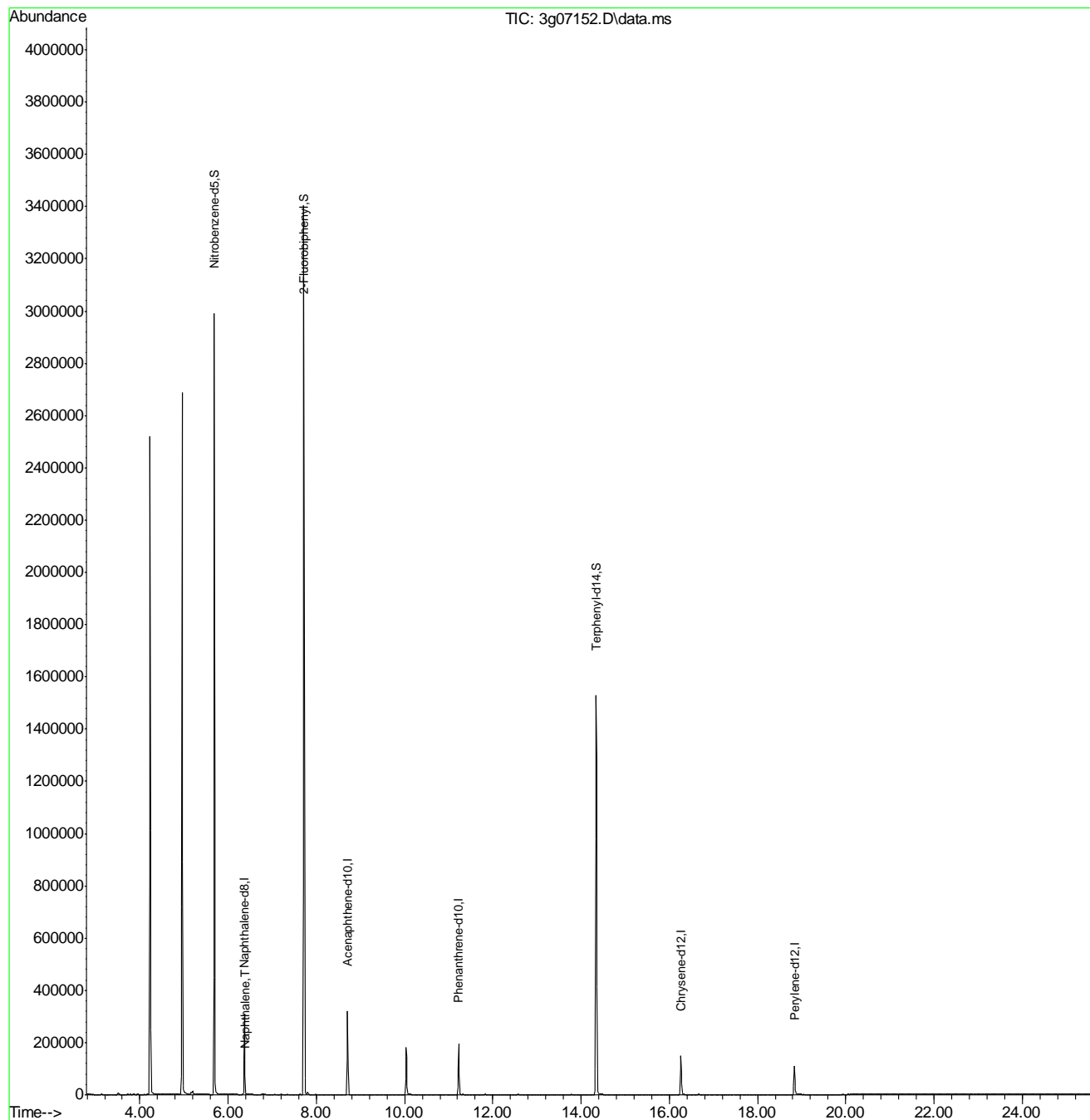
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	6.370	136	271050	4.00	ug/mL	0.00
6) Acenaphthene-d10	8.709	164	166538	4.00	ug/mL	0.00
14) Phenanthrene-d10	11.232	188	222176	4.00	ug/mL	0.00
18) Chrysene-d12	16.263	240	176214	4.00	ug/mL	-0.01
23) Perylene-d12	18.838	264	152019	4.00	ug/mL	0.00
System Monitoring Compounds						
2) Nitrobenzene-d5	5.685	82	1506607	46.01	ug/mL	-0.01
7) 2-Fluorobiphenyl	7.716	172	2865854	43.84	ug/mL	-0.01
20) Terphenyl-d14	14.342	244	1788307	50.71	ug/mL	-0.02
Target Compounds						
						Qvalue
3) N-Nitrosodimethylamine	0.000		0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000		0	N.D.	d	
5) Naphthalene	6.395	128	862	0.01	ug/mL	71
8) 2-Methylnaphthalene	0.000		0	N.D.	d	
9) 1-Methylnaphthalene	0.000		0	N.D.	d	
10) Acenaphthylene	0.000		0	N.D.	d	
11) Acenaphthene	0.000		0	N.D.	d	
12) Fluorene	0.000		0	N.D.	d	
13) Diphenylamine	0.000		0	N.D.	d	
15) Phenanthrene	0.000		0	N.D.	d	
16) Anthracene	0.000		0	N.D.	d	
17) Fluoranthene	0.000		0	N.D.	d	
19) Pyrene	0.000		0	N.D.	d	
21) Benzo(a)anthracene	0.000		0	N.D.	d	
22) Chrysene	0.000		0	N.D.	d	
24) Benzo(b)fluoranthene	0.000		0	N.D.	d	
25) Benzo(k)fluoranthene	0.000		0	N.D.	d	
26) Benzo(a)pyrene	0.000		0	N.D.	d	
27) Indeno(1,2,3-cd)pyrene	0.000		0	N.D.	d	
28) Dibenz(a,h)anthracene	0.000		0	N.D.	d	
29) Benzo(g,h,i)perylene	0.000		0	N.D.	d	

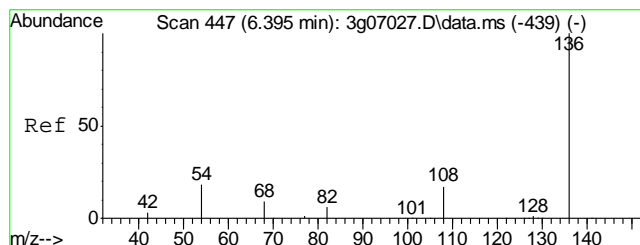
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\120711\  
Data File : 3g07152.D  
Acq On : 7 Dec 2011 9:58 pm  
Operator : DONC  
Sample : OP4929-MB  
Misc : OP4929,E3G262,30,,,1,1  
ALS Vial : 16 Sample Multiplier: 1

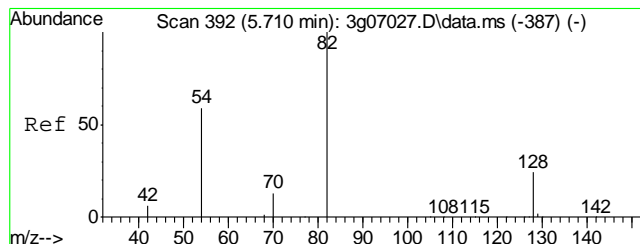
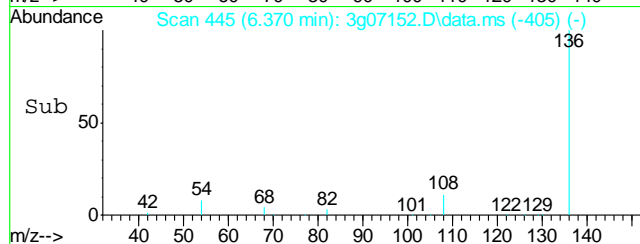
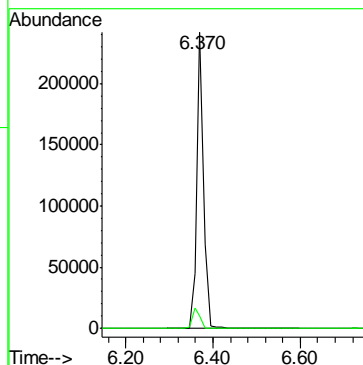
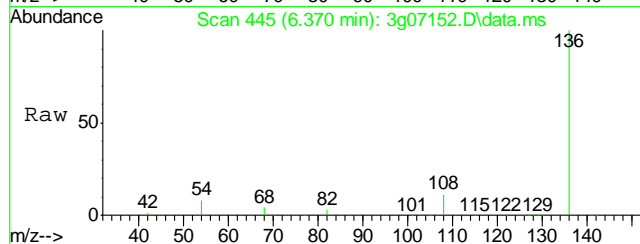
Quant Time: Dec 08 09:47:15 2011  
Quant Method : C:\msdchem\1\METHODS\SIMPE3G262.M  
Quant Title : PAHSIM BASE  
QLast Update : Thu Dec 08 09:26:11 2011  
Response via : Initial Calibration





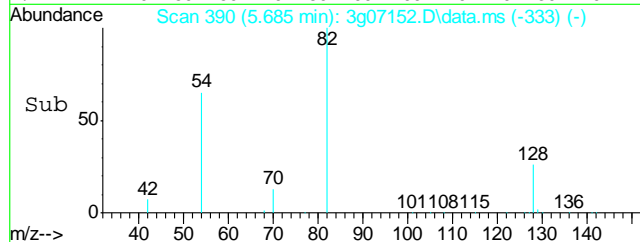
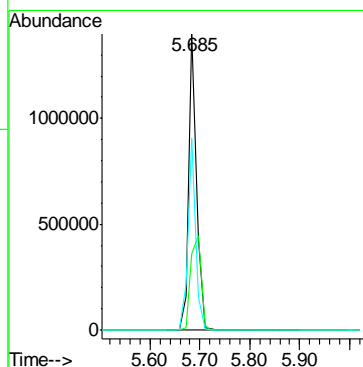
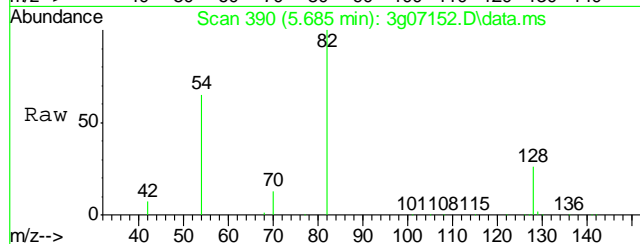
#1  
Naphthalene-d8  
Concen: 4.00 ug/mL  
RT: 6.370 min Scan# 445  
Delta R.T. 0.000 min  
Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

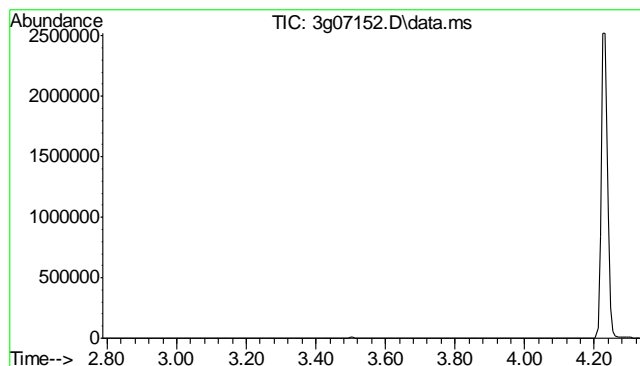
Tgt Ion: 136 Resp: 271050  
Ion Ratio Lower Upper  
136 100  
68 7.9 0.0 27.5



#2  
Nitrobenzene-d5  
Concen: 46.01 ug/mL  
RT: 5.685 min Scan# 390  
Delta R.T. -0.012 min  
Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

Tgt Ion: 82 Resp: 1506607  
Ion Ratio Lower Upper  
82 100  
128 41.8 22.2 62.2  
54 64.2 32.9 72.9

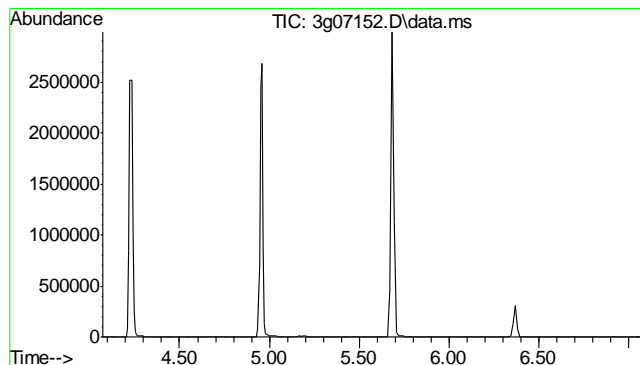
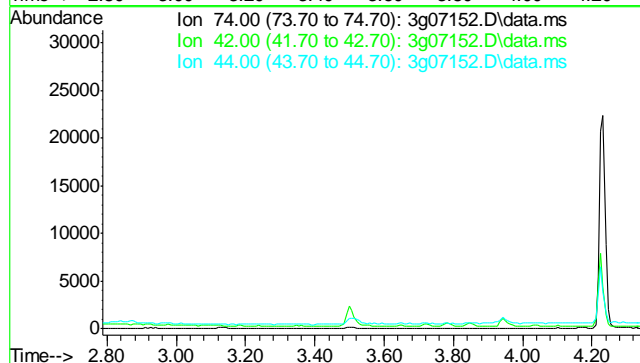




#3  
N-Nitrosodimethylamine  
Concen: N.D. ug/mL  
Expected RT: 2.84 min

Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

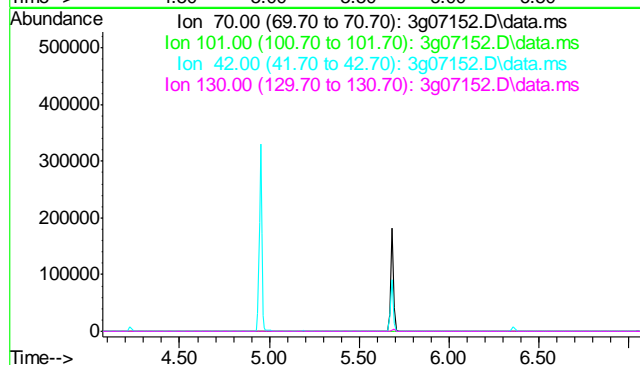
Tgt Ion:	74
Sig	Exp Ratio
74	100
42	62.7
44	4.7

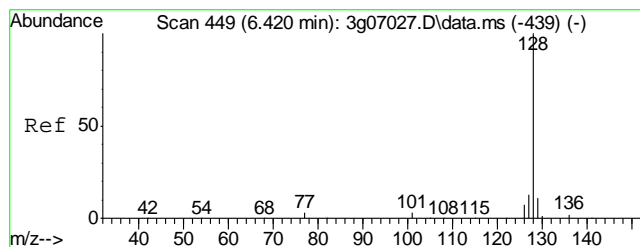


#4  
N-Nitrosodi-propylamine  
Concen: N.D. ug/mL  
Expected RT: 5.57 min

Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

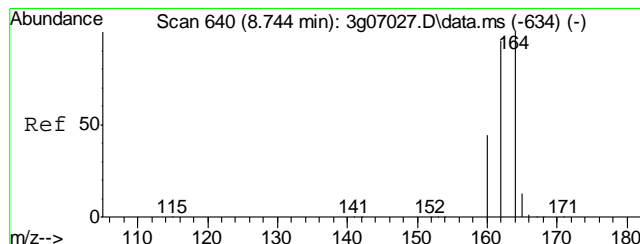
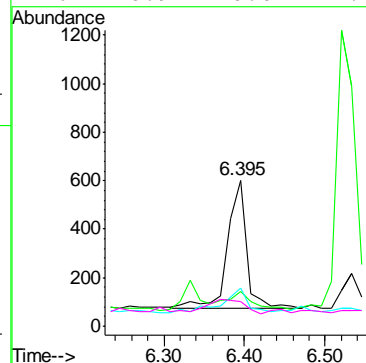
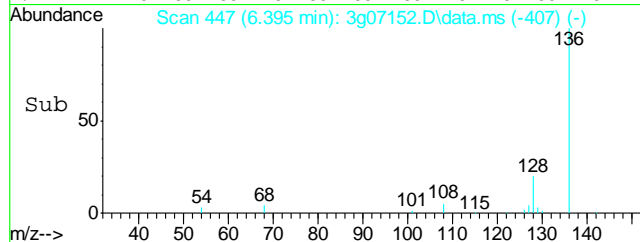
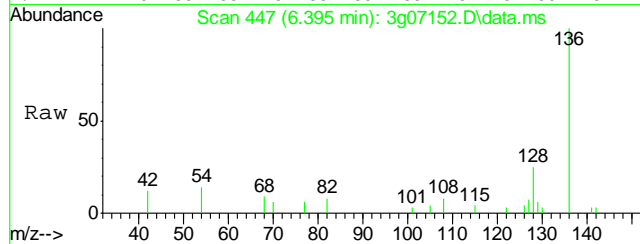
Tgt Ion:	70
Sig	Exp Ratio
70	100
101	12.9
42	56.3
130	25.7





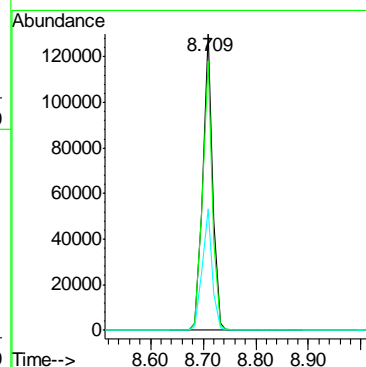
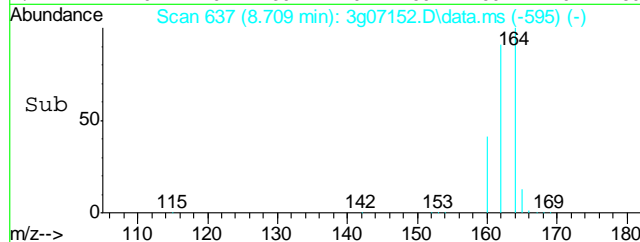
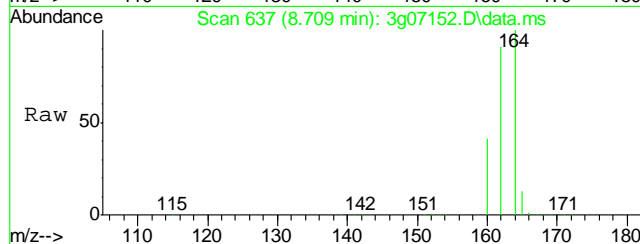
#5  
Naphthalene  
Concen: 0.01 ug/mL  
RT: 6.395 min Scan# 447  
Delta R.T. 0.000 min  
Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

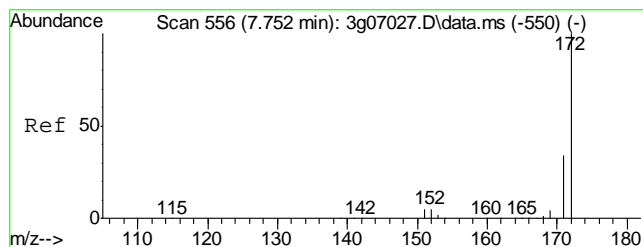
Tgt Ion:	128	Resp:	862
Ion Ratio	Lower	Upper	
128	100		
129	19.1	0.0	31.0
127	24.4	0.0	32.5
126	20.9	0.0	27.2



#6  
Acenaphthene-d10  
Concen: 4.00 ug/mL  
RT: 8.709 min Scan# 637  
Delta R.T. 0.000 min  
Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

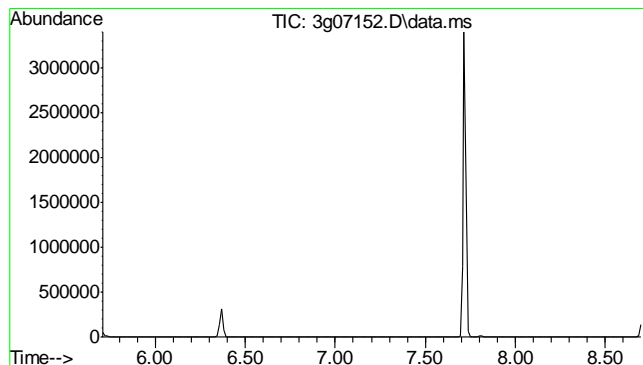
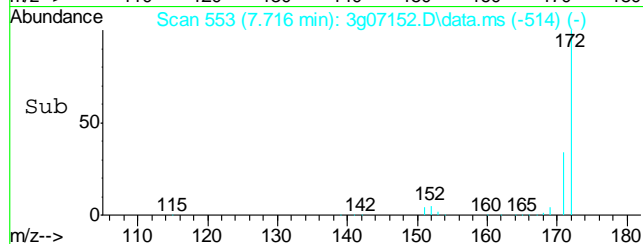
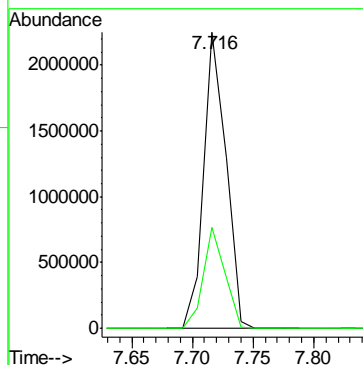
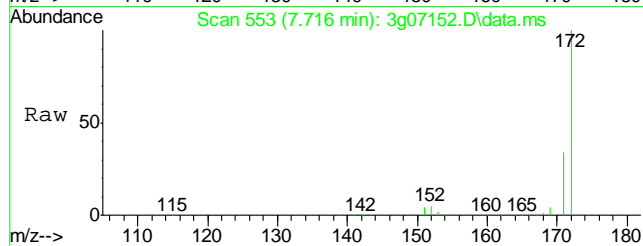
Tgt Ion:	164	Resp:	166538
Ion Ratio	Lower	Upper	
164	100		
162	91.0	71.7	111.7
160	41.2	21.3	61.3





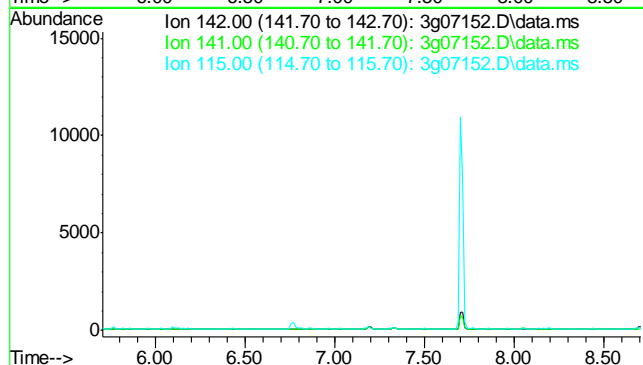
#7  
2-Fluorobiphenyl  
Concen: 43.84 ug/mL  
RT: 7.716 min Scan# 553  
Delta R.T. -0.012 min  
Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

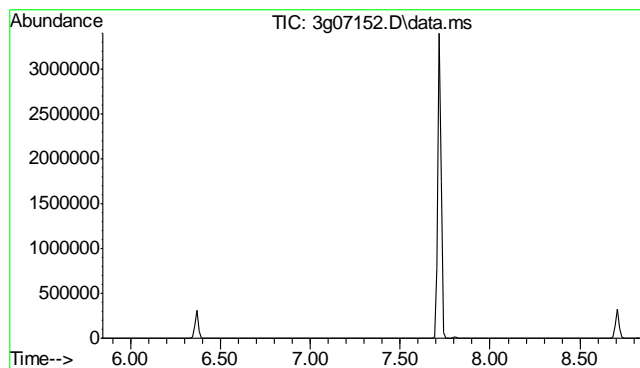
Tgt Ion: 172 Resp: 2865854  
Ion Ratio Lower Upper  
172 100  
171 33.1 12.5 52.5



#8  
2-Methylnaphthalene  
Concen: N.D. ug/mL  
Expected RT: 7.21 min  
Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

Tgt Ion: 142  
Sig Exp Ratio  
142 100  
141 82.4  
115 36.5

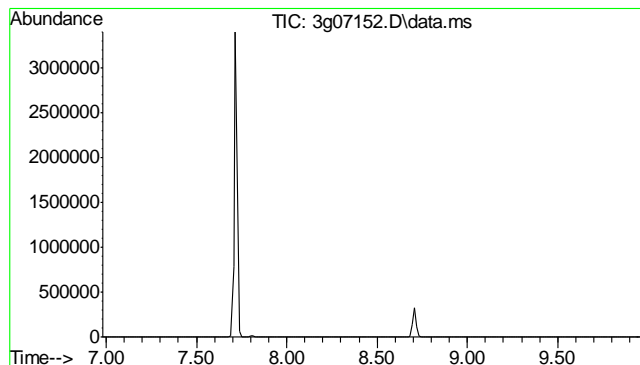
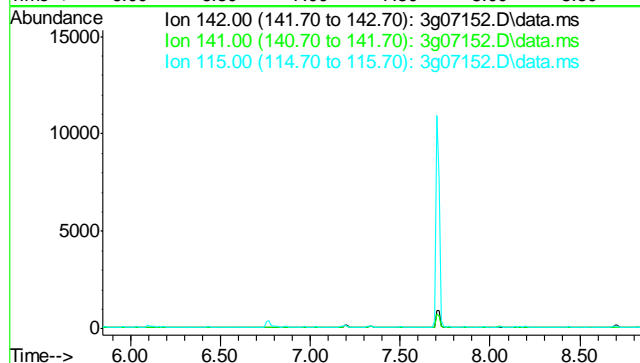




#9  
1-Methylnaphthalene  
Concen: N.D. ug/mL  
Expected RT: 7.34 min

Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

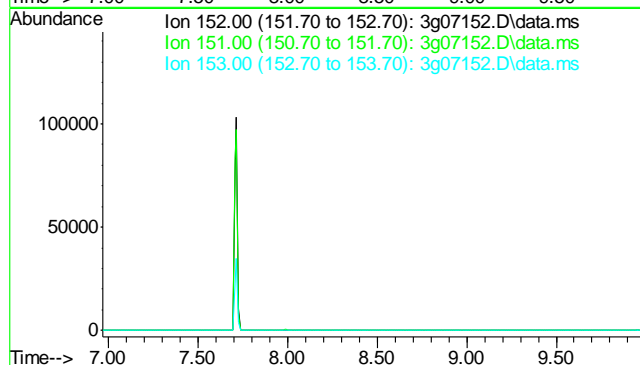
Tgt Ion:	142
Sig	Exp Ratio
142	100
141	85.1
115	39.1

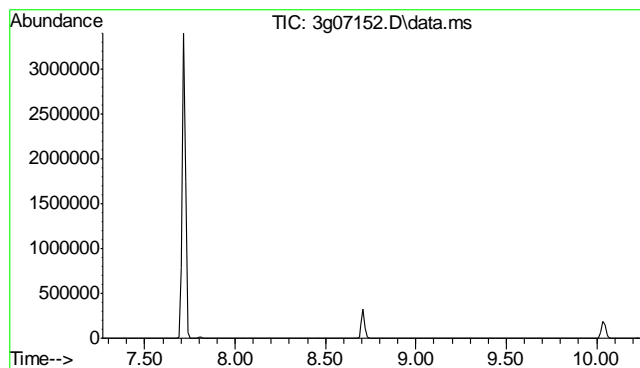


#10  
Acenaphthylene  
Concen: N.D. ug/mL  
Expected RT: 8.47 min

Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

Tgt Ion:	152
Sig	Exp Ratio
152	100
151	18.8
153	13.0

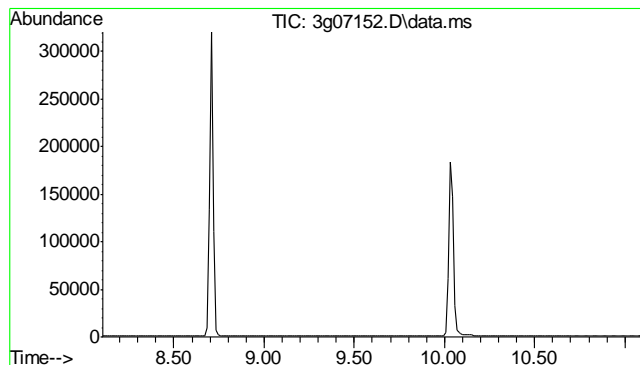
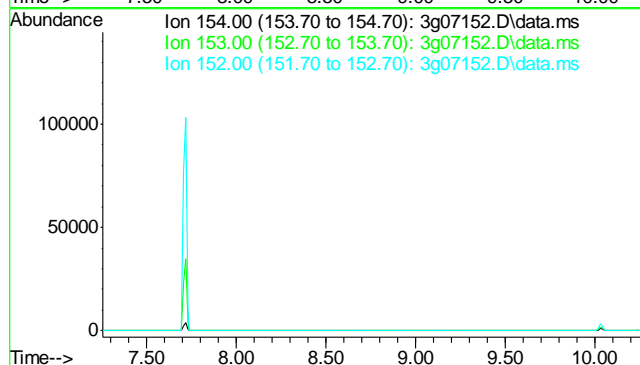




#11  
Acenaphthene  
Concen: N.D. ug/mL  
Expected RT: 8.76 min

Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

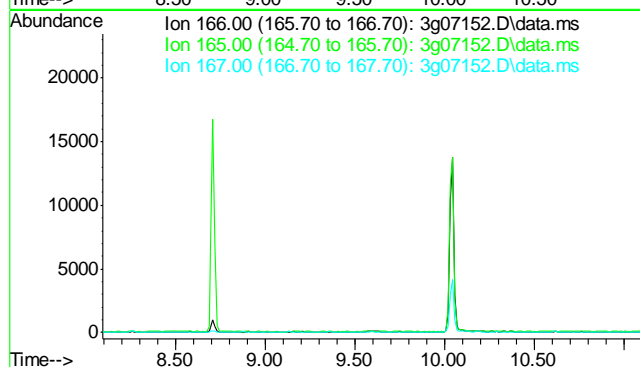
Tgt Ion: 154  
Sig Exp Ratio  
154 100  
153 102.1  
152 48.4



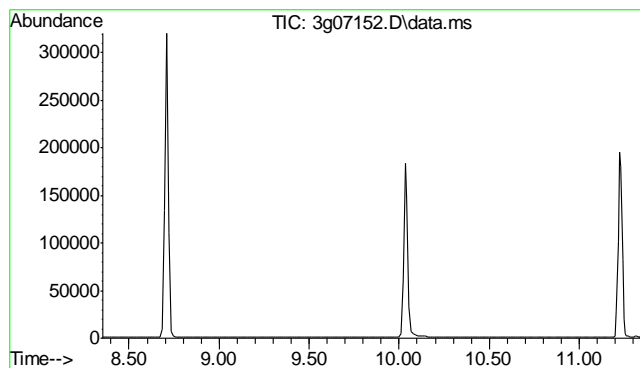
#12  
Fluorene  
Concen: N.D. ug/mL  
Expected RT: 9.59 min

Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

Tgt Ion: 166  
Sig Exp Ratio  
166 100  
165 89.2  
167 12.0



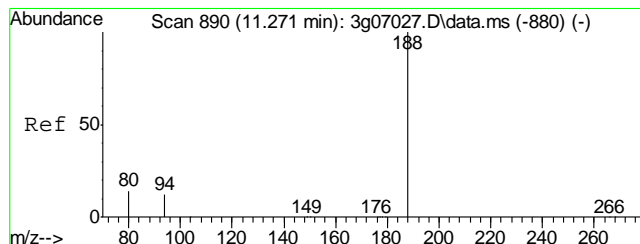
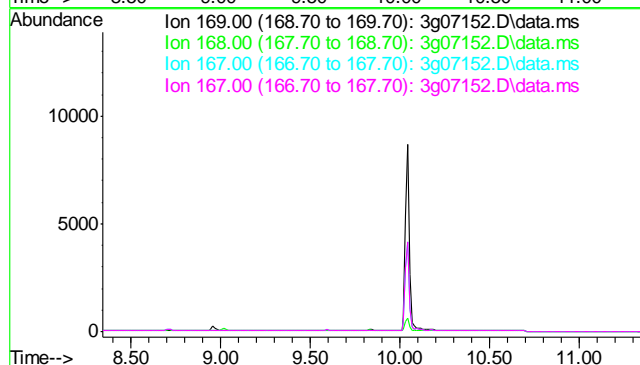




#13  
Diphenylamine  
Concen: N.D. ug/mL  
Expected RT: 9.84 min

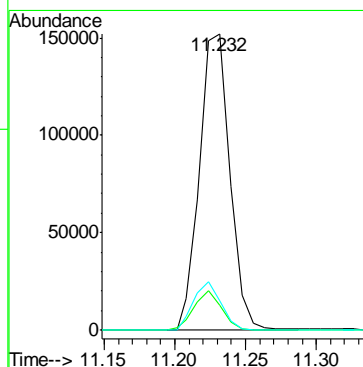
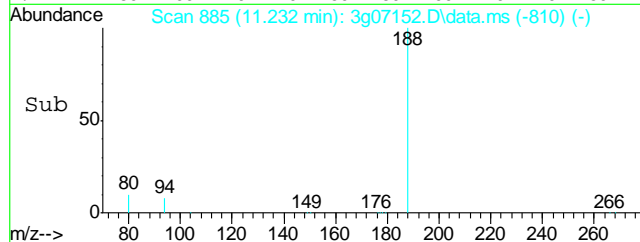
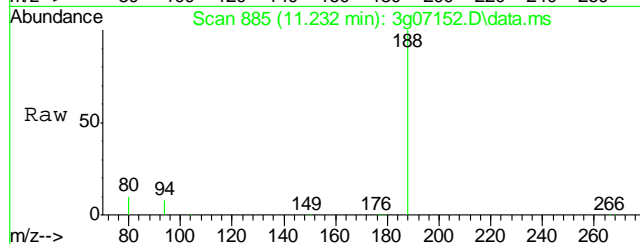
Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

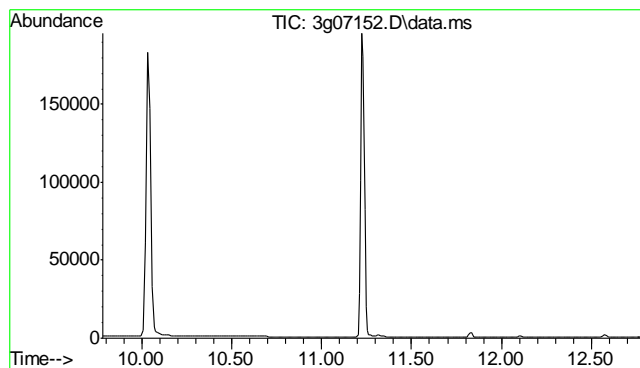
Tgt Ion: 169  
Sig Exp Ratio  
169 100  
168 60.5  
167 32.9  
167 32.9



#14  
Phenanthrene-d10  
Concen: 4.00 ug/mL  
RT: 11.232 min Scan# 885  
Delta R.T. 0.000 min  
Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

Tgt Ion: 188 Resp: 222176  
Ion Ratio Lower Upper  
188 100  
94 11.9 0.0 34.2  
80 15.1 0.0 36.8

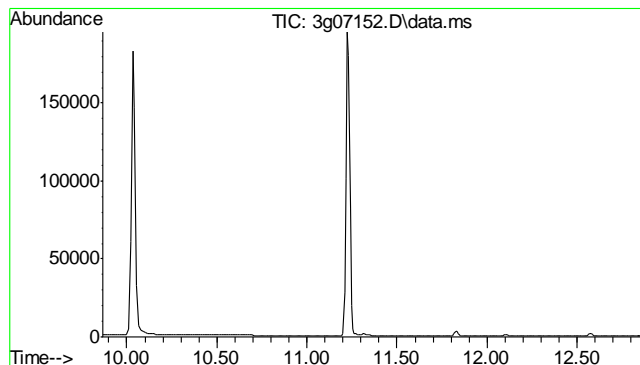
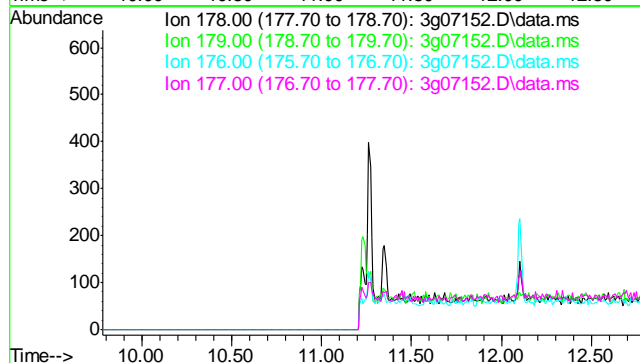




#15  
Phenanthrene  
Concen: N.D. ug/mL  
Expected RT: 11.28 min

Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

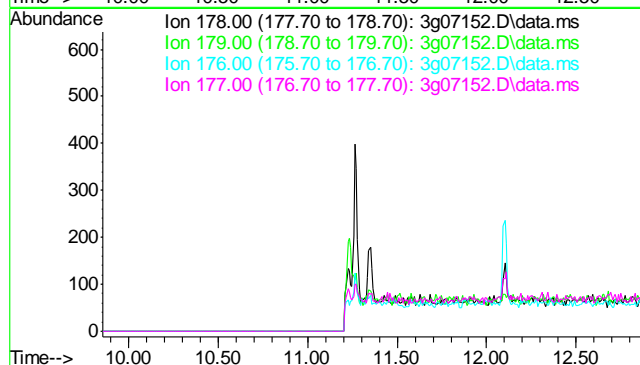
Tgt Ion: 178
Sig Exp Ratio
178 100
179 15.3
176 18.3
177 10.1

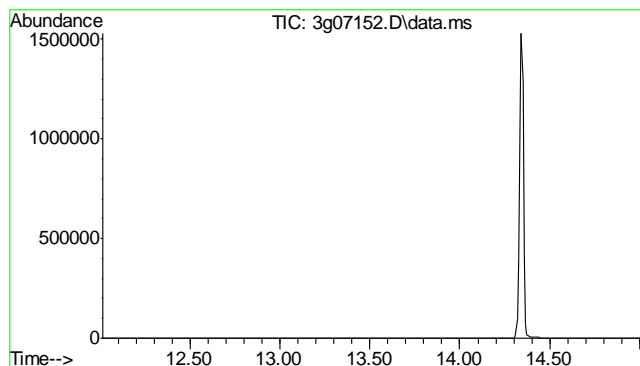


#16  
Anthracene  
Concen: N.D. ug/mL  
Expected RT: 11.36 min

Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

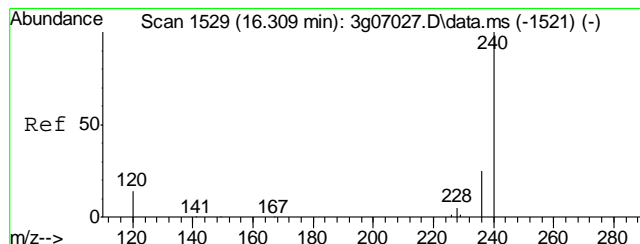
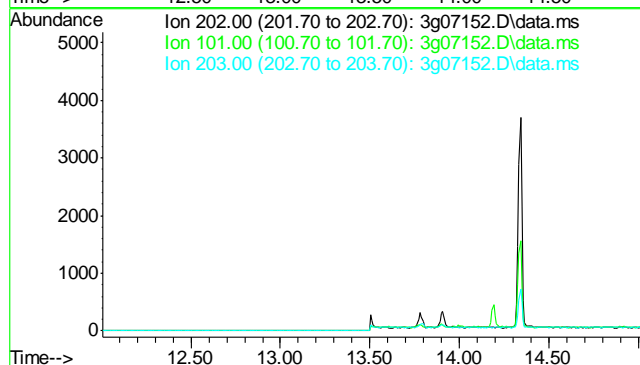
Tgt Ion: 178
Sig Exp Ratio
178 100
179 15.1
176 17.8
177 8.7





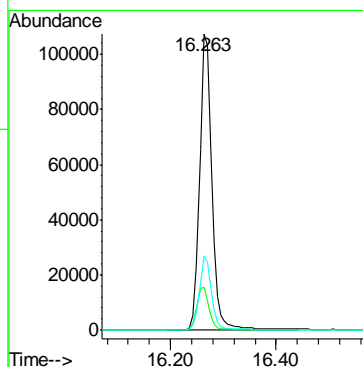
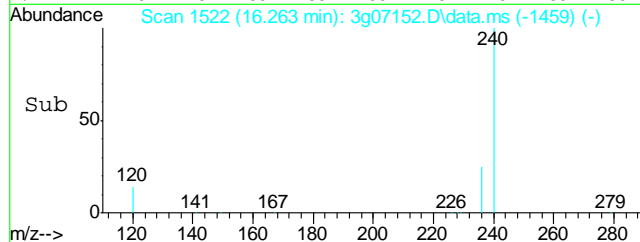
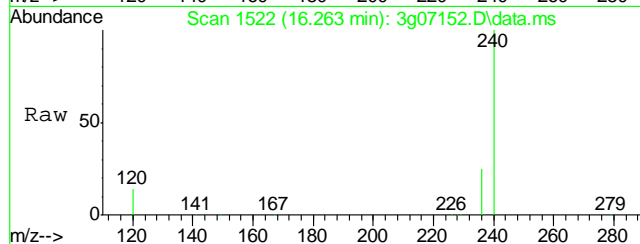
#17  
Fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 13.51 min  
  
Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

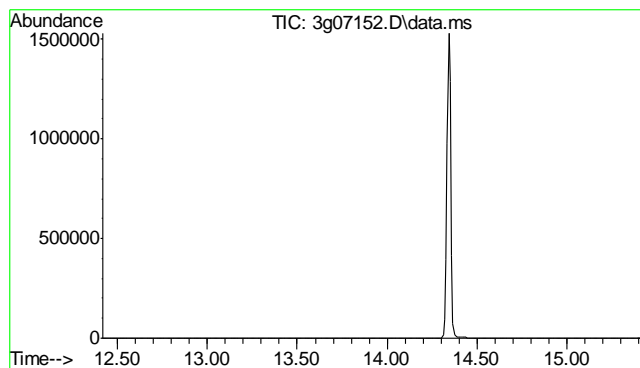
Tgt Ion: 202  
Sig Exp Ratio  
202 100  
101 12.8  
203 18.0



#18  
Chrysene-d12  
Concen: 4.00 ug/mL  
RT: 16.263 min Scan# 1522  
Delta R.T. -0.013 min  
Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

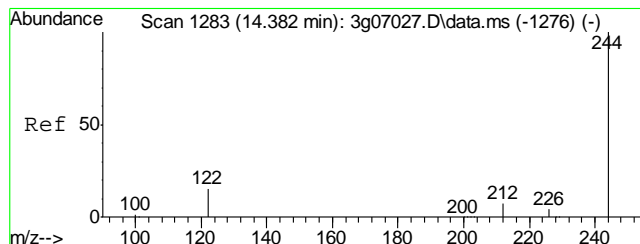
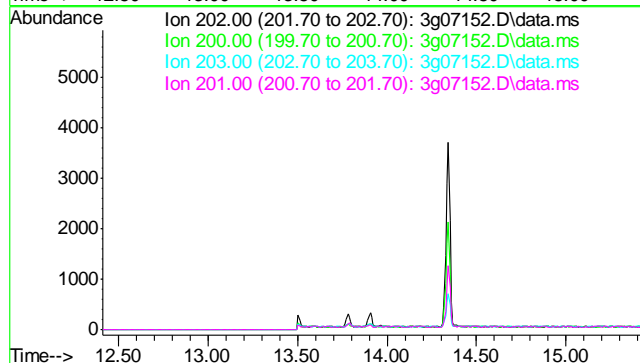
Tgt Ion: 240 Resp: 176214  
Ion Ratio Lower Upper  
240 100  
120 14.5 0.0 38.6  
236 24.8 5.2 45.2





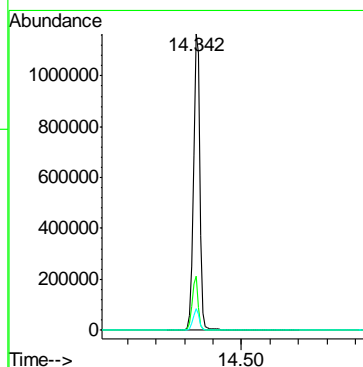
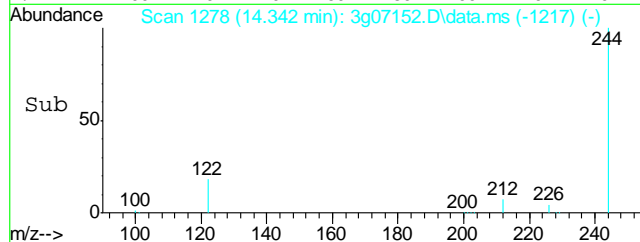
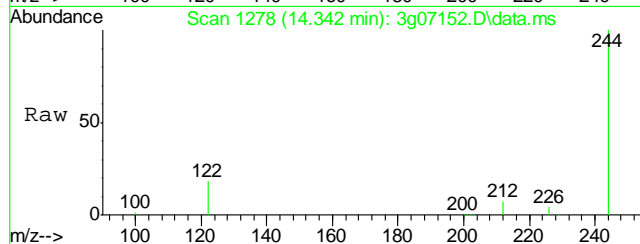
#19  
Pyrene  
Concen: N.D. ug/mL  
Expected RT: 13.91 min  
  
Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

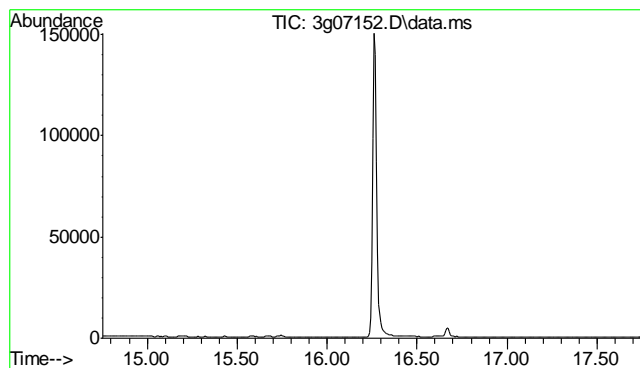
Tgt Ion:	202
Sig	Exp Ratio
202	100
200	22.1
203	17.8
201	18.2



#20  
Terphenyl-d14  
Concen: 50.71 ug/mL  
RT: 14.342 min Scan# 1278  
Delta R.T. -0.016 min  
Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

Tgt Ion:	244	Resp:	1788307
Ion	Ratio	Lower	Upper
244	100		
122	16.9	0.8	40.8
212	7.0	0.0	27.2

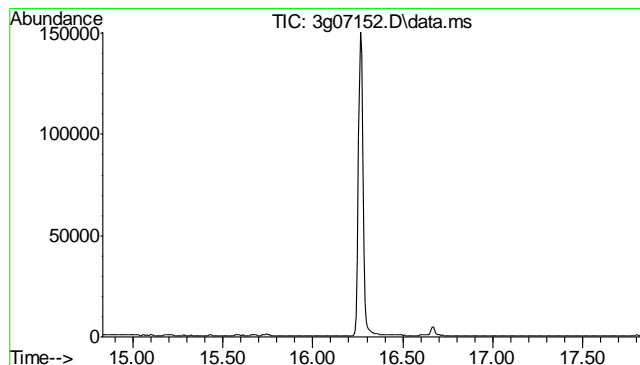
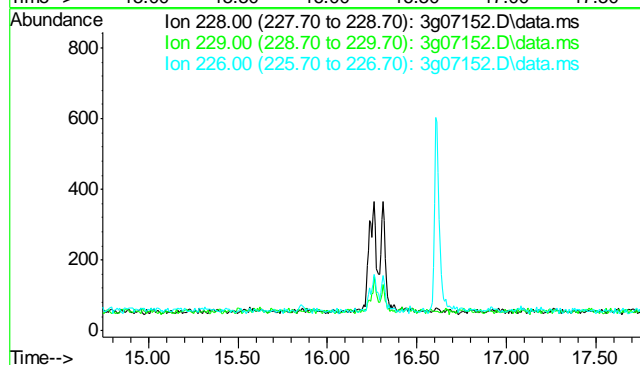




#21  
Benzo(a)anthracene  
Concen: N.D. ug/mL  
Expected RT: 16.25 min

Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

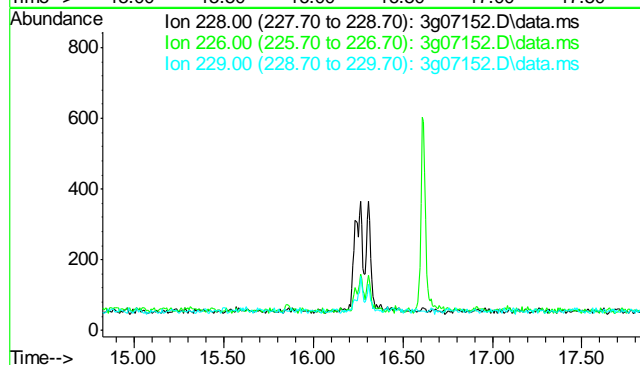
Tgt Ion:	228
Sig	Exp Ratio
228	100
229	19.6
226	26.6

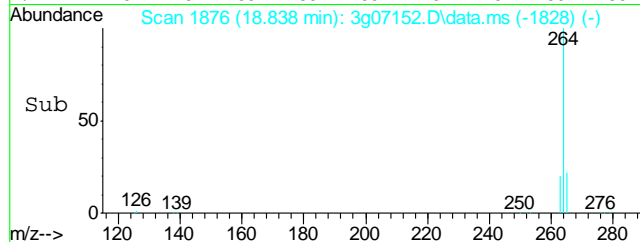
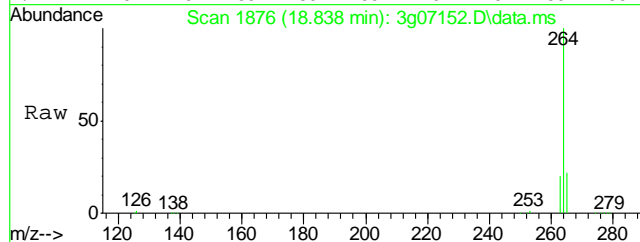
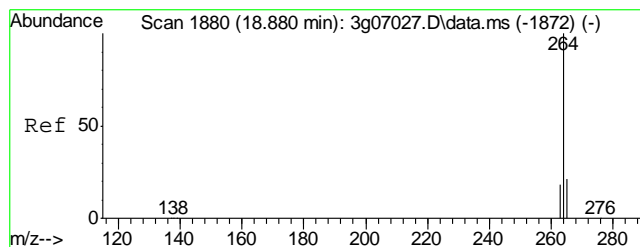


#22  
Chrysene  
Concen: N.D. ug/mL  
Expected RT: 16.33 min

Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

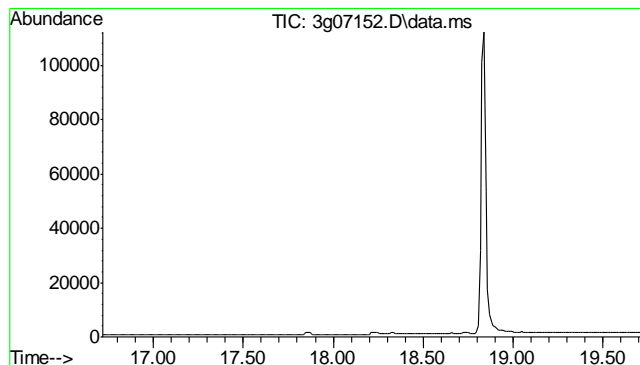
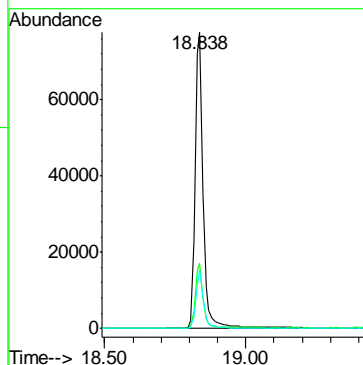
Tgt Ion:	228
Sig	Exp Ratio
228	100
226	27.4
229	19.2





#23  
Perylene-d12  
Concen: 4.00 ug/mL  
RT: 18.838 min Scan# 1876  
Delta R.T. 0.000 min  
Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

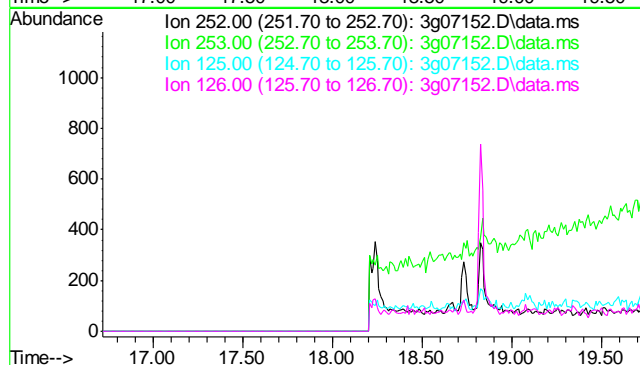
Tgt Ion	Ratio	Lower	Upper
264	100		
265	21.1	1.0	41.0
263	18.4	0.0	38.6

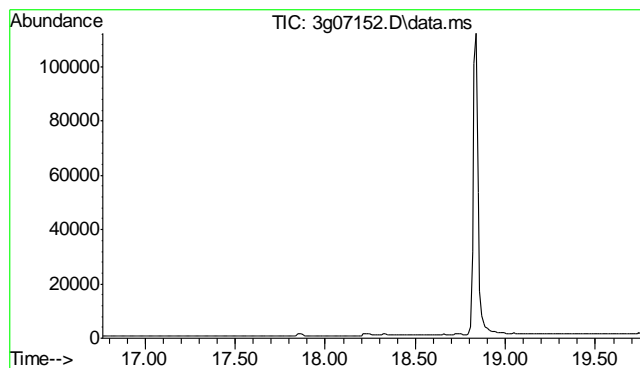


#24  
Benzo(b)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 18.22 min

Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

Tgt Ion	Exp Ratio
252	100
253	66.5
125	35.4
126	50.6

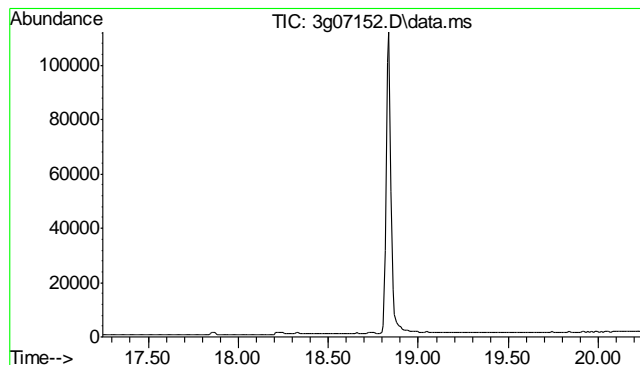
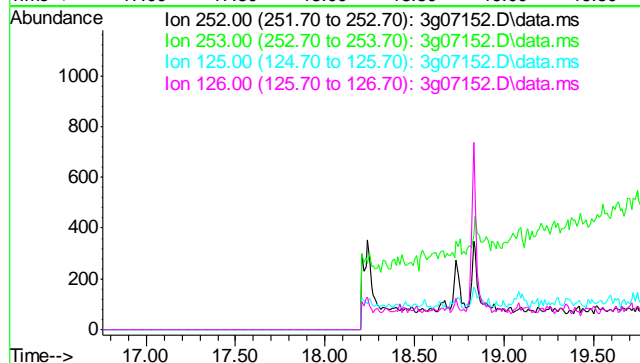




#25  
Benzo(k)fluoranthene  
Concen: N.D. ug/mL  
Expected RT: 18.26 min

Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

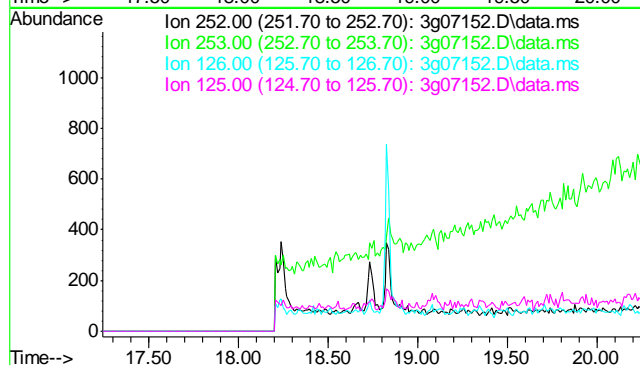
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	37.7
125	20.1
126	28.7

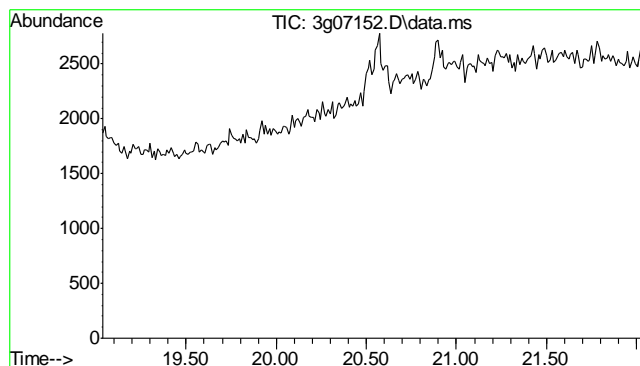


#26  
Benzo(a)pyrene  
Concen: N.D. ug/mL  
Expected RT: 18.74 min

Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

Tgt Ion:	252
Sig	Exp Ratio
252	100
253	21.4
126	18.6
125	14.0

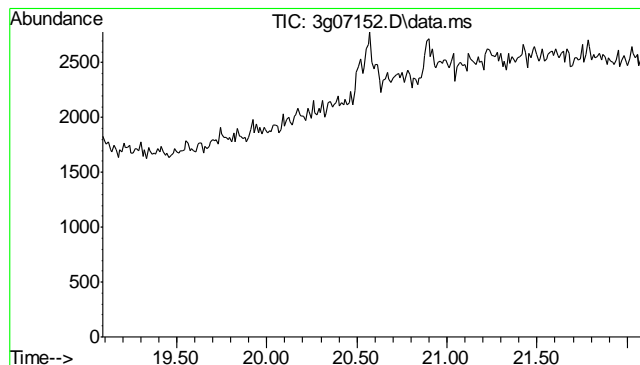
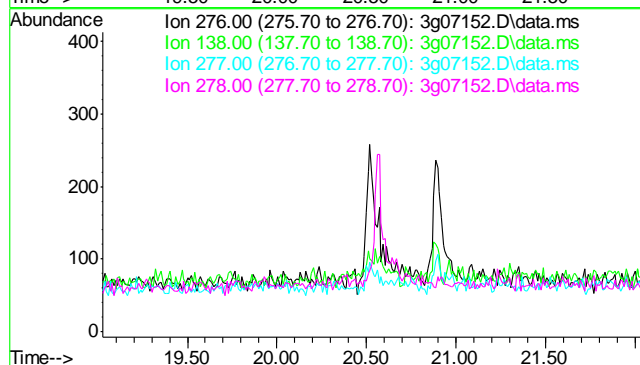




#27  
Indeno(1,2,3-cd)pyrene  
Concen: N.D. ug/mL  
Expected RT: 20.53 min

Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

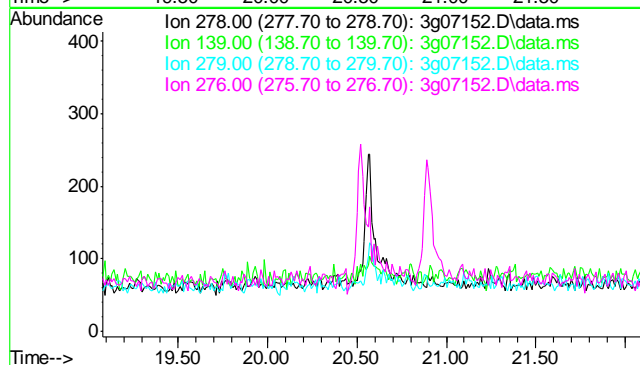
Tgt Ion:	276
Sig	Exp Ratio
276	100
138	28.2
277	28.3
278	3.7



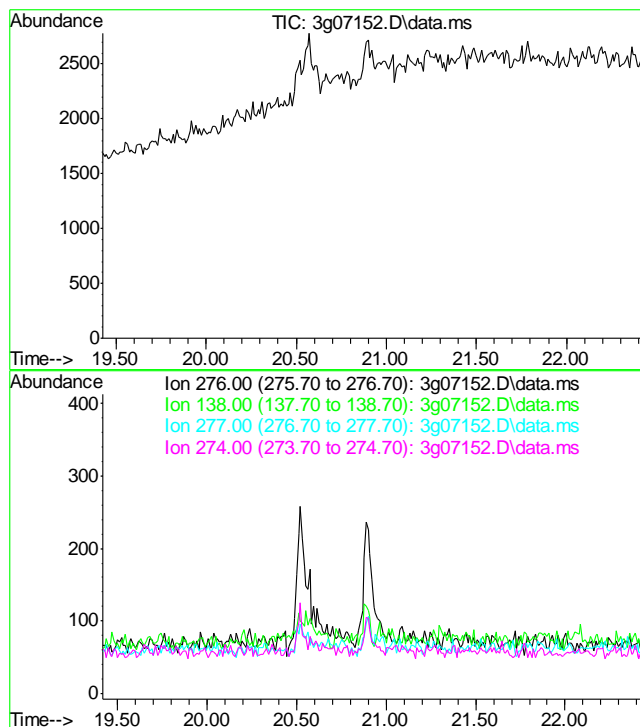
#28  
Dibenz(a,h)anthracene  
Concen: N.D. ug/mL  
Expected RT: 20.58 min

Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

Tgt Ion:	278
Sig	Exp Ratio
278	100
139	18.1
279	23.6
276	125.3







#29  
Benzo(g,h,i)perylene  
Concen: N.D. ug/mL  
Expected RT: 20.92 min

Lab File: 3g07152.D  
Acq: 7 Dec 11 9:58 pm

Tgt Ion: 276  
Sig Exp Ratio  
276 100  
138 23.3  
277 23.1  
274 20.6

## 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: D29644  
Account: KRWCCOL KRW Consulting, Inc.  
Project: XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB794-MB	GB13979.D	1	11/21/11	SK	n/a	n/a	GGB794

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

D29644-1

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	97% 60-140%

9.1.1  
9

Blank Spike Summary

Job Number: D29644  
Account: KRWCCOL KRW Consulting, Inc.  
Project: XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB794-BS	GB13980.D	1	11/21/11	SK	n/a	n/a	GGB794

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

D29644-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	110	100	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	107%	60-140%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D29644  
Account: KRWCCOL KRW Consulting, Inc.  
Project: XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D29577-1MS	GB13982.D	1	11/21/11	SK	n/a	n/a	GGB794
D29577-1MSD	GB13983.D	1	11/21/11	SK	n/a	n/a	GGB794
D29577-1	GB13981.D	1	11/21/11	SK	n/a	n/a	GGB794

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

D29644-1

CAS No.	Compound	D29577-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	12.2	J	154	162	97	159	95	2	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D29577-1	Limits
120-82-1	1,2,4-Trichlorobenzene	109%	107%	87%	60-140%

GC Volatiles

Raw Data

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\112111\GB13989.D\FID1A.CH Vial: 13  
Signal #2 : Y:\1\DATA\112111\GB13989.D\FID2B.CH  
Acq On : 21 Nov 2011 10:43 pm Operator: StephK  
Sample : D29644-1, 50X Inst : GC/MS Ins  
Misc : GC2426,GGB794,5.089,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Nov 22 08:14:55 2011 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Tue Nov 22 08:14:15 2011  
Response via : Initial Calibration  
DataAcq Meth : TVB4.M

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

Compound	R.T.	Response	Conc	Units
-----				
System Monitoring Compounds				
2) S 1,2,4-Trichlorobenzene	14.39	2709845	92.628 %	m
10) S 1,2,4-Trichlorobenzene (P)	14.39	25273303	109.961 %	
Target Compounds				
1) H TVH-Gasoline	7.32	8734360	0.123 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	7.70	253175	0.447 ug/L	
7) T Ethylbenzene	0.00	0	N.D. ug/L	d
8) T m,p-Xylene	10.50	525701	0.505 ug/L	
9) T o-Xylene	0.00	0	N.D. ug/L	d
11) T Naphthalene	14.59	7252965	28.178 ug/L	

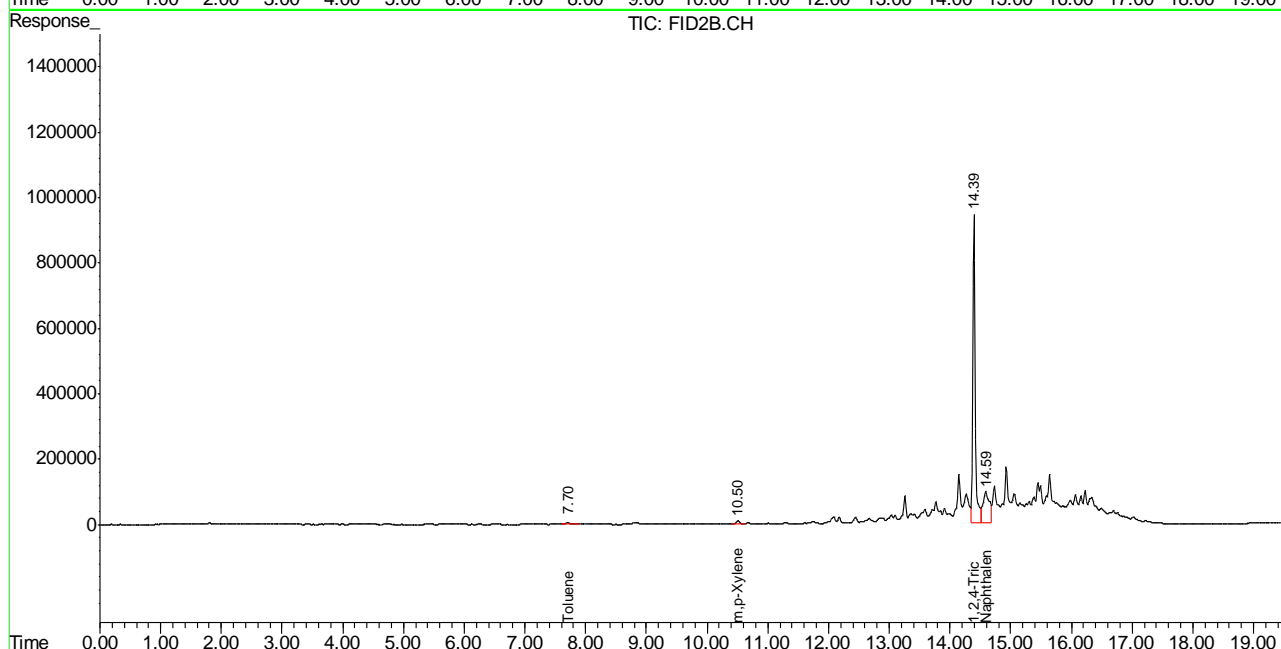
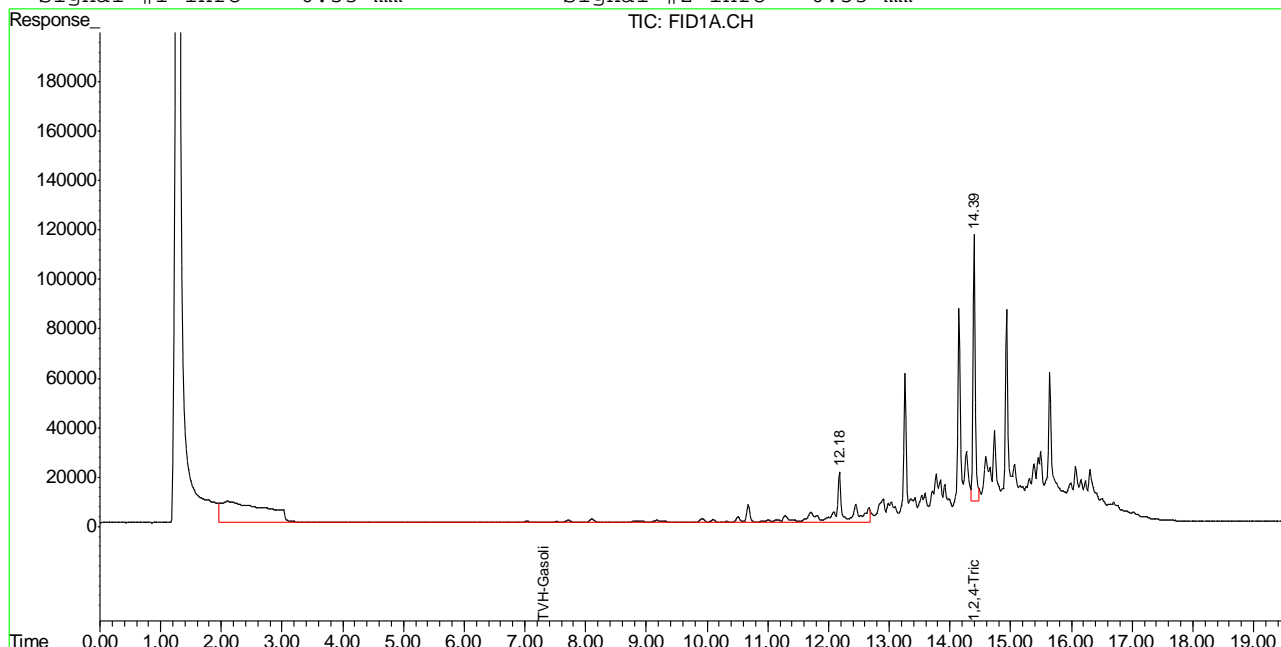
10.1.1  
10

Quantitation Report (QT Reviewed)

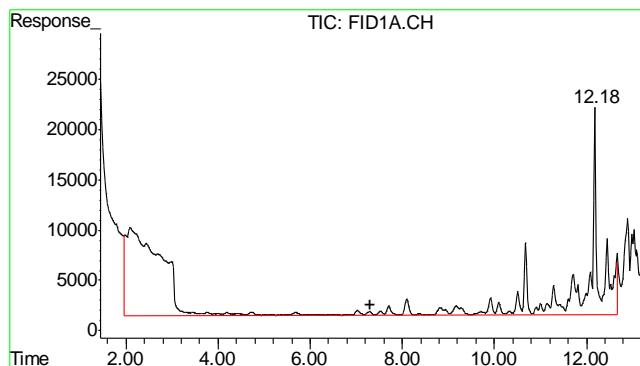
Signal #1 : Y:\1\DATA\112111\GB13989.D\FID1A.CH Vial: 13  
 Signal #2 : Y:\1\DATA\112111\GB13989.D\FID2B.CH  
 Acq On : 21 Nov 2011 10:43 pm Operator: StephK  
 Sample : D29644-1, 50X Inst : GC/MS Ins  
 Misc : GC2426,GGB794,5.089,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Nov 22 8:18 2011 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Tue Nov 22 08:14:15 2011  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TVB4.M

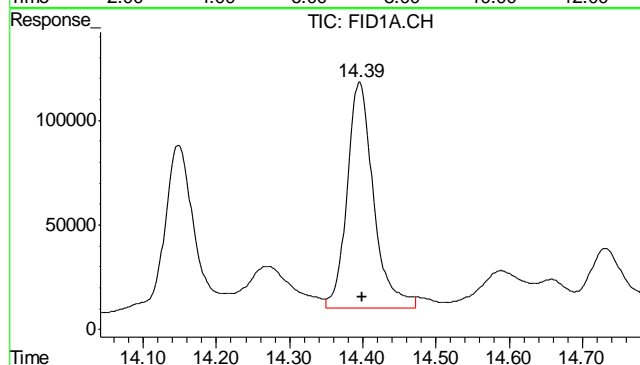
Volume Inj. :  
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm



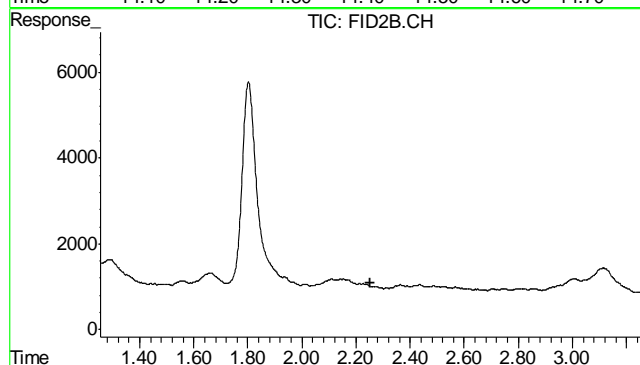




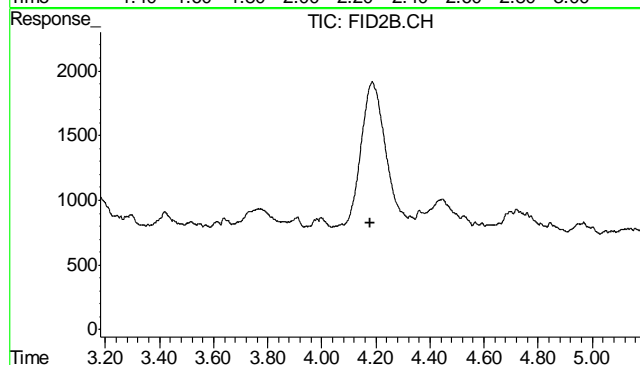
#1 TVH-Gasoline  
 R.T.: 7.315 min  
 Delta R.T.: 0.000 min  
 Response: 8734360  
 Conc: 0.12 mg/L m



#2 1,2,4-Trichlorobenzene  
 R.T.: 14.395 min  
 Delta R.T.: -0.005 min  
 Response: 2709845  
 Conc: 92.63 % m

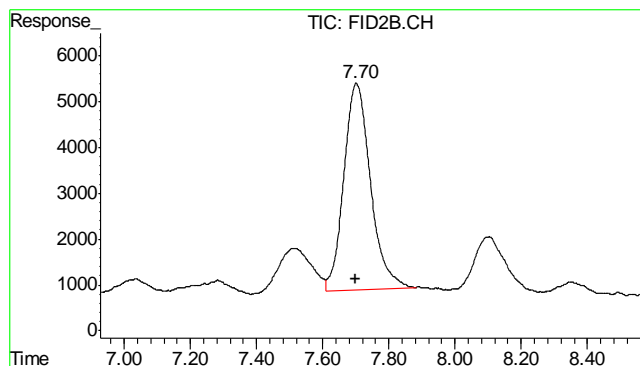


#4 Methyl-t-butyl-ether  
 R.T.: 0.000 min  
 Exp R.T.: 2.254 min  
 Response: 0  
 Conc: N.D.



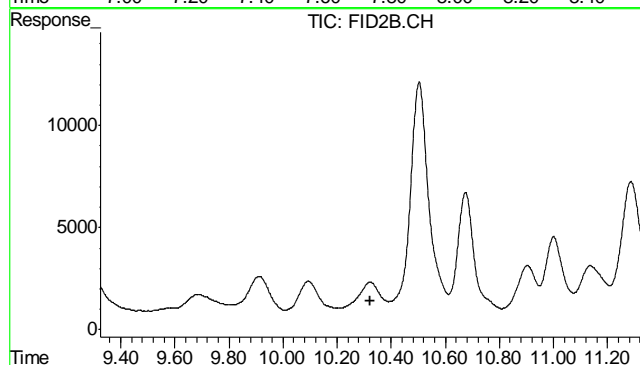
#5 Benzene  
 R.T.: 0.000 min  
 Exp R.T.: 4.180 min  
 Response: 0  
 Conc: N.D.

10.1.1  
10



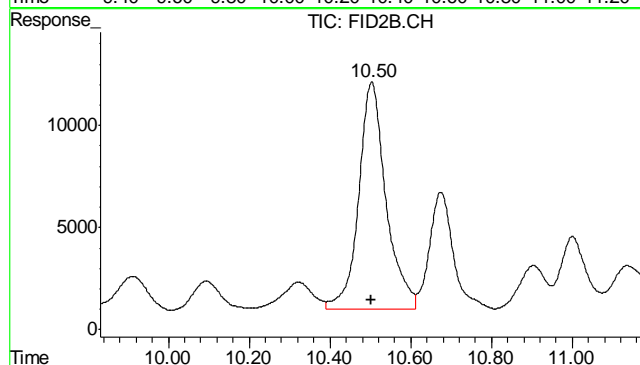
#6 Toluene

R.T.: 7.701 min  
Delta R.T.: 0.000 min  
Response: 253175  
Conc: 0.45 ug/L



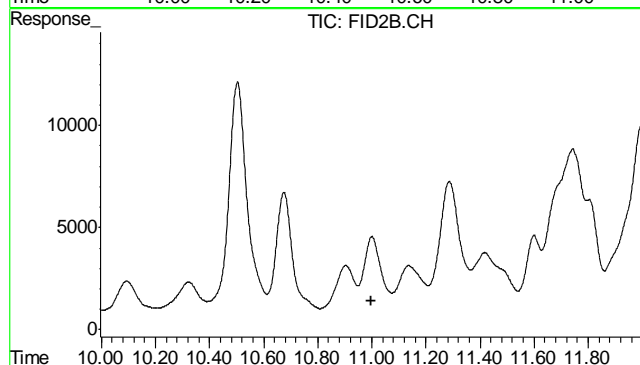
#7 Ethylbenzene

R.T.: 0.000 min  
Exp R.T.: 10.323 min  
Response: 0  
Conc: N.D.



#8 m,p-Xylene

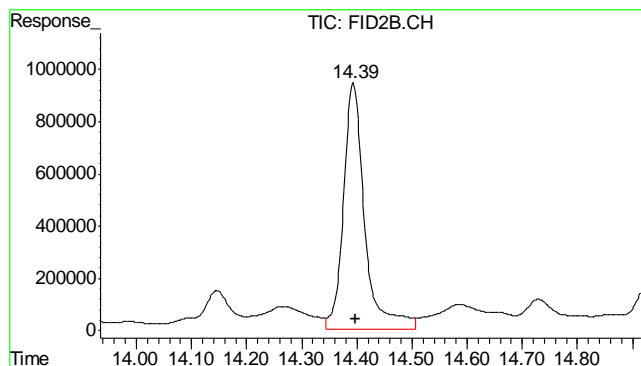
R.T.: 10.503 min  
Delta R.T.: 0.000 min  
Response: 525701  
Conc: 0.51 ug/L



#9 o-Xylene

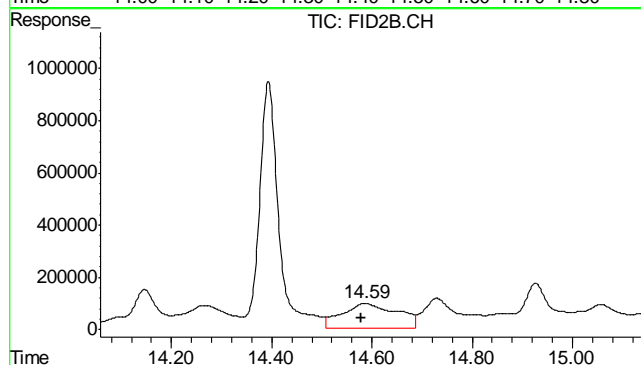
R.T.: 0.000 min  
Exp R.T.: 10.996 min  
Response: 0  
Conc: N.D.

10.1.1  
10



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

R.T.: 14.394 min  
Delta R.T.: -0.004 min  
Response: 25273303  
Conc: 109.96 %



#11 Naphthalene

R.T.: 14.586 min  
Delta R.T.: 0.007 min  
Response: 7252965  
Conc: 28.18 ug/L

10.1.1  
10

## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\112111\GB13979.D\FID1A.CH Vial: 3  
 Signal #2 : Y:\1\DATA\112111\GB13979.D\FID2B.CH  
 Acq On : 21 Nov 2011 4:46 pm Operator: StephK  
 Sample : MB, S Inst : GC/MS Ins  
 Misc : GC2426,GGB794,5.000,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Nov 21 16:55:18 2011 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Mon Nov 21 16:54:59 2011  
 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	14.40	2831394	96.783	%
10) S	1,2,4-Trichlorobenzene (P)	14.40	23494418	102.221	%
Target Compounds					
1) H	TVH-Gasoline	7.32	5609938	<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	7.70	197556	0.349	ug/L
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	0.00	0	N.D.	ug/L d
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.58	441310	1.715	ug/L

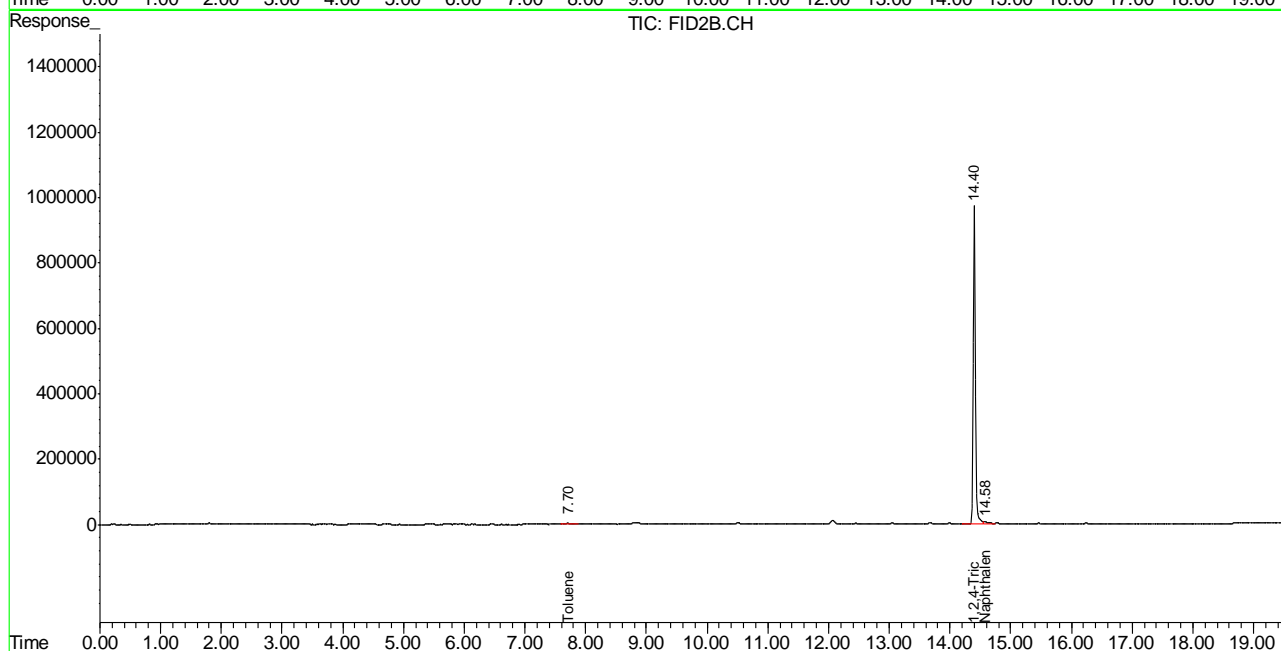
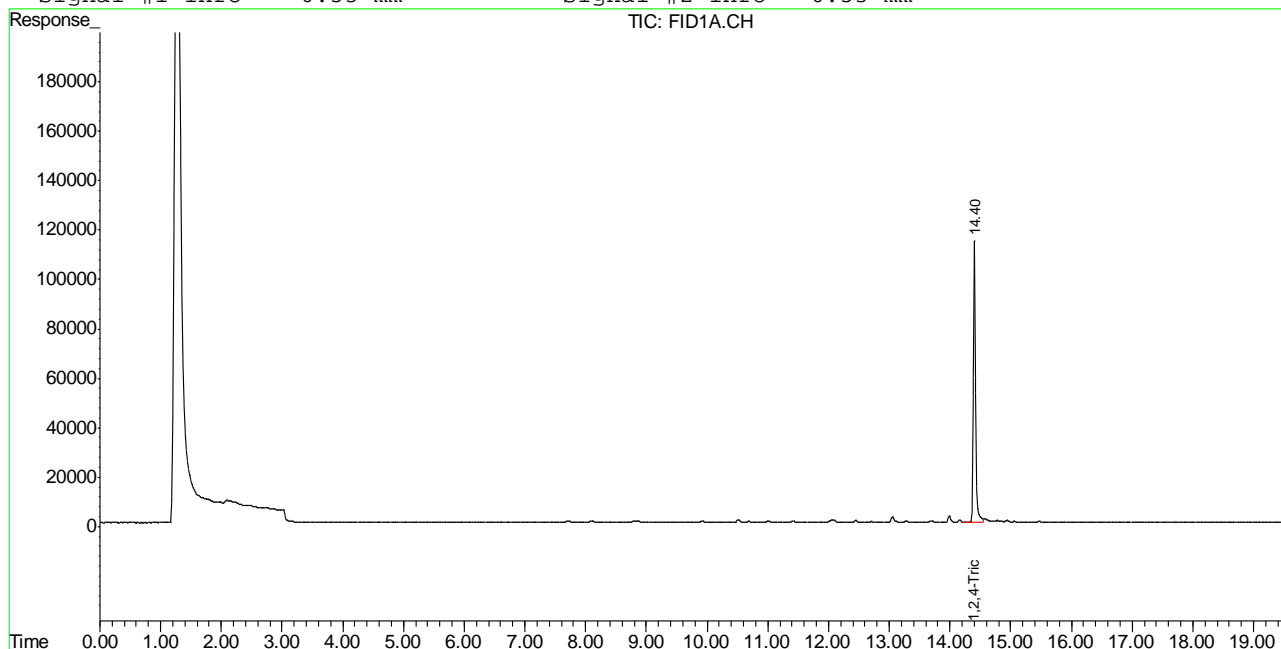
-----  
 (f)=RT Delta > 1/2 Window (m)=manual int.  
 GB13979.D TB791GB791SOIL.M Tue Nov 22 08:23:29 2011 GC

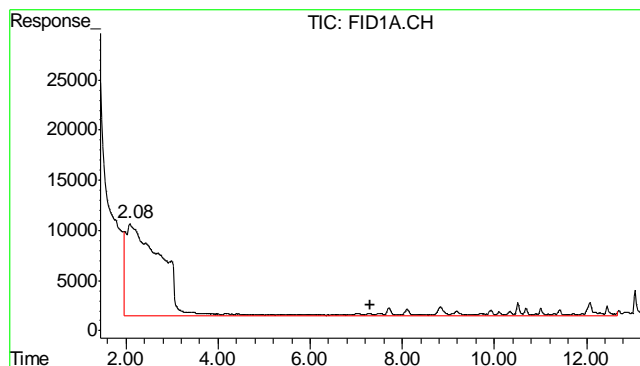
## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\112111\GB13979.D\FID1A.CH Vial: 3  
Signal #2 : Y:\1\DATA\112111\GB13979.D\FID2B.CH  
Acq On : 21 Nov 2011 4:46 pm Operator: StephK  
Sample : MB, S Inst : GC/MS Ins  
Misc : GC2426,GGB794,5.000,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Nov 21 16:55 2011 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Mon Nov 21 16:54:59 2011  
Response via : Multiple Level Calibration  
DataAcq Meth : TVB4.M

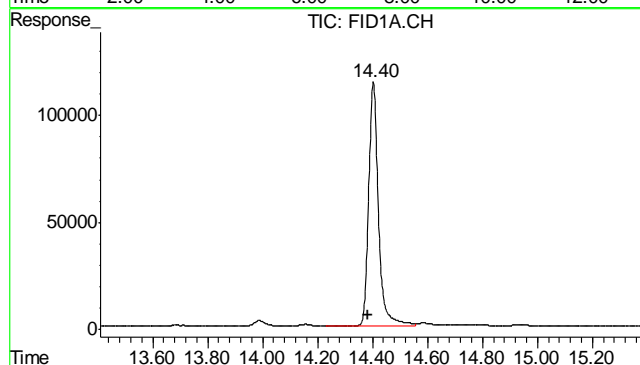
Volume Inj. :  
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





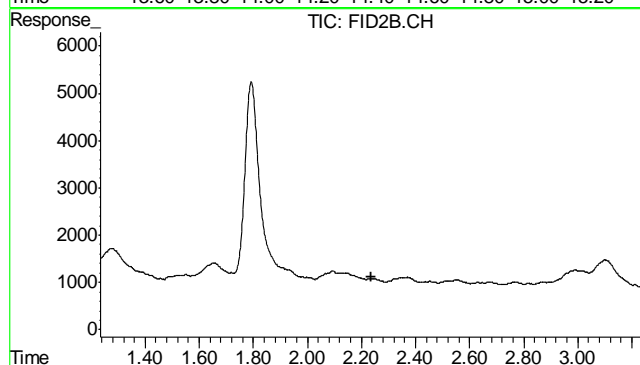
#1 TVH-Gasoline

R.T.: 7.315 min  
Delta R.T.: 0.000 min  
Response: 5609938  
Conc: N.D.



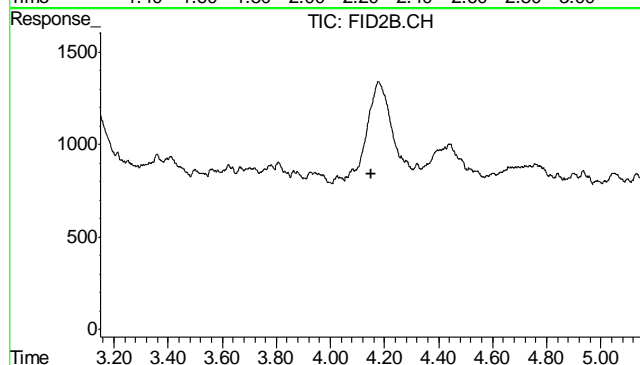
#2 1,2,4-Trichlorobenzene

R.T.: 14.403 min  
Delta R.T.: 0.021 min  
Response: 2831394  
Conc: 96.78 %



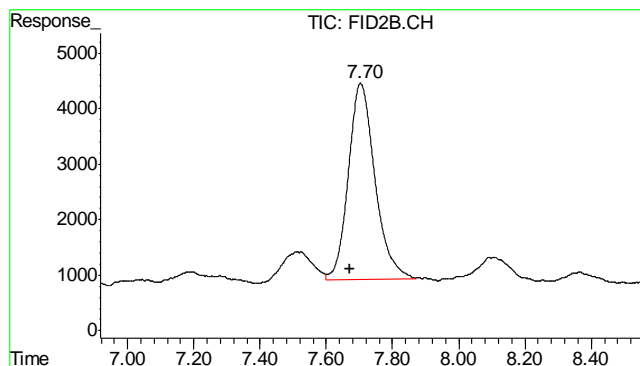
#4 Methyl-t-butyl-ether

R.T.: 0.000 min  
Exp R.T.: 2.235 min  
Response: 0  
Conc: N.D.



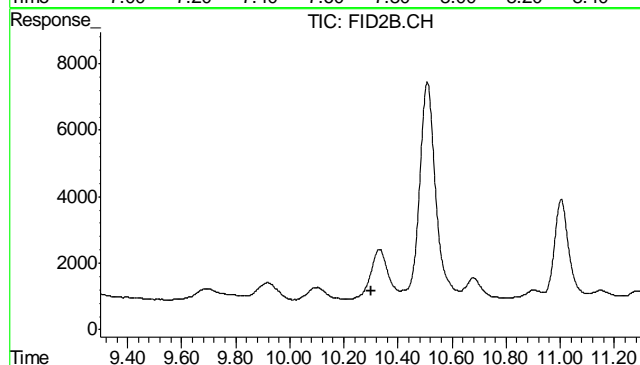
#5 Benzene

R.T.: 0.000 min  
Exp R.T.: 4.149 min  
Response: 0  
Conc: N.D.



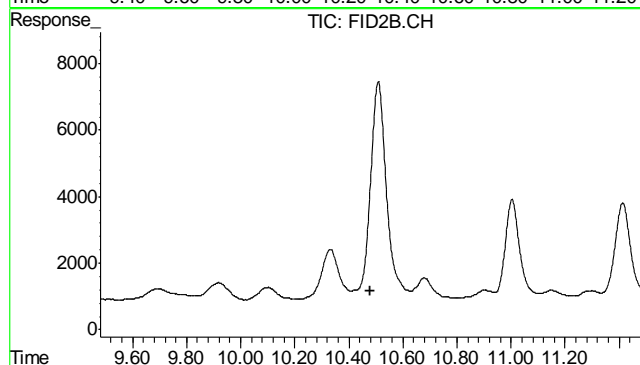
#6 Toluene

R.T.: 7.704 min  
Delta R.T.: 0.033 min  
Response: 197556  
Conc: 0.35 ug/L



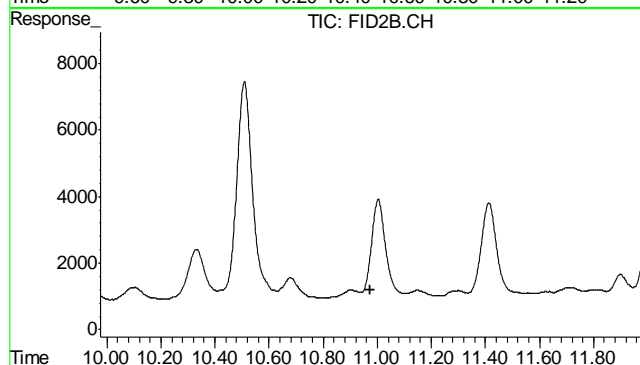
#7 Ethylbenzene

R.T.: 0.000 min  
Exp R.T.: 10.300 min  
Response: 0  
Conc: N.D.



#8 m,p-Xylene

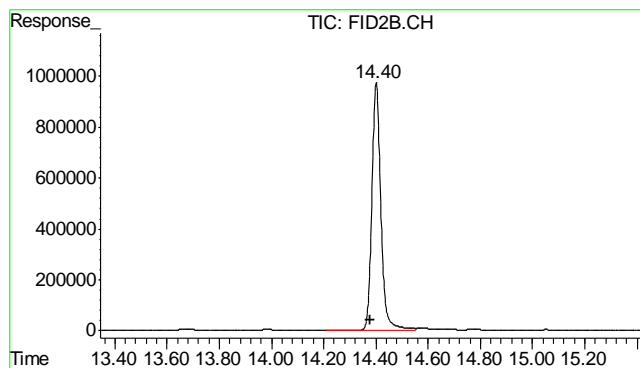
R.T.: 0.000 min  
Exp R.T.: 10.480 min  
Response: 0  
Conc: N.D.



#9 o-Xylene

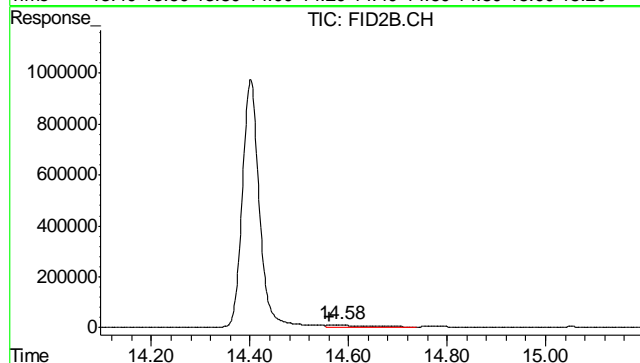
R.T.: 0.000 min  
Exp R.T.: 10.976 min  
Response: 0  
Conc: N.D.

10.2.1 10



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

R.T.: 14.402 min  
Delta R.T.: 0.022 min  
Response: 23494418  
Conc: 102.22 %



#11 Naphthalene

R.T.: 14.582 min  
Delta R.T.: 0.020 min  
Response: 441310  
Conc: 1.71 ug/L

10.2.1  
10



## GC Semi-volatiles

### QC Data Summaries

---

Includes the following where applicable:

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

**Method Blank Summary**

Page 1 of 1

**Job Number:** D29644  
**Account:** KRWCCOL KRW Consulting, Inc.  
**Project:** XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4885-MB	FD11773.D	1	11/28/11	TR	11/21/11	OP4885	GFD599

The QC reported here applies to the following samples:

Method: SW846-8015B

D29644-1

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	94% 61-142%

11.1.1  
11

Blank Spike Summary

Job Number: D29644  
Account: KRWCCOL KRW Consulting, Inc.  
Project: XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4885-BS	FD11774.D	1	11/28/11	TR	11/21/11	OP4885	GFD599

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

D29644-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	554	83	60-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	83%	61-142%

11.2.1  
11

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D29644  
Account: KRWCCOL KRW Consulting, Inc.  
Project: XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4885-MS	FD11775.D	1	11/28/11	TR	11/21/11	OP4885	GFD599
OP4885-MSD	FD11776.D	1	11/28/11	TR	11/21/11	OP4885	GFD599
D29644-1	FD11777.D	1	11/28/11	TR	11/21/11	OP4885	GFD599

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

D29644-1

CAS No.	Compound	D29644-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	390		804	793	50	1090	87	31	24-157/35

CAS No.	Surrogate Recoveries	MS	MSD	D29644-1	Limits
84-15-1	o-Terphenyl	61%	77%	61%	61-142%

11.3.1  
11



GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2011\NOV\FD112811\FD11777.D Vial: 16  
Acq On : 28 Nov 2011 11:08 pm Operator: TEDR  
Sample : D29644-1 Inst : FID5  
Misc : OP4885,GFD599,30.05,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Nov 29 10:07:56 2011 Quant Results File: GFD599.RES

Quant Method : C:\MSDCHEM\2\METHODS\GFD599.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Tue Nov 29 09:00:39 2011  
Response via : Initial Calibration  
DataAcq Meth : JH080911.M

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

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	9.67	32482402	609.475 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	7.46	247602306	4852.211 mg/L

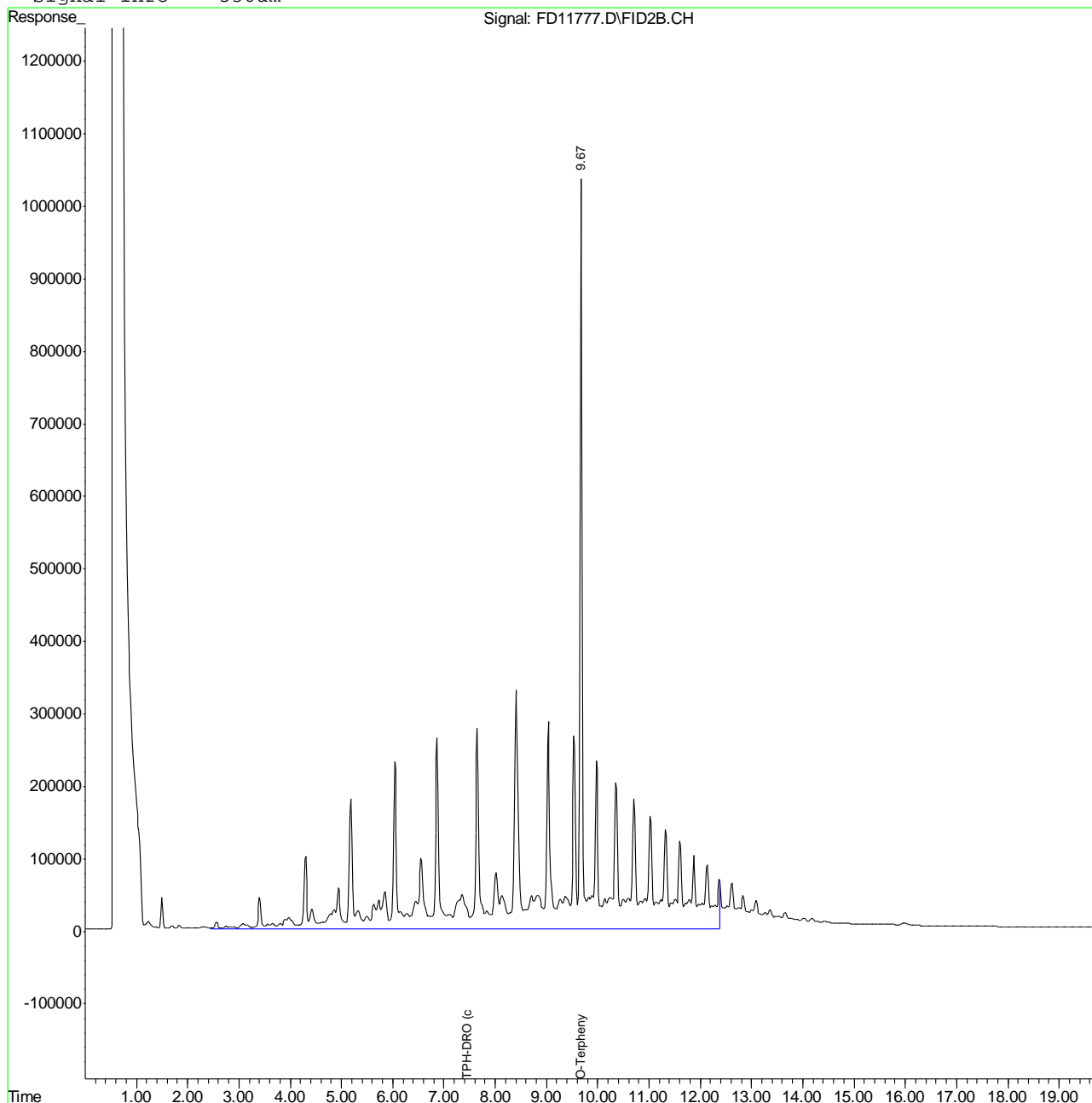
12.1.1  
12

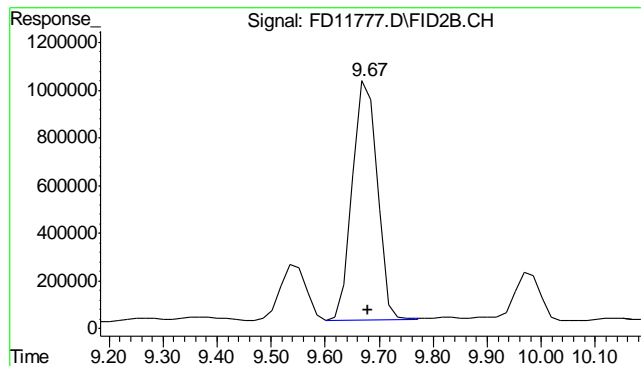
## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2011\NOV\FD112811\FD11777.D Vial: 16  
Acq On : 28 Nov 2011 11:08 pm Operator: TEDR  
Sample : D29644-1 Inst : FID5  
Misc : OP4885,GFD599,30.05,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Nov 29 10:08 2011 Quant Results File: GFD599.RES

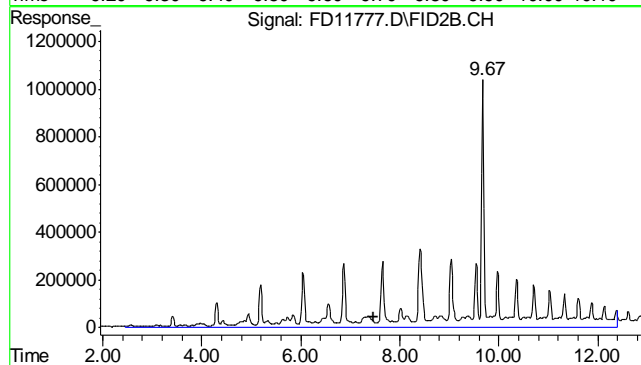
Quant Method : C:\MSDCHEM\2\METHODS\GFD599.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Tue Nov 29 09:00:39 2011  
Response via : Multiple Level Calibration  
DataAcq Meth : JH080911.M

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

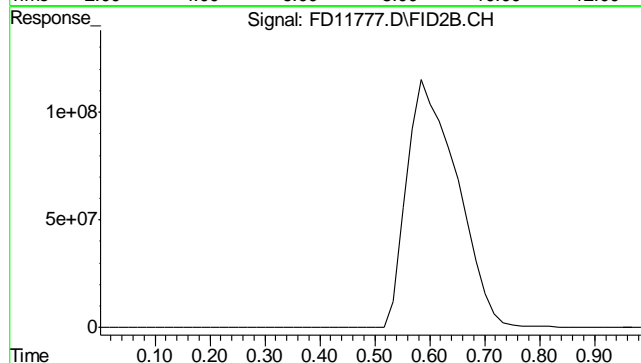




#1 O-Terphenyl  
R.T.: 9.673 min  
Delta R.T.: -0.007 min  
Response: 32482402  
Conc: 609.47 mg/L m



#2 TPH-DRO (c10-c28)  
R.T.: 7.455 min  
Delta R.T.: 0.000 min  
Response: 247602306  
Conc: 4852.21 mg/L m



#9 5a-Androstane  
R.T.: 0.000 min  
Exp R.T.: 0.000 min  
Response: 0  
Conc: N.D.

12.1.1  
12



Judy Melson  
11/29/11 12:07

## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2011\NOV\FD112811\FD11773.D Vial: 12  
Acq On : 11-28-2011 09:25:46 PM Operator: TEDR  
Sample : OP4885-MB Inst : FID5  
Misc : OP4885,GFD599,30.00,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Nov 29 10:04:27 2011 Quant Results File: GFD599.RES

Quant Method : C:\MSDCHEM\2\METHODS\GFD599.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Tue Nov 29 09:00:39 2011  
Response via : Initial Calibration  
DataAcq Meth : JH080911.M

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

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	9.68	49721277	942.239 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	7.46	2428144	46.985 mg/L

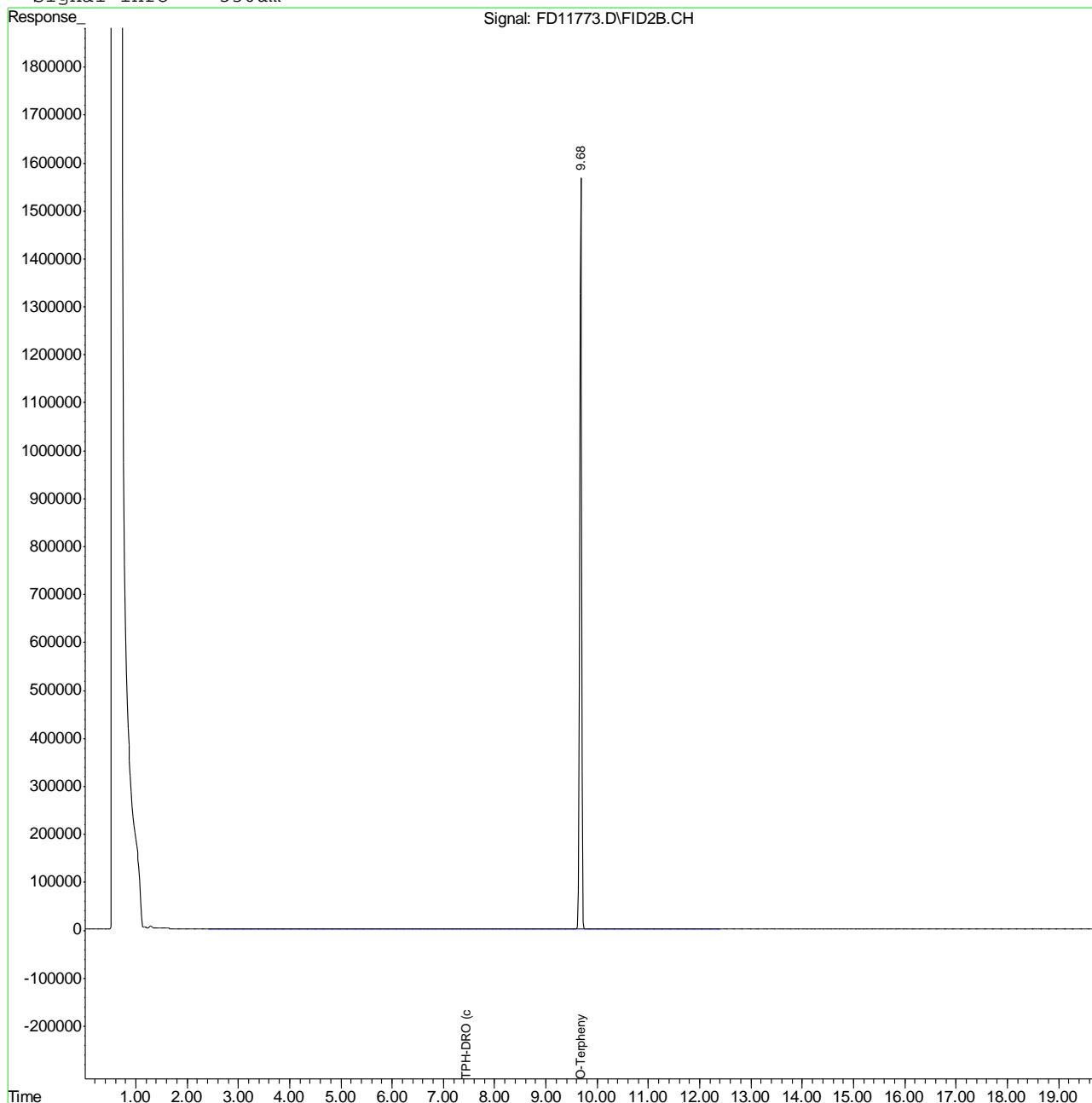
-----  
(f)=RT Delta > 1/2 Window (m)=manual int.  
FD11773.D GFD599.M Tue Nov 29 10:40:25 2011 GC

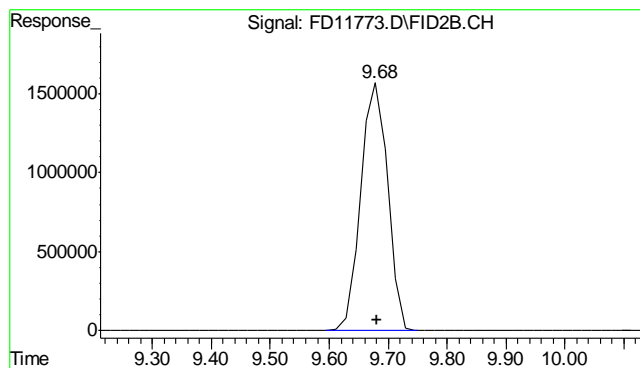
## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2011\NOV\FD112811\FD11773.D Vial: 12  
Acq On : 11-28-2011 09:25:46 PM Operator: TEDR  
Sample : OP4885-MB Inst : FID5  
Misc : OP4885,GFD599,30.00,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Nov 29 10:04 2011 Quant Results File: GFD599.RES

Quant Method : C:\MSDCHEM\2\METHODS\GFD599.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Tue Nov 29 09:00:39 2011  
Response via : Multiple Level Calibration  
DataAcq Meth : JH080911.M

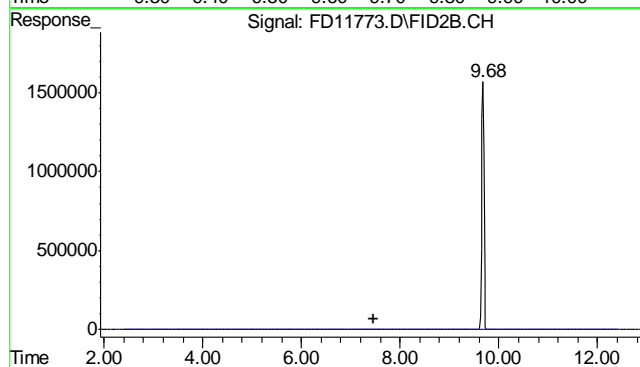
Volume Inj. : 1ul  
Signal Phase : RTX-5  
Signal Info : 530um





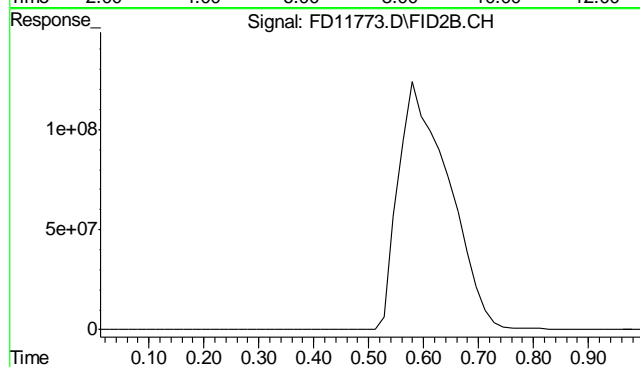
#1 O-Terphenyl

R.T.: 9.676 min  
Delta R.T.: -0.004 min  
Response: 49721277  
Conc: 942.24 mg/L m



#2 TPH-DRO (c10-c28)

R.T.: 7.455 min  
Delta R.T.: 0.000 min  
Response: 2428144  
Conc: 46.98 mg/L m



#9 5a-Androstane

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

12.2.1  
**12**

## Metals Analysis

### QC Data Summaries

Includes the following where applicable:

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6361  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 11/30/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.59	.59		
Antimony	3.0	.31	.31		
Arsenic	2.5	.59	.59		
Barium	1.0	.11	.11	0.030	<1.0
Beryllium	1.0	.044	.1		
Boron	5.0	.48	.48		
Cadmium	1.0	.027	.27	0.0	<1.0
Calcium	40	.96	1.1		
Chromium	1.0	.018	.031	-0.030	<1.0
Cobalt	0.50	.035	.035		
Copper	1.0	.085	.16	-0.050	<1.0
Iron	7.0	.34	2		
Lead	5.0	.16	.21	-0.11	<5.0
Lithium	0.20	.028	.031		
Magnesium	20	.58	1.4		
Manganese	0.50	.0053	.012		
Molybdenum	1.0	.045	.054		
Nickel	3.0	.043	.099	-0.060	<3.0
Phosphorus	10	1.1	1.2		
Potassium	200	5.5	9.2		
Selenium	5.0	.38	.5	0.070	<5.0
Silicon	5.0	.38	.51		
Silver	3.0	.018	.051	0.0	<3.0
Sodium	40	11	11		
Strontium	5.0		.017		
Thallium	1.0	.29	.34		
Tin	5.0	.55	1.3		
Titanium	1.0	.011	.1		
Uranium	5.0	.15	.2		
Vanadium	1.0	.016	.025		
Zinc	3.0	.028	.06	0.10	<3.0

Associated samples MP6361: D29644-1R

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6361  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

13.1.1

13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6361  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 11/30/11

Metal	D29760-1 Original MS		Spikelot MPICPALL	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	2480	2990	241	211.4(a)	75-125
Beryllium					
Boron					
Cadmium	0.11	56.0	60.3	92.7	75-125
Calcium					
Chromium	48.4	103	60.3	90.5	75-125
Cobalt					
Copper	11.3	66.3	60.3	91.2	75-125
Iron					
Lead	14.2	122	121	89.4	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	18.8	71.0	60.3	86.6	75-125
Phosphorus					
Potassium					
Selenium	2.1	110	121	89.5	75-125
Silicon					
Silver	0.11	22.1	24.1	91.2	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	52.0	102	60.3	82.9	75-125

Associated samples MP6361: D29644-1R

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6361  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

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



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6361  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 11/30/11

Metal	D29760-1 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	2480	2720	239	100.5	9.5	20
Beryllium						
Boron						
Cadmium	0.11	55.7	59.7	93.1	0.5	20
Calcium						
Chromium	48.4	99.2	59.7	85.1	3.8	20
Cobalt						
Copper	11.3	67.5	59.7	94.1	1.8	20
Iron						
Lead	14.2	122	119	90.3	0.0	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	18.8	69.7	59.7	85.3	1.8	20
Phosphorus						
Potassium						
Selenium	2.1	109	119	89.5	0.9	20
Silicon						
Silver	0.11	22.1	23.9	92.1	0.0	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	52.0	99.7	59.7	79.9	2.3	20

Associated samples MP6361: D29644-1R

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6361  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

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

13.1.2  
13

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29644  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM FRU 297-17A

QC Batch ID: MP6361  
 Matrix Type: SOLID

Methods: SW846 6010B  
 Units: mg/kg

Prep Date: 11/30/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	184	200	92.0	80-120
Beryllium				
Boron				
Cadmium	46.5	50	93.0	80-120
Calcium				
Chromium	47.3	50	94.6	80-120
Cobalt				
Copper	45.3	50	90.6	80-120
Iron				
Lead	95.2	100	95.2	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	46.2	50	92.4	80-120
Phosphorus				
Potassium				
Selenium	91.3	100	91.3	80-120
Silicon				
Silver	18.9	20	94.5	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	47.5	50	95.0	80-120

Associated samples MP6361: D29644-1R

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6361  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D29644  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM FRU 297-17A

QC Batch ID: MP6361  
 Matrix Type: SOLID

Methods: SW846 6010B  
 Units: ug/l

Prep Date: 11/30/11

Metal	D29760-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	22200	24200	9.1	0-10
Beryllium				
Boron				
Cadmium	1.00	0.00	100.0(a)	0-10
Calcium				
Chromium	434	478	10.1*(b)	0-10
Cobalt				
Copper	101	102	0.4	0-10
Iron				
Lead	128	123	4.0	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	168	190	12.5*(b)	0-10
Phosphorus				
Potassium				
Selenium	18.9	31.5	66.7 (a)	0-10
Silicon				
Silver	1.00	3.50	250.0(a)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	467	554	18.6*(b)	0-10

Associated samples MP6361: D29644-1R

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

13.1.4  
13

SERIAL DILUTION RESULTS SUMMARY

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6361  
Matrix Type: SOLID

Methods: SW846 6010B  
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.

13.1.4

13

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6362  
Matrix Type: SOLID

Methods: SW846 6020  
Units: mg/kg

Prep Date: 11/30/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.14	1.2		
Antimony	0.20	.001	.0095		
Arsenic	0.40	.049	.22	0.29	* (a)
Barium	1.0	.0035	.1		
Beryllium	0.10	.0075	.014		
Boron	20	.97	1		
Cadmium	0.050	.023	.048		
Calcium	200	1.8	8.2		
Chromium	1.0	.021	.24		
Cobalt	0.10	.0033	.003		
Copper	1.0	.011	.063		
Iron	20	.81	3.7		
Lead	0.25	.0012	.015		
Magnesium	50	.067	2.6		
Manganese	0.50	.007	.029		
Molybdenum	0.50	.0044	.023		
Nickel	1.0	.0029	.031		
Phosphorus	30	1.8	3.5		
Potassium	100	2	3.2		
Selenium	0.20	.075	.19		
Silver	0.050	.0008	.002		
Sodium	250	.8	4.4		
Strontium	10	.004	.04		
Thallium	0.10	.015	.02		
Tin	5.0	.006	.028		
Titanium	1.0	.035	.062		
Uranium	0.25	.00038	.0009		
Vanadium	2.0	.052	.29		
Zinc	5.0	.039	.12		

Associated samples MP6362: D29644-1R

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested  
(a) All sample results < RL or > 10x MB concentration.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29644  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM FRU 297-17A

QC Batch ID: MP6362  
 Matrix Type: SOLID

Methods: SW846 6020  
 Units: mg/kg

Prep Date: 11/30/11

Metal	D29759-1 Original MS		Spikelot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic	4.5	129	120	103.3	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6362: D29644-1R

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: D29644  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM FRU 297-17A

QC Batch ID: MP6362  
 Matrix Type: SOLID

Methods: SW846 6020  
 Units: mg/kg

Prep Date: 11/30/11

Metal	D29759-1 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	4.5	129	119	104.4	0.0	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 MP6362: D29644-1R

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

13.22  
13

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6362  
Matrix Type: SOLID

Methods: SW846 6020  
Units: mg/kg

Prep Date: 11/30/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	101	100	101.0	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 MP6362: D29644-1R

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D29644  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM FRU 297-17A

QC Batch ID: MP6362  
 Matrix Type: SOLID

Methods: SW846 6020  
 Units: ug/l

Prep Date: 11/30/11

Metal	D29759-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	36.6	58.0	58.5*(a)	0-10	
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6362: D29644-1R

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6363  
Matrix Type: SOLID

Methods: SW846 7471A  
Units: mg/kg

Prep Date: 11/30/11

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.013	-0.0026	<0.10

Associated samples MP6363: D29644-1R

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: D29644  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM FRU 297-17A

QC Batch ID: MP6363  
 Matrix Type: SOLID

Methods: SW846 7471A  
 Units: mg/kg

Prep Date: 11/30/11

Metal	D25269-9		Spikelot		QC
	Original	MS	HGWSR1	% Rec	
Mercury	0.045	0.39	0.4	86.3	85-115

Associated samples MP6363: D29644-1R

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: D29644  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM FRU 297-17A

QC Batch ID: MP6363  
 Matrix Type: SOLID

Methods: SW846 7471A  
 Units: mg/kg

Prep Date: 11/30/11

Metal	D25269-9 Original MSD		Spikelot HGWSR1 % Rec		MSD RPD	QC Limit
Mercury	0.045	0.36	0.364	86.6	8.0	20

Associated samples MP6363: D29644-1R

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: D29644  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM FRU 297-17A

QC Batch ID: MP6363  
 Matrix Type: SOLID

Methods: SW846 7471A  
 Units: mg/kg

Prep Date: 11/30/11

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

Associated samples MP6363: D29644-1R

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: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6373  
Matrix Type: AQUEOUS

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

Prep Date: 12/01/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	30	30		
Antimony	150	16	16		
Arsenic	130	30	30		
Barium	50	5.5	5.5		
Beryllium	50	2.2	2.5		
Boron	250	24	24		
Cadmium	50	1.4	1.4		
Calcium	2000	48	75	-26	<2000
Chromium	50	.9	4		
Cobalt	25	1.8	1.8		
Copper	50	4.3	14		
Iron	350	17	65		
Lead	250	8	11		
Lithium	10	1.4	6		
Magnesium	1000	29	50	2.5	<1000
Manganese	25	.27	1.6		
Molybdenum	50	2.3	4.4		
Nickel	150	2.2	5		
Phosphorus	500	55	100		
Potassium	5000	280	280		
Selenium	250	19	19		
Silicon	250	19	19		
Silver	150	.9	1.6		
Sodium	2000	570	570	322	<2000
Strontium	25		1.3		
Thallium	50	15	15		
Tin	250	28	50		
Titanium	50	.55	1.6		
Uranium	250	7.5	18		
Vanadium	50	.8	1.1		
Zinc	150	1.4	9		

Associated samples MP6373: D29644-1RA

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



BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6373  
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6373  
Matrix Type: AQUEOUS

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

Prep Date: 12/01/11

Metal	D29787-1 Original MS		Spikelot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	3860000	4150000	125000	232.0(a)	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	158000	291000	125000	106.4	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	23500000	23200000	125000	-240.0(a)	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6373: D29644-1RA

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6373  
Matrix Type: AQUEOUS

Methods: SW846 6010B, 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: D29644  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM FRU 297-17A

QC Batch ID: MP6373  
 Matrix Type: AQUEOUS

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

Prep Date: 12/01/11

Metal	D29787-1 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	3860000	3900000	125000	32.0 (a)	6.2	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	158000	281000	125000	98.4	3.5	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	23500000	22300000	125000	-960.0(a)	4.0	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP6373: D29644-1RA

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6373  
Matrix Type: AQUEOUS

Methods: SW846 6010B, 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: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6373  
Matrix Type: AQUEOUS

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

Prep Date: 12/01/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	140000	125000	112.0	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 MP6373: D29644-1RA

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

QC Batch ID: MP6373  
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

## General Chemistry

### QC Data Summaries

Includes the following where applicable:

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



METHOD BLANK AND SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Specific Conductivity	GP6037/GN12726			umhos/cm	10008	9900	98.9	90-110%
pH	GN12694			su	8.00	8.04	100.5	99.3-100.7%

Associated Samples:  
Batch GN12694: D29644-1R  
Batch GP6037: D29644-1R  
(\*) Outside of QC limits

14.1  
14

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D29644  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-17A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Redox Potential Vs H2	GN12695	D29644-1R	mv	204	223	8.7	0-20%

Associated Samples:  
Batch GN12695: D29644-1R  
(\*) Outside of QC limits

14.2  
14

## Misc. Forms

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### Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

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Includes the following where applicable:

- Chain of Custody



# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D29644

Client: AMS

Immediate Client Services Action Required: No

Date / Time Received: 11/30/2011

Delivery Method:

Client Service Action Required at Login: No

Project:

No. Coolers: 1

Airbill #'s:

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"/>	<input checked="" type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" 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 recvd 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

## General Chemistry

### QC Data Summaries

(Accutest Labs of New England, Inc.)

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Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D29644  
Account: ALMS - Accutest Mountain States  
Project: KRWCCOL: XOM FRU 297-17A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP13883/GN37110	0.40	0.0	mg/kg	40	39.5	98.8	80-120%
Chromium, Hexavalent	GP13883/GN37110			mg/kg	1230	1450	117.9	80-120%

Associated Samples:  
Batch GP13883: D29644-1R  
(\*) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D29644  
Account: ALMS - Accutest Mountain States  
Project: KRWCCOL: XOM FRU 297-17A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP13883/GN37110	D29653-14	mg/kg	0.22	0.20	9.5	0-20%

Associated Samples:  
Batch GP13883: D29644-1R  
(\*) Outside of QC limits



MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D29644  
Account: ALMS - Accutest Mountain States  
Project: KRWCCOL: XOM FRU 297-17A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP13883/GN37110	D29653-14	mg/kg	0.22	41.6	43.8	104.7	75-125%
Chromium, Hexavalent	GP13883/GN37110	D29653-14	mg/kg	0.22	1050	1240	118.0	75-125%

Associated Samples:

Batch GP13883: D29644-1R

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits