



11/30/11

Technical Report for

KRW Consulting, Inc.

XOM FRU 297-17A

1108-13A

Accutest Job Number: D29577

Sampling Date: 11/16/11

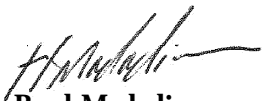
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Total number of pages in report: 122



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)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.

Test results relate only to samples analyzed.

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Sample Summary

KRW Consulting, Inc.

Job No: D29577

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

Sample Number	Collected			Received	Matrix		Client Sample ID
	Date	Time	By		Code	Type	
D29577-1	11/16/11	11:10	CH	11/17/11	SO	Soil	RP_MIX/BLEND_11,14,15 NOV
D29577-1R	11/16/11	11:10	CH	11/17/11	SO	Soil	RP_MIX/BLEND_11,14,15 NOV
D29577-1RA	11/16/11	11:10	CH	11/17/11	SO	Soil	RP_MIX/BLEND_11,14,15 NOV

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: KRW Consulting, Inc.

Job No D29577

Site: XOM FRU 297-17A

Report Dat 11/30/2011 5:11:22 PM

On 11/17/2011, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2.5 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D29577 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: V3V846

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29409-2MS, D29409-2MSD were used as the QC samples indicated.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO

Batch ID: OP4905

- The data for SW846 8270C BY SIM meets quality control requirements.

Volatiles by GC By Method SW846 8015B

Matrix SO

Batch ID: GGB794

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29577-1MS, D29577-1MSD were used as the QC samples indicated.

Extractables by GC By Method SW846-8015B

Matrix SO

Batch ID: OP4872

- All samples were extracted 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) D29575-1MS, D29575-1MSD were used as the QC samples indicated.

Metals By Method SW846 6010B

Matrix AQ

Batch ID: MP6359

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29577-1RAMS, D29577-1RAMSD were used as the QC samples for the metals analysis.
- The matrix spike duplicate (MSD) recovery(s) of Sodium are outside control limits. Probable cause due to matrix interference.

Matrix SO

Batch ID: MP6345

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29717-1MS, D29717-1MSD, D29717-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Cadmium, Selenium, Copper, Nickel, Zinc are outside control limits for sample MP6345-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- The serial dilution RPD(s) for Copper, Nickel, Zinc are outside control limits for sample MP6345-SD1. Serial dilution indicates possible matrix interference.
- D29577-1R for Selenium: Elevated detection limit due to dilution required for possible matrix interference.

Metals By Method SW846 6020

Matrix SO

Batch ID: MP6346

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29717-1MS, D29717-1MSD, D29717-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471A

Matrix SO

Batch ID: MP6347

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29717-2MS, D29717-2MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO

Batch ID: GN12654

- Sample(s) D29575-1RDUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM19 2540B M

Matrix SO

Batch ID: GN12569

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

Wet Chemistry By Method SW846 3060/7196A M

Matrix SO

Batch ID: R10910

- The data for SW846 3060/7196A M meets quality control requirements.
- D29577-1R for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO

Batch ID: M:GP13862

- The data for SW846 3060A/7196A meets quality control requirements.
- D29577-1R for Chromium, Hexavalent: Analysis performed at Accutest Laboratories, Marlborough, MA.

Wet Chemistry By Method SW846 9045C

Matrix SO

Batch ID: GN12653

- The following sample was run outside of holding time for method SW846 9045C: D29577-1R.

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO

Batch ID: MP6359

- D29577-1RA 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 D29577

Site: KRWCCOL: XOM FRU 297-17A

Report Date 11/30/2011 5:38:11 PM

1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 11/16/2011 and were received at Accutest on 11/17/2011 properly preserved, at XXXXNO TEMPERATURE FOUNDXXXX Deg. C and intact. These Samples received an Accutest job number of D29577. 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: GP13862

- 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) D29745-1MS, D29745-1DUP were used as the QC samples for Chromium, Hexavalent.
- RPD(s) for Duplicate for Chromium, Hexavalent are outside control limits for sample GP13862-D1. RPD acceptable due to low duplicate and sample concentrations.

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(D29577).

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	RP_MIX/BLEND_11,14,15 NOV	Date Sampled:	11/16/11
Lab Sample ID:	D29577-1	Date Received:	11/17/11
Matrix:	SO - Soil	Percent Solids:	82.7
Method:	SW846 8260B		
Project:	XOM FRU 297-17A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V14661.D	1	11/17/11	DC	n/a	n/a	V3V846
Run #2							

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

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	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	105%		61-130%
460-00-4	4-Bromofluorobenzene	106%		53-131%
17060-07-0	1,2-Dichloroethane-D4	107%		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

Page 1 of 1

Client Sample ID:	RP_MIX/BLEND_11,14,15 NOV					Date Sampled:	11/16/11
Lab Sample ID:	D29577-1					Date Received:	11/17/11
Matrix:	SO - Soil					Percent Solids:	82.7
Method:	SW846 8015B						
Project:	XOM FRU 297-17A						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13981.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)	12.2	14	7.0	mg/kg	J
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	87%		60-140%		

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

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

Accutest Laboratories

Report of Analysis

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Client Sample ID:	RP_MIX/BLEND_11,14,15 NOV			Date Sampled:	11/16/11
Lab Sample ID:	D29577-1			Date Received:	11/17/11
Matrix:	SO - Soil			Percent Solids:	82.7
Method:	SW846-8015B SW846 3546				
Project:	XOM FRU 297-17A				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FI04536.D	1	11/18/11	CS	11/18/11	OP4872	GFI333
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)	454	16	10	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	105%		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

Client Sample ID:	RP_MIX/BLEND_11,14,15 NOV	Date Sampled:	11/16/11
Lab Sample ID:	D29577-1R	Date Received:	11/17/11
Matrix:	SO - Soil	Percent Solids:	82.7
Method:	SW846 8270C BY SIM SW846 3546		
Project:	XOM FRU 297-17A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G07065.D	1	11/29/11	TMB	11/23/11	OP4905	E3G260
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	8.1	6.4	ug/kg	
120-12-7	Anthracene	ND	8.1	7.2	ug/kg	
56-55-3	Benzo(a)anthracene	ND	20	10	ug/kg	
50-32-8	Benzo(a)pyrene	ND	20	14	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	20	15	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	20	8.9	ug/kg	
218-01-9	Chrysene	ND	20	8.9	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	20	15	ug/kg	
206-44-0	Fluoranthene	ND	8.1	8.1	ug/kg	
86-73-7	Fluorene	31.3	8.1	6.8	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	24	22	ug/kg	
91-20-3	Naphthalene	27.0	8.1	7.7	ug/kg	
129-00-0	Pyrene	ND	8.1	7.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	24%		10-145%
321-60-8	2-Fluorobiphenyl	23%		10-130%
1718-51-0	Terphenyl-d14	26%		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: RP_MIX/BLEND_11,14,15 NOV**Lab Sample ID:** D29577-1R**Matrix:** SO - Soil**Project:** XOM FRU 297-17A**Date Sampled:** 11/16/11**Date Received:** 11/17/11**Percent Solids:** 82.7**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.3	0.48	mg/kg	5	11/28/11	11/29/11 GJ	SW846 6020 ³	SW846 3050B ⁶
Barium	3180	6.0	mg/kg	5	11/28/11	11/29/11 JB	SW846 6010B ⁴	SW846 3050B ⁵
Cadmium	< 1.2	1.2	mg/kg	1	11/28/11	11/28/11 JB	SW846 6010B ²	SW846 3050B ⁵
Chromium	32.3	1.2	mg/kg	1	11/28/11	11/28/11 JB	SW846 6010B ²	SW846 3050B ⁵
Copper	12.3	1.2	mg/kg	1	11/28/11	11/28/11 JB	SW846 6010B ²	SW846 3050B ⁵
Lead	13.6	6.0	mg/kg	1	11/28/11	11/28/11 JB	SW846 6010B ²	SW846 3050B ⁵
Mercury	< 0.11	0.11	mg/kg	1	11/28/11	11/28/11 JB	SW846 7471A ¹	SW846 7471A ⁷
Nickel	16.3	3.6	mg/kg	1	11/28/11	11/28/11 JB	SW846 6010B ²	SW846 3050B ⁵
Selenium ^a	< 30	30	mg/kg	5	11/28/11	11/29/11 JB	SW846 6010B ⁴	SW846 3050B ⁵
Silver	< 3.6	3.6	mg/kg	1	11/28/11	11/28/11 JB	SW846 6010B ²	SW846 3050B ⁵
Zinc	44.0	3.6	mg/kg	1	11/28/11	11/28/11 JB	SW846 6010B ²	SW846 3050B ⁵

(1) Instrument QC Batch: MA2002

(2) Instrument QC Batch: MA2005

(3) Instrument QC Batch: MA2006

(4) Instrument QC Batch: MA2009

(5) Prep QC Batch: MP6345

(6) Prep QC Batch: MP6346

(7) Prep QC Batch: MP6347

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

RL = Reporting Limit

Report of Analysis

Client Sample ID: RP_MIX/BLEND_11,14,15 NOV**Lab Sample ID:** D29577-1R**Matrix:** SO - Soil**Project:** XOM FRU 297-17A**Date Sampled:** 11/16/11**Date Received:** 11/17/11**Percent Solids:** 82.7**General Chemistry**

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent ^a	0.80	0.48	mg/kg	1	11/30/11 16:32	AMA	SW846 3060A/7196A
Chromium, Trivalent ^b	31.5	1.7	mg/kg	1	11/30/11 16:32	AMA	SW846 3060/7196A M
Redox Potential Vs H2	260		mv	1	11/23/11 13:20	JK	ASTM D1498-76M
Specific Conductivity	3160	1.0	umhos/cm	1	11/29/11	CJ	DEPT.OF AG, BOOK N9
pH	12.11		su	1	11/23/11 13:20	JK	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: RP_MIX/BLEND_11,14,15 NOV**Lab Sample ID:** D29577-1RA**Matrix:** SO - Soil**Project:** XOM FRU 297-17A**Date Sampled:** 11/16/11**Date Received:** 11/17/11**Percent Solids:** 82.7

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	26.7	2.0	mg/l	1	11/29/11	11/29/11 JB	SW846 6010B ¹	EPA 200.7 ²
Magnesium	< 1.0	1.0	mg/l	1	11/29/11	11/29/11 JB	SW846 6010B ¹	EPA 200.7 ²
Sodium	334	2.0	mg/l	1	11/29/11	11/29/11 JB	SW846 6010B ¹	EPA 200.7 ²

(1) Instrument QC Batch: MA2009

(2) Prep QC Batch: MP6359

RL = Reporting Limit

Report of Analysis

Client Sample ID:	RP_MIX/BLEND_11,14,15 NOV	Date Sampled:	11/16/11
Lab Sample ID:	D29577-1RA	Date Received:	11/17/11
Matrix:	SO - Soil	Percent Solids:	82.7
Project:	XOM FRU 297-17A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	17.7		ratio	1	11/29/11 18:39	JB	USDA HANDBOOK 60

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

FED-EX Tracking #	Bottle Order Control #																				
Accutest Quote #	Accutest Job # <u>D29577</u>																				
Client / Reporting Information Company Name: <u>KRW Consulting Inc</u> Street Address: <u>8000 W. 14th Ave. Ste. 200</u> City: <u>Lakewood, Co</u> State: <u>80214</u> Project Contact: <u>Dwayne Knudson</u> Phone # <u>970 675 4066</u> Fax # <u>4066</u> Samples Name(s): <u>Caln Hollister</u> Phone # <u>239-9011</u>																					
Project Information Project Name: <u>XOM-FRU-297-17A</u> Street: _____ City: _____ State: _____ Zip: _____ Billing Information (if different from Report to) Company Name: _____ Project # <u>1108-13A</u> Street Address: _____ Client PO# _____ City: _____ State: _____ Zip: _____ Project Manager: <u>Jol Hess</u> Attention: _____ PO# _____																					
Requested Analysis (see TEST CODE sheet) Matrix Codes: <u>Table 910</u> DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank																					
LAB USE ONLY Field ID / Point of Collection: <u>RP-Mix/Bleed-11/14/15</u> MECH/DI Vial # _____ Date: <u>11/14/11</u> Time: <u>11:10</u> CH <u>SO</u> # of bottles <u>5</u> Run BTEX & TPH 2-Day Rush Hold rest of Table 910 analyses until further notice.																					
Turnaround Time (Business days) <input type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> Std. 5 Business Days (By Contract only) <input type="checkbox"/> 5 Day R/SH <input type="checkbox"/> 3 Day EMERGENCY <input checked="" type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY Approved By (Accutest PM) / Date: _____ Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> Commercial "B" + Narrative <input type="checkbox"/> FULLT1 (Level 3+4) State Forms <input type="checkbox"/> EDD Format <input checked="" type="checkbox"/> PDF Commercial "A" = Results Only Commercial "B" = Results + QC Summary																					
Comments / Special Instructions <u>Please email results to KRW Pirence Creek XOM Team</u>																					
Sample Custody must be documented below each time samples change possession, including courier delivery. <table border="1"> <tr> <td>Relinquished By: <u>1</u></td> <td>Date Time: <u>11-16-11 17:00</u></td> <td>Received By: <u>1</u></td> <td>Date Time: <u>11-17-11</u></td> </tr> <tr> <td>Relinquished By: <u>2</u></td> <td>Date Time: _____</td> <td>Received By: <u>2</u></td> <td>Date Time: _____</td> </tr> <tr> <td>Relinquished By: <u>3</u></td> <td>Date Time: _____</td> <td>Received By: <u>3</u></td> <td>Date Time: _____</td> </tr> <tr> <td>Relinquished By: <u>4</u></td> <td>Date Time: _____</td> <td>Received By: <u>4</u></td> <td>Date Time: _____</td> </tr> <tr> <td>Relinquished By: <u>5</u></td> <td>Date Time: _____</td> <td>Received By: <u>5</u></td> <td>Date Time: _____</td> </tr> </table>		Relinquished By: <u>1</u>	Date Time: <u>11-16-11 17:00</u>	Received By: <u>1</u>	Date Time: <u>11-17-11</u>	Relinquished By: <u>2</u>	Date Time: _____	Received By: <u>2</u>	Date Time: _____	Relinquished By: <u>3</u>	Date Time: _____	Received By: <u>3</u>	Date Time: _____	Relinquished By: <u>4</u>	Date Time: _____	Received By: <u>4</u>	Date Time: _____	Relinquished By: <u>5</u>	Date Time: _____	Received By: <u>5</u>	Date Time: _____
Relinquished By: <u>1</u>	Date Time: <u>11-16-11 17:00</u>	Received By: <u>1</u>	Date Time: <u>11-17-11</u>																		
Relinquished By: <u>2</u>	Date Time: _____	Received By: <u>2</u>	Date Time: _____																		
Relinquished By: <u>3</u>	Date Time: _____	Received By: <u>3</u>	Date Time: _____																		
Relinquished By: <u>4</u>	Date Time: _____	Received By: <u>4</u>	Date Time: _____																		
Relinquished By: <u>5</u>	Date Time: _____	Received By: <u>5</u>	Date Time: _____																		
Custody Seal # _____ Intact <input checked="" type="checkbox"/> Not Intact <input type="checkbox"/> Preserved where applicable <input type="checkbox"/> On Ice <input checked="" type="checkbox"/> Cooler Temp. <u>2.5</u>																					

D29577: Chain of Custody

Page 1 of 3

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D29577

Client: KRW CONSULTING INC

Immediate Client Services Action Required: No

Date / Time Received: 11/17/2011 12:00:00 P

No. Coolers: 1

Client Service Action Required at Login: No

Project: XOM FRU 297-17

Airbill #'s: HD/CO

Cooler Security

Y or N

Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler Temperature

Y or N

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

Quality Control Preservation

Y or N

N/A

- | | | | |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/> | <input type="checkbox"/> | |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input type="checkbox"/> | |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. VOCs headspace free: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Sample Integrity - Documentation

Y or N

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

Sample Integrity - Condition

Y or N

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

Sample Integrity - Instructions

Y or N N/A

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

Comments

Job Change Order: D29577_11/23/2011

Requested	11/23/2011	Received Date:	11/17/2011
Account Name:	KRW Consulting, Inc.	Due Date:	11/21/2011
Project	XOM FRU 297-17A	Deliverable:	COMMBN+
CSR:	RR	TAT (Days):	3

Change: Please log the remainder of table 9-10 to an R sample and run on a 3 day turn. Thank you.

Sample #:
D29577-1

RP_MIX/BLEND_11,14,15 NOV

Above Changes Per: Dwayne Knudson - Client Date: 11/23/2011

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

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: D29577
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V846-MB	3V14650.D	1	11/17/11	DC	n/a	n/a	V3V846

The QC reported here applies to the following samples:

Method: SW846 8260B

D29577-1

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	107% 61-130%
460-00-4	4-Bromofluorobenzene	99% 53-131%
17060-07-0	1,2-Dichloroethane-D4	107% 62-130%

Blank Spike Summary

Page 1 of 1

Job Number: D29577

Account: KRWCCOL KRW Consulting, Inc.

Project: XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V846-BS	3V14651.D	1	11/17/11	DC	n/a	n/a	V3V846

The QC reported here applies to the following samples:

Method: SW846 8260B

D29577-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	57.8	116	70-130
100-41-4	Ethylbenzene	50	57.1	114	70-130
108-88-3	Toluene	50	55.5	111	70-130
1330-20-7	Xylene (total)	150	173	115	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	105%	61-130%
460-00-4	4-Bromofluorobenzene	117%	53-131%
17060-07-0	1,2-Dichloroethane-D4	110%	62-130%

Blank Spike Summary

Page 1 of 1

Job Number: D29577

Account: KRWCCOL KRW Consulting, Inc.

Project: XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V846-BS	3V14652.D	1	11/17/11	DC	n/a	n/a	V3V846

The QC reported here applies to the following samples:

Method: SW846 8260B

D29577-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
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CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	108%	61-130%
460-00-4	4-Bromofluorobenzene	107%	53-131%
17060-07-0	1,2-Dichloroethane-D4	109%	62-130%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D29577
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D29409-2MS	3V14654.D	1	11/17/11	DC	n/a	n/a	V3V846
D29409-2MSD	3V14655.D	1	11/17/11	DC	n/a	n/a	V3V846
D29409-2	3V14653.D	1	11/17/11	DC	n/a	n/a	V3V846

The QC reported here applies to the following samples:

Method: SW846 8260B

D29577-1

CAS No.	Compound	D29409-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3210	3430	107	3700	115	8	70-134/30
100-41-4	Ethylbenzene	ND		3210	3430	107	3600	112	5	70-137/30
108-88-3	Toluene	ND		3210	3290	103	3460	108	5	70-130/30
1330-20-7	Xylene (total)	ND		9620	10500	109	11000	114	5	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D29409-2	Limits
2037-26-5	Toluene-D8	103%	104%	105%	61-130%
460-00-4	4-Bromofluorobenzene	116%	116%	109%	53-131%
17060-07-0	1,2-Dichloroethane-D4	105%	103%	109%	62-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D29577
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D29409-2MS	3V14656.D	1	11/17/11	DC	n/a	n/a	V3V846
D29409-2MSD	3V14657.D	1	11/17/11	DC	n/a	n/a	V3V846
D29409-2	3V14653.D	1	11/17/11	DC	n/a	n/a	V3V846

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

D29577-1

CAS No.	Compound	D29409-2 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
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CAS No.	Surrogate Recoveries	MS	MSD	D29409-2	Limits
2037-26-5	Toluene-D8	104%	105%	105%	61-130%
460-00-4	4-Bromofluorobenzene	112%	113%	109%	53-131%
17060-07-0	1,2-Dichloroethane-D4	101%	102%	109%	62-130%

GC/MS Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3111711.S\
Data File : 3V14661.D
Acq On : 17 Nov 2011 5:00 pm
Operator : DONC
Sample : D29577-1, 50x
Misc : MS2970,V3V846,5.080,,100,5,1
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Nov 18 16:37:51 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	11.888	168	298490	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.684	114	504159	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.315	117	441856	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.308	152	241337	50.00	ug/l	0.00

System Monitoring Compounds						
33) 1,2-Dichloroethane-d4	12.283	102	42096	53.39	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	106.78%
61) Toluene-d8	14.074	98	694796	52.71	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	105.42%
69) 4-Bromofluorobenzene	16.265	95	227235	52.98	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	105.96%

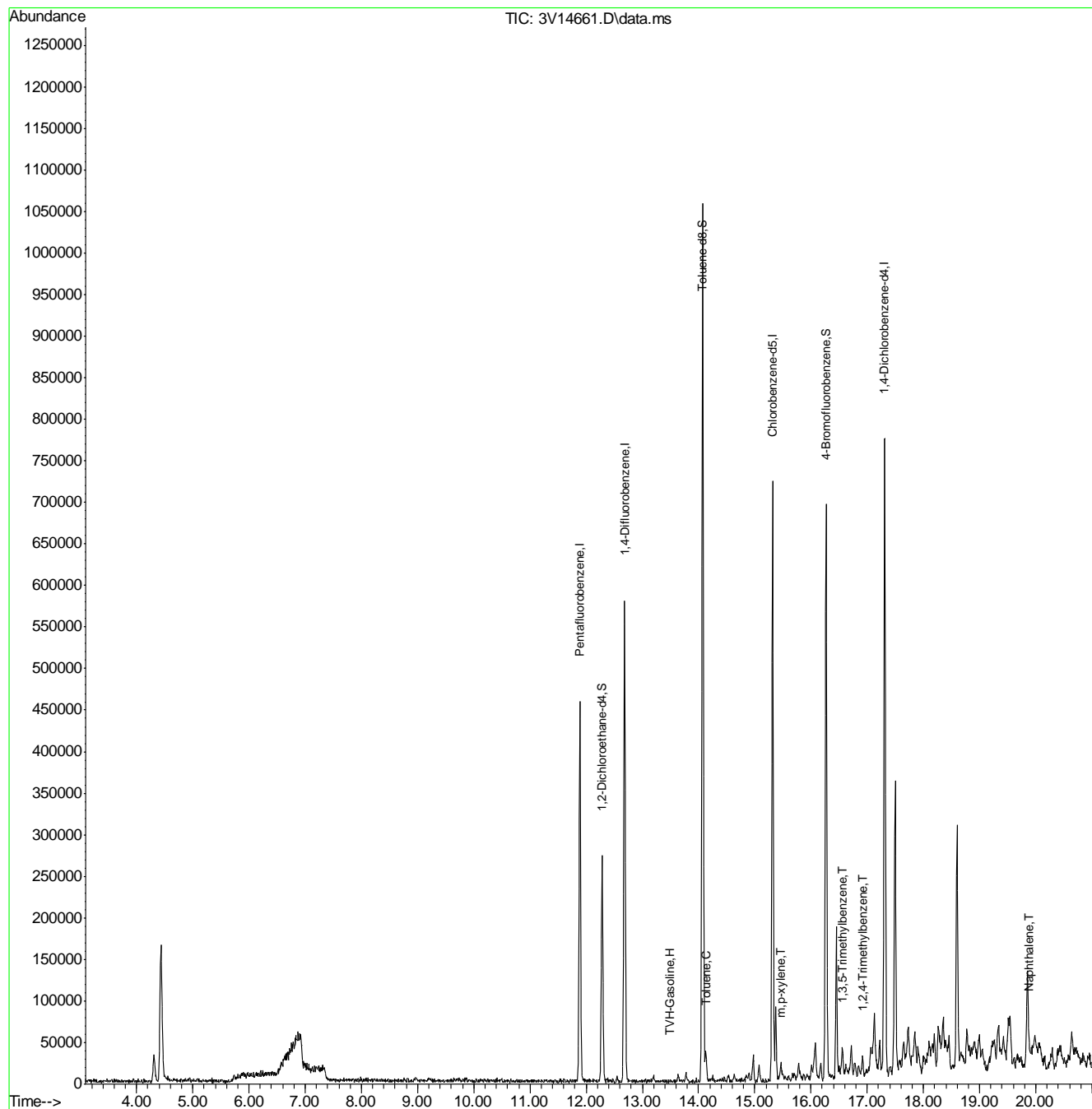
Target Compounds					Qvalue
1) TVH-Gasoline	13.491	TIC	988659m	68.74	ug/l
62) Toluene	14.128	92	4227	0.47	ug/l
72) m,p-xylene	15.463	106	4887	0.66	ug/l
80) 1,3,5-Trimethylbenzene	16.554	105	10382	0.85	ug/l
82) 1,2,4-Trimethylbenzene	16.913	105	9402	0.64	ug/l
91) Naphthalene	19.885	128	13789	1.03	ug/l

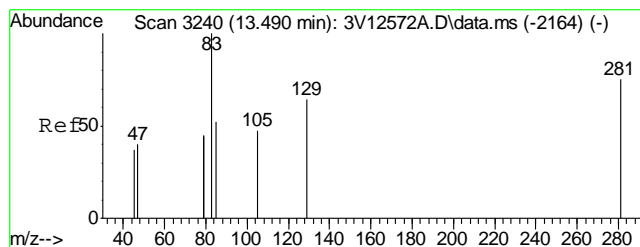
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3111711.S\
Data File : 3V14661.D
Acq On : 17 Nov 2011 5:00 pm
Operator : DONC
Sample : D29577-1, 50x
Misc : MS2970,V3V846,5.080,,100,5,1
ALS Vial : 15 Sample Multiplier: 1

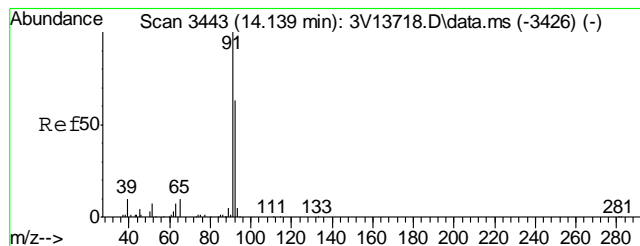
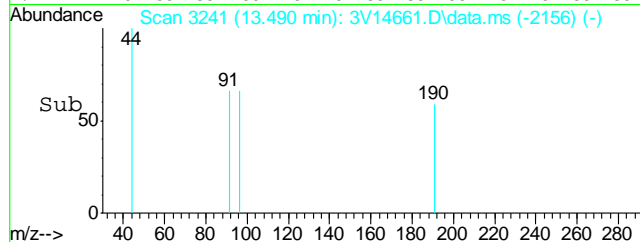
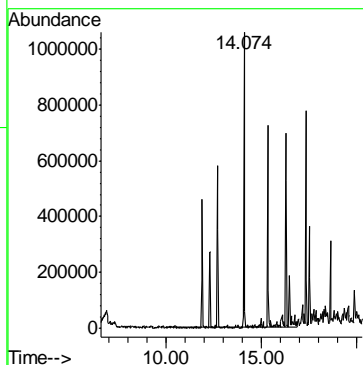
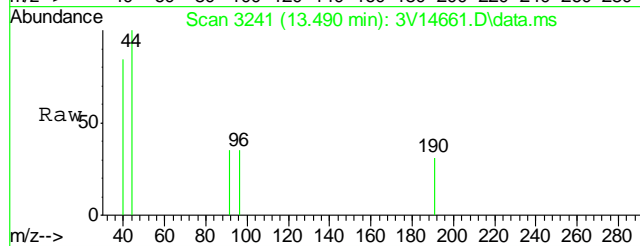
Quant Time: Nov 18 16:37:51 2011
Quant Method : C:\msdchem\1\METHODS\V3AP830TVH830.M
Quant Title : 8260
QLast Update : Mon Nov 07 14:42:41 2011
Response via : Initial Calibration





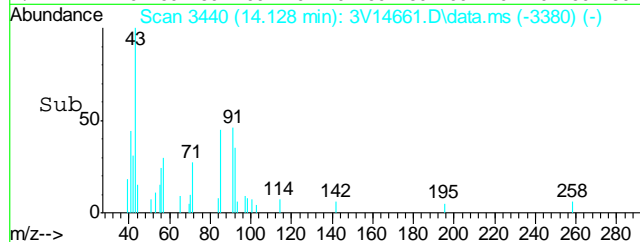
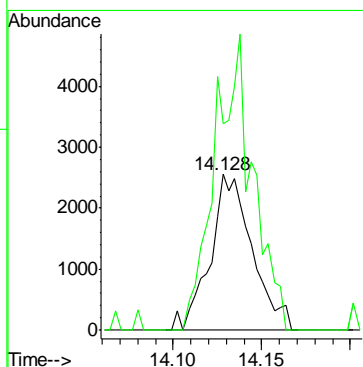
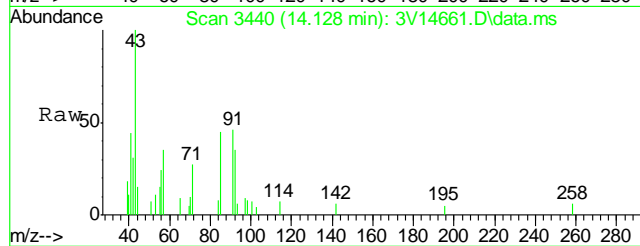
#1
TVH-Gasoline
Concen: 68.74 ug/l m
RT: 13.491 min Scan# 3241
Delta R.T. 0.000 min
Lab File: 3V14661.D
Acq: 17 Nov 2011 5:00 pm

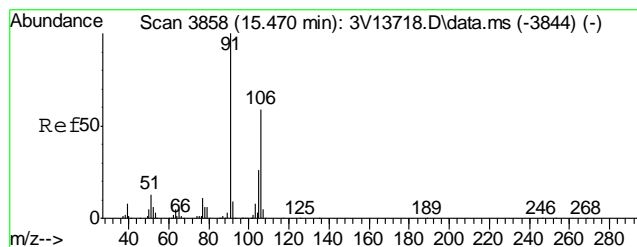
Tgt Ion:TIC Resp: 988659



#62
Toluene
Concen: 0.47 ug/l
RT: 14.128 min Scan# 3440
Delta R.T. -0.007 min
Lab File: 3V14661.D
Acq: 17 Nov 2011 5:00 pm

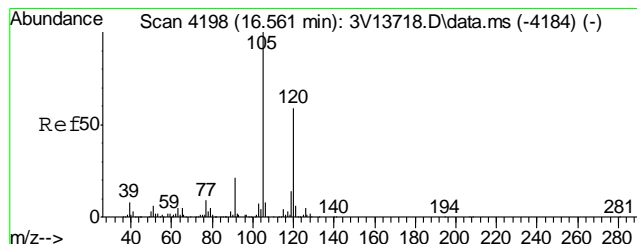
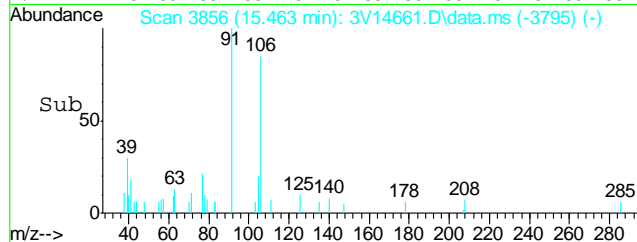
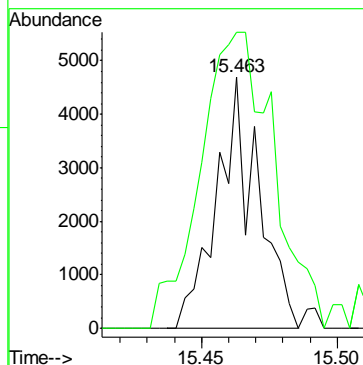
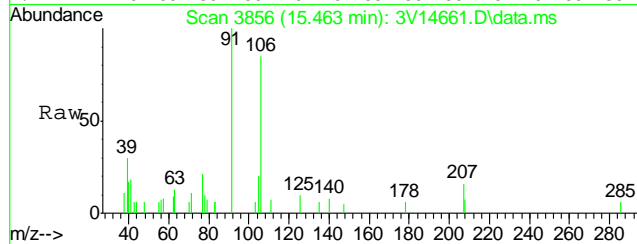
Tgt Ion: 92 Resp: 4227
Ion Ratio Lower Upper
92 100
91 172.7 156.8 196.8





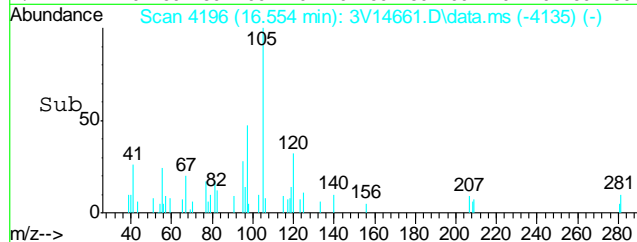
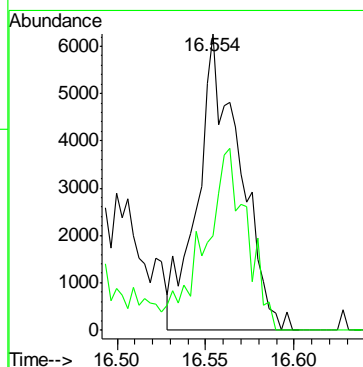
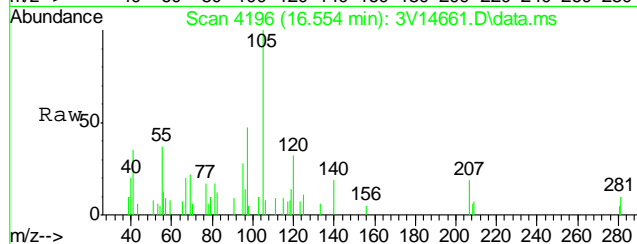
#72
m,p-xylene
Concen: 0.66 ug/l
RT: 15.463 min Scan# 3856
Delta R.T. -0.003 min
Lab File: 3V14661.D
Acq: 17 Nov 2011 5:00 pm

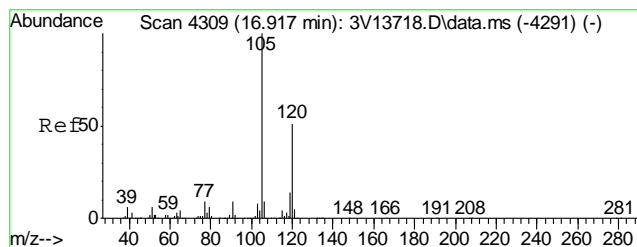
Tgt Ion:106 Resp: 4887
Ion Ratio Lower Upper
106 100
91 213.5 164.7 204.7#



#80
1,3,5-Trimethylbenzene
Concen: 0.85 ug/l
RT: 16.554 min Scan# 4196
Delta R.T. -0.003 min
Lab File: 3V14661.D
Acq: 17 Nov 2011 5:00 pm

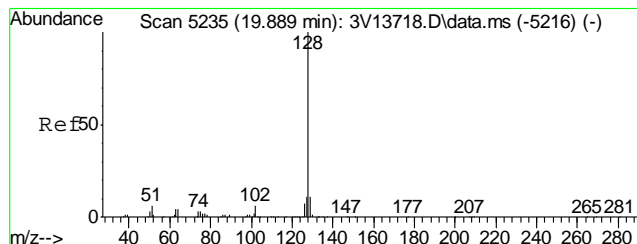
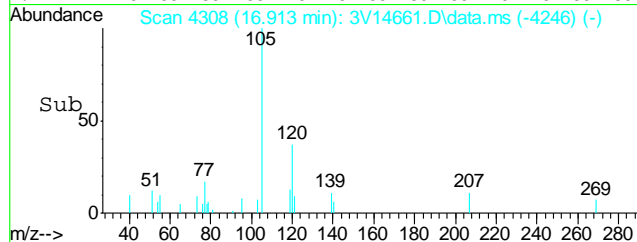
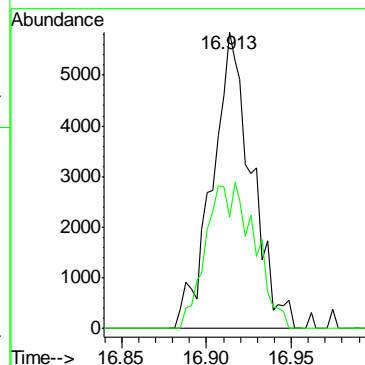
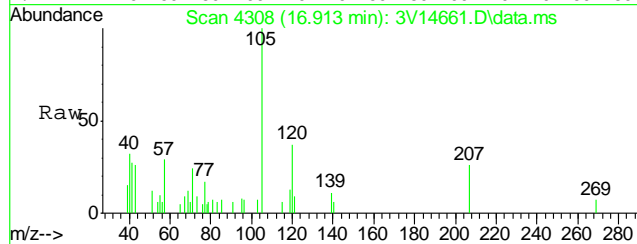
Tgt Ion:105 Resp: 10382
Ion Ratio Lower Upper
105 100
120 61.9 43.8 65.8





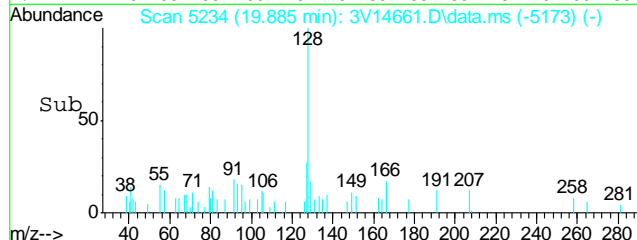
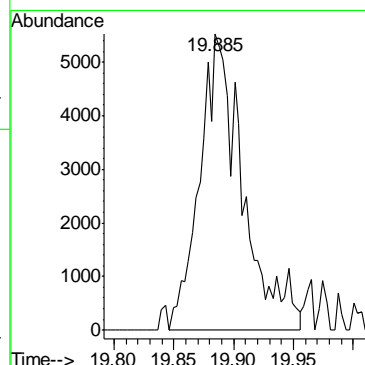
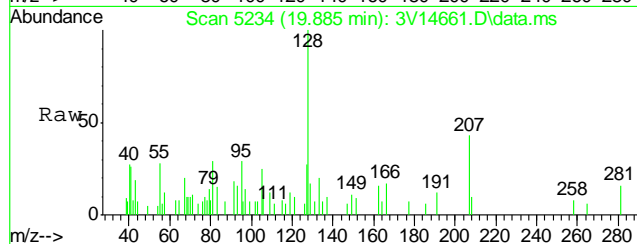
#82
1,2,4-Trimethylbenzene
Concen: 0.64 ug/l
RT: 16.913 min Scan# 4308
Delta R.T. -0.001 min
Lab File: 3V14661.D
Acq: 17 Nov 2011 5:00 pm

Tgt Ion:105 Resp: 9402
Ion Ratio Lower Upper
105 100
120 60.4 47.8 71.6



#91
Naphthalene
Concen: 1.03 ug/l
RT: 19.885 min Scan# 5234
Delta R.T. -0.004 min
Lab File: 3V14661.D
Acq: 17 Nov 2011 5:00 pm

Tgt Ion:128 Resp: 13789



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3111711.S\
Data File : 3V14650.D
Acq On : 17 Nov 2011 11:19 am
Operator : DONC
Sample : MB, MEB111711
Misc : MS2970,V3V846,5,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 18 16:27:00 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	11.889	168	278436	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.679	114	468323	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.313	117	413891	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.309	152	213659	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.284	102	39246	53.36	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	106.72%
61) Toluene-d8	14.075	98	659640	53.43	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	106.86%
69) 4-Bromofluorobenzene	16.263	95	199833	49.74	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	99.48%

Target Compounds

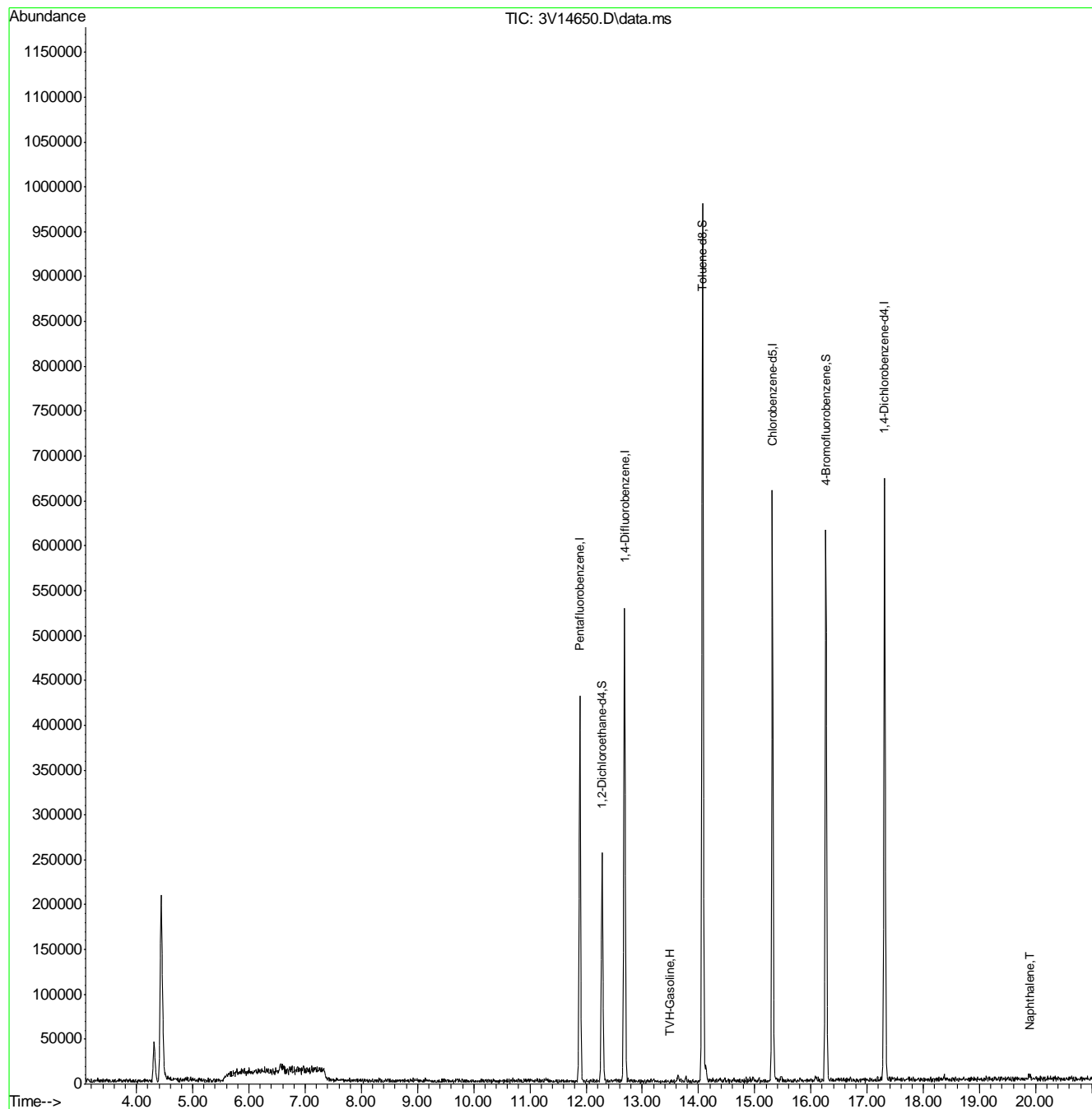
					Qvalue
1) TVH-Gasoline	13.491	TIC	76472m	16.67	ug/l
91) Naphthalene	19.892	128	4982	0.42	ug/l

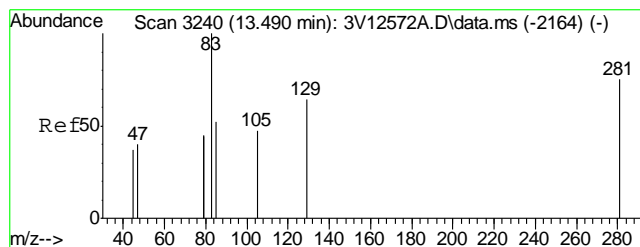
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3111711.S\
Data File : 3V14650.D
Acq On : 17 Nov 2011 11:19 am
Operator : DONC
Sample : MB, MEB111711
Misc : MS2970,V3V846,5,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

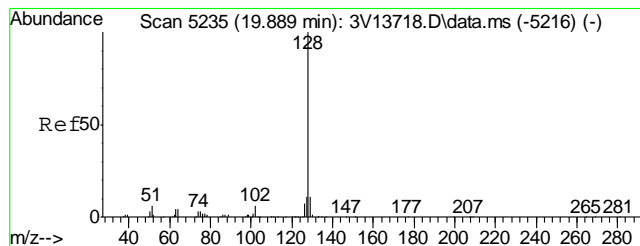
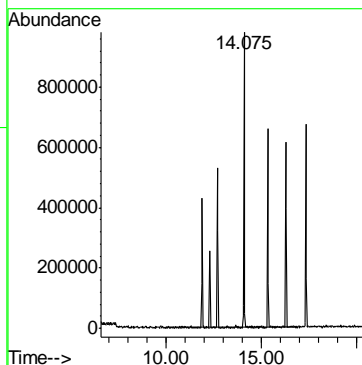
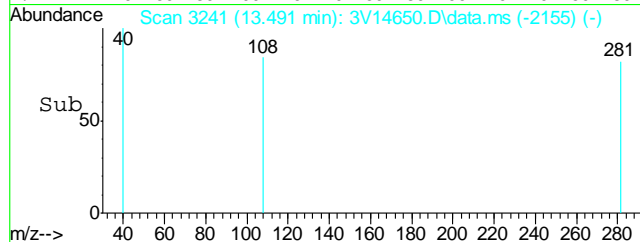
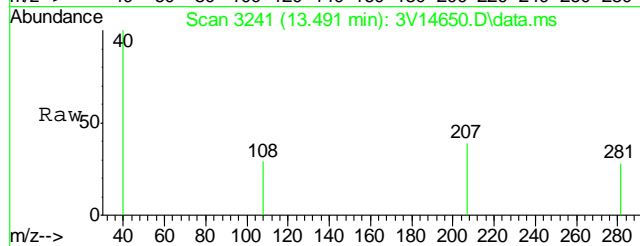
Quant Time: Nov 18 16:27:00 2011
Quant Method : C:\msdchem\1\METHODS\V3AP830TVH830.M
Quant Title : 8260
QLast Update : Mon Nov 07 14:42:41 2011
Response via : Initial Calibration





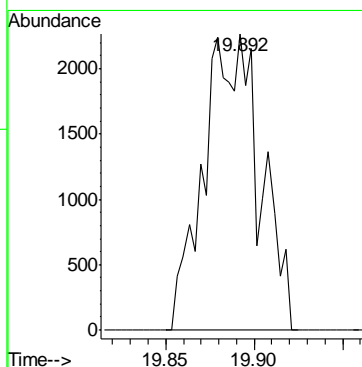
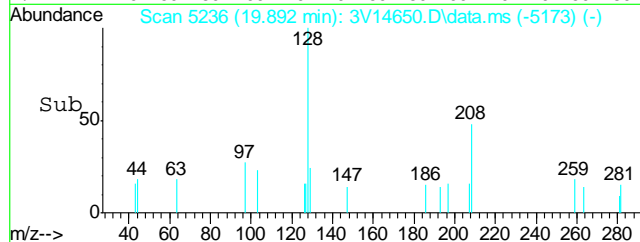
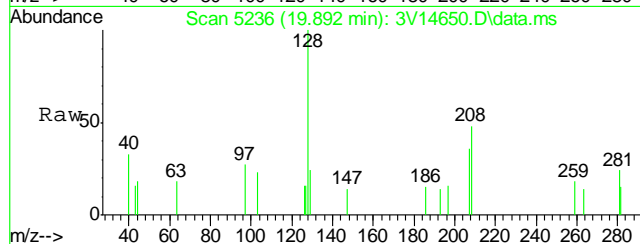
#1
TVH-Gasoline
Concen: 16.67 ug/l m
RT: 13.491 min Scan# 3241
Delta R.T. 0.000 min
Lab File: 3V14650.D
Acq: 17 Nov 2011 11:19 am

Tgt Ion:TIC Resp: 76472



#91
Naphthalene
Concen: 0.42 ug/l
RT: 19.892 min Scan# 5236
Delta R.T. 0.003 min
Lab File: 3V14650.D
Acq: 17 Nov 2011 11:19 am

Tgt Ion:128 Resp: 4982



GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

GC/MS Semi-volatiles

Raw Data

∞

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\112811\
 Data File : 3g07065.D
 Acq On : 29 Nov 2011 3:36 am
 Operator : TamiB
 Sample : D29577-1R
 Misc : OP4905,E3G260,30.03,,,1,1
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 29 13:34:17 2011
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G260.M
 Quant Title : PAHSIM BASE
 QLast Update : Tue Nov 29 12:28:30 2011
 Response via : Initial Calibration

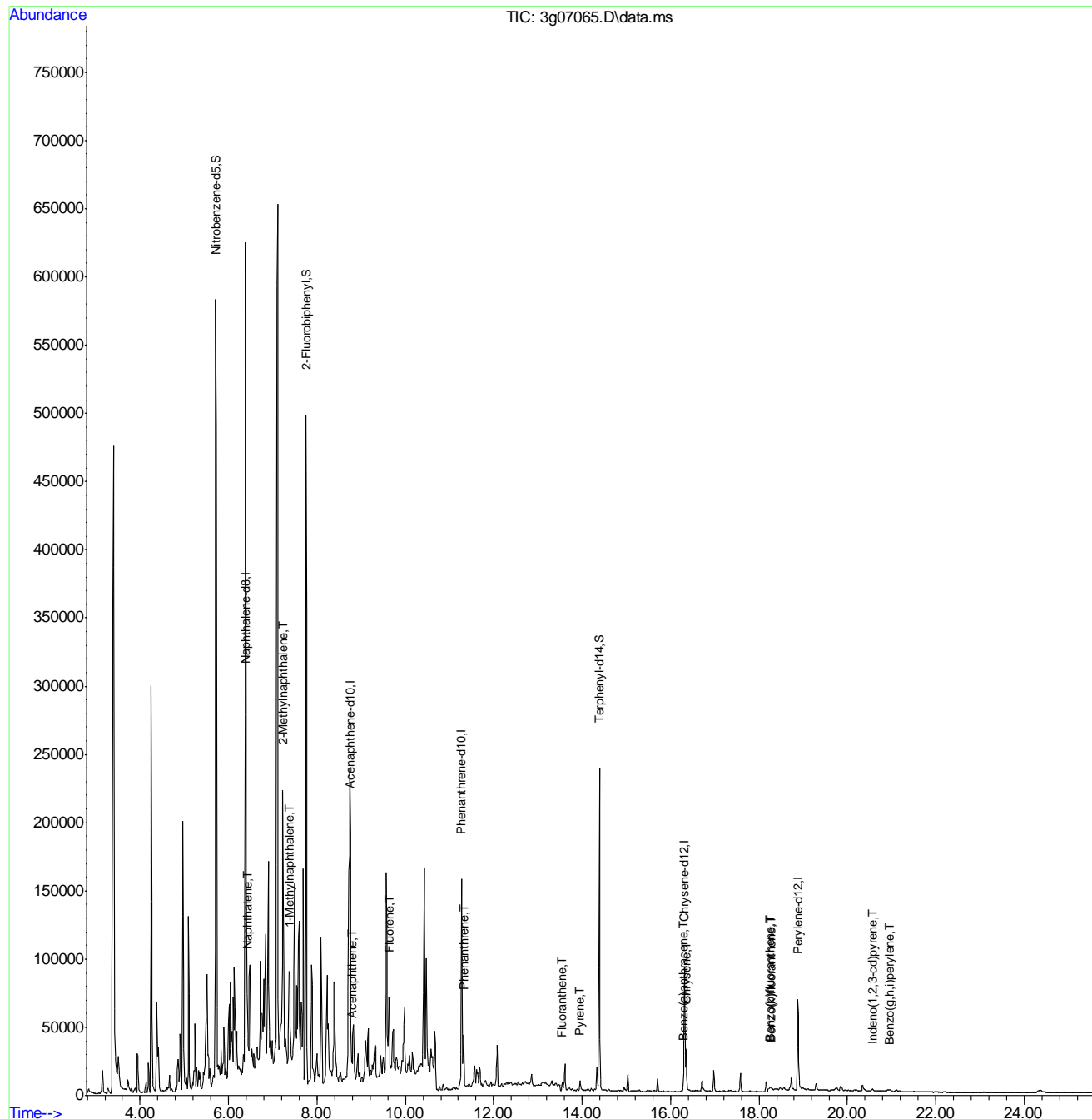
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	6.395	136	193485	4.00	ug/mL	0.00
6) Acenaphthene-d10	8.756	164	101614	4.00	ug/mL	0.01
14) Phenanthrene-d10	11.271	188	171525	4.00	ug/mL	0.00
18) Chrysene-d12	16.315	240	108677	4.00	ug/mL	0.00
23) Perylene-d12	18.880	264	88950	4.00	ug/mL	0.00
System Monitoring Compounds						
2) Nitrobenzene-d5	5.709	82	269541	11.92	ug/mL	0.00
7) 2-Fluorobiphenyl	7.751	172	466500	11.36	ug/mL	0.00
20) Terphenyl-d14	14.389	244	279264	13.05	ug/mL	0.00
Target Compounds						
					Qvalue	
3) N-Nitrosodimethylamine	0.000		0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000		0	N.D.	d	
5) Naphthalene	6.420	128	41960	0.67	ug/mL#	1
8) 2-Methylnaphthalene	7.230	142	93758	2.55	ug/mL#	82
9) 1-Methylnaphthalene	7.380	142	32383	0.90	ug/mL#	69
10) Acenaphthylene	0.000		0	N.D.	d	
11) Acenaphthene	8.803	154	3486	0.11	ug/mL#	1
12) Fluorene	9.630	166	27656	0.78	ug/mL#	10
13) Diphenylamine	0.000		0	N.D.	d	
15) Phenanthrene	11.319	178	38382	0.58	ug/mL	85
16) Anthracene	0.000		0	N.D.	d	
17) Fluoranthene	13.551	202	7608	0.14	ug/mL	94
19) Pyrene	13.954	202	6029	0.15	ug/mL	91
21) Benzo(a)anthracene	16.289	228	2896m	0.10	ug/mL	
22) Chrysene	16.355	228	5641	0.15	ug/mL	81
24) Benzo(b)fluoranthene	18.249	252	3203m	0.14	ug/mL	
25) Benzo(k)fluoranthene	18.270	252	2333m	0.10	ug/mL	
26) Benzo(a)pyrene	0.000		0	N.D.	d	
27) Indeno(1,2,3-cd)pyrene	20.573	276	722	0.10	ug/mL#	80
28) Dibenz(a,h)anthracene	0.000		0	N.D.	d	
29) Benzo(g,h,i)perylene	20.951	276	1419	0.11	ug/mL#	73

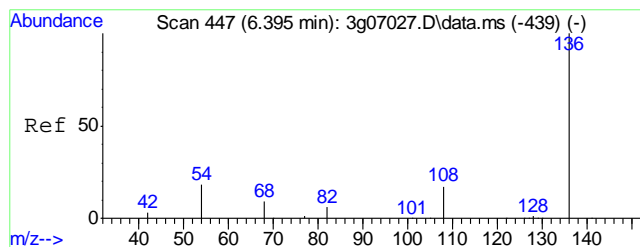
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\112811\
Data File : 3g07065.D
Acq On : 29 Nov 2011 3:36 am
Operator : TamiB
Sample : D29577-1R
Misc : OP4905,E3G260,30.03,,,1,1
ALS Vial : 18 Sample Multiplier: 1

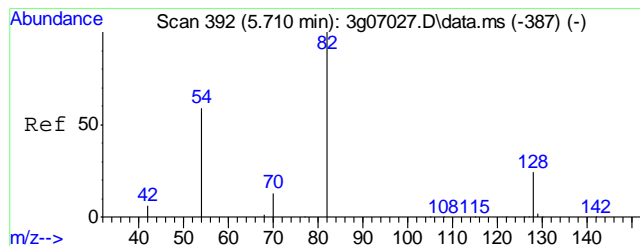
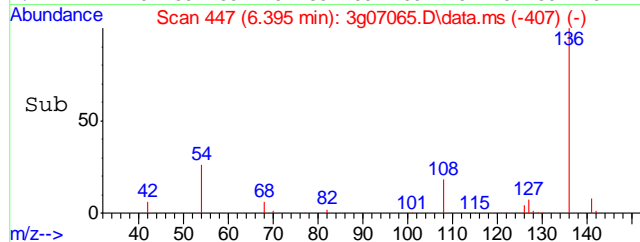
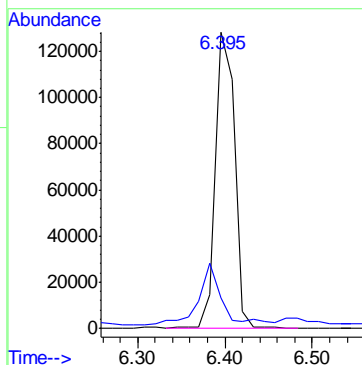
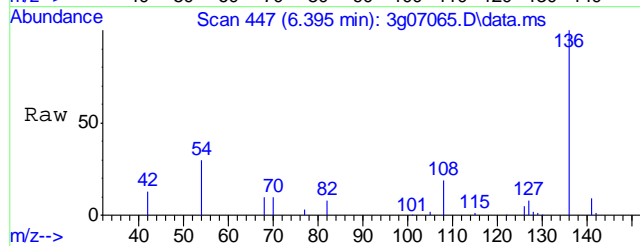
Quant Time: Nov 29 13:34:17 2011
Quant Method : C:\msdchem\1\METHODS\SIMPE3G260.M
Quant Title : PAHSIM BASE
QLast Update : Tue Nov 29 12:28:30 2011
Response via : Initial Calibration





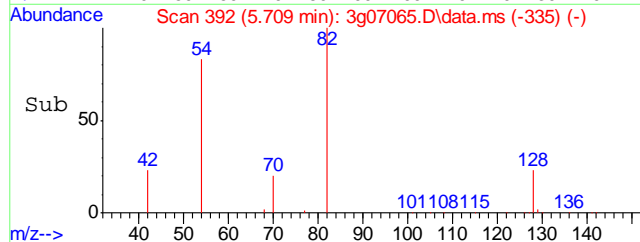
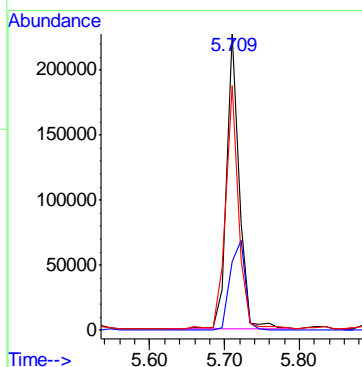
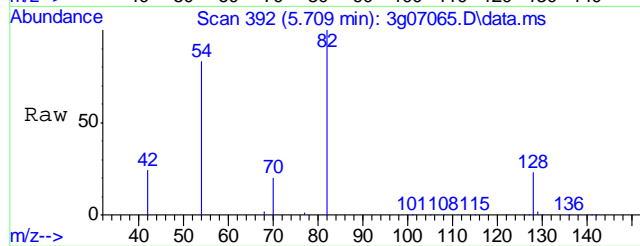
#1
Naphthalene-d8
Concen: 4.00 ug/mL
RT: 6.395 min Scan# 447
Delta R.T. -0.000 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

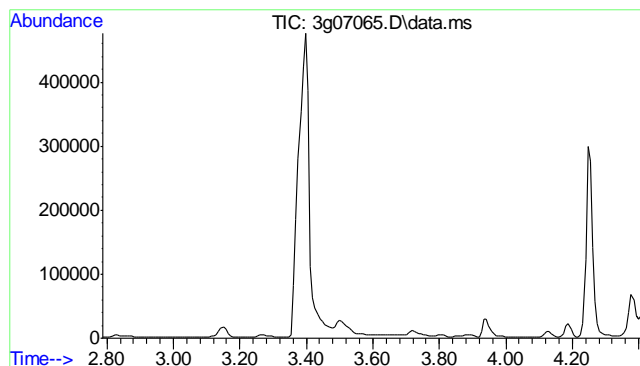
Tgt Ion: 136 Resp: 193485
Ion Ratio Lower Upper
136 100
68 22.2 0.0 27.7



#2
Nitrobenzene-d5
Concen: 11.92 ug/mL
RT: 5.709 min Scan# 392
Delta R.T. 0.000 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

Tgt Ion: 82 Resp: 269541
Ion Ratio Lower Upper
82 100
128 36.0 21.4 61.4
54 85.1 33.7 73.7#

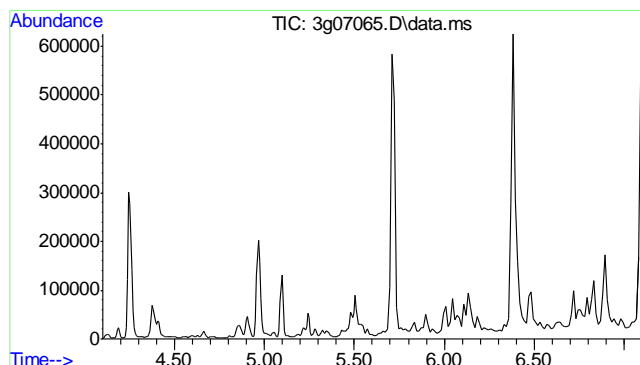
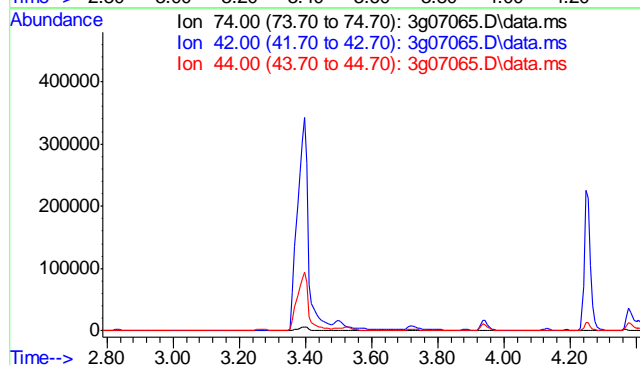




#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.91 min

Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

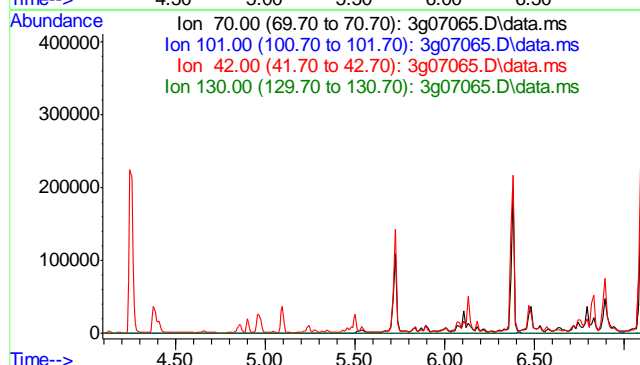
Tgt Ion	Exp Ratio
74	100
42	61.9
44	5.3

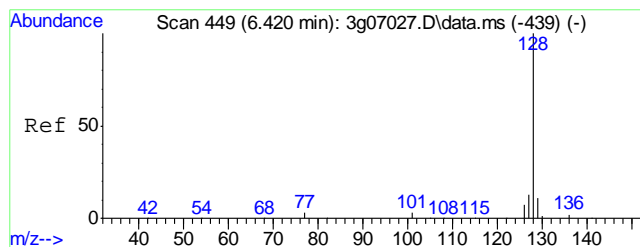


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 5.60 min

Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

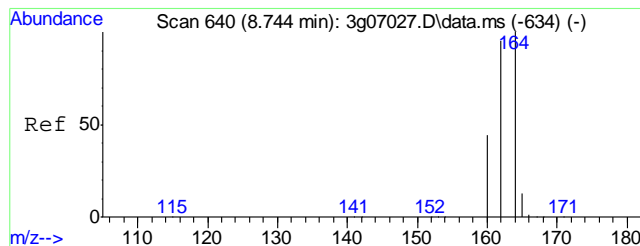
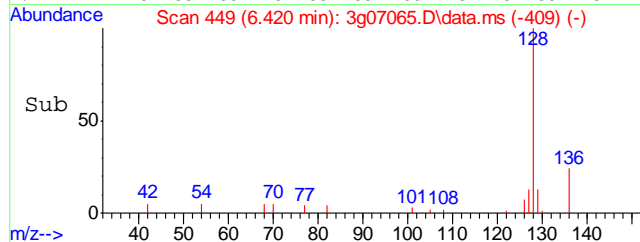
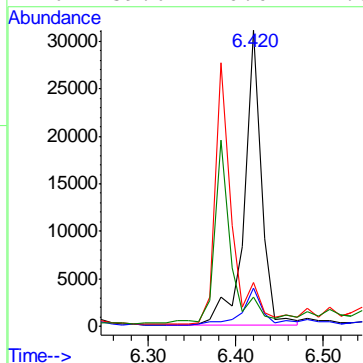
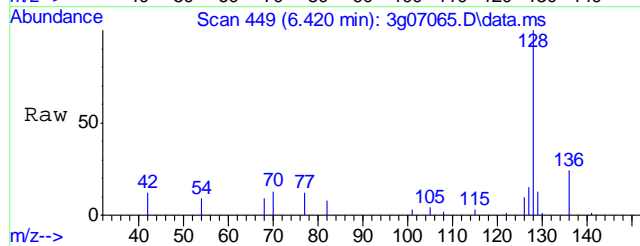
Tgt Ion	Exp Ratio
70	100
101	12.8
42	56.0
130	26.0





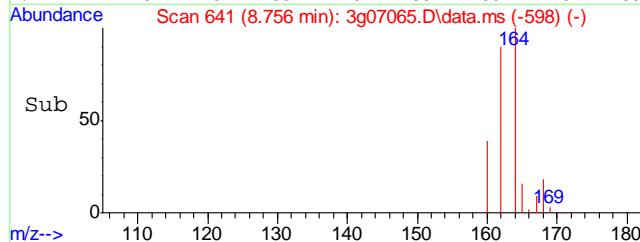
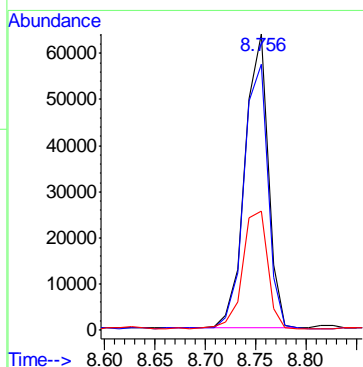
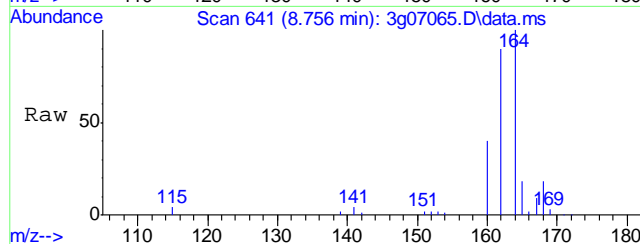
#5
Naphthalene
Concen: 0.67 ug/mL
RT: 6.420 min Scan# 449
Delta R.T. -0.000 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

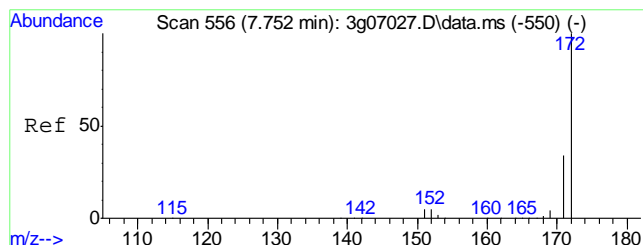
Tgt Ion	Ratio	Lower	Upper
128	100		
129	17.1	0.0	30.9
127	87.8	0.0	32.7#
126	59.6	0.0	27.3#



#6
Acenaphthene-d10
Concen: 4.00 ug/mL
RT: 8.756 min Scan# 641
Delta R.T. 0.012 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

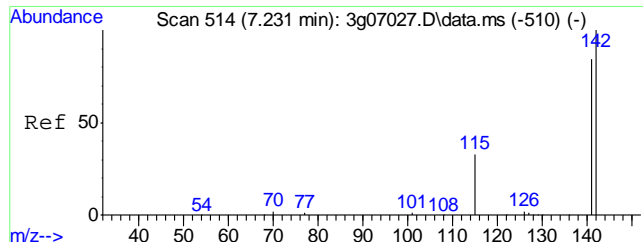
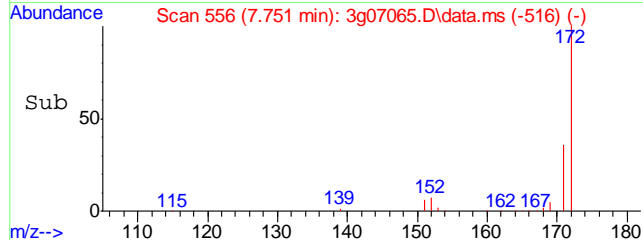
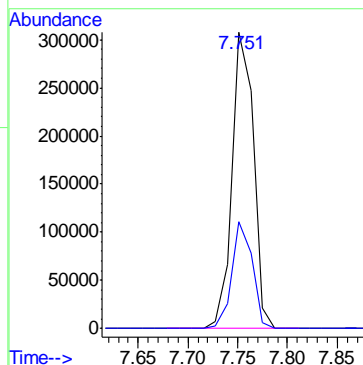
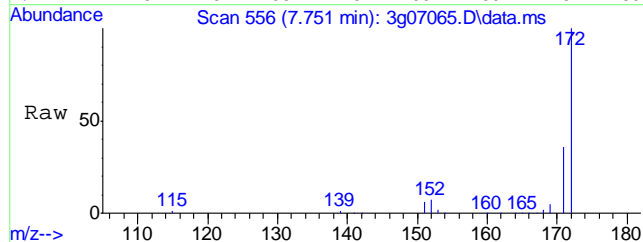
Tgt Ion	Ratio	Lower	Upper
164	100		
162	93.4	72.3	112.3
160	44.0	21.6	61.6





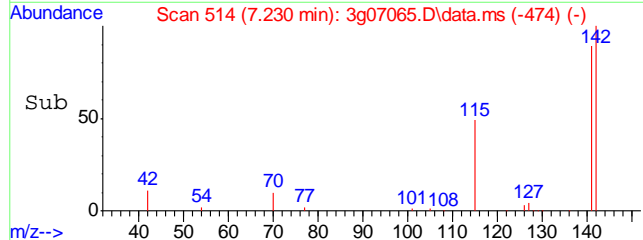
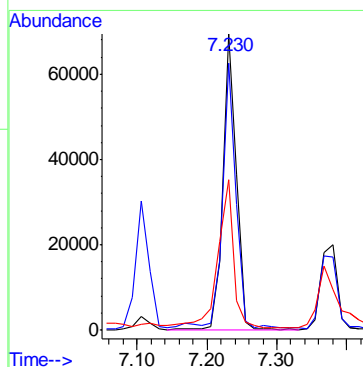
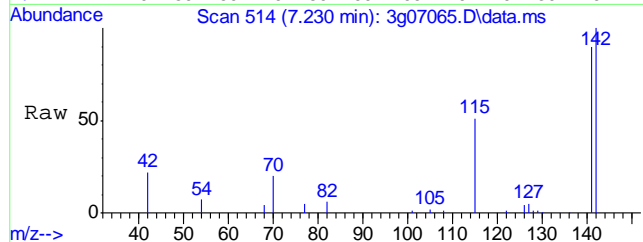
#7
2-Fluorobiphenyl
Concen: 11.36 ug/mL
RT: 7.751 min Scan# 556
Delta R.T. -0.000 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

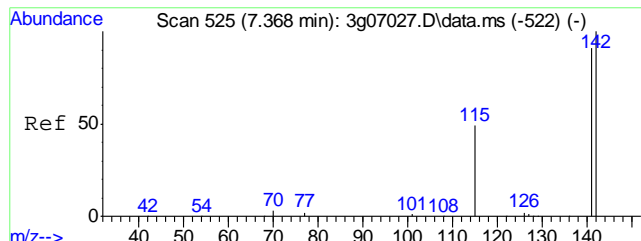
Tgt Ion	Ratio	Lower	Upper
172	100		
171	34.4	13.1	53.1



#8
2-Methylnaphthalene
Concen: 2.55 ug/mL
RT: 7.230 min Scan# 514
Delta R.T. -0.000 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

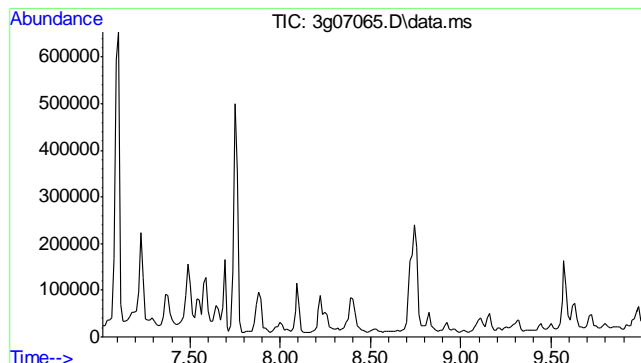
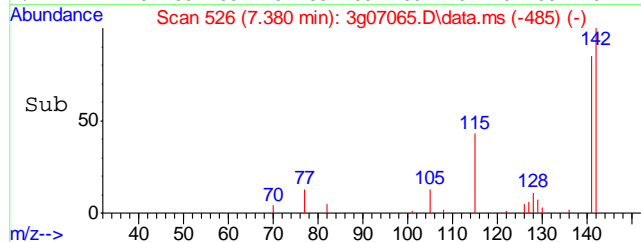
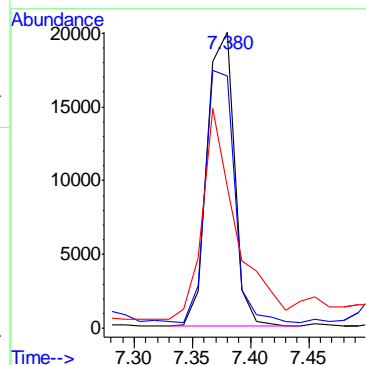
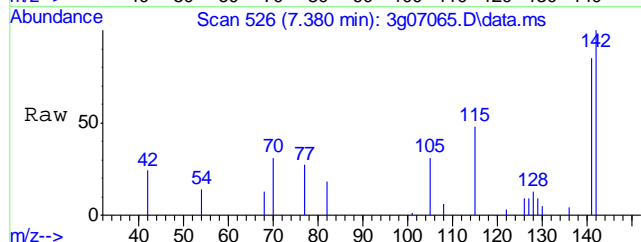
Tgt Ion	Ratio	Lower	Upper
142	100		
141	91.6	62.1	102.1
115	57.5	16.6	56.6#





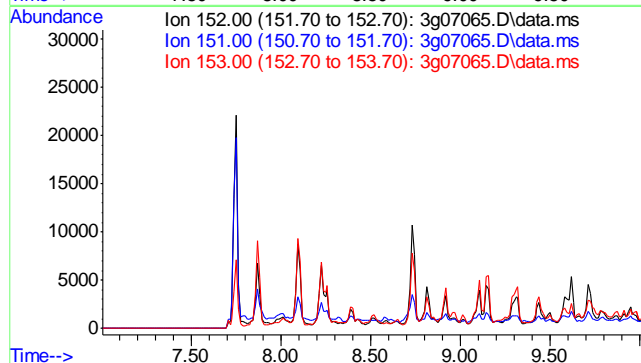
#9
1-Methylnaphthalene
Concen: 0.90 ug/mL
RT: 7.380 min Scan# 526
Delta R.T. 0.012 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

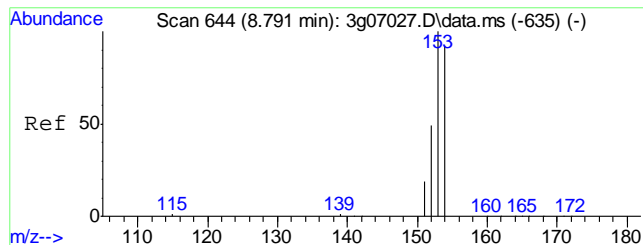
Tgt Ion: 142 Resp: 32383
Ion Ratio Lower Upper
142 100
141 92.6 67.8 101.6
115 87.7 30.6 45.8#



#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 8.51 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

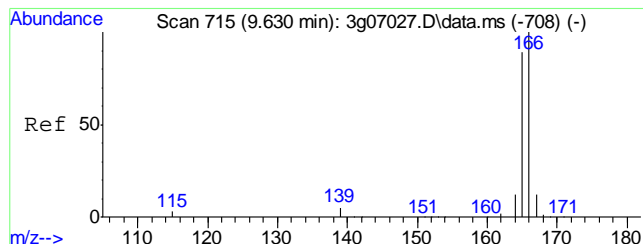
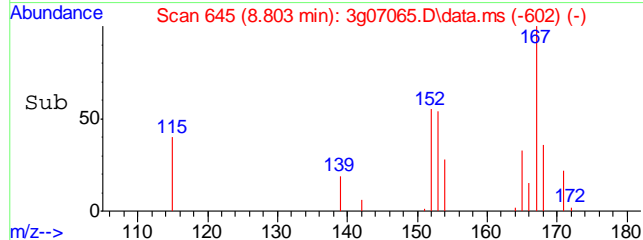
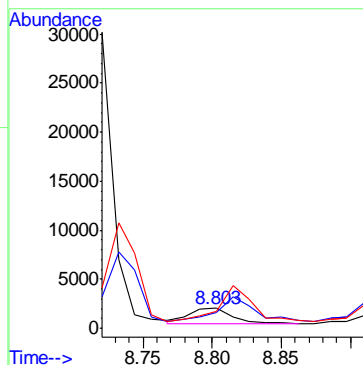
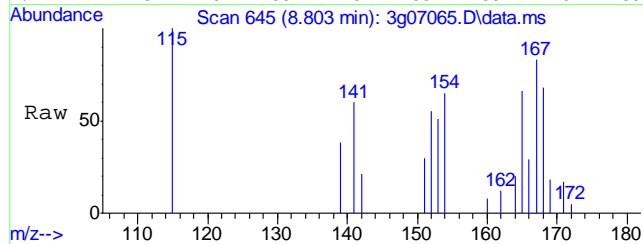
Tgt Ion: 152
Sig Exp Ratio
152 100
151 19.0
153 13.1





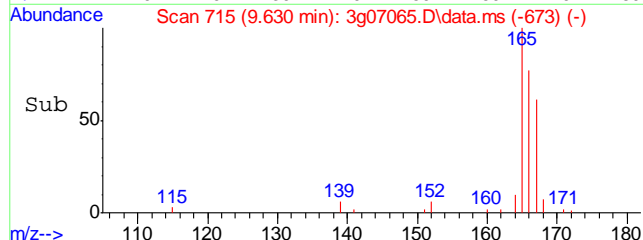
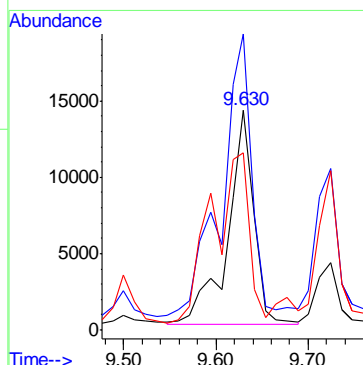
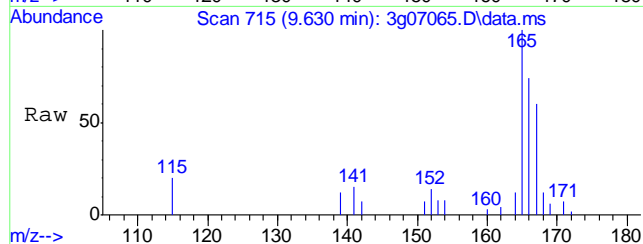
#11
Acenaphthene
Concen: 0.11 ug/mL
RT: 8.803 min Scan# 645
Delta R.T. 0.012 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

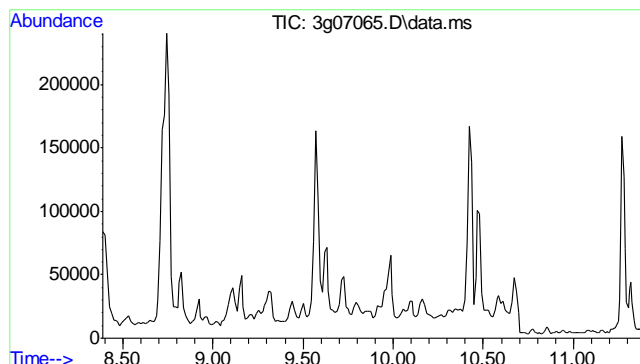
Tgt Ion:154 Resp: 3486
Ion Ratio Lower Upper
154 100
153 144.2 82.6 122.6#
152 202.9 28.6 68.6#



#12
Fluorene
Concen: 0.78 ug/mL
RT: 9.630 min Scan# 715
Delta R.T. -0.000 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

Tgt Ion:166 Resp: 27656
Ion Ratio Lower Upper
166 100
165 153.5 70.3 110.3#
167 114.2 0.0 32.1#

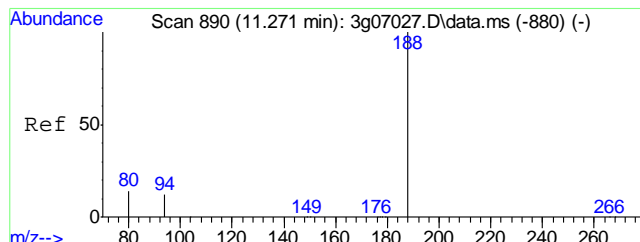
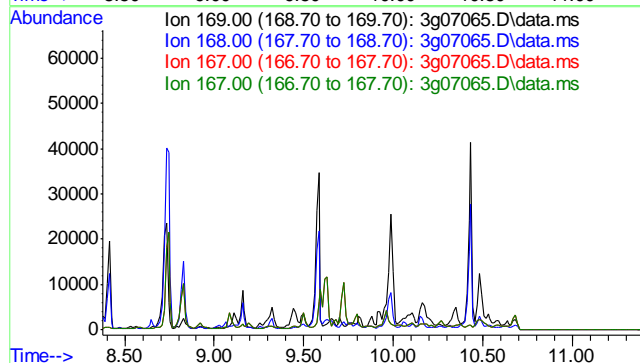




#13
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 9.88 min

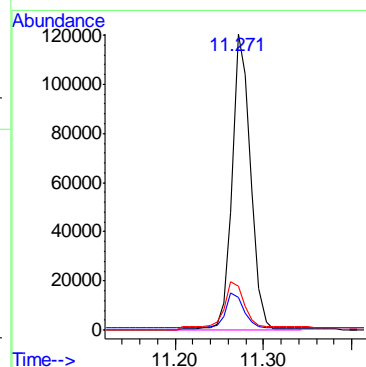
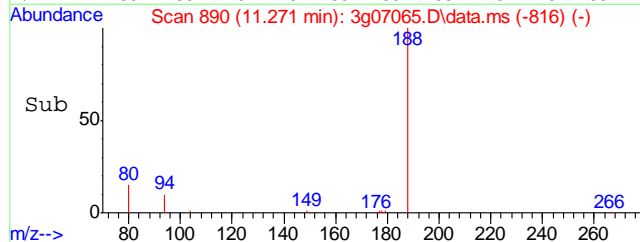
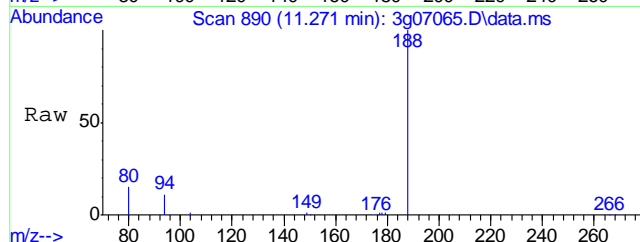
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

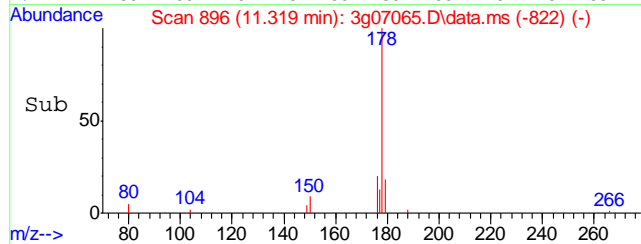
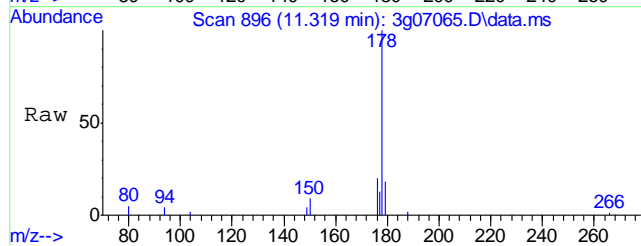
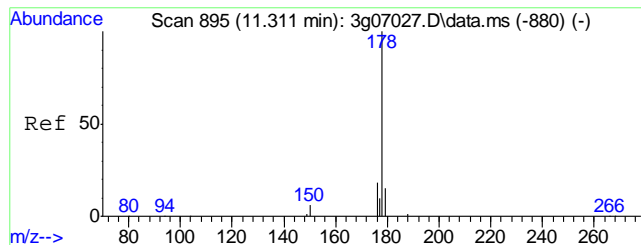
Tgt Ion: 169
Sig Exp Ratio
169 100
168 60.6
167 32.6
167 32.6



#14
Phenanthrene-d10
Concen: 4.00 ug/mL
RT: 11.271 min Scan# 890
Delta R.T. -0.000 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

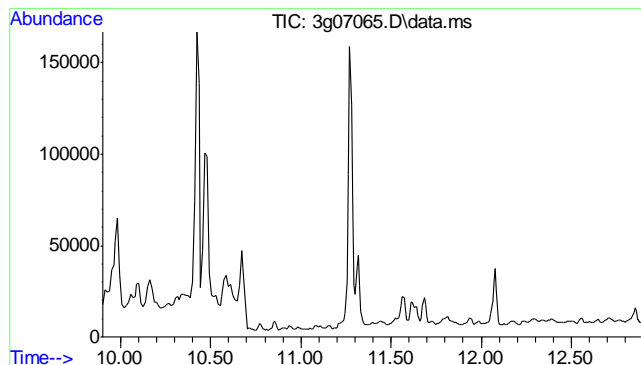
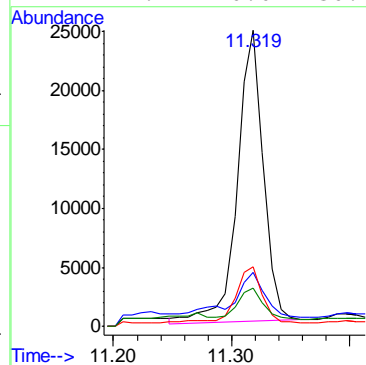
Tgt Ion: 188 Resp: 171525
Ion Ratio Lower Upper
188 100
94 11.3 0.0 35.2
80 20.2 0.0 37.6





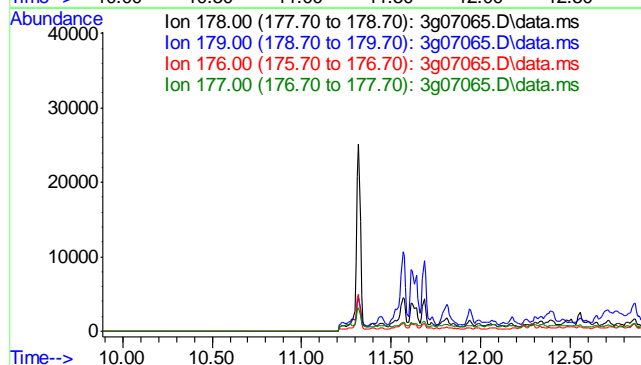
#15
Phenanthrene
Concen: 0.58 ug/mL
RT: 11.319 min Scan# 896
Delta R.T. 0.008 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

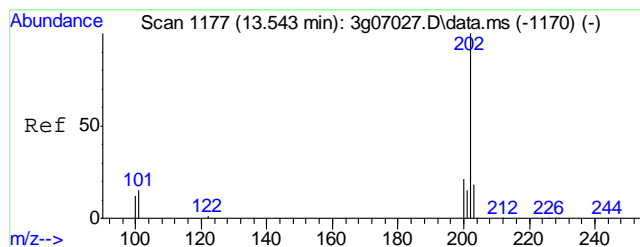
Tgt Ion: 178	Resp: 38382
Ion Ratio	Lower Upper
178	100
179	25.8 0.0 35.3
176	23.3 0.0 38.5
177	12.4 0.0 30.2



#16
Anthracene
Concen: N.D. ug/mL
Expected RT: 11.39 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

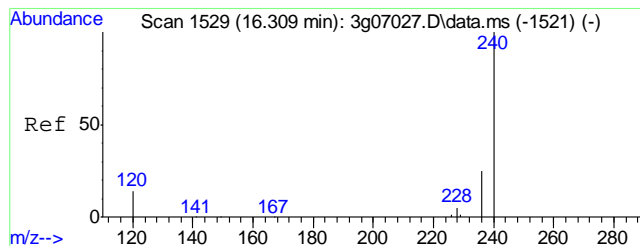
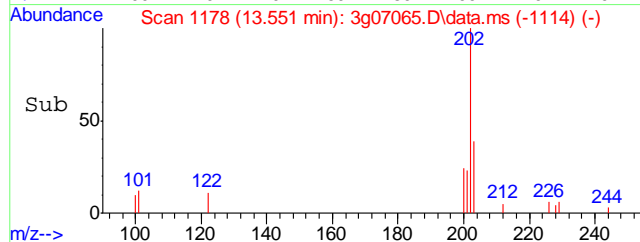
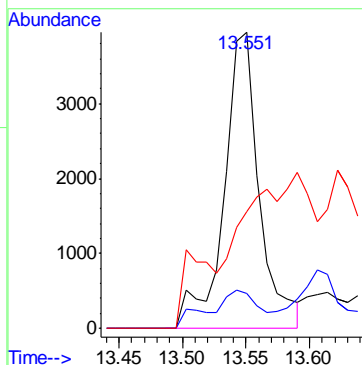
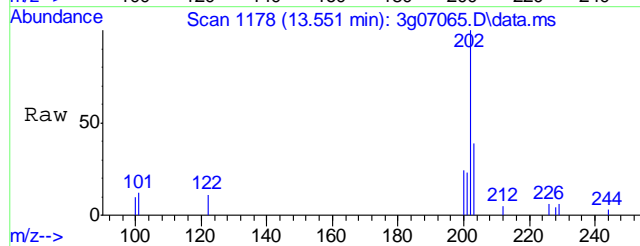
Tgt Ion: 178
Sig Exp Ratio
178 100
179 15.2
176 17.6
177 8.7





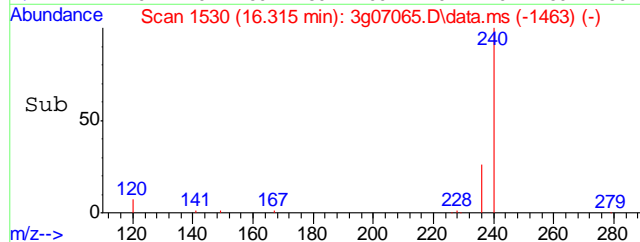
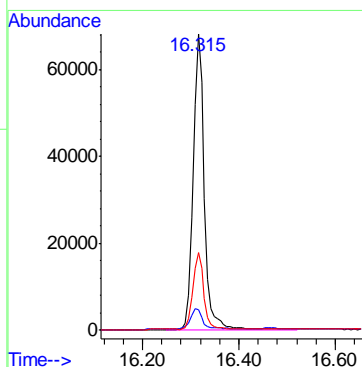
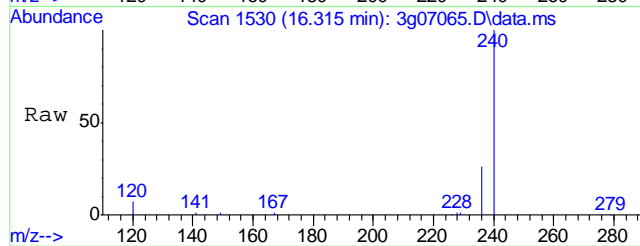
#17
Fluoranthene
Concen: 0.14 ug/mL
RT: 13.551 min Scan# 1178
Delta R.T. 0.008 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

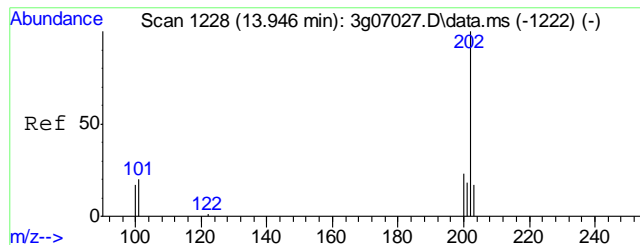
Tgt Ion	Ratio	Lower	Upper
202	100		
101	17.7	0.0	37.5
203	22.2	0.0	37.3



#18
Chrysene-d12
Concen: 4.00 ug/mL
RT: 16.315 min Scan# 1530
Delta R.T. 0.006 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

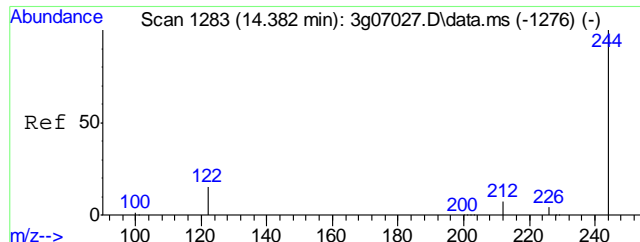
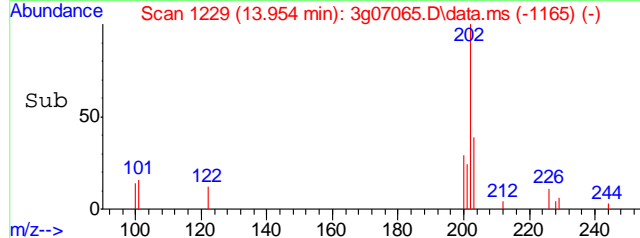
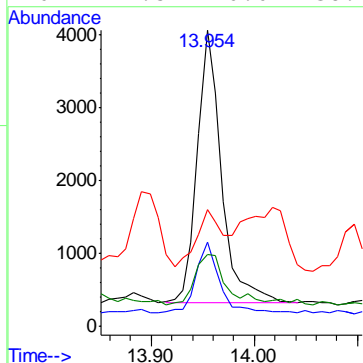
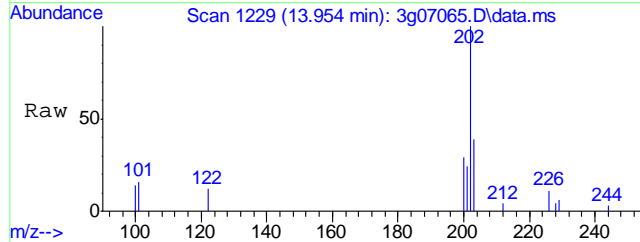
Tgt Ion	Ratio	Lower	Upper
240	100		
120	8.3	0.0	37.7
236	25.7	4.9	44.9





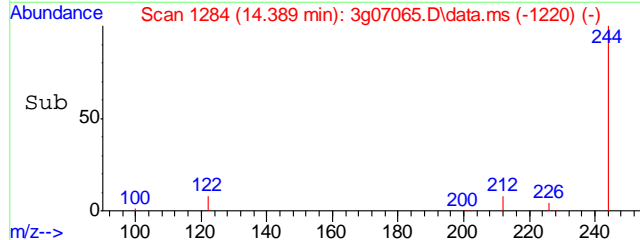
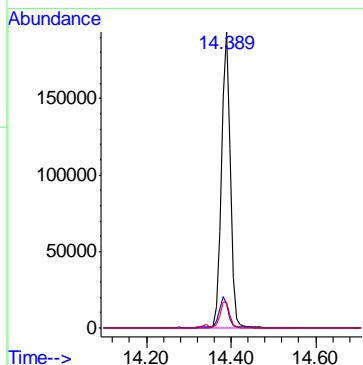
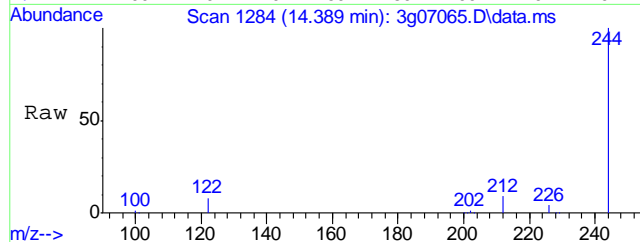
#19
Pyrene
Concen: 0.15 ug/mL
RT: 13.954 min Scan# 1229
Delta R.T. 0.008 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

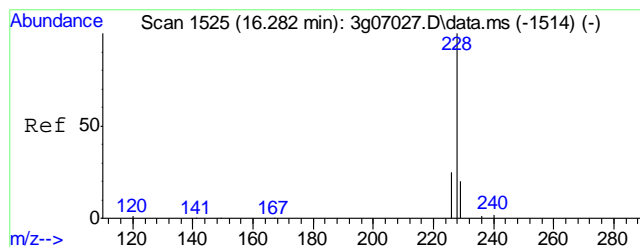
Tgt Ion:	202	Resp:	6029
Ion Ratio	Lower	Upper	
202	100		
200	24.8	1.9	41.9
203	14.8	0.0	37.5
201	24.5	0.0	38.1



#20
Terphenyl-d14
Concen: 13.05 ug/mL
RT: 14.389 min Scan# 1284
Delta R.T. 0.008 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

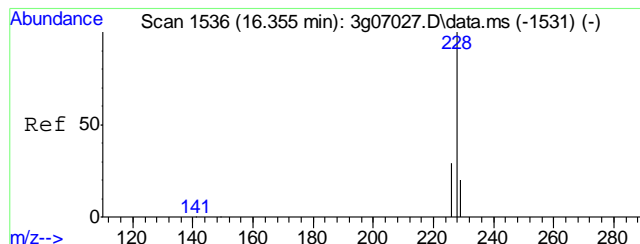
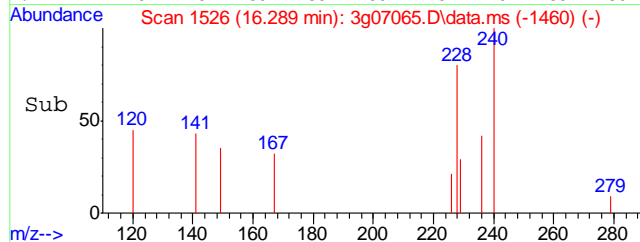
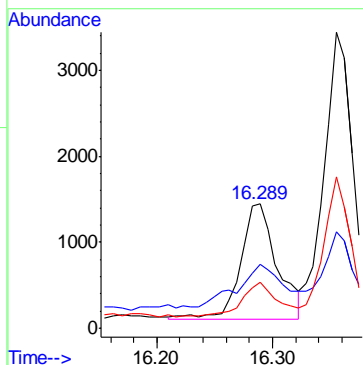
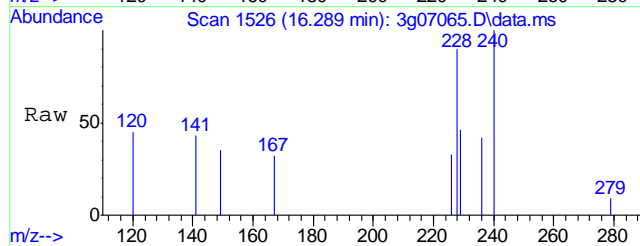
Tgt Ion:	244	Resp:	279264
Ion Ratio	Lower	Upper	
244	100		
122	10.3	0.7	40.7
212	9.2	0.0	27.5





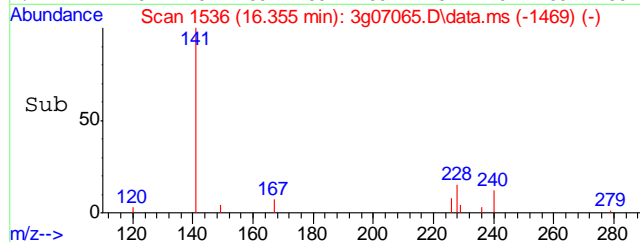
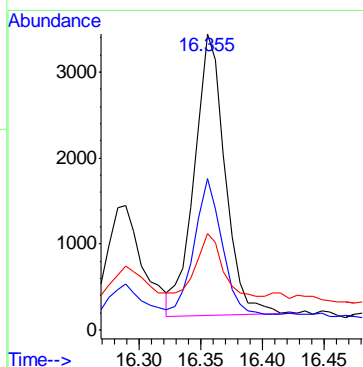
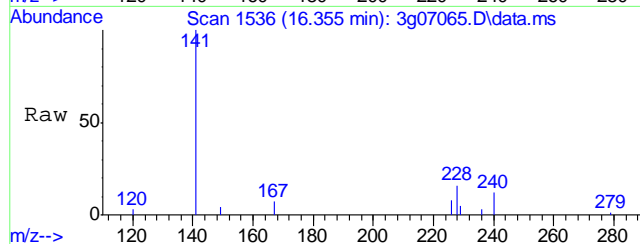
#21
Benzo(a)anthracene
Concen: 0.10 ug/mL m
RT: 16.289 min Scan# 1526
Delta R.T. 0.006 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

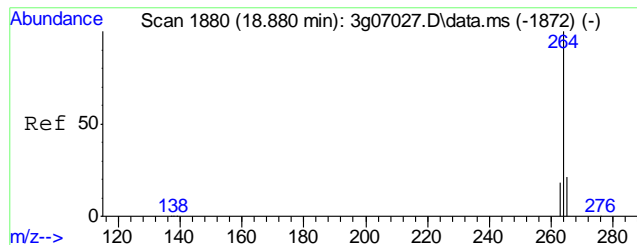
Tgt Ion	Ratio	Lower	Upper
228	100		
229	40.2	0.0	39.5#
226	85.2	5.6	45.6#



#22
Chrysene
Concen: 0.15 ug/mL
RT: 16.355 min Scan# 1536
Delta R.T. -0.000 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

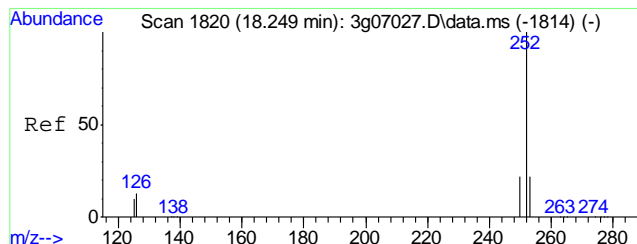
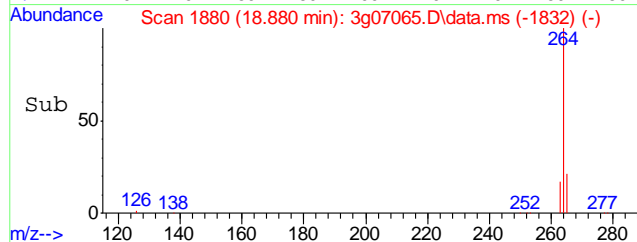
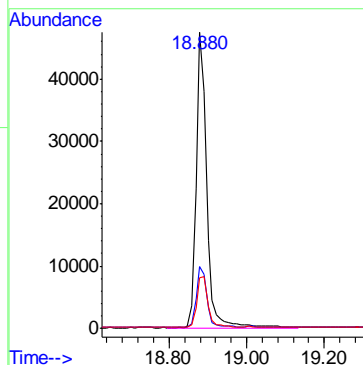
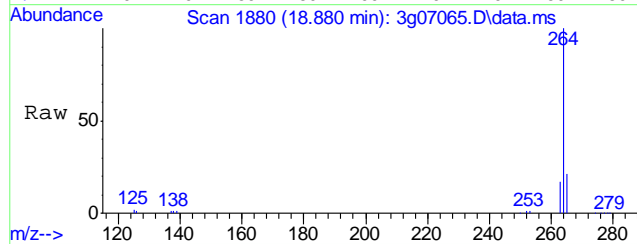
Tgt Ion	Ratio	Lower	Upper
228	100		
226	43.7	7.6	47.6
229	20.7	0.0	39.2





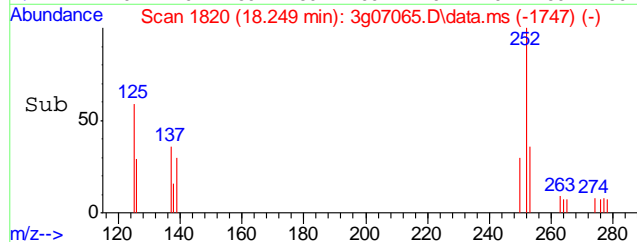
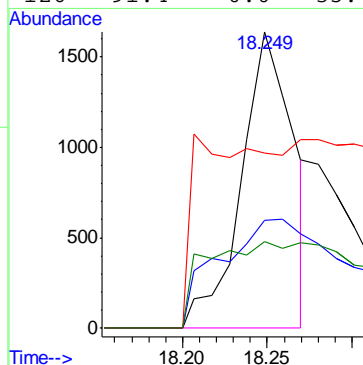
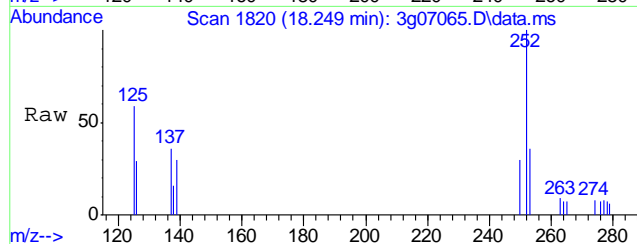
#23
Perylene-d12
Concen: 4.00 ug/mL
RT: 18.880 min Scan# 1880
Delta R.T. -0.000 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

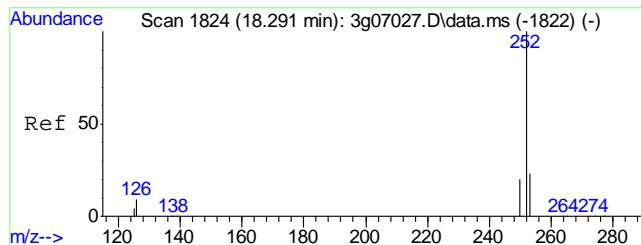
Tgt Ion:	264	Resp:	88950
Ion Ratio	Lower	Upper	
264	100		
265	20.8	1.1	41.1
263	18.2	0.0	38.8



#24
Benzo(b)fluoranthene
Concen: 0.14 ug/mL m
RT: 18.249 min Scan# 1820
Delta R.T. -0.000 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

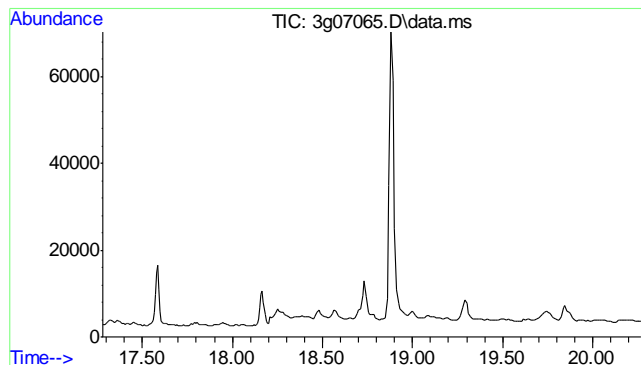
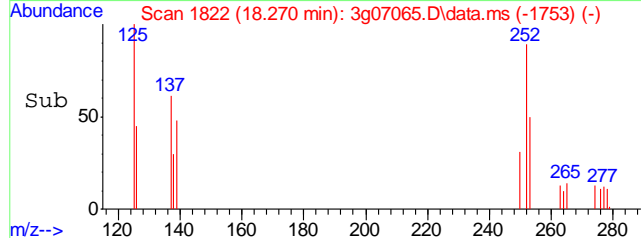
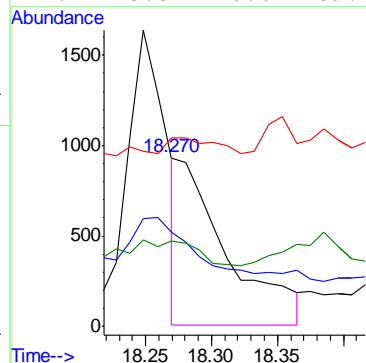
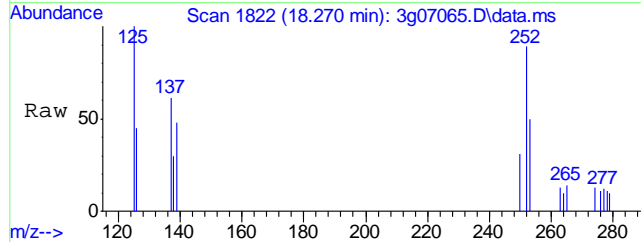
Tgt Ion:	252	Resp:	3203
Ion Ratio	Lower	Upper	
252	100		
253	128.2	1.6	41.6#
125	47.8	0.0	31.4#
126	91.4	0.0	35.4#





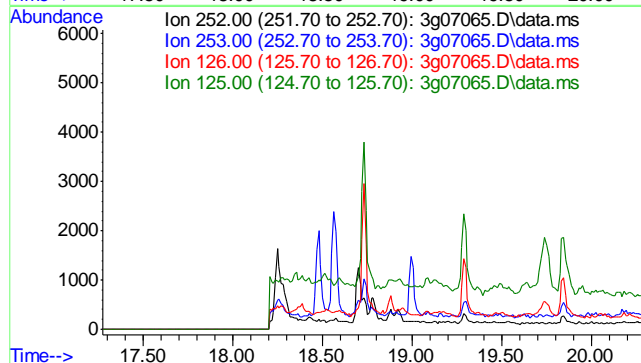
#25
Benzo(k)fluoranthene
Concen: 0.10 ug/mL m
RT: 18.270 min Scan# 1822
Delta R.T. -0.020 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

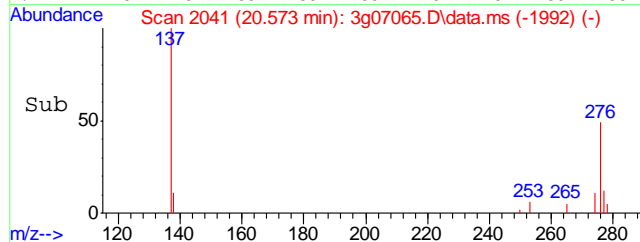
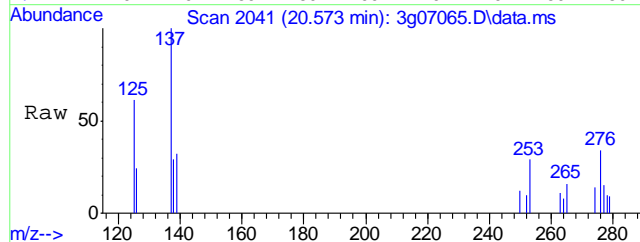
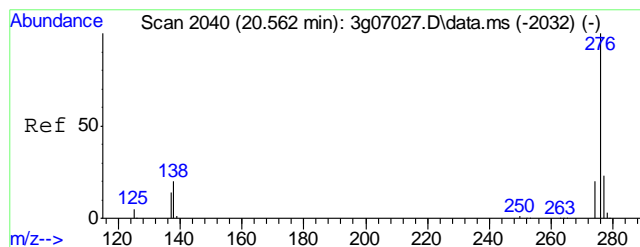
Tgt Ion: 252 Resp: 2333
Ion Ratio Lower Upper
252 100
253 176.0 2.7 42.7#
125 65.6 0.0 33.3#
126 125.5 0.0 39.8#



#26
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 18.77 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

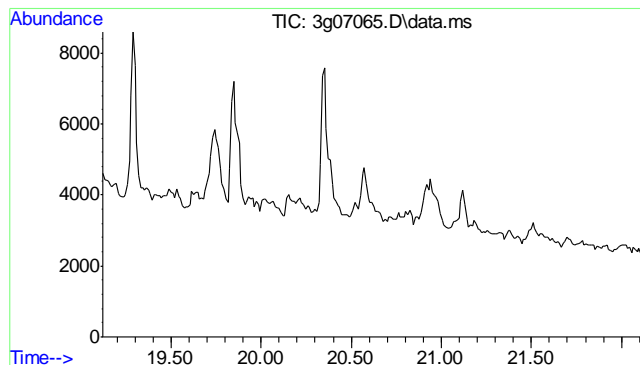
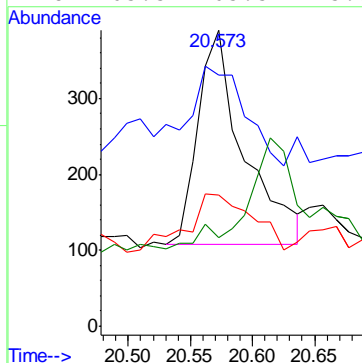
Tgt Ion: 252
Sig Exp Ratio
252 100
253 21.7
126 17.6
125 13.5





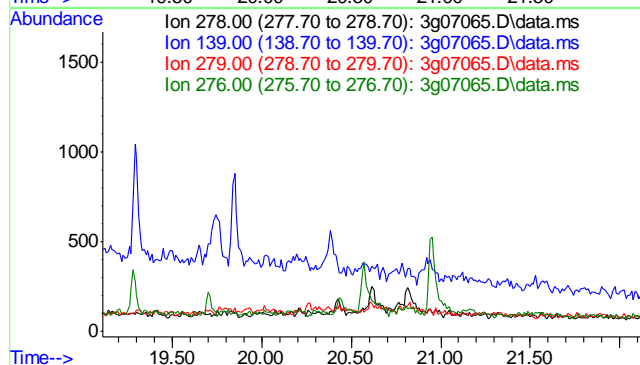
#27
 Indeno(1,2,3-cd)pyrene
 Concen: 0.10 ug/mL
 RT: 20.573 min Scan# 2041
 Delta R.T. 0.010 min
 Lab File: 3g07065.D
 Acq: 29 Nov 11 3:36 am

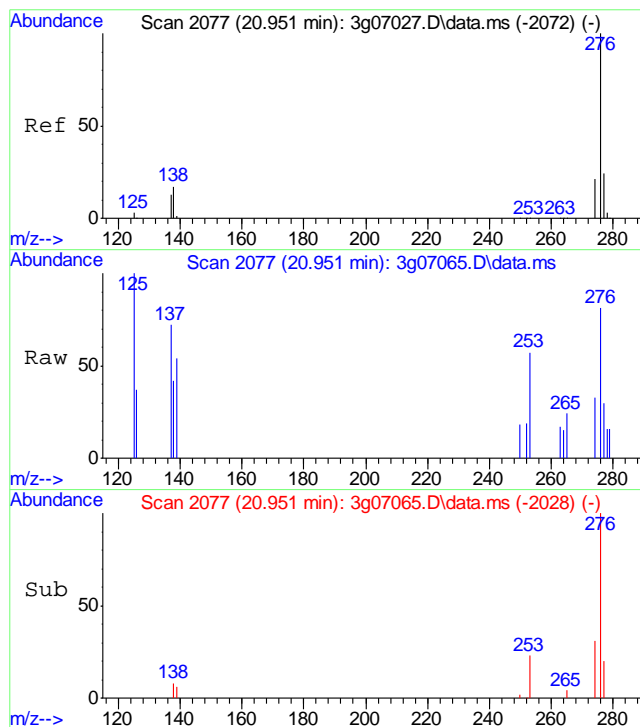
Tgt Ion	Ratio	Lower	Upper
276	100		
138	52.6	0.7	40.7#
277	39.2	18.7	58.7
278	105.5	105.5	145.5



#28
 Dibenzo(a,h)anthracene
 Concen: N.D. ug/mL
 Expected RT: 20.61 min
 Lab File: 3g07065.D
 Acq: 29 Nov 11 3:36 am

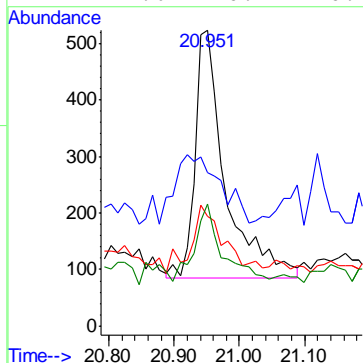
Tgt Ion	Sig	Exp Ratio
278	100	
139	18.3	
279	23.4	
276	124.2	





#29
Benzo(g,h,i)perylene
Concen: 0.11 ug/mL
RT: 20.951 min Scan# 2077
Delta R.T. 0.010 min
Lab File: 3g07065.D
Acq: 29 Nov 11 3:36 am

Tgt Ion: 276	Resp: 1419
Ion Ratio	Lower Upper
276 100	
138 44.3	1.4 41.4#
277 31.1	2.6 42.6
274 27.6	0.4 40.4



8.1.1

8

GC Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D29577
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

D29577-1

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: D29577
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

D29577-1

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: D29577
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

D29577-1

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\GB13981.D\FID1A.CH Vial: 5
Signal #2 : Y:\1\DATA\112111\GB13981.D\FID2B.CH
Acq On : 21 Nov 2011 5:57 pm Operator: StephK
Sample : D29577-1, 50X Inst : GC/MS Ins
Misc : GC2426,GGB794,5.080,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Nov 22 08:11:38 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 16:55:39 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

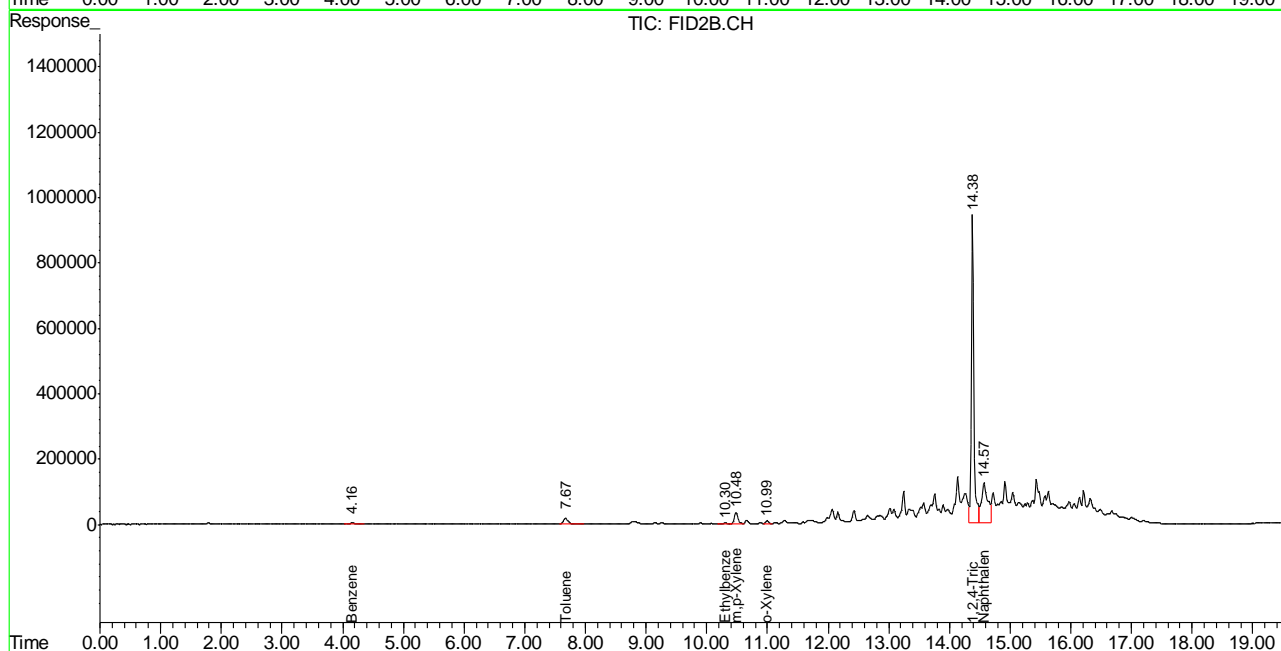
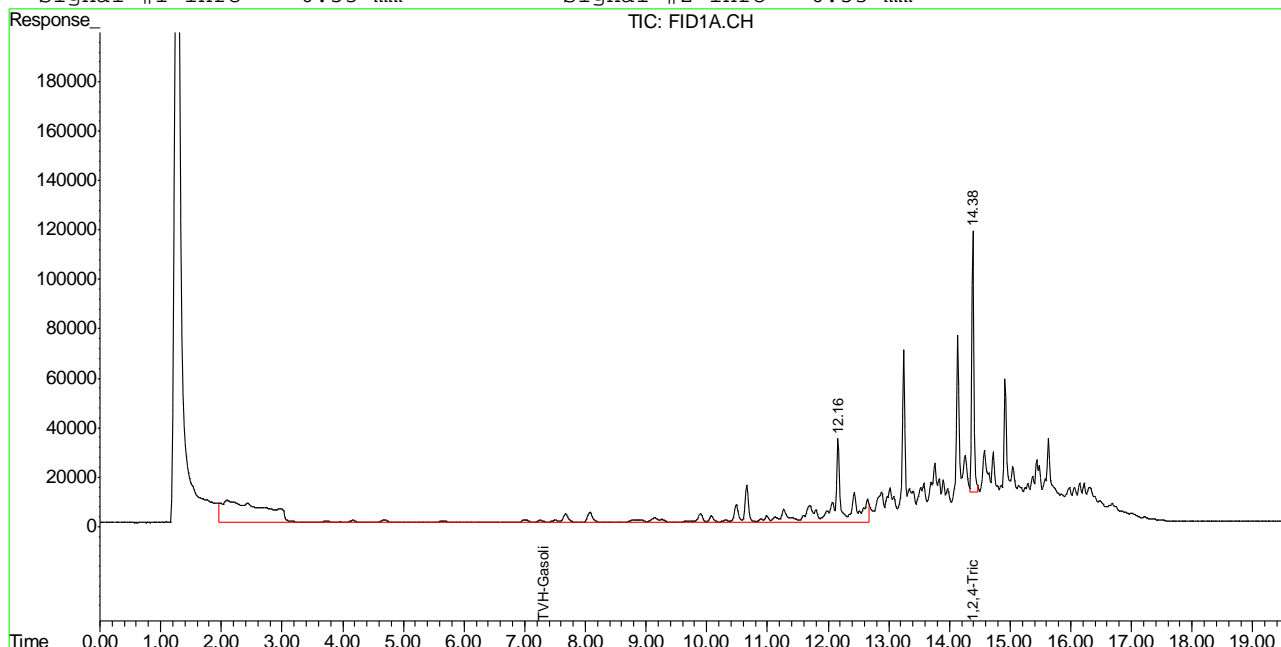
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.38	2537529	86.738 %	m
10) S	1,2,4-Trichlorobenzene (P)	14.38	25747914	112.026 %	
Target Compounds					
1) H	TVH-Gasoline	7.32	12434357	0.175 mg/L	
4) T	Methyl-t-butyl-ether	0.00	0	N.D. ug/L	d
5) T	Benzene	4.16	286647	0.501 ug/L	
6) T	Toluene	7.67	1080076	1.906 ug/L	
7) T	Ethylbenzene	10.30	197019	0.404 ug/L	
8) T	m,p-Xylene	10.48	1609472	2.452 ug/L	
9) T	o-Xylene	10.99	418367	0.608 ug/L	
11) T	Naphthalene	14.57	8545636	33.200 ug/L	

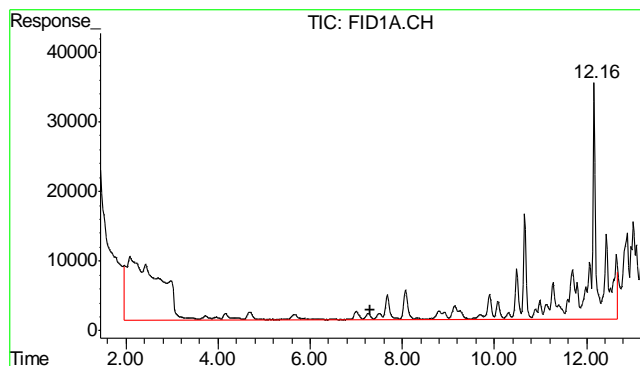
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\112111\GB13981.D\FID1A.CH Vial: 5
 Signal #2 : Y:\1\DATA\112111\GB13981.D\FID2B.CH
 Acq On : 21 Nov 2011 5:57 pm Operator: StephK
 Sample : D29577-1, 50X Inst : GC/MS Ins
 Misc : GC2426,GGB794,5.080,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Nov 22 8:16 2011 Quant Results File: TB791GB791SOIL.RES

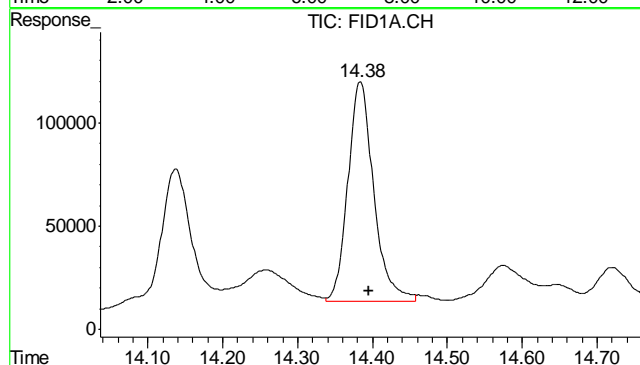
Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Mon Nov 21 16:55:39 2011
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

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

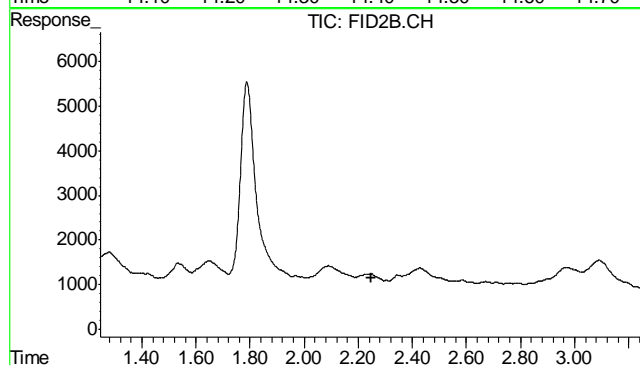




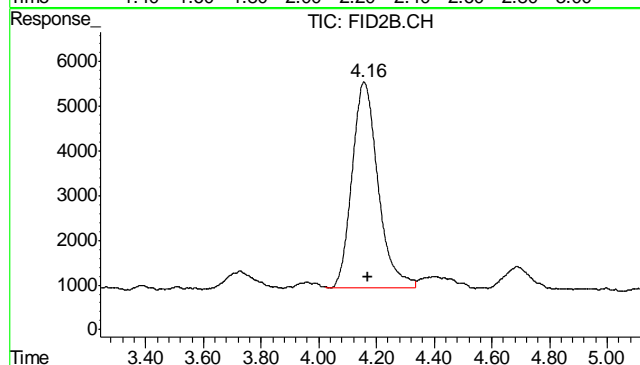
#1 TVH-Gasoline
 R.T.: 7.315 min
 Delta R.T.: 0.000 min
 Response: 12434357
 Conc: 0.17 mg/L m



#2 1,2,4-Trichlorobenzene
 R.T.: 14.383 min
 Delta R.T.: -0.012 min
 Response: 2537529
 Conc: 86.74 % m

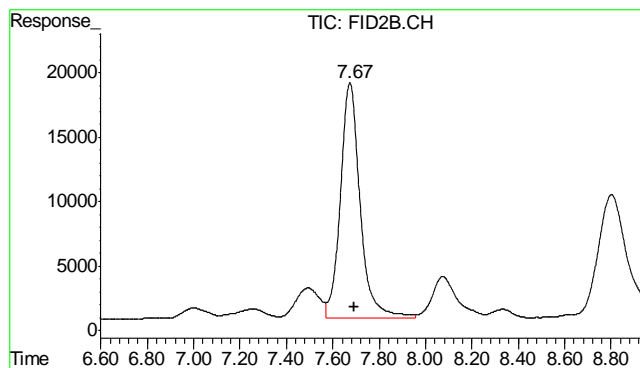


#4 Methyl-t-butyl-ether
 R.T.: 0.000 min
 Exp R.T.: 2.246 min
 Response: 0
 Conc: N.D.



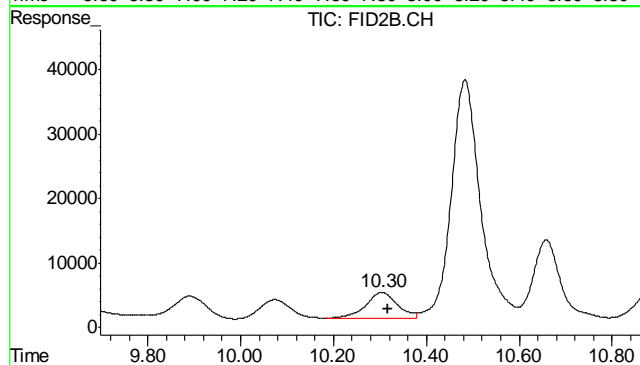
#5 Benzene
 R.T.: 4.157 min
 Delta R.T.: -0.014 min
 Response: 286647
 Conc: 0.50 ug/L

10.1.1
 10



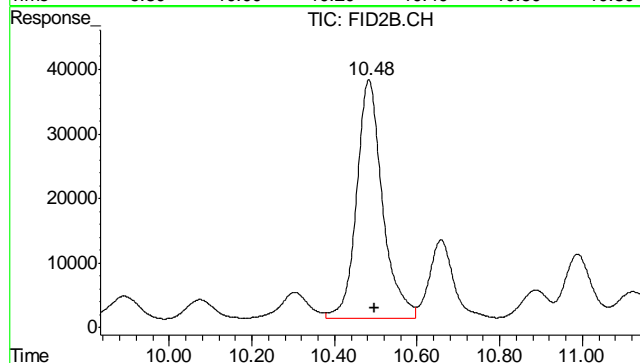
#6 Toluene

R.T.: 7.674 min
Delta R.T.: -0.020 min
Response: 1080076
Conc: 1.91 ug/L



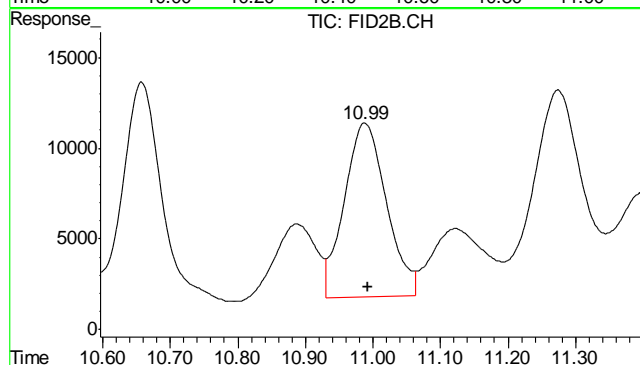
#7 Ethylbenzene

R.T.: 10.304 min
Delta R.T.: -0.014 min
Response: 197019
Conc: 0.40 ug/L



#8 m,p-Xylene

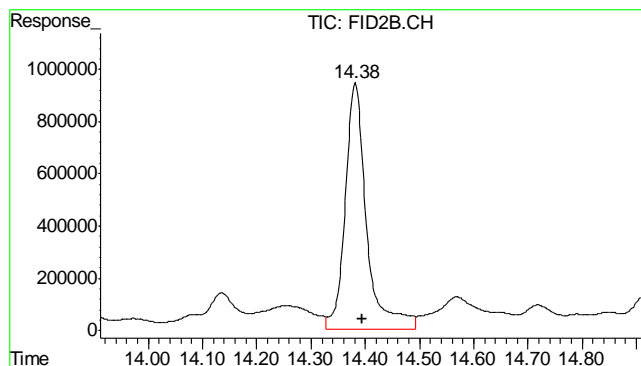
R.T.: 10.483 min
Delta R.T.: -0.015 min
Response: 1609472
Conc: 2.45 ug/L



#9 o-Xylene

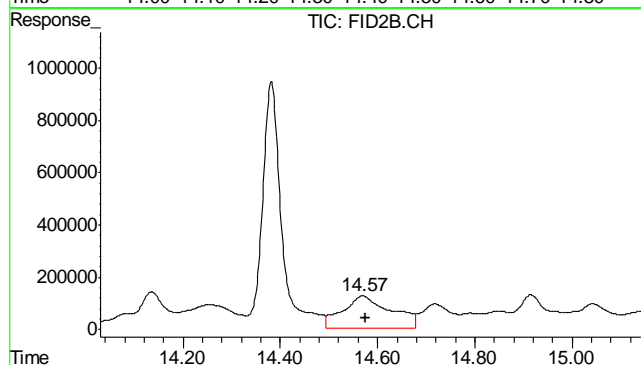
R.T.: 10.988 min
Delta R.T.: -0.004 min
Response: 418367
Conc: 0.61 ug/L

10.1.1 10



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

R.T.: 14.382 min
Delta R.T.: -0.012 min
Response: 25747914
Conc: 112.03 %



#11 Naphthalene

R.T.: 14.569 min
Delta R.T.: -0.006 min
Response: 8545636
Conc: 33.20 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

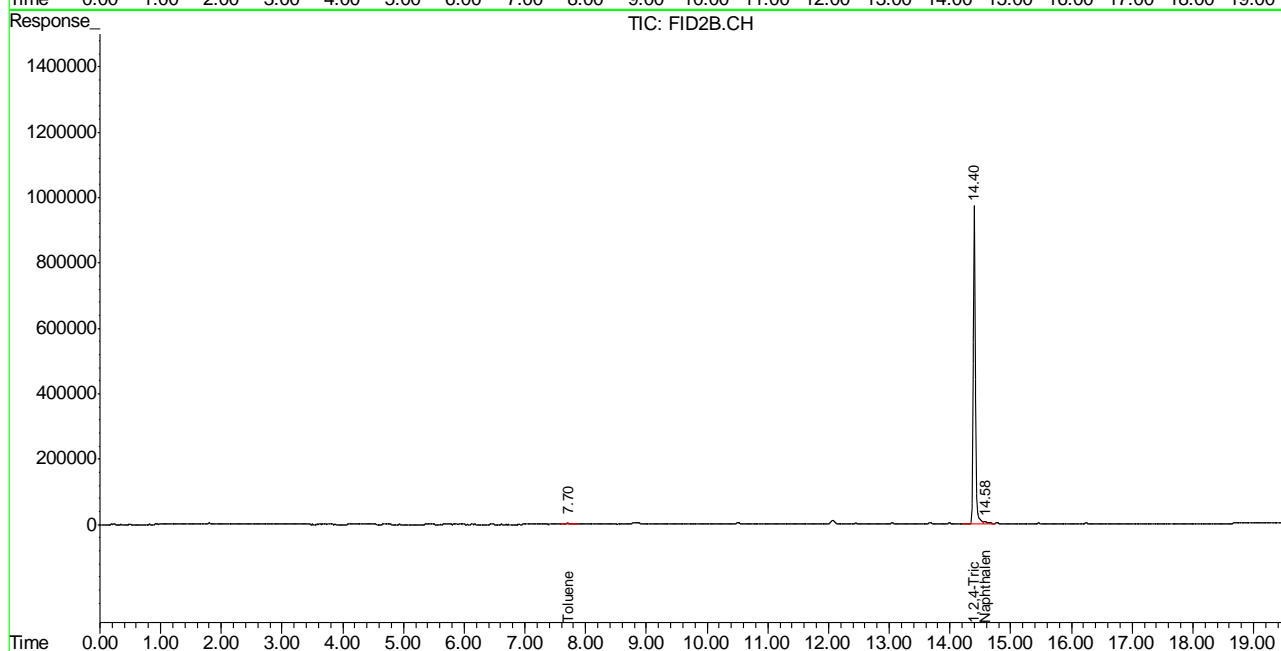
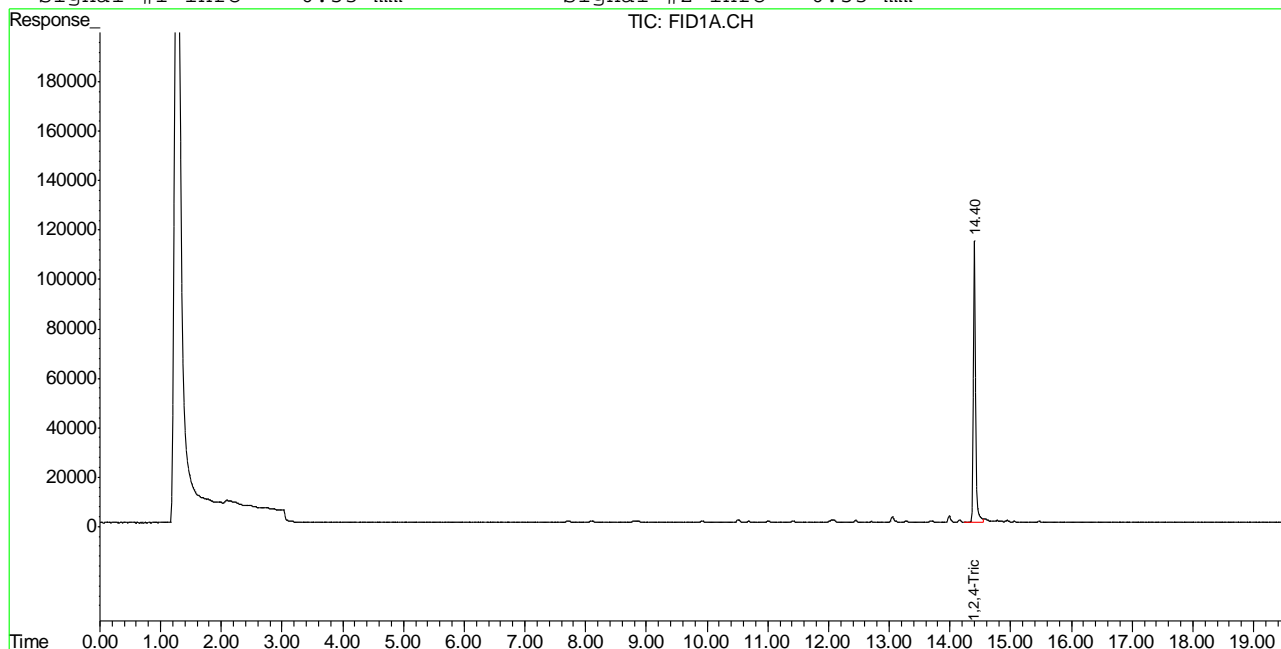
 (f)=RT Delta > 1/2 Window (m)=manual int.
 GB13979.D TB791GB791SOIL.M Tue Nov 22 08:23:29 2011 GC

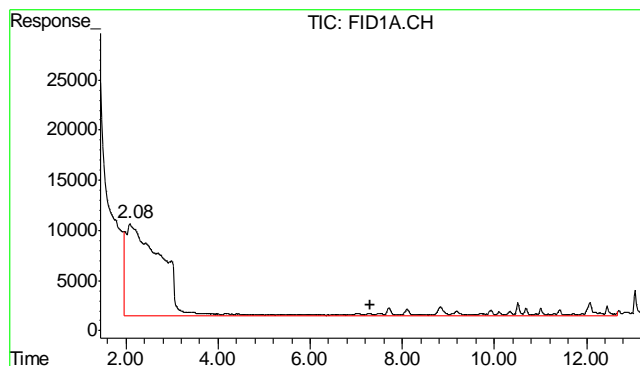
Quantitation Report (QT Reviewed)

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

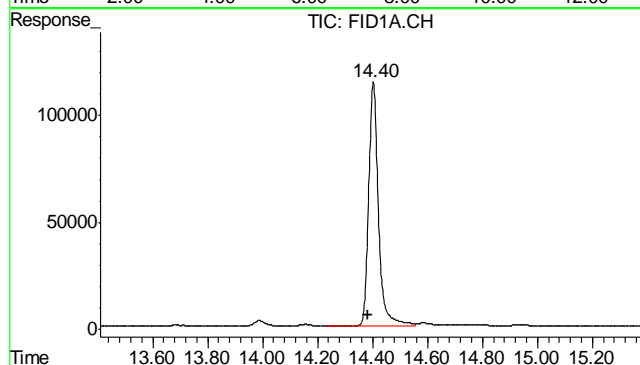
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





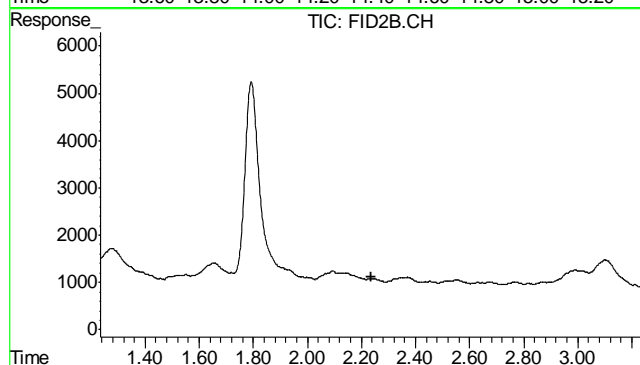
#1 TVH-Gasoline

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



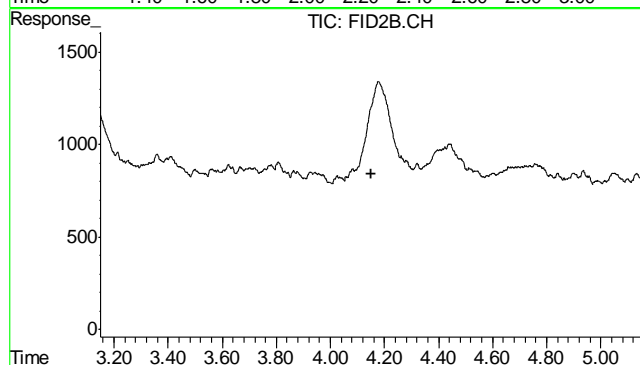
#2 1,2,4-Trichlorobenzene

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



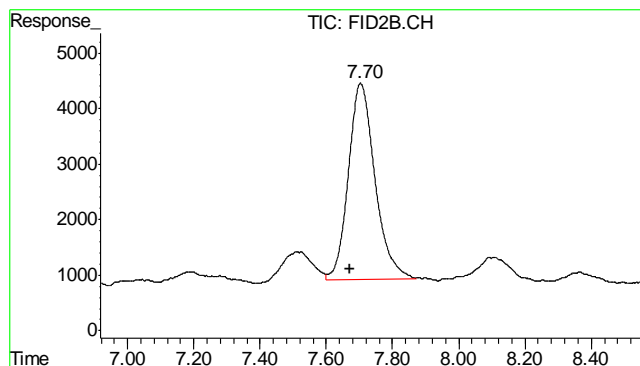
#4 Methyl-t-butyl-ether

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



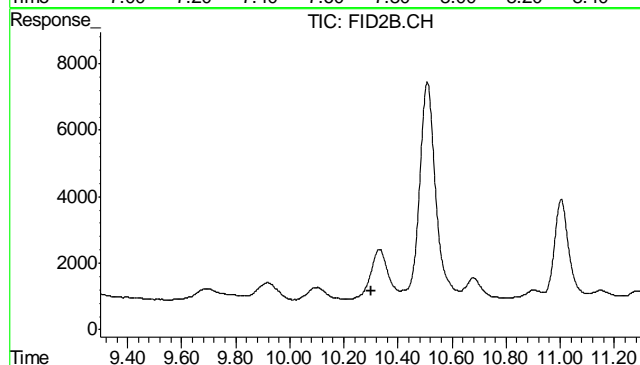
#5 Benzene

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



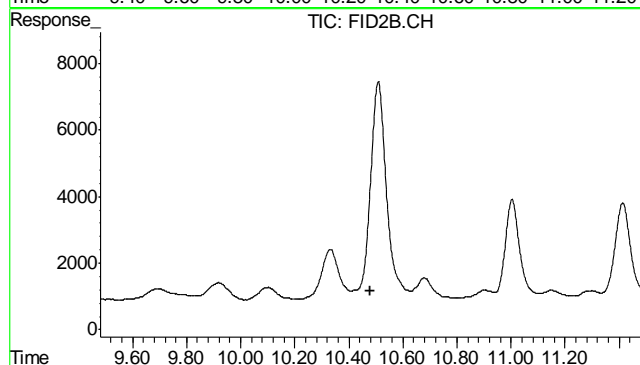
#6 Toluene

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



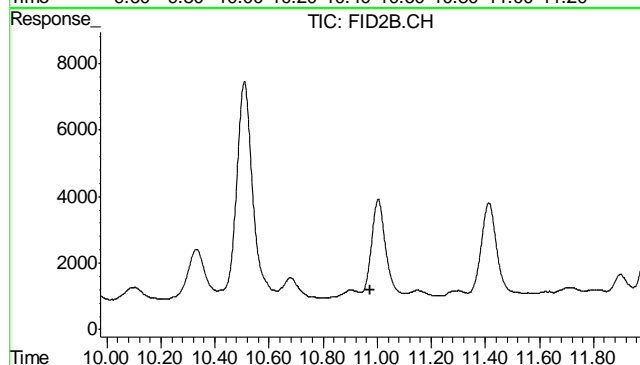
#7 Ethylbenzene

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



#8 m,p-Xylene

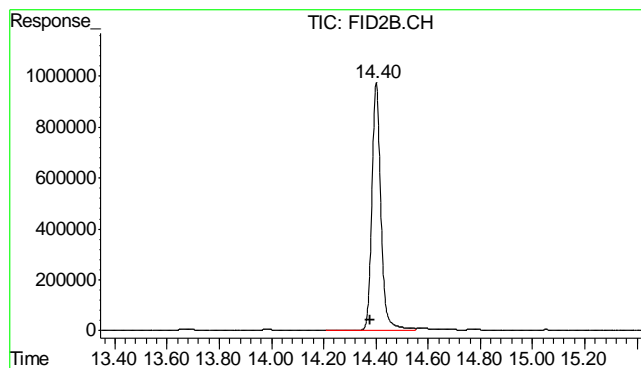
R.T.: 0.000 min
Exp R.T.: 10.480 min
Response: 0
Conc: N.D.



#9 o-Xylene

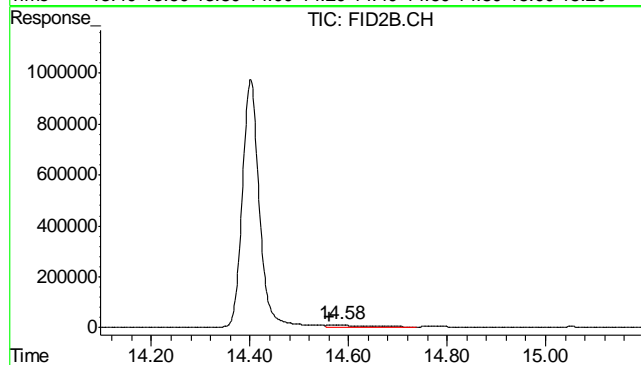
R.T.: 0.000 min
Exp R.T.: 10.976 min
Response: 0
Conc: N.D.

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: D29577
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4872-MB	F104530.D	1	11/18/11	CS	11/18/11	OP4872	GFI333

The QC reported here applies to the following samples:

Method: SW846-8015B

D29577-1

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	121% 61-142%

Blank Spike Summary

Job Number: D29577
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4872-BS	FI04531.D	1	11/18/11	CS	11/18/11	OP4872	GFI333

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

D29577-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	601	90	60-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	123%	61-142%

11.2.1
11

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D29577
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 297-17A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4872-MS	FI04532.D	1	11/18/11	CS	11/18/11	OP4872	GFI333
OP4872-MSD	FI04533.D	1	11/18/11	CS	11/18/11	OP4872	GFI333
D29575-1	FI04534.D	1	11/18/11	CS	11/18/11	OP4872	GFI333

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

D29577-1

CAS No.	Compound	D29575-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	29.4		796	623	75	663	80	6	24-157/35

CAS No.	Surrogate Recoveries	MS	MSD	D29575-1	Limits
84-15-1	o-Terphenyl	99%	97%	97%	61-142%

11.3.1
11

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data File : E:\DATA\FI111811\FI04536.D Vial: 9
Acq On : 18 Nov 2011 2:45 pm Operator: CHAVALIT
Sample : D29577-1 Inst : FID6
Misc : OP4872,GFI333,30.06,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 18 15:18:50 2011 Quant Results File: DF-GFI308.RES

Quant Method : C:\MSDCHEM\1\METHODS\DF-GFI308.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Mon Nov 14 09:02:05 2011
Response via : Initial Calibration
DataAcq Meth : FR_BASE2.M

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

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S O-Terphenyl	13.59	58601172	1053.238 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	11.79	376903683	5649.163 mg/L

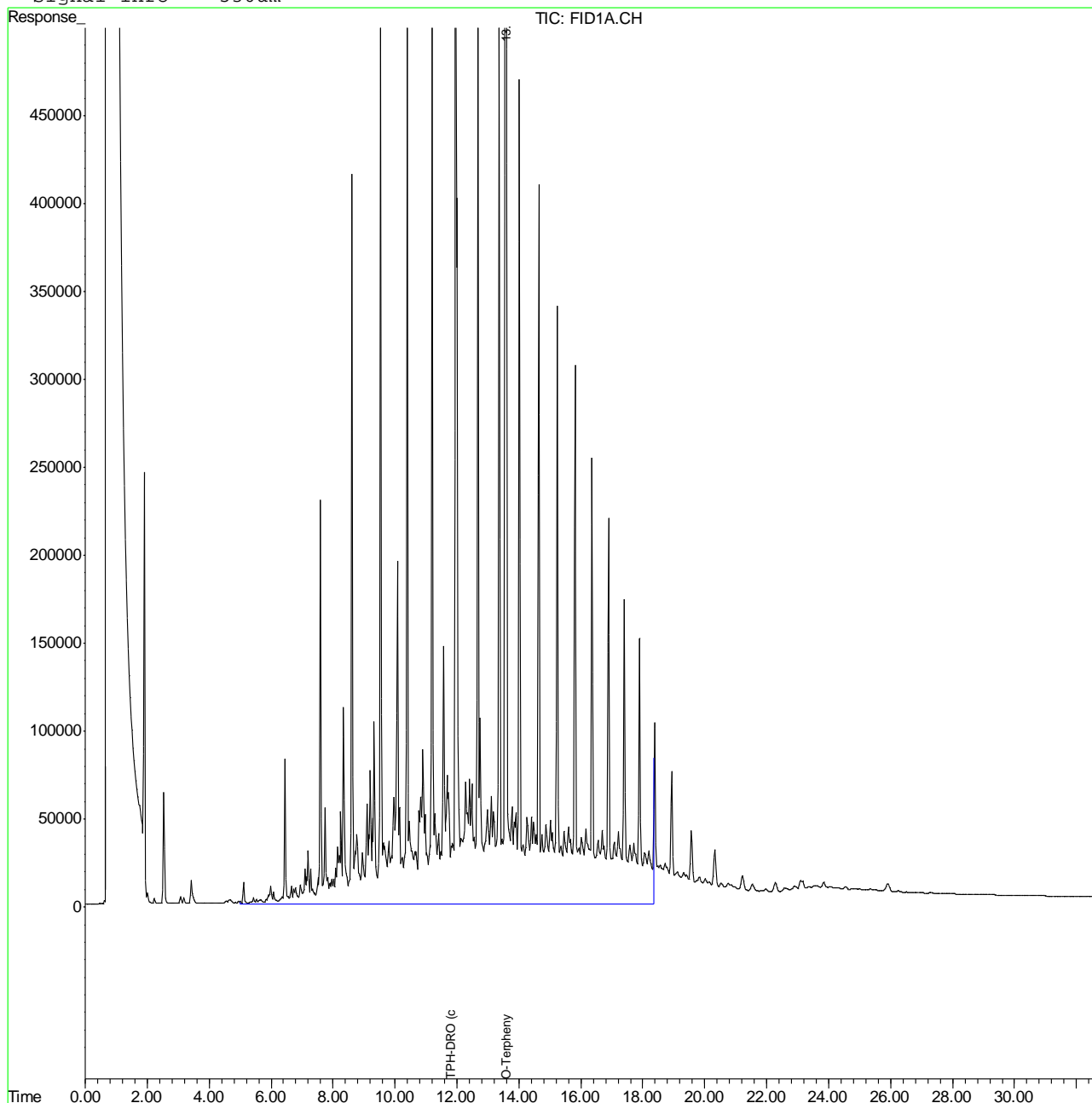
12.1.1
12

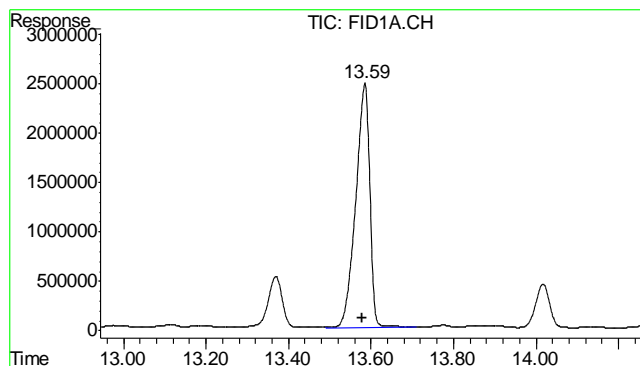
Quantitation Report (QT Reviewed)

Data File : E:\DATA\FI111811\FI04536.D Vial: 9
Acq On : 18 Nov 2011 2:45 pm Operator: CHAVALIT
Sample : D29577-1 Inst : FID6
Misc : OP4872,GFI333,30.06,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 18 15:20 2011 Quant Results File: DF-GFI308.RES

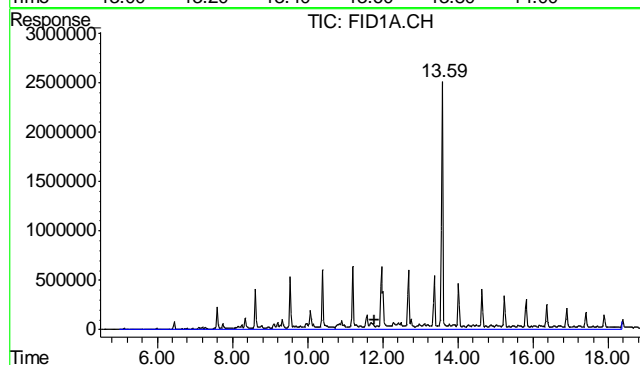
Quant Method : C:\MSDCHEM\1\METHODS\DF-GFI308.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Mon Nov 14 09:02:05 2011
Response via : Multiple Level Calibration
DataAcq Meth : FR_BASE2.M

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

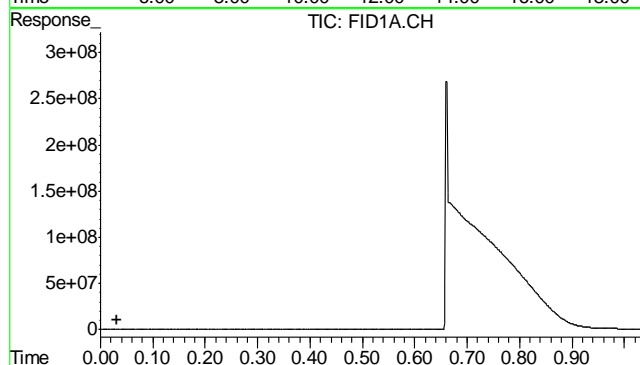




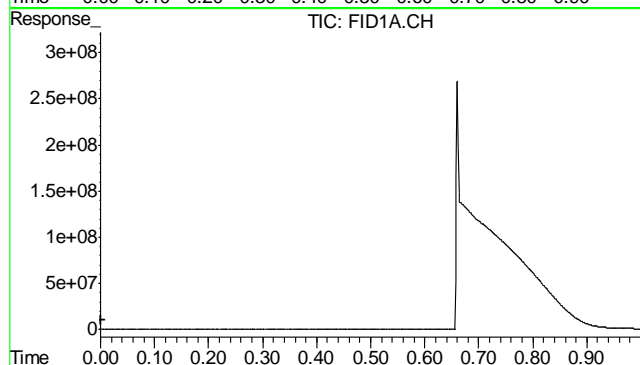
#1 O-Terphenyl
R.T.: 13.585 min
Delta R.T.: 0.005 min
Response: 58601172
Conc: 1053.24 mg/L m



#2 TPH-DRO (c10-c28)
R.T.: 11.790 min
Delta R.T.: 0.000 min
Response: 376903683
Conc: 5649.16 mg/L m

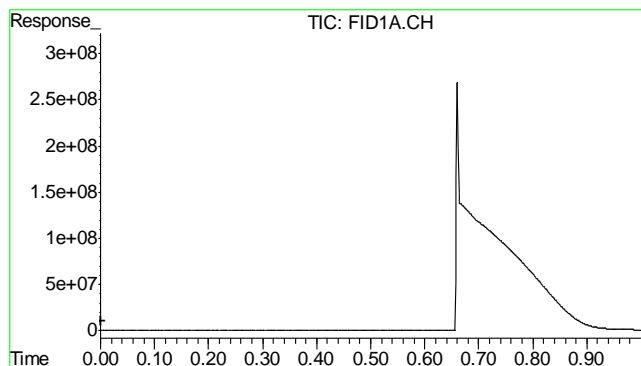


#9 5a-Androstane
R.T.: 0.000 min
Exp R.T.: 0.032 min
Response: 0
Conc: N.D.

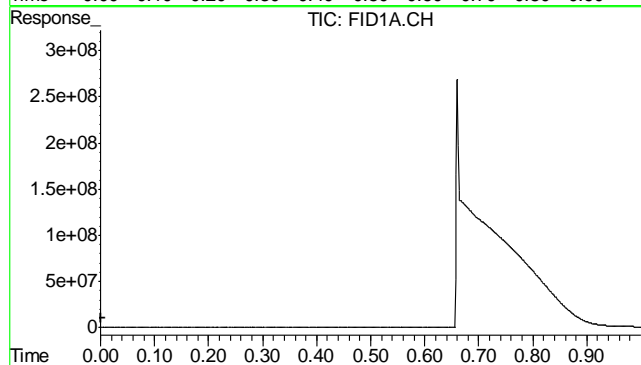


#10 2-Fluorophenol
R.T.: 0.000 min
Exp R.T.: 0.000 min
Response: 0
Conc: N.D.

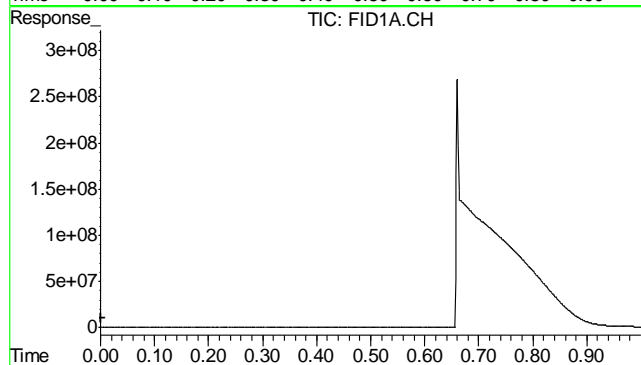
12.1.1
12



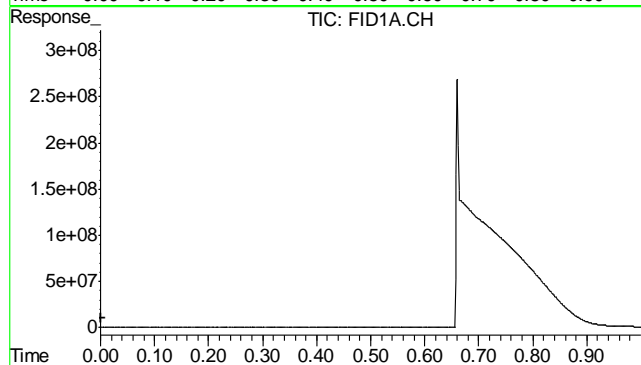
#11 Phenol-d5
 R.T.: 0.000 min
 Exp R.T. : 0.000 min
 Response: 0
 Conc: N.D.



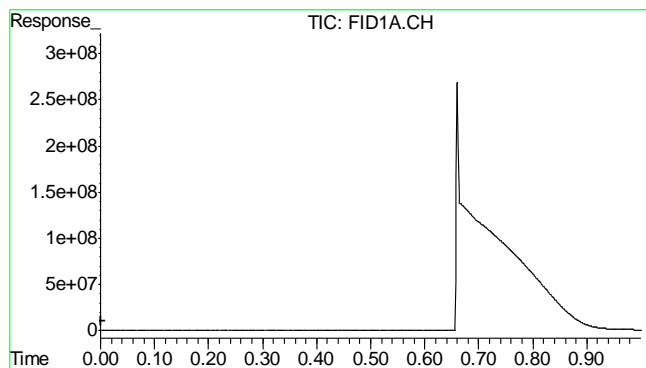
#12 Nitrobenzene-d5
 R.T.: 0.000 min
 Exp R.T. : 0.000 min
 Response: 0
 Conc: N.D.



#13 2-Fluorobiphenyl
 R.T.: 0.000 min
 Exp R.T. : 0.000 min
 Response: 0
 Conc: N.D.



#14 2,4,6-Tribromophenol
 R.T.: 0.000 min
 Exp R.T. : 0.000 min
 Response: 0
 Conc: N.D.



#15 Terphenyl-d14

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

12.1.1
12

Judy Melson
11/21/11 09:52

Quantitation Report (QT Reviewed)

Data File : E:\DATA\FI111811\FI04530.D Vial: 3
Acq On : 18 Nov 2011 10:46 am Operator: CHAVALIT
Sample : OP4872-MB Inst : FID6
Misc : OP4872,GFI333,30.00,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 18 11:22:40 2011 Quant Results File: DF-GFI308.RES

Quant Method : C:\MSDCHEM\1\METHODS\DF-GFI308.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Mon Nov 14 09:02:05 2011
Response via : Initial Calibration
DataAcq Meth : FR_BASE2.M

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

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S O-Terphenyl	13.59	67119937	1206.345 mg/L m

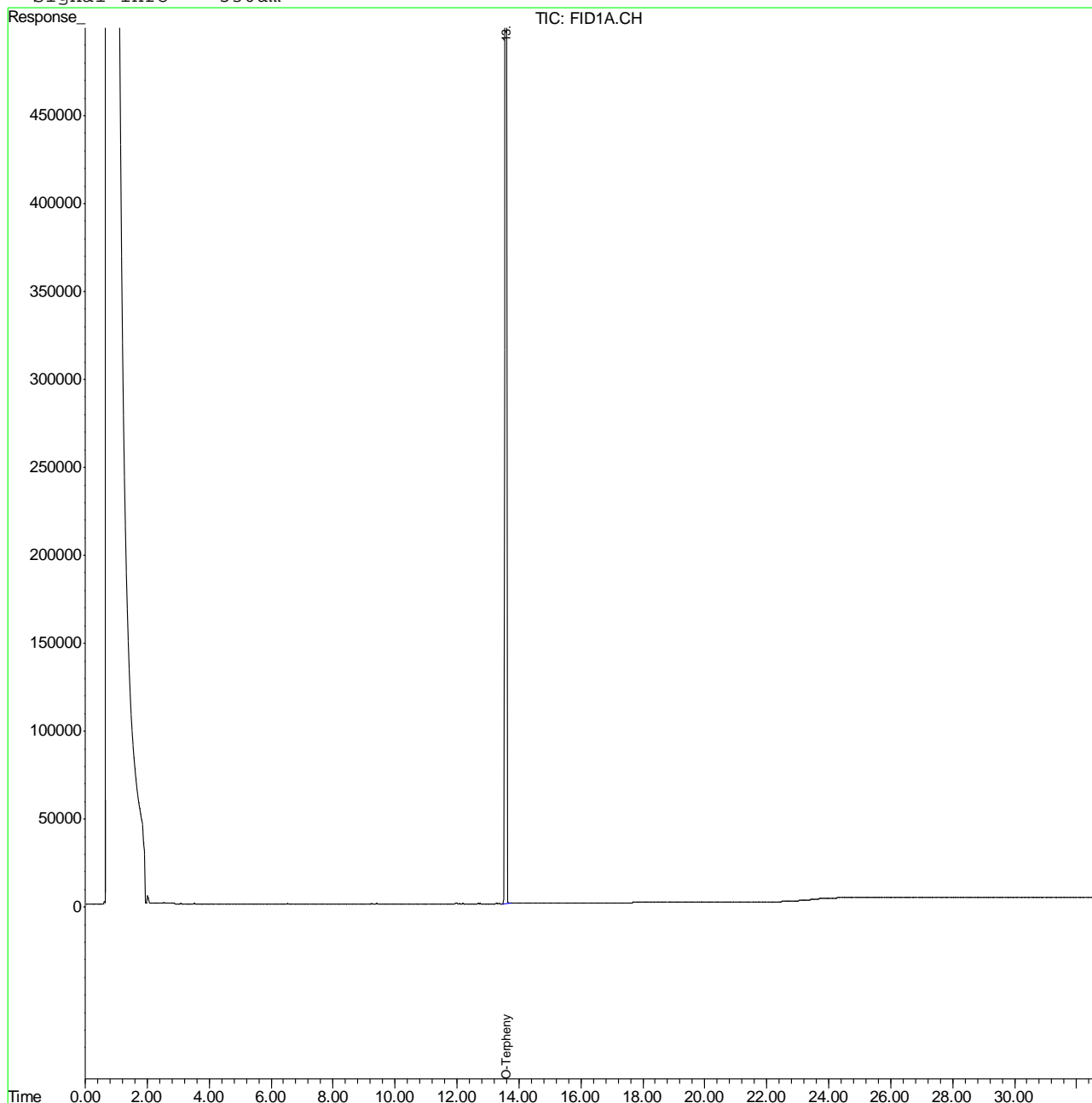
Target Compounds

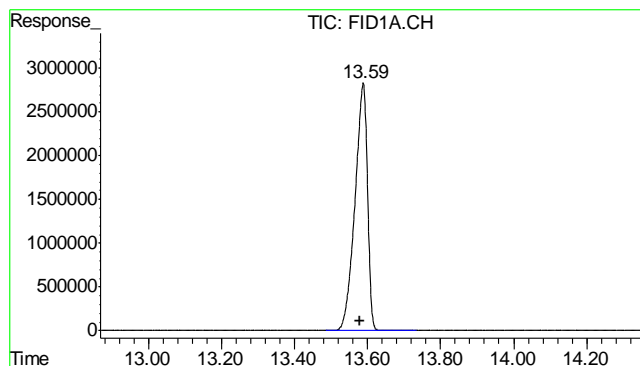
Quantitation Report (QT Reviewed)

Data File : E:\DATA\FI111811\FI04530.D Vial: 3
Acq On : 18 Nov 2011 10:46 am Operator: CHAVALIT
Sample : OP4872-MB Inst : FID6
Misc : OP4872,GFI333,30.00,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 18 11:24 2011 Quant Results File: DF-GFI308.RES

Quant Method : C:\MSDCHEM\1\METHODS\DF-GFI308.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Mon Nov 14 09:02:05 2011
Response via : Multiple Level Calibration
DataAcq Meth : FR_BASE2.M

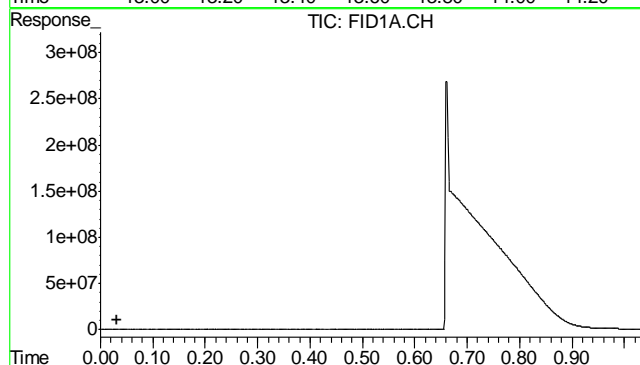
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um





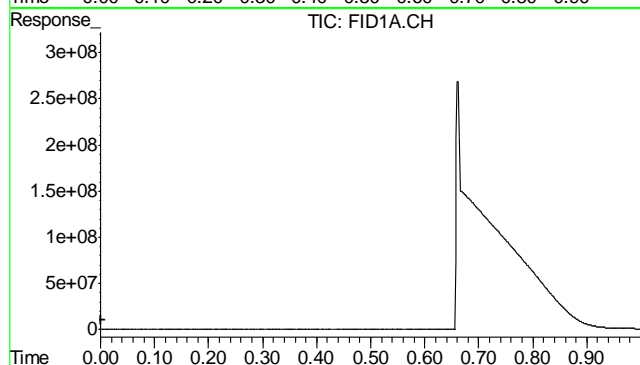
#1 O-Terphenyl

R.T.: 13.588 min
Delta R.T.: 0.008 min
Response: 67119937
Conc: 1206.35 mg/L m



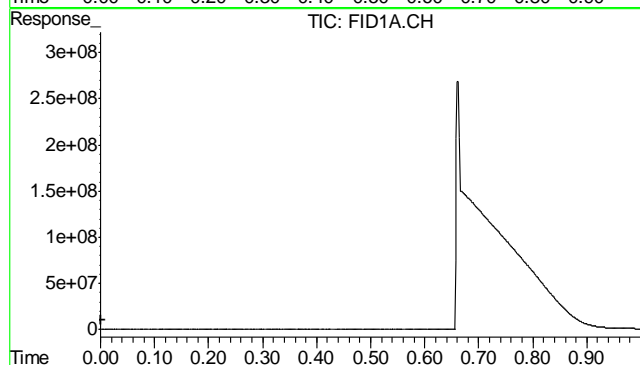
#9 5a-Androstane

R.T.: 0.000 min
Exp R.T.: 0.032 min
Response: 0
Conc: N.D.



#10 2-Fluorophenol

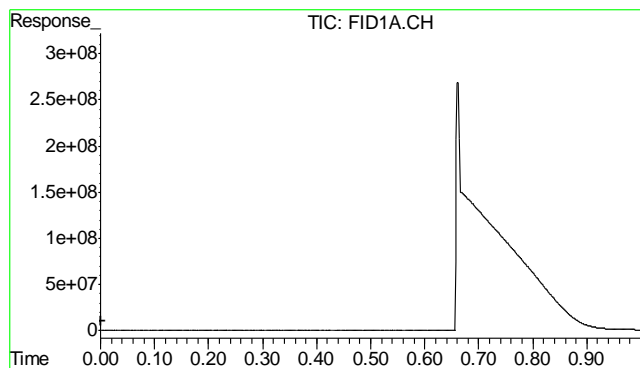
R.T.: 0.000 min
Exp R.T.: 0.000 min
Response: 0
Conc: N.D.



#11 Phenol-d5

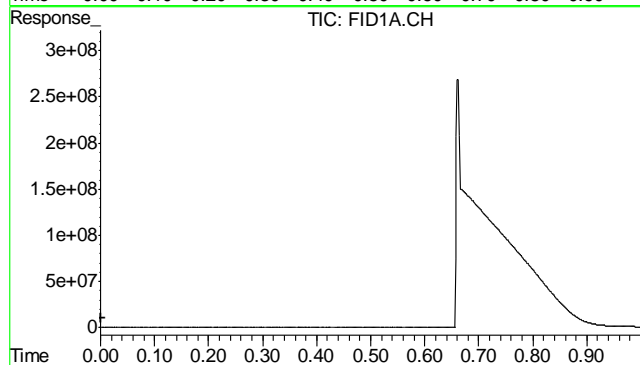
R.T.: 0.000 min
Exp R.T.: 0.000 min
Response: 0
Conc: N.D.

12.2.1
12



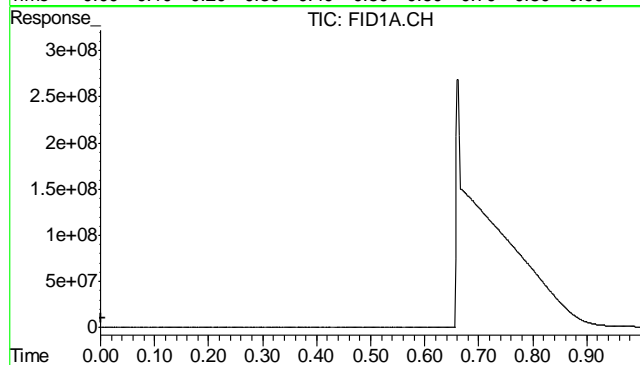
#12 Nitrobenzene-d5

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



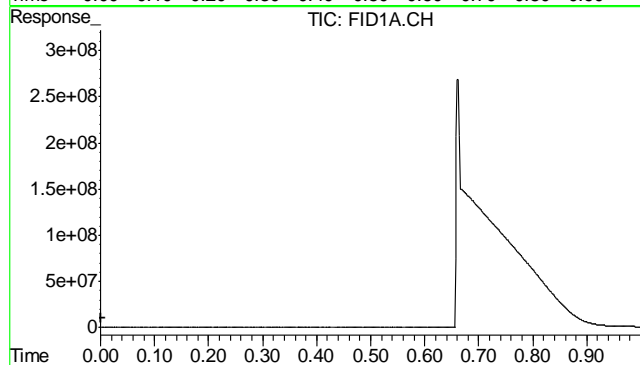
#13 2-Fluorobiphenyl

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



#14 2,4,6-Tribromophenol

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



#15 Terphenyl-d14

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

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: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6345
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 11/28/11

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	0.040	<1.0
Beryllium	1.0	.044	.1		
Boron	5.0	.48	.48		
Cadmium	1.0	.027	.27	0.010	<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	0.010	<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	-0.090	<3.0
Phosphorus	10	1.1	1.2		
Potassium	200	5.5	9.2		
Selenium	5.0	.38	.5	0.25	<5.0
Silicon	5.0	.38	.51		
Silver	3.0	.018	.051	0.020	<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	0.24	<3.0

Associated samples MP6345: D29577-1R

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6345
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: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6345
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 11/28/11

Metal	D29717-1 Original MS		SpikeLot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	244	475	271	85.3	75-125
Beryllium					
Boron					
Cadmium	0.23	61.1	67.7	89.9	75-125
Calcium					
Chromium	8.6	68.4	67.7	88.3	75-125
Cobalt					
Copper	10.3	72.5	67.7	91.8	75-125
Iron					
Lead	7.3	127	135	88.4	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	7.0	61.6	67.7	80.6	75-125
Phosphorus					
Potassium					
Selenium	1.9	124	135	90.1	75-125
Silicon					
Silver	0.0	26.3	27.1	97.1	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	24.8	79.0	67.7	80.0	75-125

Associated samples MP6345: D29577-1R

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6345
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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6345
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 11/28/11

Metal	D29717-1 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	244	471	245	92.5	0.8	20
Beryllium						
Boron						
Cadmium	0.23	55.8	61.3	90.6	9.1	20
Calcium						
Chromium	8.6	63.6	61.3	89.7	7.3	20
Cobalt						
Copper	10.3	68.9	61.3	95.5	5.1	20
Iron						
Lead	7.3	115	123	87.8	9.9	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	7.0	57.0	61.3	81.5	7.8	20
Phosphorus						
Potassium						
Selenium	1.9	113	123	90.6	9.3	20
Silicon						
Silver	0.0	24.2	24.5	98.6	8.3	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	24.8	75.9	61.3	83.3	4.0	20

Associated samples MP6345: D29577-1R

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6345
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6345
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 11/28/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	194	200	97.0	80-120
Beryllium				
Boron				
Cadmium	48.2	50	96.4	80-120
Calcium				
Chromium	49.4	50	98.8	80-120
Cobalt				
Copper	47.4	50	94.8	80-120
Iron				
Lead	99.9	100	99.9	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	47.8	50	95.6	80-120
Phosphorus				
Potassium				
Selenium	97.1	100	97.1	80-120
Silicon				
Silver	20.2	20	101.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	48.7	50	97.4	80-120

Associated samples MP6345: D29577-1R

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6345
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D29577
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 297-17A

QC Batch ID: MP6345
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: ug/l

Prep Date: 11/28/11

Metal	D29717-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	1990	2110	5.8	0-10
Beryllium				
Boron				
Cadmium	1.90	0.00	100.0(a)	0-10
Calcium				
Chromium	70.2	75.5	7.5	0-10
Cobalt				
Copper	83.6	73.5	12.1*(b)	0-10
Iron				
Lead	59.7	59.5	0.3	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	57.1	65.0	13.8*(b)	0-10
Phosphorus				
Potassium				
Selenium	15.8	0.00	100.0(a)	0-10
Silicon				
Silver	0.00	1.00		0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	202	238	17.8*(b)	0-10

Associated samples MP6345: D29577-1R

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

13.1.4
13

SERIAL DILUTION RESULTS SUMMARY

Login Number: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6345
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: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6346
Matrix Type: SOLID

Methods: SW846 6020
Units: mg/kg

Prep Date: 11/28/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.14	1.2		
Antimony	0.20	.001	.0095		
Arsenic	0.40	.049	.22	0.018	<0.40
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 MP6346: D29577-1R

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: D29577
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 297-17A

QC Batch ID: MP6346
 Matrix Type: SOLID

Methods: SW846 6020
 Units: mg/kg

Prep Date: 11/28/11

Metal	D29717-1 Original MS		Spikelot MPICPALL % Rec	QC Limits
Aluminum				
Antimony				
Arsenic	6.8	150	135	105.7 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 MP6346: D29577-1R

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: D29577
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 297-17A

QC Batch ID: MP6346
 Matrix Type: SOLID

Methods: SW846 6020
 Units: mg/kg

Prep Date: 11/28/11

Metal	D29717-1 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	6.8	132	123	102.1	12.8	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP6346: D29577-1R

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: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6346
Matrix Type: SOLID

Methods: SW846 6020
Units: mg/kg

Prep Date: 11/28/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	108	100	108.0	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 MP6346: D29577-1R

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D29577
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 297-17A

QC Batch ID: MP6346
 Matrix Type: SOLID

Methods: SW846 6020
 Units: ug/l

Prep Date: 11/28/11

Metal	D29717-1 Original SDL 5:25 %DIF			QC Limits
Aluminum				
Antimony				
Arsenic	55.1	59.9	8.7	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6346: D29577-1R

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

13.2.4
13

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6347
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 11/28/11

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.013	-0.0025	<0.10

Associated samples MP6347: D29577-1R

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: D29577
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 297-17A

QC Batch ID: MP6347
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 11/28/11

Metal	D29717-2		Spikelot		QC
	Original	MS	HGWSR1	% Rec	Limits
Mercury	0.0048	0.42	0.458	90.6	85-115

Associated samples MP6347: D29577-1R

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: D29577
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 297-17A

QC Batch ID: MP6347
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 11/28/11

Metal	D29717-2 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.0048	0.46	0.45	101.1	9.1	20

Associated samples MP6347: D29577-1R

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

13.3.2
13

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29577
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 297-17A

QC Batch ID: MP6347
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 11/28/11

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

Associated samples MP6347: D29577-1R

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: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6359
Matrix Type: AQUEOUS

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

Prep Date: 11/29/11

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	11.5	<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	-22	<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	-180	<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 MP6359: D29577-1RA

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6359
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

13.4.1

13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29577
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 297-17A

QC Batch ID: MP6359
 Matrix Type: AQUEOUS

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

Prep Date: 11/29/11

Metal	D29577-1RA Original MS		Spikelot MPICPAL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	26700	161000	125000	107.4	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	157	125000	125000	99.9	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	334000	482000	125000	118.4	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6359: D29577-1RA

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

13.4.2
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6359
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

13.4.2
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6359
Matrix Type: AQUEOUS

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

Prep Date: 11/29/11

Metal	D29577-1RA Original MSD	Spikelot MPICPAL % Rec	MSD RPD	QC Limit
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	26700	163000	125000	109.0
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	157	127000	125000	101.5
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	334000	491000	125000	125.6N(a
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6359: D29577-1RA

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6359
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 recovery indicates possible matrix interference and/or sample nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6359
Matrix Type: AQUEOUS

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

Prep Date: 11/29/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	134000	125000	107.2	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	126000	125000	100.8	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	129000	125000	103.2	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6359: D29577-1RA

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29577
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 297-17A

QC Batch ID: MP6359
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: D29577
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	GP6017/GN12683			umhos/cm	10008	9880	98.7	90-110%
pH	GN12653			su	8.00	8.03	100.4	99.3-100.7%

Associated Samples:
Batch GN12653: D29577-1R
Batch GP6017: D29577-1R
(*) Outside of QC limits

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DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D29577
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	GN12654	D29575-1R	mv	387	377	2.6	0-20%

Associated Samples:
Batch GN12654: D29577-1R
(*) Outside of QC limits

Misc. Forms

Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D29577

Client: AMS

Immediate Client Services Action Required: No

Date / Time Received: 11/28/2011

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.)

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: D29577
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	GP13862/GN37061	0.40	0.0	mg/kg	40	39.0	97.5	80-120%
Chromium, Hexavalent	GP13862/GN37061			mg/kg	966	1100	113.9	80-120%

Associated Samples:
Batch GP13862: D29577-1R
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D29577
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	GP13862/GN37061	D29745-1	mg/kg	0.21	0.26	21.3(a)	0-20%

Associated Samples:
Batch GP13862: D29577-1R
(*) Outside of QC limits
(a) RPD acceptable due to low duplicate and sample concentrations.

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D29577
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	GP13862/GN37061	D29745-1	mg/kg	0.21	41.5	39.8	95.5	75-125%
Chromium, Hexavalent	GP13862/GN37061	D29745-1	mg/kg	0.21	939	1050	111.8	75-125%

Associated Samples:
Batch GP13862: D29577-1R
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits