



12/16/11

Technical Report for

KRW Consulting, Inc.

XOM FRU 197-33A

1103-03A

Accutest Job Number: D29896

Sampling Date: 11/30/11

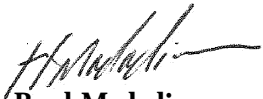
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Total number of pages in report: 111



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: D29896

XOM FRU 197-33A
Project No: 1103-03A

Sample Number	Collected		Matrix Code	Type	Client Sample ID
	Date	Time By			
D29896-1	11/30/11	10:00 CB	12/01/11	SO Soil	FW SUBLINER-1.5'
D29896-1R	11/30/11	10:00 CB	12/01/11	SO Soil	FW SUBLINER-1.5'
D29896-1RA	11/30/11	10:00 CB	12/01/11	SO Soil	FW SUBLINER-1.5'

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: KRW Consulting, Inc.

Job No D29896

Site: XOM FRU 197-33A

Report Dat 12/16/2011 2:21:39 PM

On 12/01/2011, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 5.9 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D29896 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: V3V861
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) D29895-1MS, D29895-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO	Batch ID: M:OP27187
------------------	----------------------------

- The data for SW846 8270C BY SIM meets quality control requirements.
- D29896-1R: Analysis performed at Accutest Laboratories, Marlborough, MA.

Volatiles by GC By Method SW846 8015B

Matrix SO	Batch ID: GGB800
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29895-1MS, D29895-1MSD were used as the QC samples indicated.

Extractables by GC By Method SW846-8015B

Matrix SO	Batch ID: OP4942
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D29895-1MS, D29895-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Metals By Method SW846 6010B

Matrix AQ

Batch ID: MP6425

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29896-1RAMS, D29896-1RAMSD were used as the QC samples for the metals analysis.

Matrix SO

Batch ID: MP6421

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29896-1RMS, D29896-1RMSD, D29896-1RSDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Copper, Lead, Cadmium, Selenium are outside control limits for sample MP6421-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- The serial dilution RPD(s) for Chromium, Nickel, Zinc are outside control limits for sample MP6421-SD1. Serial dilution indicates possible matrix interference.
- D29896-1R for Copper, Lead: Elevated detection limit due to dilution required for possible matrix interference.

Metals By Method SW846 6020

Matrix SO

Batch ID: MP6422

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29896-1RMS, D29896-1RMSD, D29896-1RSDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471A

Matrix SO

Batch ID: MP6423

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30022-1MS, D30022-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO

Batch ID: GN12831

- Sample(s) D30098-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM19 2540B M

Matrix SO

Batch ID: GN12737

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

Wet Chemistry By Method SW846 3060/7196A M

Matrix SO

Batch ID: R11110

- The data for SW846 3060/7196A M meets quality control requirements.
- D29896-1R for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO

Batch ID: M:GP13918

- The data for SW846 3060A/7196A meets quality control requirements.
- D29896-1R for Chromium, Hexavalent: Analysis performed at Accutest Laboratories, Marlborough, MA.

Wet Chemistry By Method SW846 9045C**Matrix** SO**Batch ID:** GN12804

- The following sample was run outside of holding time for method SW846 9045C: D29896-1R.

Wet Chemistry By Method USDA HANDBOOK 60**Matrix** SO**Batch ID:** MP6425

- D29896-1RA 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** D29896**Site:** KRWCCOL: XOM FRU 197-33A**Report Date** 12/14/2011 8:14:52 AM

1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 11/30/2011 and were received at Accutest on 12/01/2011 properly preserved, at 1.5 Deg. C and intact. These Samples received an Accutest job number of D29896. 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.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO**Batch ID:** OP27187

- 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) MC6194-7MS, MC6194-7MSD were used as the QC samples indicated.

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(D29896).

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	FW SUBLINER-1.5'	Date Sampled:	11/30/11
Lab Sample ID:	D29896-1	Date Received:	12/01/11
Matrix:	SO - Soil	Percent Solids:	92.4
Method:	SW846 8260B		
Project:	XOM FRU 197-33A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V14853.D	1	12/03/11	KV	n/a	n/a	V3V861
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.05 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	52.4	58	25	ug/kg	J
108-88-3	Toluene	130	120	58	ug/kg	
100-41-4	Ethylbenzene	33.8	120	29	ug/kg	J
1330-20-7	Xylene (total)	148	230	120	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	113%		61-130%
460-00-4	4-Bromofluorobenzene	120%		53-131%
17060-07-0	1,2-Dichloroethane-D4	102%		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:	FW SUBLINER-1.5'	Date Sampled:	11/30/11
Lab Sample ID:	D29896-1	Date Received:	12/01/11
Matrix:	SO - Soil	Percent Solids:	92.4
Method:	SW846 8015B		
Project:	XOM FRU 197-33A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB14156.D	1	12/02/11	SK	n/a	n/a	GGB800
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	12	5.8	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	96%		60-140%		

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

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

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	FW SUBLINER-1.5'	Date Sampled:	11/30/11
Lab Sample ID:	D29896-1	Date Received:	12/01/11
Matrix:	SO - Soil	Percent Solids:	92.4
Method:	SW846-8015B SW846 3546		
Project:	XOM FRU 197-33A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD12037.D	1	12/06/11	TR	12/02/11	OP4942	GFD621
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)	83.0	14	9.4	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	61%		43-136%		

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

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

Report of Analysis

Client Sample ID:	FW SUBLINER-1.5'	Date Sampled:	11/30/11
Lab Sample ID:	D29896-1R	Date Received:	12/01/11
Matrix:	SO - Soil	Percent Solids:	92.4
Method:	SW846 8270C BY SIM SW846 3546		
Project:	XOM FRU 197-33A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	U3859.D	1	12/13/11	AMA	12/09/11	M:OP27187	M:MSU233
Run #2							

	Initial Weight	Final Volume
Run #1	20.5 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	5.3	0.61	ug/kg	
120-12-7	Anthracene	ND	5.3	0.86	ug/kg	
56-55-3	Benzo(a)anthracene	ND	5.3	0.66	ug/kg	
50-32-8	Benzo(a)pyrene	ND	5.3	0.77	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	5.3	0.64	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	5.3	1.0	ug/kg	
218-01-9	Chrysene	1.3	5.3	0.81	ug/kg	J
53-70-3	Dibenzo(a,h)anthracene	ND	5.3	1.5	ug/kg	
206-44-0	Fluoranthene	ND	5.3	0.84	ug/kg	
86-73-7	Fluorene	20.5	5.3	0.47	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.3	1.3	ug/kg	
91-20-3	Naphthalene	21.0	5.3	1.2	ug/kg	
129-00-0	Pyrene	ND	5.3	1.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	52%		30-130%
321-60-8	2-Fluorobiphenyl	57%		30-130%
1718-51-0	Terphenyl-d14	71%		30-130%

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

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: FW SUBLINER-1.5'
Lab Sample ID: D29896-1R
Matrix: SO - Soil
Project: XOM FRU 197-33A

Date Sampled: 11/30/11
Date Received: 12/01/11
Percent Solids: 92.4

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	5.5	0.44	mg/kg	5	12/08/11	12/09/11 GJ	SW846 6020 ³	SW846 3050B ⁶
Barium	420	1.1	mg/kg	1	12/08/11	12/08/11 JB	SW846 6010B ²	SW846 3050B ⁵
Cadmium	< 1.1	1.1	mg/kg	1	12/08/11	12/08/11 JB	SW846 6010B ²	SW846 3050B ⁵
Chromium	18.4	1.1	mg/kg	1	12/08/11	12/08/11 JB	SW846 6010B ²	SW846 3050B ⁵
Copper ^a	< 11	11	mg/kg	10	12/08/11	12/12/11 JB	SW846 6010B ⁴	SW846 3050B ⁵
Lead ^a	< 55	55	mg/kg	10	12/08/11	12/12/11 JB	SW846 6010B ⁴	SW846 3050B ⁵
Mercury	< 0.11	0.11	mg/kg	1	12/08/11	12/08/11 JB	SW846 7471A ¹	SW846 7471A ⁷
Nickel	12.3	3.3	mg/kg	1	12/08/11	12/08/11 JB	SW846 6010B ²	SW846 3050B ⁵
Selenium	< 5.5	5.5	mg/kg	1	12/08/11	12/08/11 JB	SW846 6010B ²	SW846 3050B ⁵
Silver	< 3.3	3.3	mg/kg	1	12/08/11	12/08/11 JB	SW846 6010B ²	SW846 3050B ⁵
Zinc	27.2	3.3	mg/kg	1	12/08/11	12/08/11 JB	SW846 6010B ²	SW846 3050B ⁵

(1) Instrument QC Batch: MA2035

(2) Instrument QC Batch: MA2037

(3) Instrument QC Batch: MA2038

(4) Instrument QC Batch: MA2041

(5) Prep QC Batch: MP6421

(6) Prep QC Batch: MP6422

(7) Prep QC Batch: MP6423

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

RL = Reporting Limit

Report of Analysis

Client Sample ID: FW SUBLINER-1.5'
Lab Sample ID: D29896-1R
Matrix: SO - Soil
Project: XOM FRU 197-33A

Date Sampled: 11/30/11
Date Received: 12/01/11
Percent Solids: 92.4

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent ^a	< 0.43	0.43	mg/kg	1	12/15/11 15:44	AMA	SW846 3060A/7196A
Chromium, Trivalent ^b	18.2	1.5	mg/kg	1	12/15/11 15:44	AMA	SW846 3060/7196A M
Redox Potential Vs H2	322		mv	1	12/09/11 12:30	JK	ASTM D1498-76M
Specific Conductivity	2110	1.0	umhos/cm	1	12/09/11	JD	DEPT.OF AG, BOOK N9
pH	9.77		su	1	12/08/11 11:55	JD	SW846 9045C

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

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	FW SUBLINER-1.5'	Date Sampled:	11/30/11
Lab Sample ID:	D29896-1RA	Date Received:	12/01/11
Matrix:	SO - Soil	Percent Solids:	92.4
Project:	XOM FRU 197-33A		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	49.2	2.0	mg/l	1	12/08/11	12/08/11 JB	SW846 6010B ¹	EPA 200.7 ²
Magnesium	16.6	1.0	mg/l	1	12/08/11	12/08/11 JB	SW846 6010B ¹	EPA 200.7 ²
Sodium	236	2.0	mg/l	1	12/08/11	12/08/11 JB	SW846 6010B ¹	EPA 200.7 ²

(1) Instrument QC Batch: MA2037
(2) Prep QC Batch: MP6425

RL = Reporting Limit

Report of Analysis

Client Sample ID:	FW SUBLINER-1.5'	Date Sampled:	11/30/11
Lab Sample ID:	D29896-1RA	Date Received:	12/01/11
Matrix:	SO - Soil	Percent Solids:	92.4
Project:	XOM FRU 197-33A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	7.42		ratio	1	12/08/11 15:02	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 877-737-4321
FAX: 303-425-6021

FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job # D29896
Requested Analysis (see TEST CODE sheet)	
Matrix Codes	
DW - Drinking Water GW - Ground Water WW - Wastewater SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - 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 FW Sublimar - 1.5'	
Date: 11-30-11 Time: 10:00 Matrix: SO # of bottles: 5	
Number of preserved Bottles: HCl <input type="checkbox"/> NaOH <input type="checkbox"/> HNO3 <input type="checkbox"/> H2SO4 <input type="checkbox"/> NONE <input checked="" type="checkbox"/> DI Water <input type="checkbox"/> MEOH <input type="checkbox"/> ENCORE <input type="checkbox"/> Blankfill <input type="checkbox"/>	
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 checked="" type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY Emergency & Rush T/A data available VIA Lablink	
Approved By (Accutest PM): / Date: _____ Commercial "A" (Level 1) <input type="checkbox"/> State Forms <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> EDD Format <input type="checkbox"/> Commercial "B" - Narrative <input type="checkbox"/> PDF <input checked="" type="checkbox"/> FULLT1 (Level 3/4) <input type="checkbox"/> Commercial "A" = Results Only Commercial "B" = Results + QC Summary	
Comments / Special Instructions Please email results to KRW please C-XOM Team Run TPH, BTEX hold other analytes pending results	
Sample Custody must be documented below each time samples change possession, including courier delivery.	
Relinquished by Sampler: 1 Date Time: 11/30/11 Relinquished by Sampler: 3 Date Time: _____ Relinquished by: 5 Date Time: _____	Received By: 1 Date Time: _____ Received By: 3 Date Time: _____ Received By: 5 Date Time: _____
Relinquished by: 2 Date Time: _____ Relinquished by: 4 Date Time: _____	Received By: 2 Date Time: _____ Received By: 4 Date Time: _____
Custody Seal # H8CC <input type="checkbox"/> Intact <input type="checkbox"/> Preserved where applicable <input type="checkbox"/> On Ice <input checked="" type="checkbox"/> Cooler Temp. 5.9	

D29896: Chain of Custody

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Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D29896

Client: KRW CONSULTING INC.

Immediate Client Services Action Required: No

Date / Time Received: 12/1/2011 2:20:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XOM FRU 197-33A

Airbill #'s: HD/CO

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

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

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

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

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

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

Comments

Accutest Laboratories
V:(303) 425-6021

4036 Youngfield Street
F: (303) 425-6854

Wheat Ridge, CO
www.accutest.com

D29896: Chain of Custody
Page 2 of 3

Job Change Order: D29896_12/7/2011

Requested	12/7/2011	Received Date:	12/1/2011
Account Name:	KRW Consulting, Inc.	Due Date:	12/6/2011
Project	XOM FRU 197-33A	Deliverable:	COMMBN+
CSR:	RR	TAT (Days):	3

Change: Please log the rest of the table 9-10 parameters to an "R" sample and analyze and report on a 3 day turn.
Thank you!

FW SUBLINER-1.5'

Above Changes Per: Craig Burger - Client

Date: 12/7/2011

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

Page 1 of 1

D29896: Chain of Custody
Page 3 of 3

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: D29896
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V861-MB	3V14848.D	1	12/03/11	KV	n/a	n/a	V3V861

The QC reported here applies to the following samples:

Method: SW846 8260B

D29896-1

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	115% 61-130%
460-00-4	4-Bromofluorobenzene	114% 53-131%
17060-07-0	1,2-Dichloroethane-D4	108% 62-130%

Blank Spike Summary

Page 1 of 1

Job Number: D29896

Account: KRWCCOL KRW Consulting, Inc.

Project: XOM FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V861-BS	3V14849.D	1	12/03/11	KV	n/a	n/a	V3V861

The QC reported here applies to the following samples:

Method: SW846 8260B

D29896-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	49.9	100	70-130
100-41-4	Ethylbenzene	50	48.0	96	70-130
108-88-3	Toluene	50	48.7	97	70-130
1330-20-7	Xylene (total)	150	144	96	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	112%	61-130%
460-00-4	4-Bromofluorobenzene	118%	53-131%
17060-07-0	1,2-Dichloroethane-D4	110%	62-130%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D29896

Account: KRWCCOL KRW Consulting, Inc.

Project: XOM FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D29895-1MS	3V14851.D	1	12/03/11	KV	n/a	n/a	V3V861
D29895-1MSD	3V14852.D	1	12/03/11	KV	n/a	n/a	V3V861
D29895-1	3V14850.D	1	12/03/11	KV	n/a	n/a	V3V861

The QC reported here applies to the following samples:

Method: SW846 8260B

D29896-1

CAS No.	Compound	D29895-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		2950	3000	102	3120	106	4	70-134/30
100-41-4	Ethylbenzene	ND		2950	2910	98	2950	100	1	70-137/30
108-88-3	Toluene	ND		2950	2880	97	2970	101	3	70-130/30
1330-20-7	Xylene (total)	ND		8860	8800	99	8870	100	1	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D29895-1	Limits
2037-26-5	Toluene-D8	111%	113%	109%	61-130%
460-00-4	4-Bromofluorobenzene	127%	128%	118%	53-131%
17060-07-0	1,2-Dichloroethane-D4	101%	105%	104%	62-130%

GC/MS Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3120311.S\
 Data File : 3V14853.D
 Acq On : 3 Dec 2011 2:10 pm
 Operator : koroushv
 Sample : D29896-1, 50x
 Misc : MS3032,V3V861,5.047,,100,5,1
 ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 06 11:04:01 2011
 Quant Method : C:\msdchem\1\METHODS\V3AP850TVH850.M
 Quant Title : 8260
 QLast Update : Sat Nov 26 09:28:41 2011
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.886	168	365496	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.679	114	614584	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.317	117	542160	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.309	152	295558	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.287	102	50959	50.96	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	101.92%
61) Toluene-d8	14.072	98	867584	56.54	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	113.08%
69) 4-Bromofluorobenzene	16.266	95	301624	59.99	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	119.98%

Target Compounds

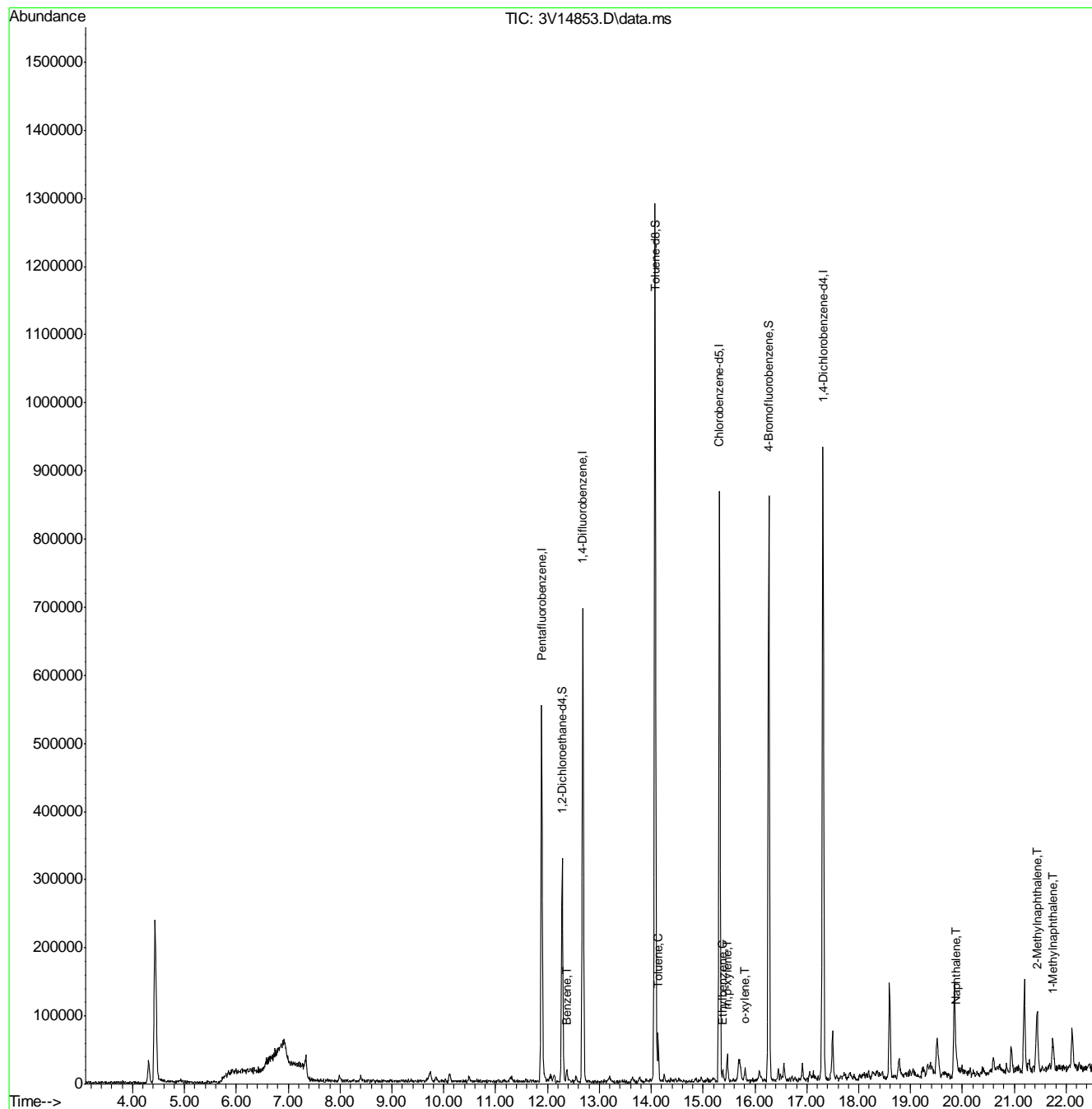
						Qvalue
50) Benzene	12.377	78	16090m	0.91	ug/l	
62) Toluene	14.133	92	25611	2.25	ug/l	100
66) Ethylbenzene	15.381	91	8255	0.59	ug/l	93
72) m,p-xylene	15.471	106	12049	1.77	ug/l	94
73) o-xylene	15.811	106	5292	0.78	ug/l	82
91) Naphthalene	19.889	128	32899	2.12	ug/l	100
94) 2-Methylnaphthalene	21.429	142	53452	11.64	ug/l #	92
95) 1-Methylnaphthalene	21.741	142	30780	6.69	ug/l #	95

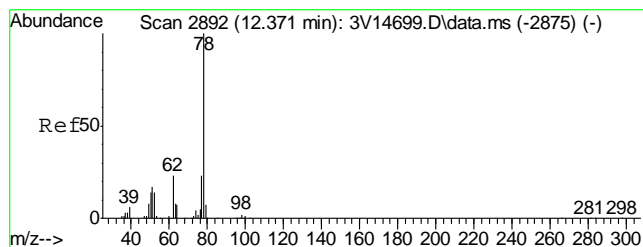
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3120311.S\
Data File : 3V14853.D
Acq On : 3 Dec 2011 2:10 pm
Operator : koroushv
Sample : D29896-1, 50x
Misc : MS3032,V3V861,5.047,,100,5,1
ALS Vial : 8 Sample Multiplier: 1

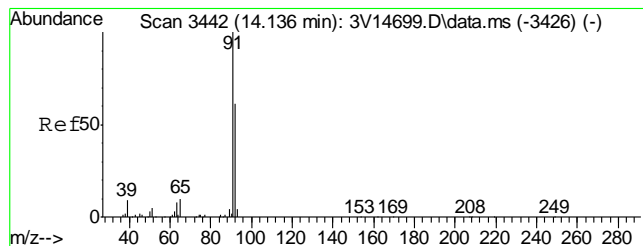
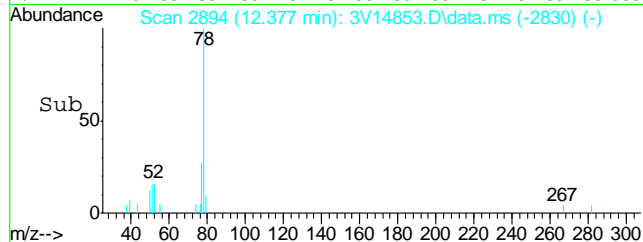
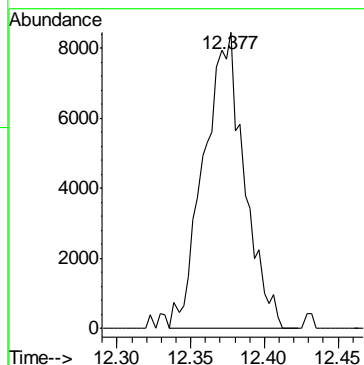
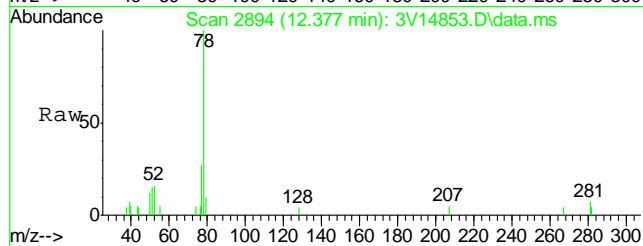
Quant Time: Dec 06 11:04:01 2011
Quant Method : C:\msdchem\1\METHODS\V3AP850TVH850.M
Quant Title : 8260
QLast Update : Sat Nov 26 09:28:41 2011
Response via : Initial Calibration





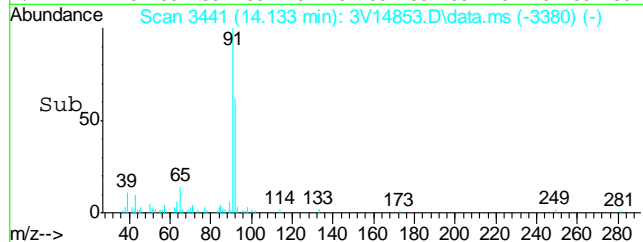
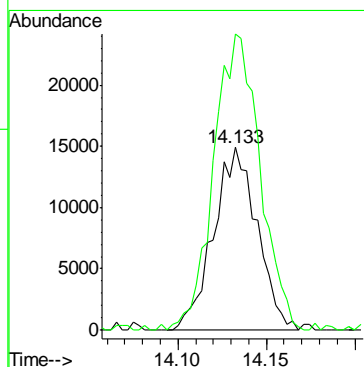
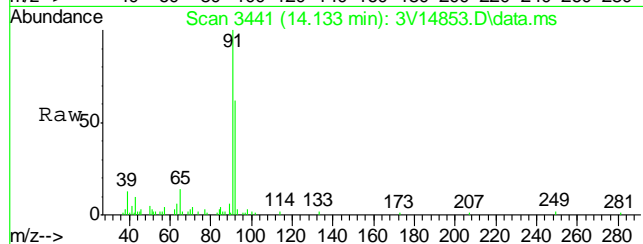
#50
Benzene
Concen: 0.91 ug/l m
RT: 12.377 min Scan# 2894
Delta R.T. 0.006 min
Lab File: 3V14853.D
Acq: 3 Dec 2011 2:10 pm

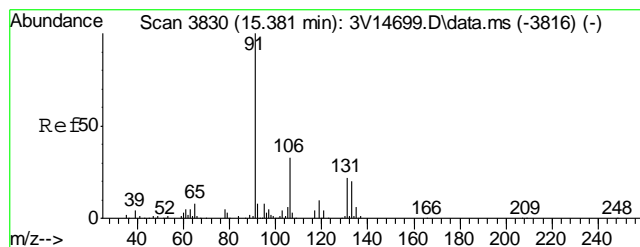
Tgt Ion: 78 Resp: 16090



#62
Toluene
Concen: 2.25 ug/l
RT: 14.133 min Scan# 3441
Delta R.T. -0.003 min
Lab File: 3V14853.D
Acq: 3 Dec 2011 2:10 pm

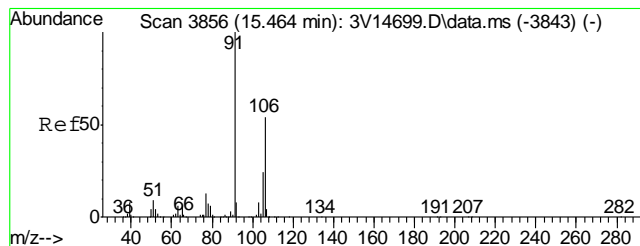
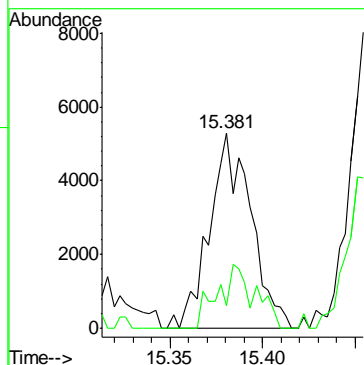
Tgt Ion: 92 Resp: 25611
Ion Ratio Lower Upper
92 100
91 172.8 152.7 192.7





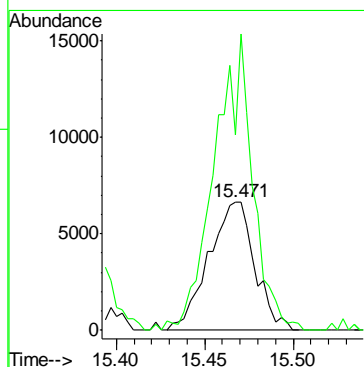
#66
Ethylbenzene
Concen: 0.59 ug/l
RT: 15.381 min Scan# 3830
Delta R.T. 0.001 min
Lab File: 3V14853.D
Acq: 3 Dec 2011 2:10 pm

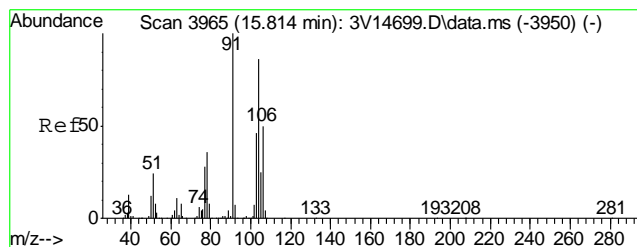
Tgt Ion: 91 Resp: 8255
Ion Ratio Lower Upper
91 100
106 29.4 13.5 53.5



#72
m,p-xylene
Concen: 1.77 ug/l
RT: 15.471 min Scan# 3858
Delta R.T. 0.007 min
Lab File: 3V14853.D
Acq: 3 Dec 2011 2:10 pm

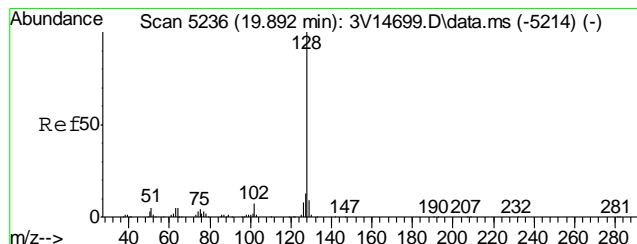
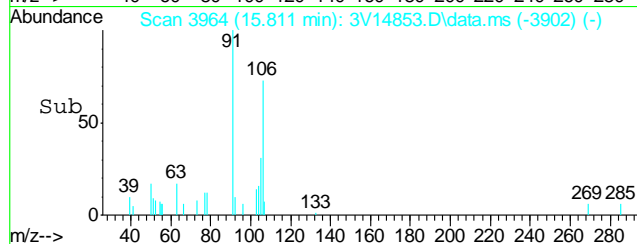
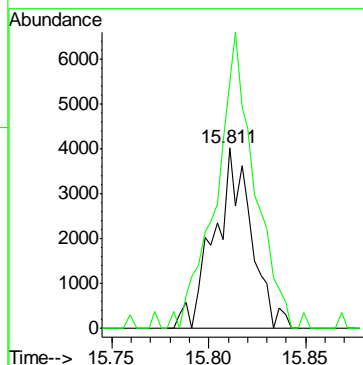
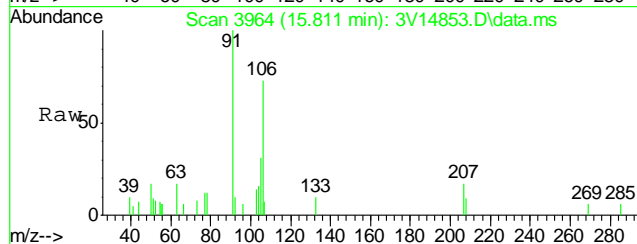
Tgt Ion: 106 Resp: 12049
Ion Ratio Lower Upper
106 100
91 192.8 164.6 204.6





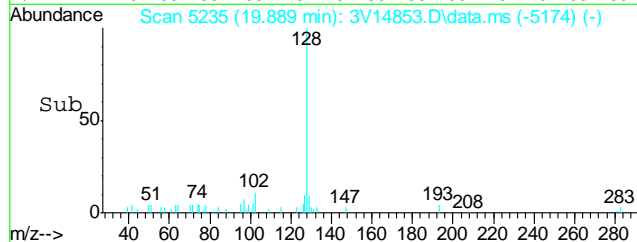
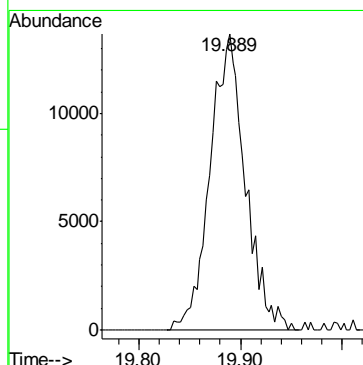
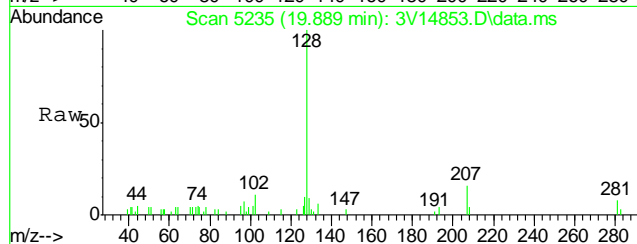
#73
o-xylene
Concen: 0.78 ug/l
RT: 15.811 min Scan# 3964
Delta R.T. -0.002 min
Lab File: 3V14853.D
Acq: 3 Dec 2011 2:10 pm

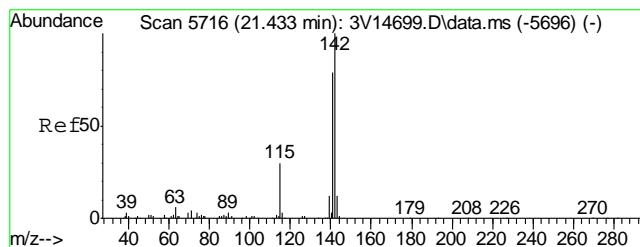
Tgt Ion:106 Resp: 5292
Ion Ratio Lower Upper
106 100
91 170.8 157.7 236.5



#91
Naphthalene
Concen: 2.12 ug/l
RT: 19.889 min Scan# 5235
Delta R.T. -0.003 min
Lab File: 3V14853.D
Acq: 3 Dec 2011 2:10 pm

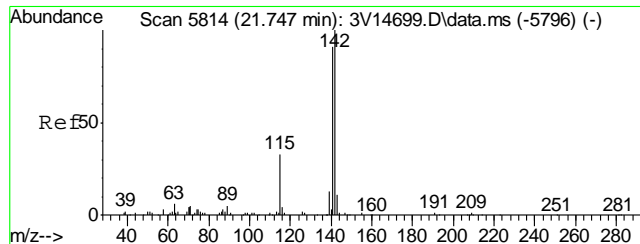
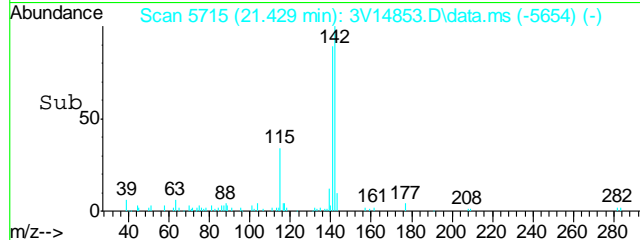
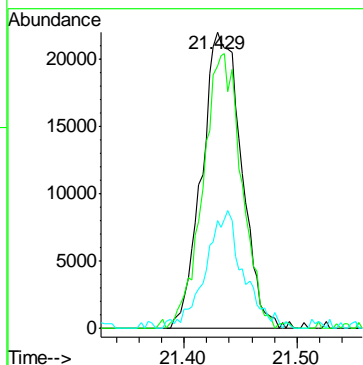
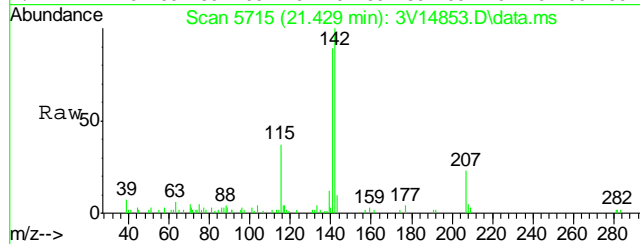
Tgt Ion:128 Resp: 32899





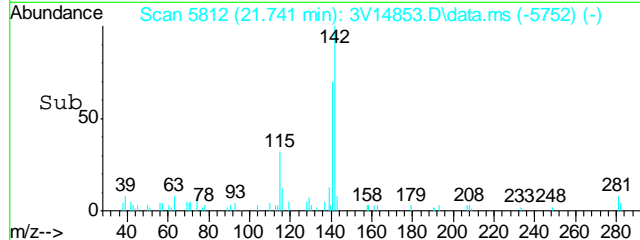
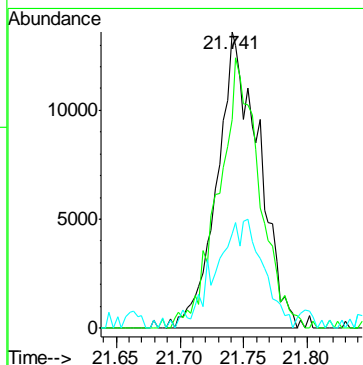
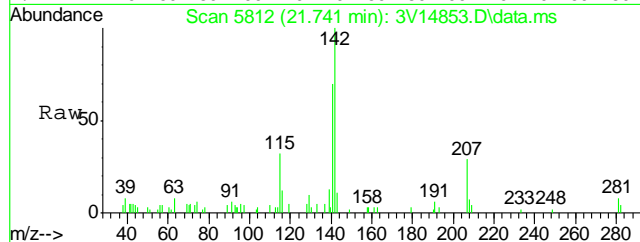
#94
2-Methylnaphthalene
Concen: 11.64 ug/l
RT: 21.429 min Scan# 5715
Delta R.T. -0.003 min
Lab File: 3V14853.D
Acq: 3 Dec 2011 2:10 pm

Tgt Ion:	142	Resp:	53452
Ion Ratio	Lower	Upper	
142	100		
141	90.2	67.4	101.2
115	37.2	24.3	36.5#



#95
1-Methylnaphthalene
Concen: 6.69 ug/l
RT: 21.741 min Scan# 5812
Delta R.T. -0.006 min
Lab File: 3V14853.D
Acq: 3 Dec 2011 2:10 pm

Tgt Ion:	142	Resp:	30780
Ion Ratio	Lower	Upper	
142	100		
141	89.6	72.6	109.0
115	40.7	26.2	39.2#



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3120311.S\
Data File : 3V14848.D
Acq On : 3 Dec 2011 11:35 am
Operator : koroushv
Sample : MB
Misc : MS3032,V3V861,5.00,,100,5,1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Dec 06 08:26:18 2011
Quant Method : C:\msdchem\1\METHODS\V3AP850TVH850.M
Quant Title : 8260
QLast Update : Sat Nov 26 09:28:41 2011
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.889	168	338898	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.681	114	564954	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.316	117	502738	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.311	152	260845	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.280	102	50227	54.17	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	108.34%
61) Toluene-d8	14.074	98	821424	57.73	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	115.46%
69) 4-Bromofluorobenzene	16.262	95	265279	56.89	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	113.78%

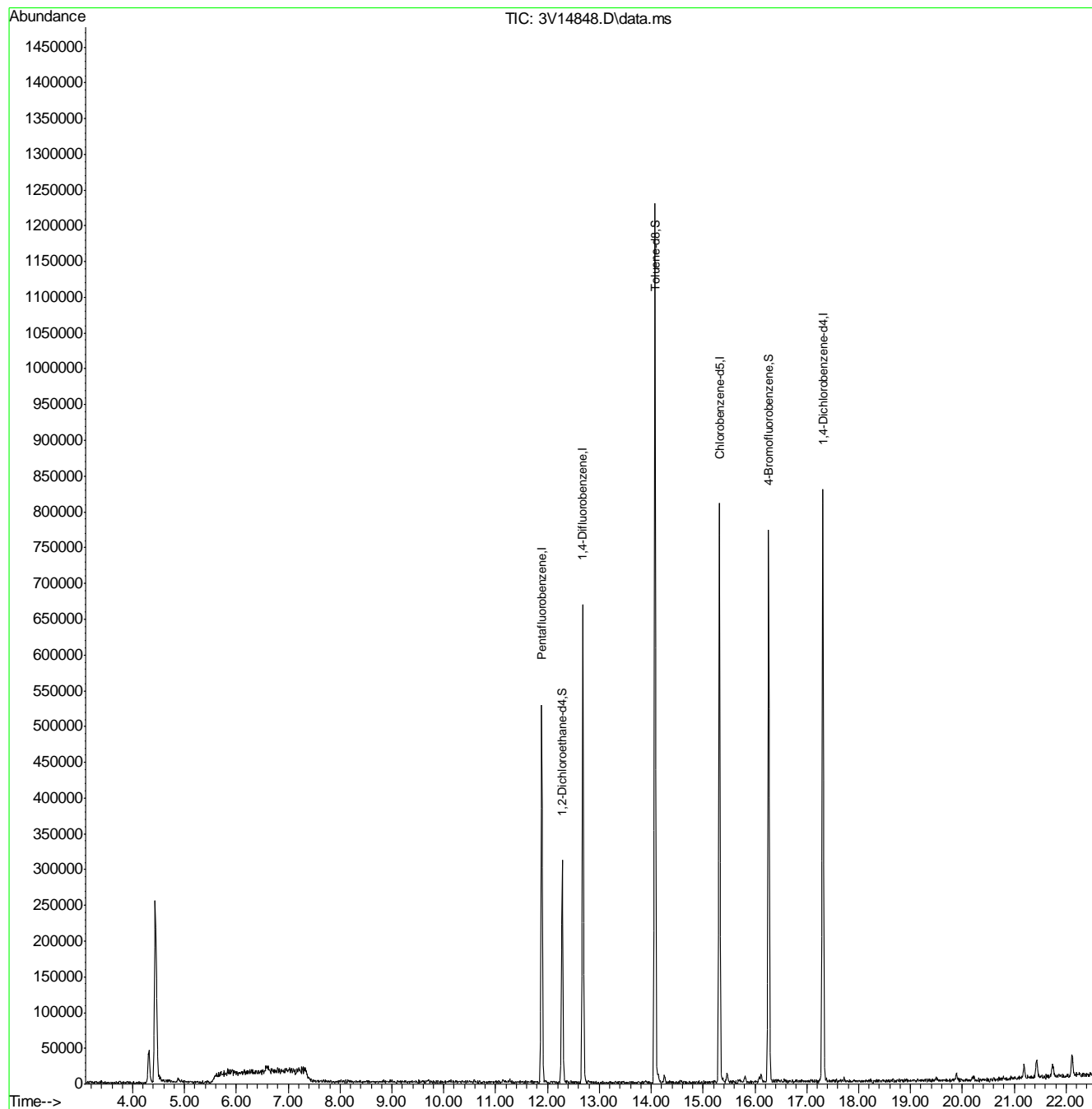
Target Compounds	Qvalue
------------------	--------

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

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3120311.S\
Data File : 3V14848.D
Acq On : 3 Dec 2011 11:35 am
Operator : koroushv
Sample : MB
Misc : MS3032,V3V861,5.00,,100,5,1
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Dec 06 08:26:18 2011
Quant Method : C:\msdchem\1\METHODS\V3AP850TVH850.M
Quant Title : 8260
QLast Update : Sat Nov 26 09:28:41 2011
Response via : Initial Calibration



GC 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: D29896**Account:** KRWCCOL KRW Consulting, Inc.**Project:** XOM FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB800-MB	GB14150.D	1	12/02/11	SK	n/a	n/a	GGB800

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

D29896-1

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	94% 60-140%

Blank Spike Summary

Page 1 of 1

Job Number: D29896

Account: KRWCCOL KRW Consulting, Inc.

Project: XOM FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB800-BS	GB14151.D	1	12/02/11	SK	n/a	n/a	GGB800

The QC reported here applies to the following samples:

Method: SW846 8015B

D29896-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	112	102	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	108%	60-140%

7.2.1

7

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D29896
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D29895-1MS	GB14153.D	1	12/02/11	SK	n/a	n/a	GGB800
D29895-1MSD	GB14154.D	1	12/02/11	SK	n/a	n/a	GGB800
D29895-1	GB14152.D	1	12/02/11	SK	n/a	n/a	GGB800

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

D29896-1

CAS No.	Compound	D29895-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		130	131	101	131	101	0	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D29895-1	Limits
120-82-1	1,2,4-Trichlorobenzene	104%	101%	96%	60-140%

7.3.1
7

GC Volatiles

Raw Data

∞

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\120211\GB14156.D\FID1A.CH Vial: 9
 Signal #2 : Y:\1\DATA\120211\GB14156.D\FID2B.CH
 Acq On : 2 Dec 2011 4:40 pm Operator: StephK
 Sample : D29896-1, 50X Inst : GC/MS Ins
 Misc : GC2446,GGB800,5.047,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Dec 02 16:26:47 2011 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Fri Dec 02 15:36:05 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

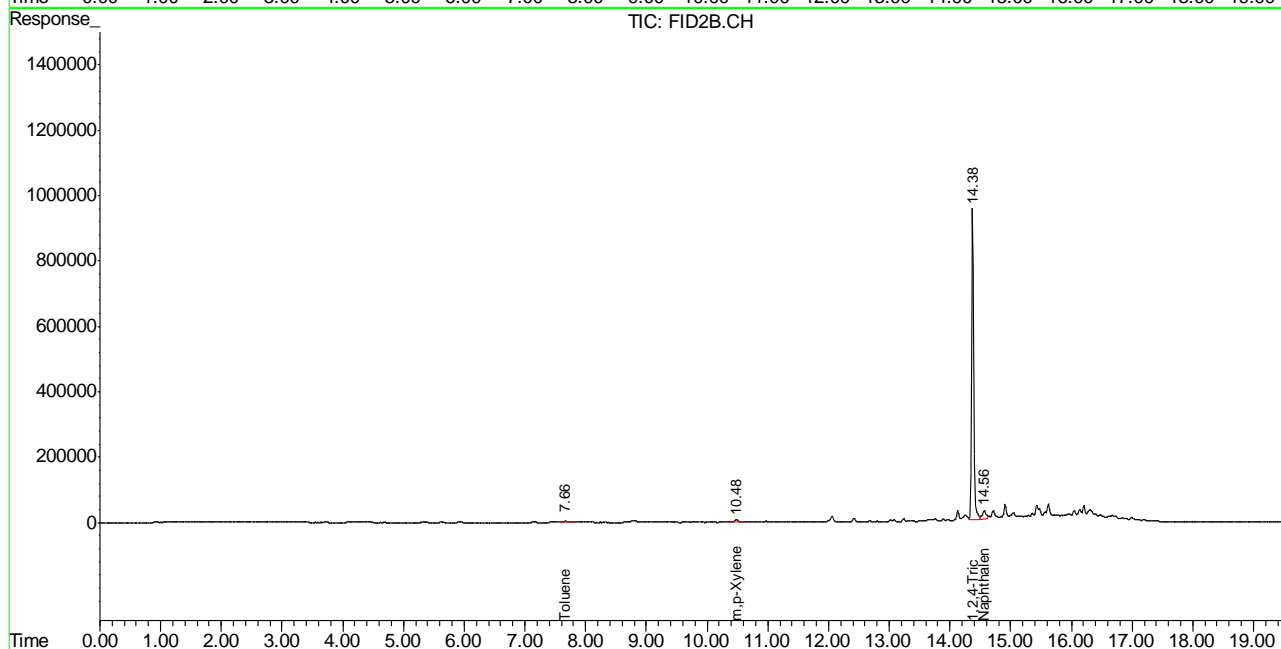
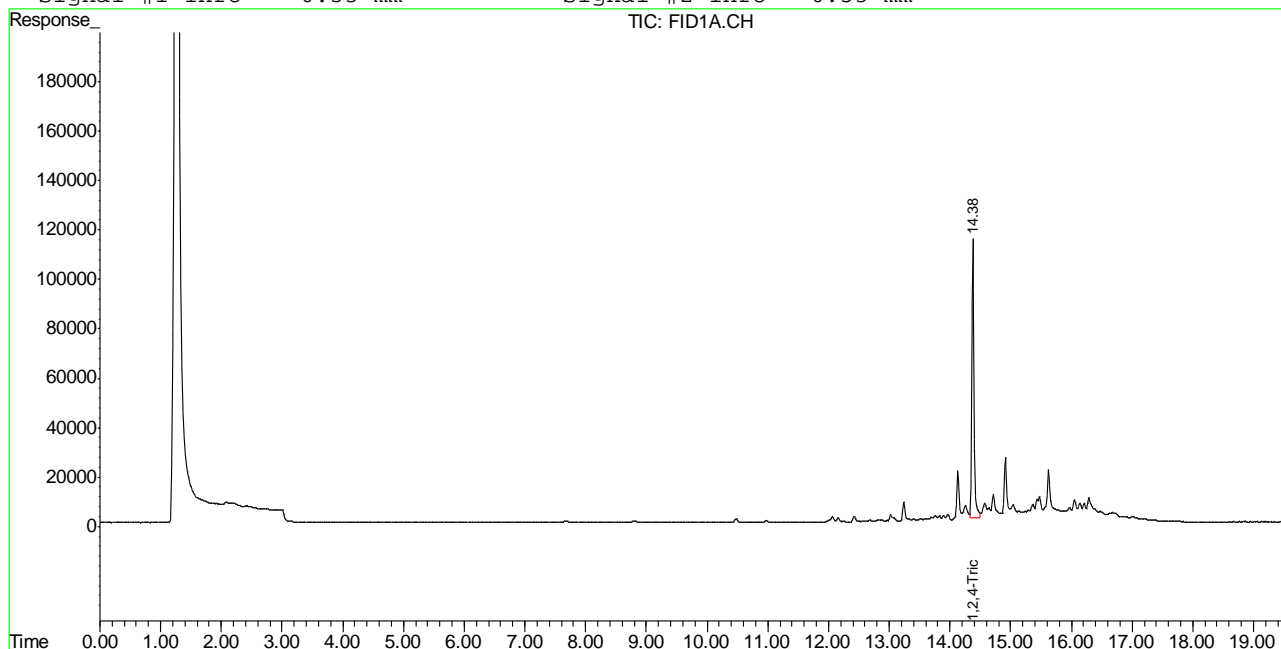
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.38	2820572	96.413	%
10) S	1,2,4-Trichlorobenzene (P)	14.38	22896113	99.618	%
Target Compounds					
1) H	TVH-Gasoline	7.32	5272347	<MDL	mg/L
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T	Benzene	0.00	0	N.D.	ug/L d
6) T	Toluene	7.66	186245	0.329	ug/L
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	10.48	332612	0.158	ug/L
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.56	1146757	4.455	ug/L

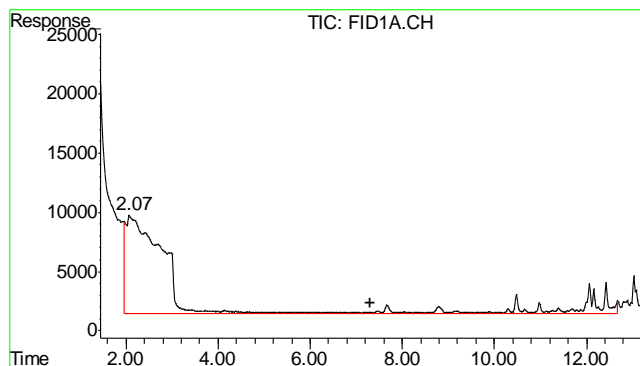
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\120211\GB14156.D\FID1A.CH Vial: 9
 Signal #2 : Y:\1\DATA\120211\GB14156.D\FID2B.CH
 Acq On : 2 Dec 2011 4:40 pm Operator: StephK
 Sample : D29896-1, 50X Inst : GC/MS Ins
 Misc : GC2446,GGB800,5.047,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Dec 2 16:26 2011 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Fri Dec 02 15:36:05 2011
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

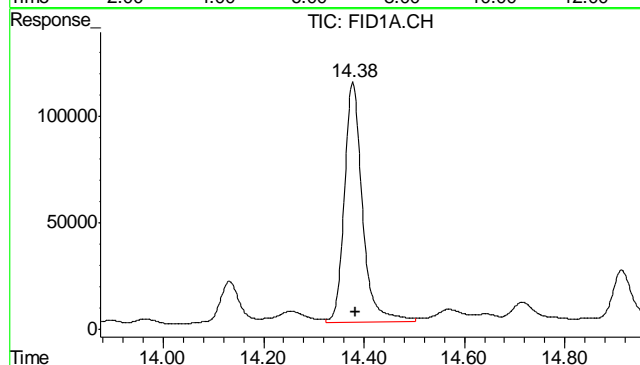
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





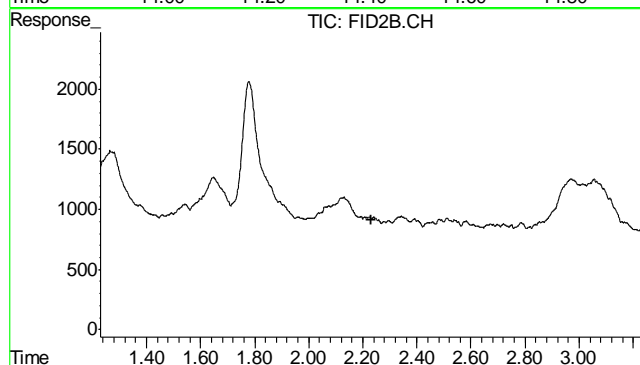
#1 TVH-Gasoline

R.T.: 7.315 min
Delta R.T.: 0.000 min
Response: 5272347
Conc: N.D.



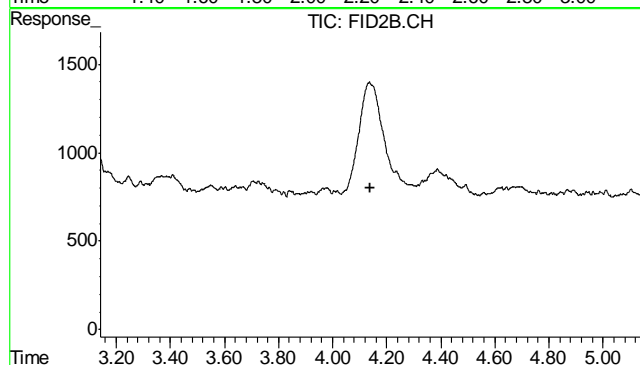
#2 1,2,4-Trichlorobenzene

R.T.: 14.378 min
Delta R.T.: -0.006 min
Response: 2820572
Conc: 96.41 %



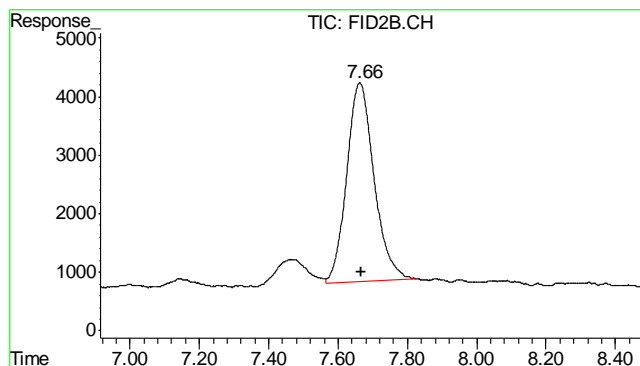
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T. : 2.229 min
Response: 0
Conc: N.D.



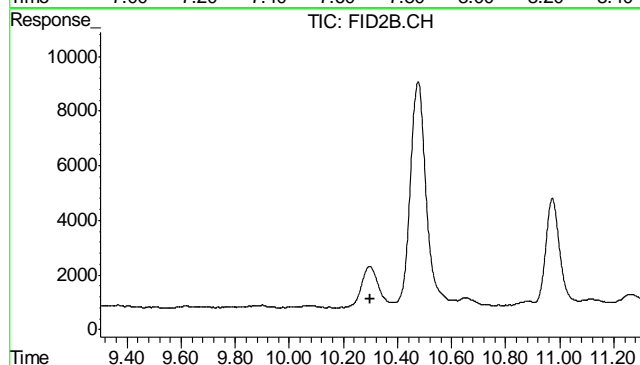
#5 Benzene

R.T.: 0.000 min
Exp R.T. : 4.140 min
Response: 0
Conc: N.D.



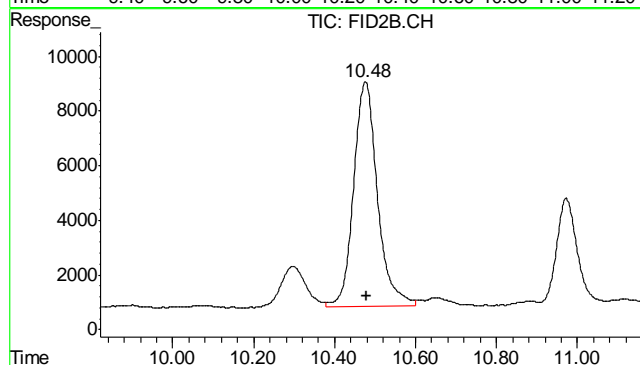
#6 Toluene

R.T.: 7.663 min
Delta R.T.: -0.004 min
Response: 186245
Conc: 0.33 ug/L



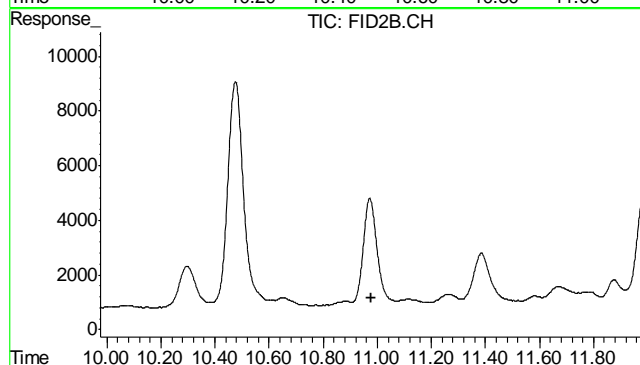
#7 Ethylbenzene

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



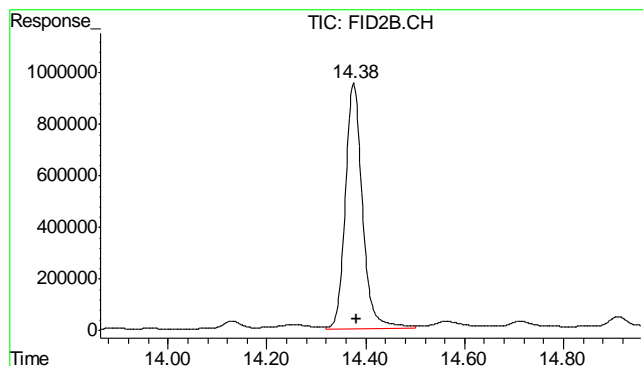
#8 m,p-Xylene

R.T.: 10.476 min
Delta R.T.: -0.004 min
Response: 332612
Conc: 0.16 ug/L



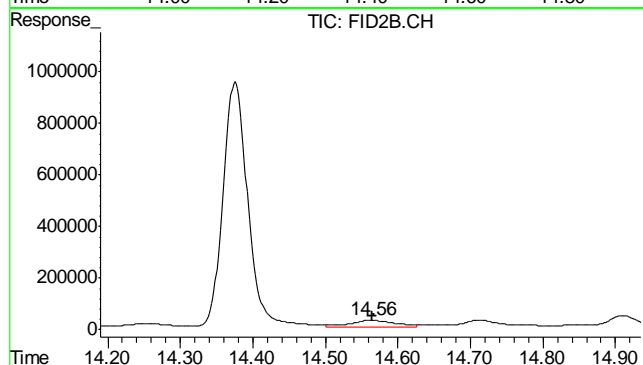
#9 o-Xylene

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



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

R.T.: 14.376 min
Delta R.T.: -0.006 min
Response: 22896113
Conc: 99.62 %



#11 Naphthalene

R.T.: 14.564 min
Delta R.T.: 0.000 min
Response: 1146757
Conc: 4.46 ug/L

8.1.1

8

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\120211\GB14150.D\FID1A.CH Vial: 3
Signal #2 : Y:\1\DATA\120211\GB14150.D\FID2B.CH
Acq On : 2 Dec 2011 1:05 pm Operator: StephK
Sample : MB, S Inst : GC/MS Ins
Misc : GC2446,GGB800,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Dec 02 13:56:08 2011 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Fri Dec 02 13:55:53 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	2751667	94.058	%
10) S 1,2,4-Trichlorobenzene (P)	14.38	22554166	98.130	%
Target Compounds				
1) H TVH-Gasoline	7.32	4833768	<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	7.67	208186	0.367	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	14.56	346575	1.346	ug/L

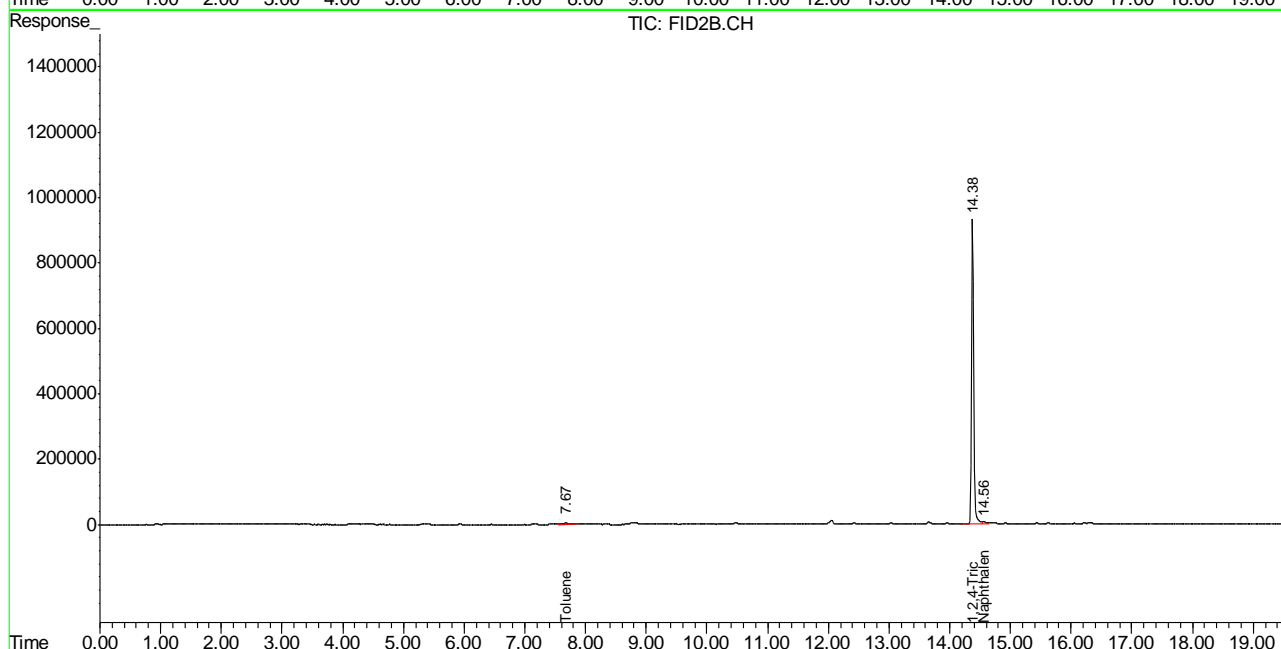
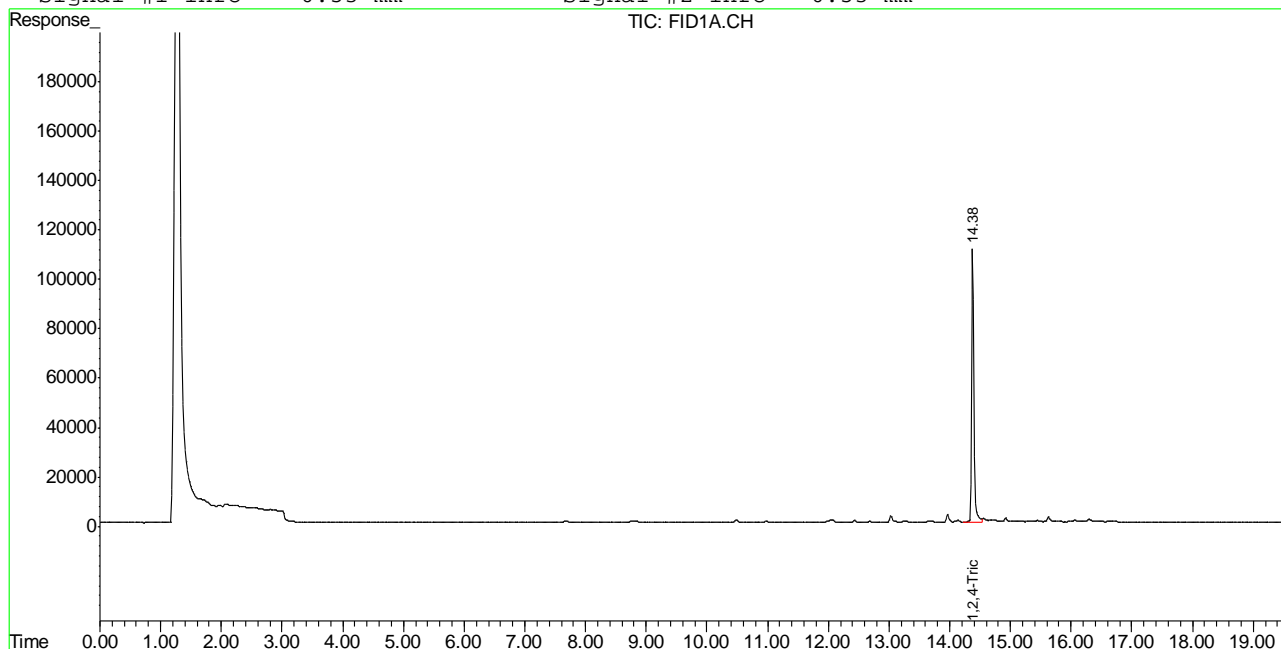
(f)=RT Delta > 1/2 Window (m)=manual int.
GB14150.D TB791GB791SOIL.M Sun Dec 04 10:46:14 2011 GC

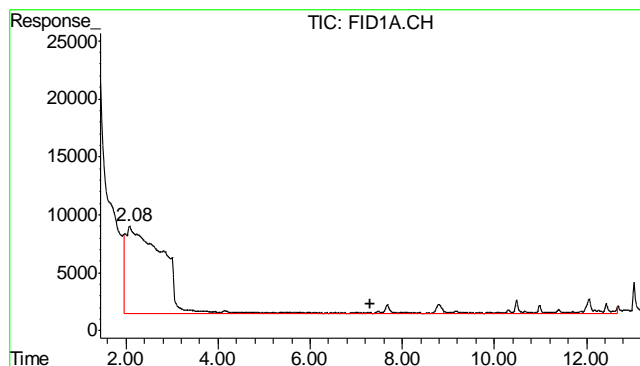
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\120211\GB14150.D\FID1A.CH Vial: 3
Signal #2 : Y:\1\DATA\120211\GB14150.D\FID2B.CH
Acq On : 2 Dec 2011 1:05 pm Operator: StephK
Sample : MB, S Inst : GC/MS Ins
Misc : GC2446,GGB800,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Dec 2 13:56 2011 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Fri Dec 02 13:55:53 2011
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

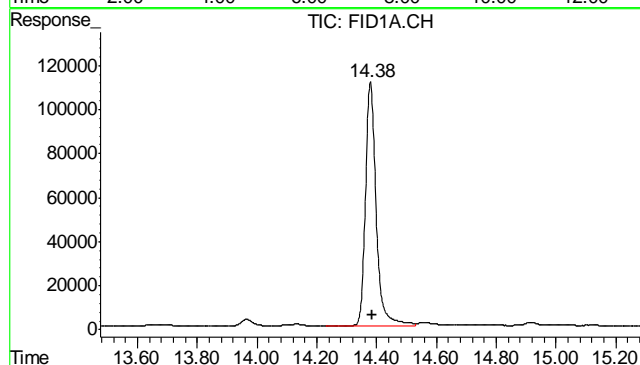
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





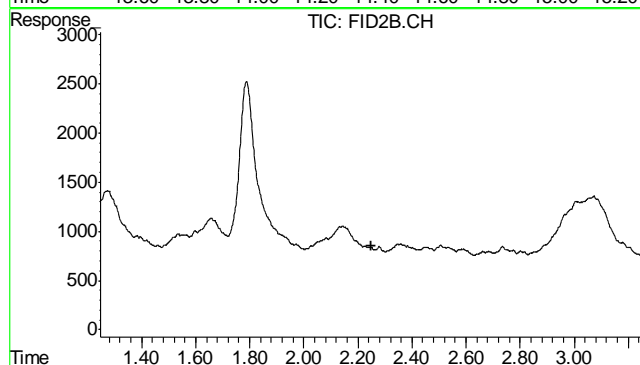
#1 TVH-Gasoline

R.T.: 7.315 min
Delta R.T.: 0.000 min
Response: 4833768
Conc: N.D.



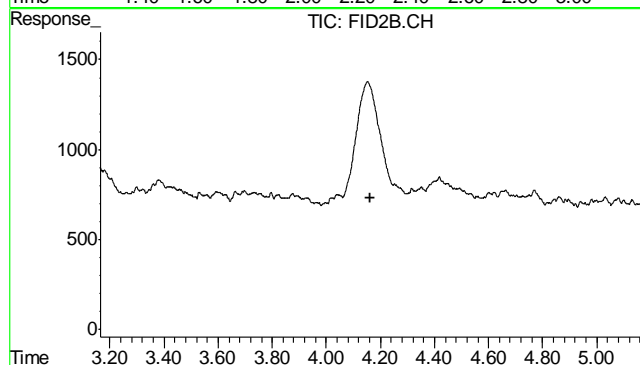
#2 1,2,4-Trichlorobenzene

R.T.: 14.379 min
Delta R.T.: -0.005 min
Response: 2751667
Conc: 94.06 %



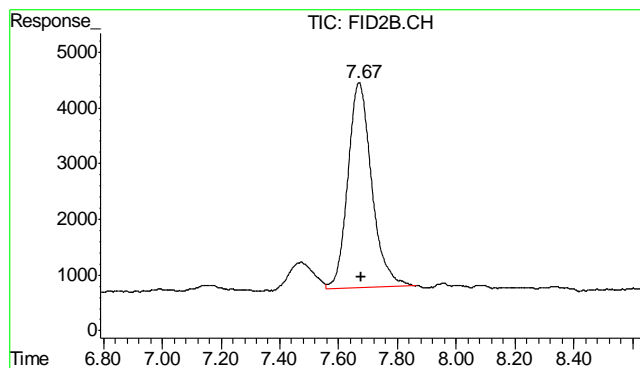
#4 Methyl-t-butyl-ether

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



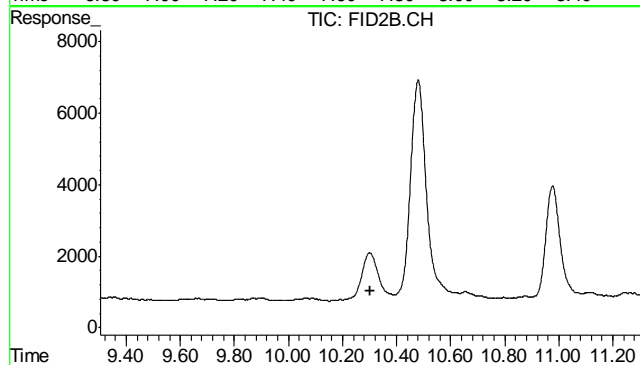
#5 Benzene

R.T.: 0.000 min
Exp R.T.: 4.163 min
Response: 0
Conc: N.D.



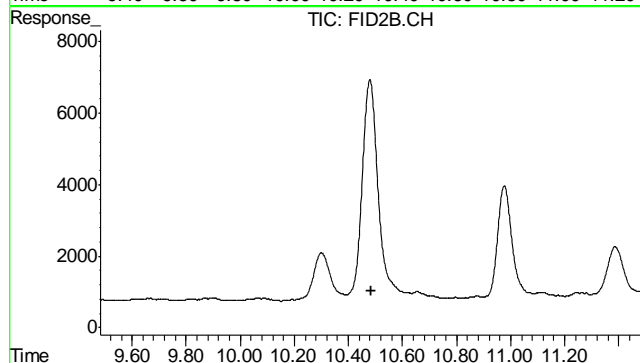
#6 Toluene

R.T.: 7.670 min
Delta R.T.: -0.007 min
Response: 208186
Conc: 0.37 ug/L



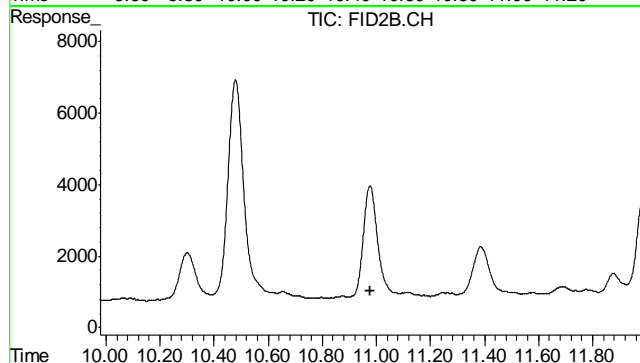
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T.: 10.303 min
Response: 0
Conc: N.D.



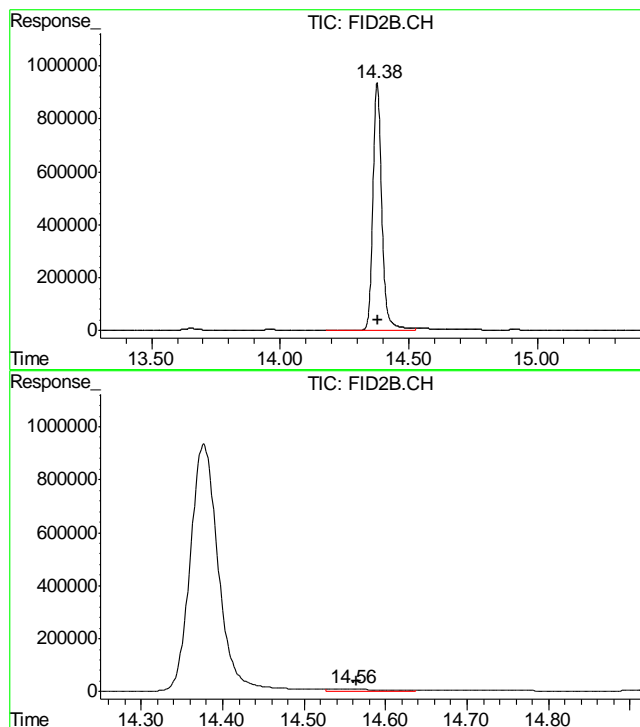
#8 m,p-Xylene

R.T.: 0.000 min
Exp R.T.: 10.483 min
Response: 0
Conc: N.D.



#9 o-Xylene

R.T.: 0.000 min
Exp R.T.: 10.978 min
Response: 0
Conc: N.D.



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

R.T.: 14.377 min
Delta R.T.: -0.004 min
Response: 22554166
Conc: 98.13 %

#11 Naphthalene

R.T.: 14.558 min
Delta R.T.: -0.006 min
Response: 346575
Conc: 1.35 ug/L

8.2.1

8

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D29896
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4942-MB	FD12031.D	1	12/06/11	TR	12/02/11	OP4942	GFD621

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

D29896-1

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	66% 43-136%

9.1.1
9

Blank Spike Summary

Job Number: D29896
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4942-BS	FD12032.D	1	12/06/11	TR	12/02/11	OP4942	GFD621

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

D29896-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	415	62	58-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	63%	43-136%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D29896
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4942-MS	FD12033.D	1	12/06/11	TR	12/02/11	OP4942	GFD621
OP4942-MSD	FD12034.D	1	12/06/11	TR	12/02/11	OP4942	GFD621
D29895-1	FD12035.D	1	12/06/11	TR	12/02/11	OP4942	GFD621

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

D29896-1

CAS No.	Compound	D29895-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	104		732	515	56	490	53	5	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D29895-1	Limits
84-15-1	o-Terphenyl	55%	54%	68%	43-136%

GC Semi-volatiles

Raw Data

Judy Melson
12/07/11 12:53

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2011\DEC\FD120611\FD12037.D Vial: 17
Acq On : 12-6-2011 07:55:39 PM Operator: TEDR
Sample : D29896-1 Inst : FID5
Misc : OP4942,GFD621,30.05,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Dec 07 08:53:39 2011 Quant Results File: GFD599.RES

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

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

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S O-Terphenyl	9.64	32557570	610.905 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	7.46	59393377	1152.603 mg/L

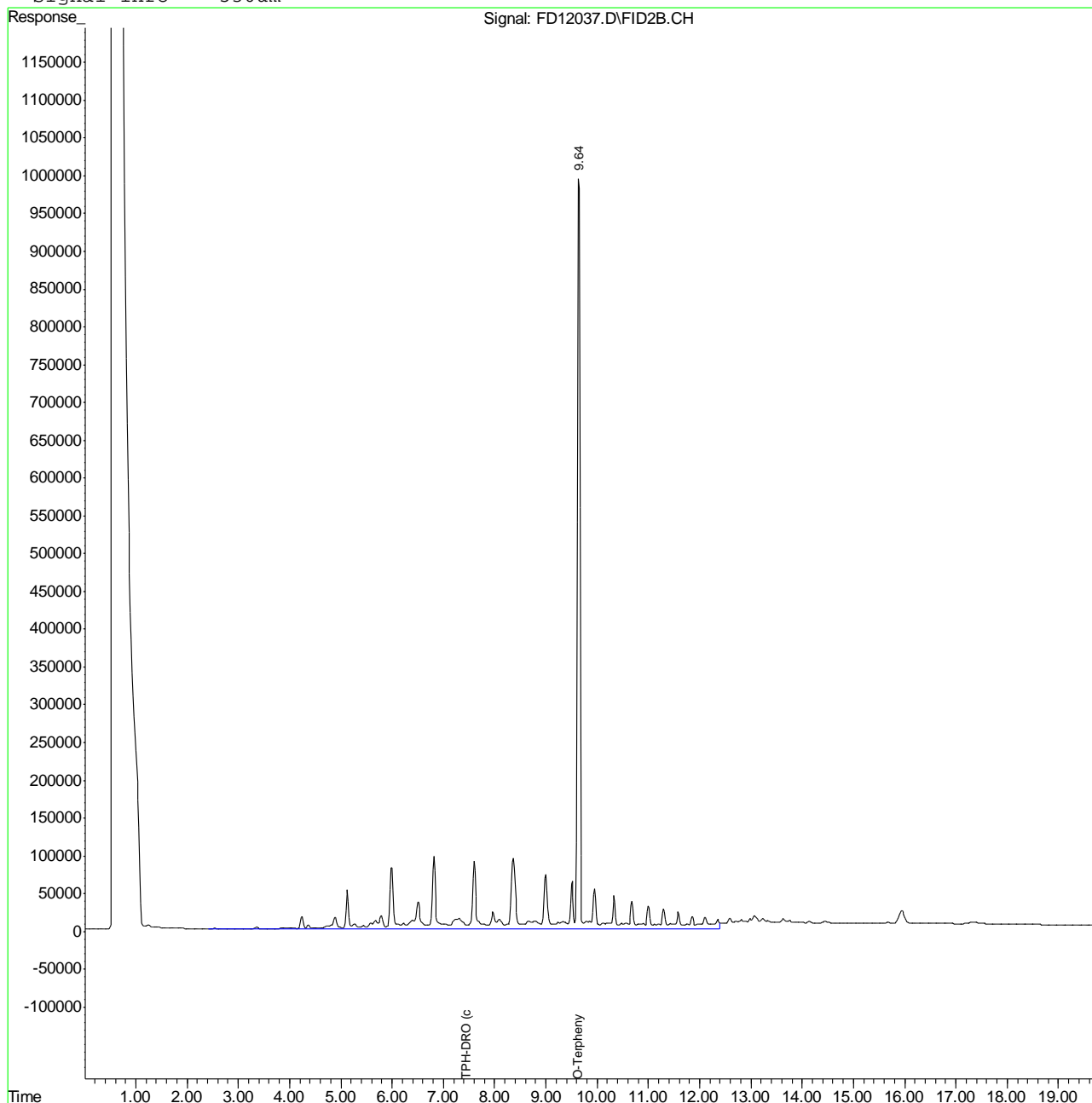
10.1.1
10

Quantitation Report (QT Reviewed)

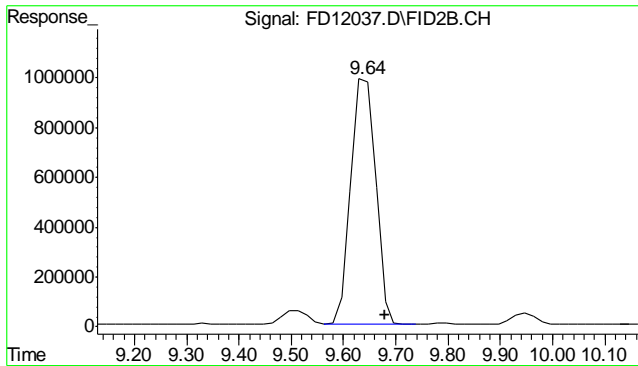
Data File : C:\MSDCHEM\2\DATA\2011\DEC\FD120611\FD12037.D Vial: 17
 Acq On : 12-6-2011 07:55:39 PM Operator: TEDR
 Sample : D29896-1 Inst : FID5
 Misc : OP4942,GFD621,30.05,,,2,1 Multiplr: 1.00
 IntFile : autoint1.e
 Quant Time: Dec 7 8:54 2011 Quant Results File: GFD599.RES

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

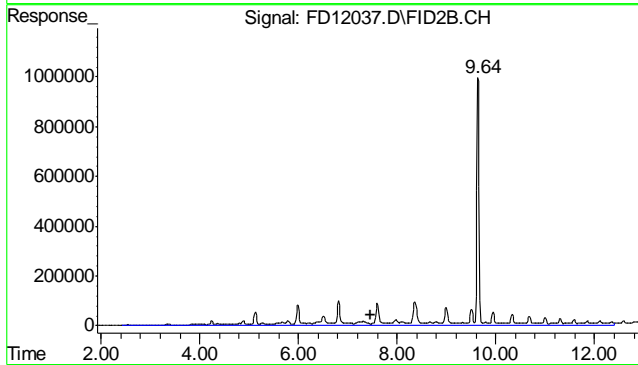
Volume Inj. : 1ul
 Signal Phase : RTX-5
 Signal Info : 530um



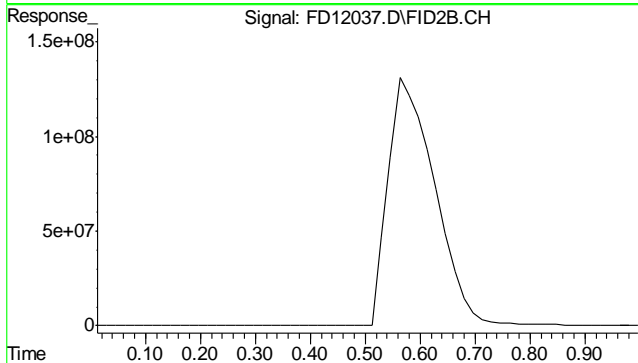
10.1.1
10



#1 O-Terphenyl
R.T.: 9.637 min
Delta R.T.: -0.043 min
Response: 32557570
Conc: 610.90 mg/L m



#2 TPH-DRO (c10-c28)
R.T.: 7.455 min
Delta R.T.: 0.000 min
Response: 59393377
Conc: 1152.60 mg/L m



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

10.1.1
10

Judy Melson
12/07/11 12:53

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2011\DEC\FD120611\FD12031.D Vial: 11
Acq On : 12-6-2011 05:19:46 PM Operator: TEDR
Sample : OP4942-MB Inst : FID5
Misc : OP4942,GFD621,30.00,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Dec 07 08:49:43 2011 Quant Results File: GFD599.RES

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

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

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S O-Terphenyl	9.64	34890923	655.390 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	7.46	3766945	72.895 mg/L

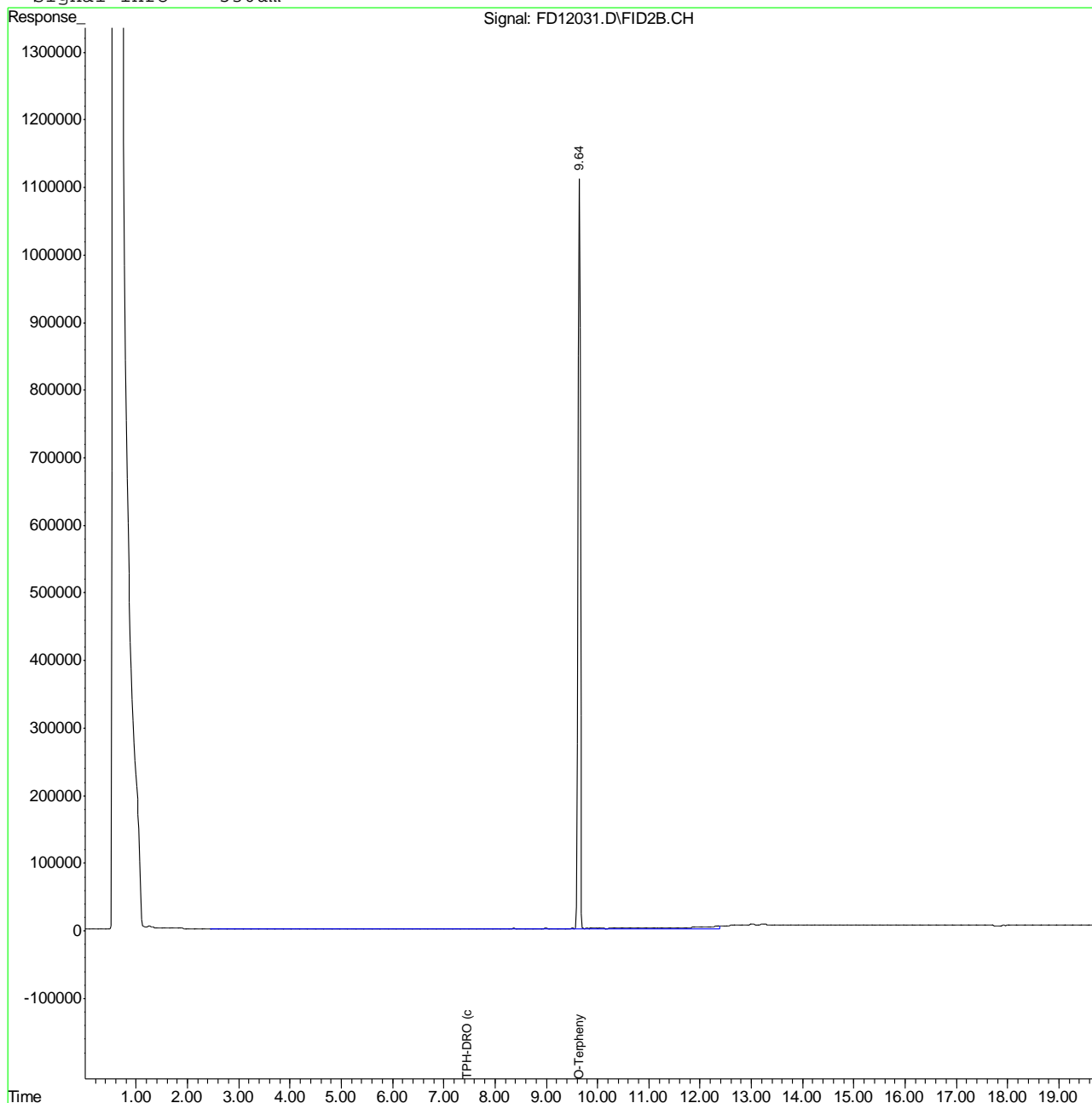
(f)=RT Delta > 1/2 Window (m)=manual int.
FD12031.D GFD599.M Wed Dec 07 09:08:54 2011 GC

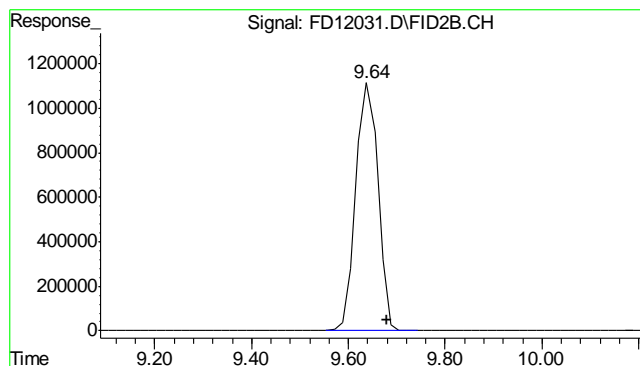
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2011\DEC\FD120611\FD12031.D Vial: 11
Acq On : 12-6-2011 05:19:46 PM Operator: TEDR
Sample : OP4942-MB Inst : FID5
Misc : OP4942,GFD621,30.00,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Dec 7 8:50 2011 Quant Results File: GFD599.RES

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

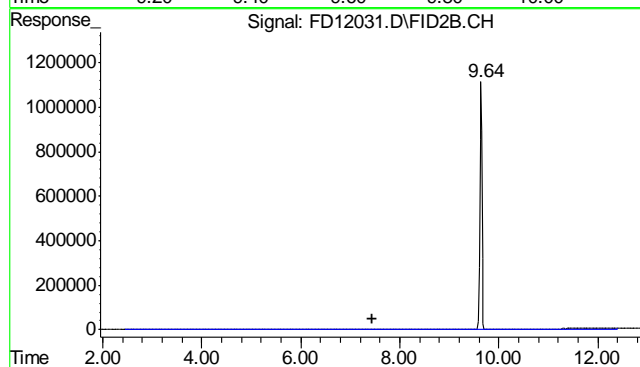
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um





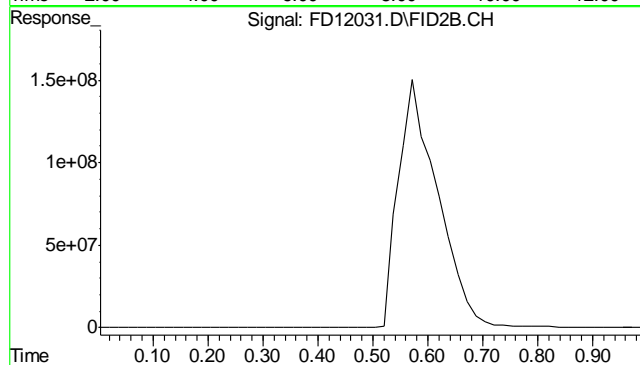
#1 O-Terphenyl

R.T.: 9.638 min
Delta R.T.: -0.042 min
Response: 34890923
Conc: 655.39 mg/L m



#2 TPH-DRO (c10-c28)

R.T.: 7.455 min
Delta R.T.: 0.000 min
Response: 3766945
Conc: 72.90 mg/L m



#9 5a-Androstane

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: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6421
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 12/08/11

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	0.040	<1.0
Cobalt	0.50	.035	.035		
Copper	1.0	.085	.16	-0.020	<1.0
Iron	7.0	.34	2		
Lead	5.0	.16	.21	0.16	<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	0.010	<3.0
Phosphorus	10	1.1	1.2		
Potassium	200	5.5	9.2		
Selenium	5.0	.38	.5	0.32	<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	0.39	<3.0

Associated samples MP6421: D29896-1R

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6421
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

11.1.1
11

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6421
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 12/08/11

Metal	D29896-1R Original MS		SpikeLot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	420	609	206	91.7	75-125
Beryllium					
Boron					
Cadmium	0.22	48.5	51.5	93.7	75-125
Calcium					
Chromium	18.4	63.6	51.5	87.7	75-125
Cobalt					
Copper	5.7	49.1	51.5	84.2	75-125
Iron					
Lead	3.9	95.4	103	88.8	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	12.3	54.1	51.5	81.1	75-125
Phosphorus					
Potassium					
Selenium	2.8	100	103	94.3	75-125
Silicon					
Silver	0.0	20.5	20.6	99.4	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	27.2	69.3	51.5	81.7	75-125

Associated samples MP6421: D29896-1R

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6421
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6421
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 12/08/11

	D29896-1R		Spikelot		MSD	QC
Metal	Original	MSD	MPICPAL	% Rec	RPD	Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	420	625	216	94.7	2.6	20
Beryllium						
Boron						
Cadmium	0.22	50.5	54.1	92.9	4.0	20
Calcium						
Chromium	18.4	65.3	54.1	86.7	2.6	20
Cobalt						
Copper	5.7	48.8	54.1	79.6	0.6	20
Iron						
Lead	3.9	95.0	108	84.2	0.4	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	12.3	54.7	54.1	78.4	1.1	20
Phosphorus						
Potassium						
Selenium	2.8	104	108	93.5	3.9	20
Silicon						
Silver	0.0	21.4	21.6	98.9	4.3	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	27.2	69.6	54.1	78.4	0.4	20

Associated samples MP6421: D29896-1R

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6421
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: D29896
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6421
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date: 12/08/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	201	200	100.5	80-120
Beryllium				
Boron				
Cadmium	48.7	50	97.4	80-120
Calcium				
Chromium	50.3	50	100.6	80-120
Cobalt				
Copper	48.6	50	97.2	80-120
Iron				
Lead	97.2	100	97.2	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	48.1	50	96.2	80-120
Phosphorus				
Potassium				
Selenium	99.3	100	99.3	80-120
Silicon				
Silver	20.4	20	102.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	51.8	50	103.6	80-120

Associated samples MP6421: D29896-1R

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

11.1.3

Project: XOM FRU 197-33A

Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6421
Matrix Type: SOLID

Methods: SW846 6010B
Units: ug/l

Prep Date: 12/08/11

Metal	D29896-1R Original SDL 1:5		%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	3840	4040	5.1	0-10
Beryllium				
Boron				
Cadmium	2.00	0.00	100.0(a)	0-10
Calcium				
Chromium	168	190	12.5*(b)	0-10
Cobalt				
Copper	72.6	0.00	100.0(a)	0-10
Iron				
Lead	66.9	0.00	100.0(a)	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	113	135	20.0*(b)	0-10
Phosphorus				
Potassium				
Selenium	25.7	47.5	84.8 (a)	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	249	487	95.7*(b)	0-10

Associated samples MP6421: D29896-1R

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6421
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.

11.1.4
11

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6422
Matrix Type: SOLID

Methods: SW846 6020
Units: mg/kg

Prep Date: 12/08/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.14	1.2		
Antimony	0.20	.001	.0095		
Arsenic	0.40	.049	.22	0.19	<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 MP6422: D29896-1R

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: D29896
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6422
 Matrix Type: SOLID

Methods: SW846 6020
 Units: mg/kg

Prep Date: 12/08/11

Metal	D29896-1R Original MS		Spikelot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic	5.5	109	103	100.4	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 MP6422: D29896-1R

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: D29896
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6422
 Matrix Type: SOLID

Methods: SW846 6020
 Units: mg/kg

Prep Date: 12/08/11

Metal	D29896-1R Original MSD	Spikelot MPICPAL % Rec	MSD RPD	QC Limit
Aluminum				
Antimony				
Arsenic	5.5	110	108	96.6
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6422: D29896-1R

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: D29896
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6422
 Matrix Type: SOLID

Methods: SW846 6020
 Units: mg/kg

Prep Date: 12/08/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	99.1	100	99.1	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 MP6422: D29896-1R

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6422
Matrix Type: SOLID

Methods: SW846 6020
Units: ug/l

Prep Date: 12/08/11

Metal	D29896-1R			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	50.5	52.7	4.4	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 MP6422: D29896-1R

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: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6423
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 12/08/11

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.013	-0.0014	<0.10

Associated samples MP6423: D29896-1R

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: D29896
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6423
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 12/08/11

Metal	D30022-1		Spikelot		QC	
	Original MS		HGWSR1		% Rec	
						Limits
Mercury	0.013	0.44	0.436	98.0		85-115

Associated samples MP6423: D29896-1R

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: D29896
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6423
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 12/08/11

Metal	D30022-1 Original MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.013	0.44	0.453	94.3	0.0 20

Associated samples MP6423: D29896-1R

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

11.3.2
11

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29896
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6423
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 12/08/11

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

Associated samples MP6423: D29896-1R

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: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6425
Matrix Type: AQUEOUS

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

Prep Date: 12/08/11

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	90.5	<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	34.5	<1000
Manganese	25	.27	1.6		
Molybdenum	50	2.3	4.4		
Nickel	150	2.2	5		
Phosphorus	500	55	100		
Potassium	5000	280	280		
Selenium	250	19	19		
Silicon	250	19	19		
Silver	150	.9	1.6		
Sodium	2000	570	570	-30	<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 MP6425: D29896-1RA

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6425
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6425
Matrix Type: AQUEOUS

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

Prep Date: 12/08/11

Metal	D29896-1RA Original MS		Spikelot MPICPAL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	49200	188000	125000	111.0	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	16600	139000	125000	97.9	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	236000	346000	125000	88.0	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6425: D29896-1RA

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6425
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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6425
Matrix Type: AQUEOUS

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

Prep Date: 12/08/11

Metal	D29896-1RA Original MSD		Spikelot MPICPAL % Rec		MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	49200	186000	125000	109.4	1.1	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	16600	139000	125000	97.9	0.0	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	236000	355000	125000	95.2	2.6	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP6425: D29896-1RA

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6425
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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6425
Matrix Type: AQUEOUS

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

Prep Date: 12/08/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	136000	125000	108.8	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	123000	125000	98.4	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	121000	125000	96.8	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6425: D29896-1RA

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6425
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: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Specific Conductivity	GP6088/GN12823			umhos/cm	10008	9900	98.9	90-110%
pH	GN12804			su	8.00	7.98	99.8	99.3-100.7%

Associated Samples:
Batch GN12804: D29896-1R
Batch GP6088: D29896-1R
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D29896
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Redox Potential Vs H2	GN12831	D30098-1	mv	414	424	2.4	0-20%

Associated Samples:
Batch GN12831: D29896-1R
(*) 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: D29896

Client: AMS

Immediate Client Services Action Required: No

Date / Time Received: 12/8/2011

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

Accutest Laboratories
V:508.481.6200

495 Technology Center West, Bldg One
F: 508.481.7753

Marlborough, MA
www.accutest.com

13.1
13

GC/MS Semi-volatiles

QC Data Summaries

(Accutest Labs of New England, Inc.)

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: D29896
Account: ALMS Accutest Mountain States
Project: KRWCCOL: XOM FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27187-MB	U3774.D	1	12/10/11	KR	12/09/11	OP27187	MSU228

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

D29896-1R

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	5.0	0.58	ug/kg	
120-12-7	Anthracene	ND	5.0	0.81	ug/kg	
56-55-3	Benzo(a)anthracene	ND	5.0	0.62	ug/kg	
50-32-8	Benzo(a)pyrene	ND	5.0	0.72	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	5.0	0.61	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	5.0	0.96	ug/kg	
218-01-9	Chrysene	ND	5.0	0.77	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	5.0	1.4	ug/kg	
206-44-0	Fluoranthene	ND	5.0	0.79	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.0	1.3	ug/kg	
91-20-3	Naphthalene	ND	5.0	1.1	ug/kg	
129-00-0	Pyrene	ND	5.0	1.7	ug/kg	

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	52% 30-130%
321-60-8	2-Fluorobiphenyl	50% 30-130%
1718-51-0	Terphenyl-d14	65% 30-130%

14.1.1
14

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 1

Job Number: D29896

Account: ALMS Accutest Mountain States

Project: KRWCCOL: XOM FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27187-BS	U3775.D	1	12/10/11	KR	12/09/11	OP27187	MSU228
OP27187-BSD	U3776.D	1	12/10/11	KR	12/09/11	OP27187	MSU228

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D29896-1R

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	2490	1990	80	1860	75	7	40-140/30
120-12-7	Anthracene	2490	2110	85	1930	78	9	40-140/30
56-55-3	Benzo(a)anthracene	2490	2600	105	2440	98	6	40-140/30
50-32-8	Benzo(a)pyrene	2490	1950	78	1830	74	6	40-140/30
205-99-2	Benzo(b)fluoranthene	2490	2200	89	2090	84	5	40-140/30
207-08-9	Benzo(k)fluoranthene	2490	2320	93	2220	89	4	40-140/30
218-01-9	Chrysene	2490	2290	92	2130	86	7	40-140/30
53-70-3	Dibenzo(a,h)anthracene	2490	2090	84	1910	77	9	40-140/30
206-44-0	Fluoranthene	2490	2100	85	1980	80	6	40-140/30
86-73-7	Fluorene	2490	2050	82	1880	76	9	40-140/30
193-39-5	Indeno(1,2,3-cd)pyrene	2490	2130	86	1930	78	10	40-140/30
91-20-3	Naphthalene	2490	1840	74	1760	71	4	40-140/30
129-00-0	Pyrene	2490	2450	99	2300	93	6	40-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
4165-60-0	Nitrobenzene-d5	77%	73%	30-130%
321-60-8	2-Fluorobiphenyl	77%	72%	30-130%
1718-51-0	Terphenyl-d14	99%	94%	30-130%

14.2.1

14

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D29896

Account: ALMS Accutest Mountain States

Project: KRWCCOL: XOM FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP27187-MS	U3856.D	1	12/13/11	KR	12/09/11	OP27187	MSU233
OP27187-MSD	U3857.D	1	12/13/11	KR	12/09/11	OP27187	MSU233
MC6194-7	U3858.D	1	12/13/11	KR	12/09/11	OP27187	MSU233

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D29896-1R

CAS No.	Compound	MC6194-7 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	6.0	2420	1640	68	1740	72	6	40-140/30
120-12-7	Anthracene	14.6	2420	1770	73	1920	79	8	40-140/30
56-55-3	Benzo(a)anthracene	45.3	2420	2240	91	2410	98	7	40-140/30
50-32-8	Benzo(a)pyrene	44.0	2420	1650	66	1800	73	9	40-140/30
205-99-2	Benzo(b)fluoranthene	41.1	2420	1790	72	1990	81	11	40-140/30
207-08-9	Benzo(k)fluoranthene	40.4	2420	1770	71	1970	80	11	40-140/30
218-01-9	Chrysene	59.6	2420	2000	80	2140	86	7	40-140/30
53-70-3	Dibenzo(a,h)anthracene	23.4	2420	2190	90	2360	97	7	40-140/30
206-44-0	Fluoranthene	73.2	2420	1810	72	2160	87	18	40-140/30
86-73-7	Fluorene	13.1	2420	1680	69	1870	77	11	40-140/30
193-39-5	Indeno(1,2,3-cd)pyrene	47.0	2420	2260	91	2420	98	7	40-140/30
91-20-3	Naphthalene	10.5	2420	1420	58	1330	55	7	40-140/30
129-00-0	Pyrene	88.4	2420	2050	81	2030	81	1	40-140/30

CAS No.	Surrogate Recoveries	MS	MSD	MC6194-7	Limits
4165-60-0	Nitrobenzene-d5	59%	51%	68%	30-130%
321-60-8	2-Fluorobiphenyl	64%	63%	75%	30-130%
1718-51-0	Terphenyl-d14	81%	80%	96%	30-130%

14.3.1
14



GC/MS Semi-volatiles

Raw Data

(Accutest Labs of New England, Inc.)

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
 Data File : u3859.D
 Acq On : 13 Dec 2011 2:24 pm
 Operator : KristinR
 Sample : D29896-1R
 Misc : op27187,msu233,20.48,,,1,1
 ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 13 14:58:06 2011
 Quant Method : C:\msdchem\1\METHODS\U120911_sim8270.m
 Quant Title : SW-846-Method 8270 by SIM
 QLast Update : Fri Dec 09 14:42:46 2011
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.446	152	192215	40.00	ppb	0.01
5) Naphthalene-d8	6.733	136	574966	40.00	ppb	0.00
10) Acenaphthene-d10	9.195	164	267007	40.00	ppb	0.00
18) Phenanthrene-d10	11.710	188	428138	40.00	ppb	0.00
26) Chrysene-d12	16.666	240	385798	40.00	ppb	0.00
31) Perylene-d12	19.206	264	444287	40.00	ppb	0.00

System Monitoring Compounds

2) 2-Fluorophenol	4.321	112	233386	47.88	ppb	0.02
Spiked Amount	100.000	Range	10 - 110	Recovery	=	47.88%
3) Phenol-d5	5.150	99	253164	45.09	ppb	0.01
Spiked Amount	100.000	Range	10 - 110	Recovery	=	45.09%
6) Nitrobenzene-d5	6.003	82	120149	26.22	ppb	0.01
Spiked Amount	50.000	Range	30 - 119	Recovery	=	52.44%
12) 2-Fluorobiphenyl	8.141	172	272523	28.33	ppb	0.00
Spiked Amount	50.000	Range	40 - 110	Recovery	=	56.66%
19) 2,4,6-Tribromophenol	10.536	330	49594	68.12	ppb	0.00
Spiked Amount	100.000	Range	10 - 157	Recovery	=	68.12%
28) Terphenyl-d14	14.719	244	229209	35.39	ppb	0.00
Spiked Amount	50.000	Range	30 - 124	Recovery	=	70.78%

Target Compounds

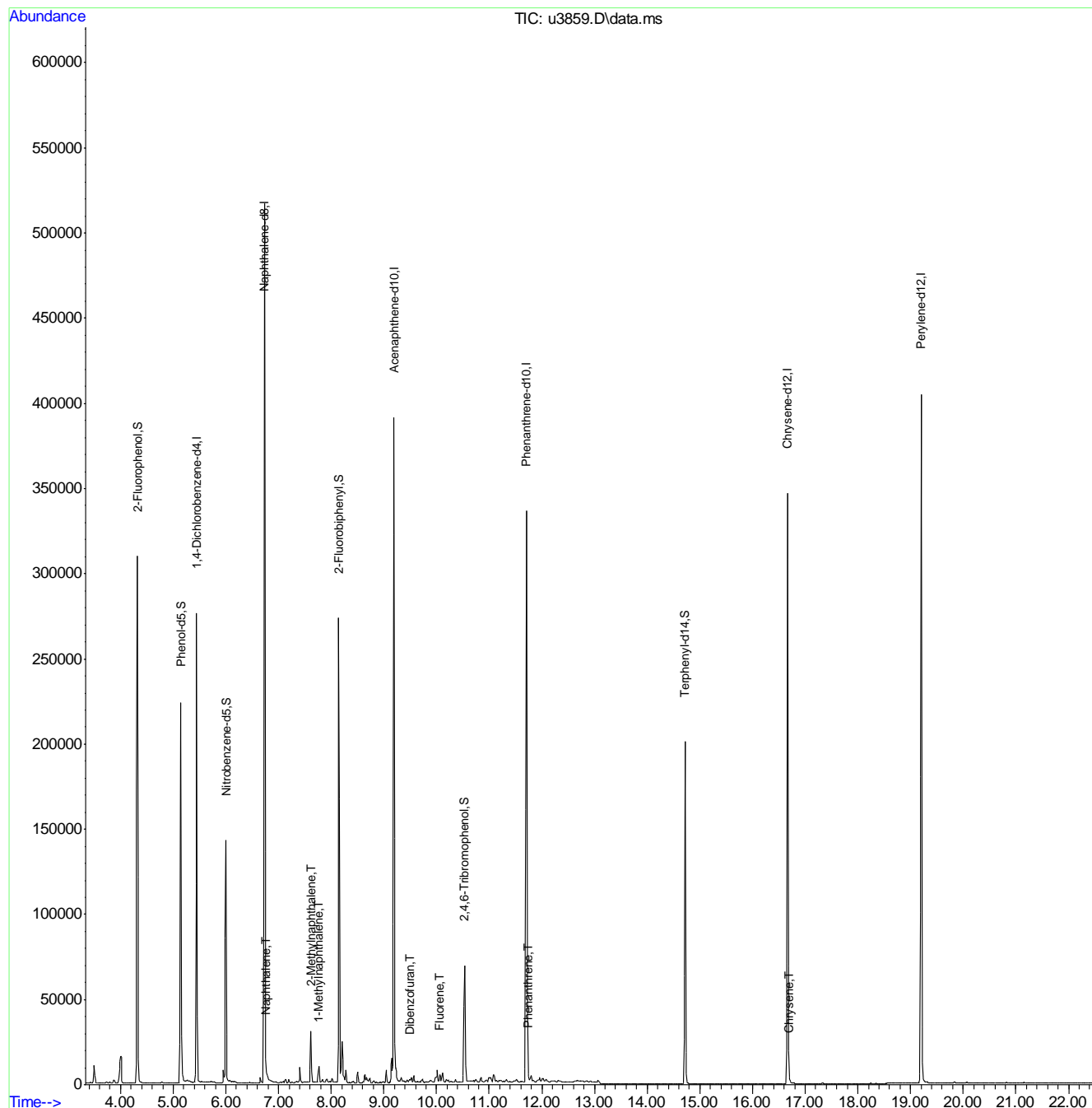
						Qvalue
7) Naphthalene	6.759	128	5589	0.40	ppb	99
8) 2-Methylnaphthalene	7.612	142	18858	1.88	ppb	99
9) 1-Methylnaphthalene	7.767	142	6379	0.69	ppb	92
16) Dibenzofuran	9.480	168	1455	0.13	ppb	56
17) Fluorene	10.060	166	3564	0.39	ppb	82
22) Phenanthrene	11.738	178	4677	0.38	ppb	97
30) Chrysene	16.704	228	258	0.03	ppb	94

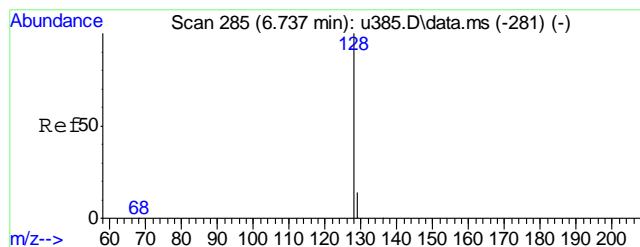
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\
Data File : u3859.D
Acq On : 13 Dec 2011 2:24 pm
Operator : KristinR
Sample : D29896-1R
Misc : op27187,msu233,20.48,,,1,1
ALS Vial : 12 Sample Multiplier: 1

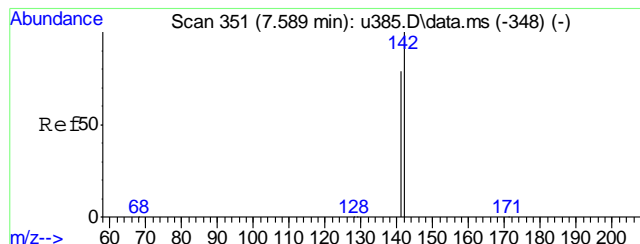
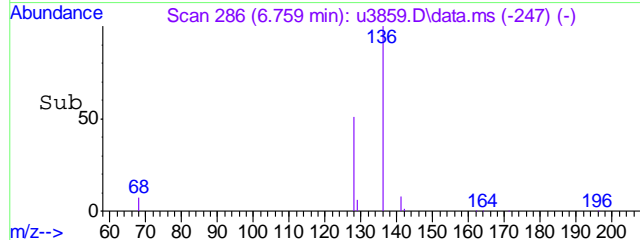
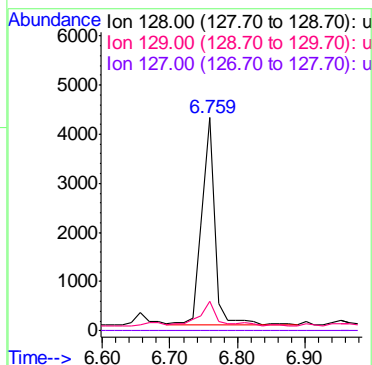
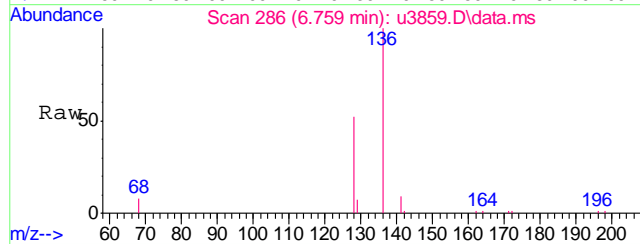
Quant Time: Dec 13 14:58:06 2011
Quant Method : C:\msdchem\1\METHODS\U120911_sim8270.m
Quant Title : SW-846-Method 8270 by SIM
QLast Update : Fri Dec 09 14:42:46 2011
Response via : Initial Calibration





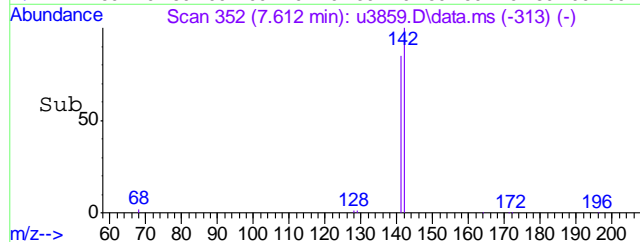
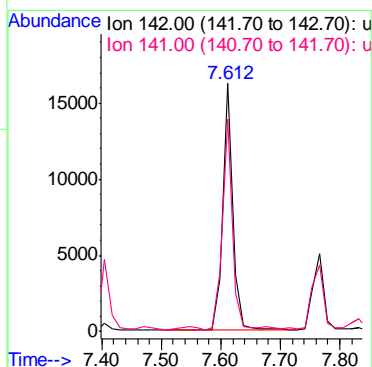
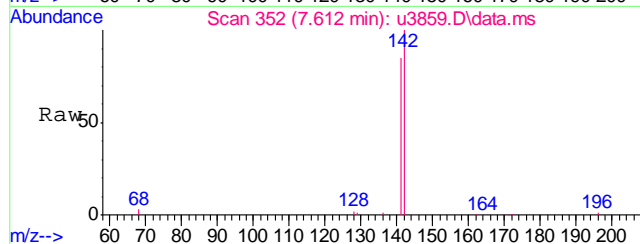
#7
Naphthalene
Concen: 0.40 ppb
RT: 6.759 min Scan# 286
Delta R.T. -0.000 min
Lab File: u3859.D
Acq: 13 Dec 2011 2:24 pm

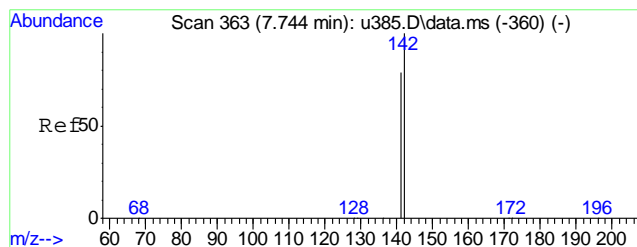
Tgt Ion	Ratio	Lower	Upper
128	100		
129	11.8	0.0	41.3
127	0.0	0.0	30.0



#8
2-Methylnaphthalene
Concen: 1.88 ppb
RT: 7.612 min Scan# 352
Delta R.T. -0.000 min
Lab File: u3859.D
Acq: 13 Dec 2011 2:24 pm

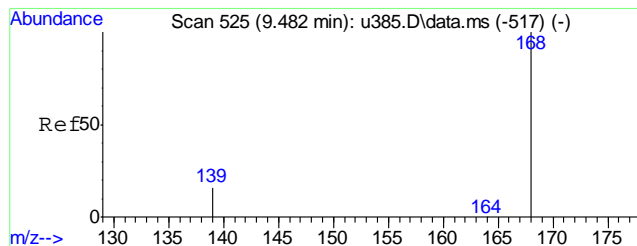
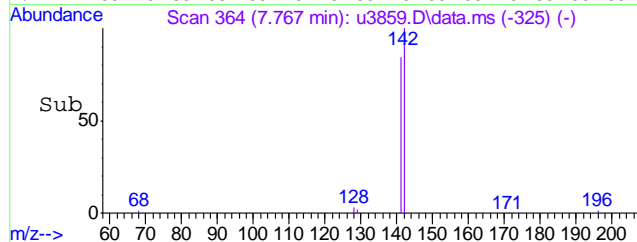
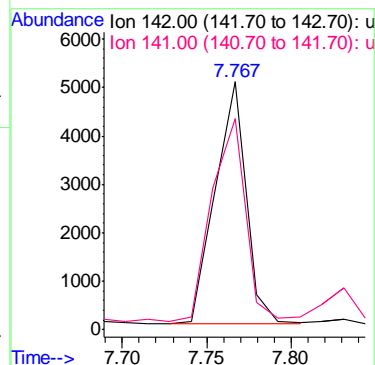
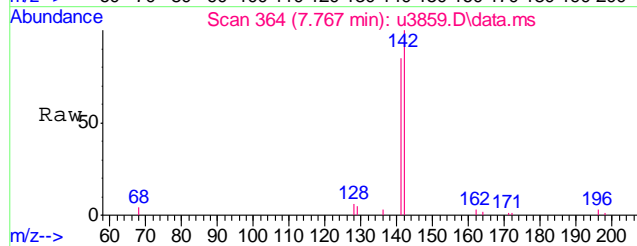
Tgt Ion	Ratio	Lower	Upper
142	100		
141	85.0	55.6	115.6





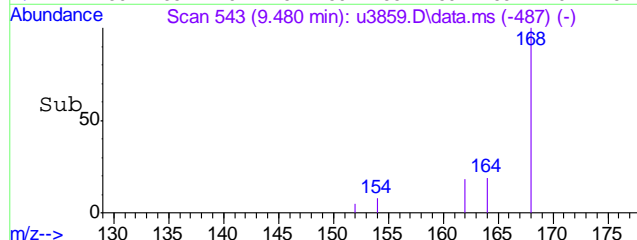
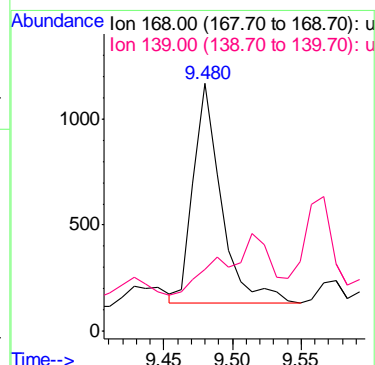
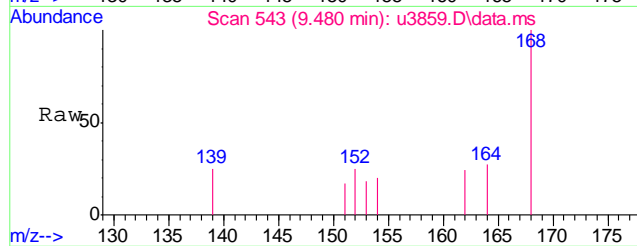
#9
1-Methylnaphthalene
Concen: 0.69 ppb
RT: 7.767 min Scan# 364
Delta R.T. -0.000 min
Lab File: u3859.D
Acq: 13 Dec 2011 2:24 pm

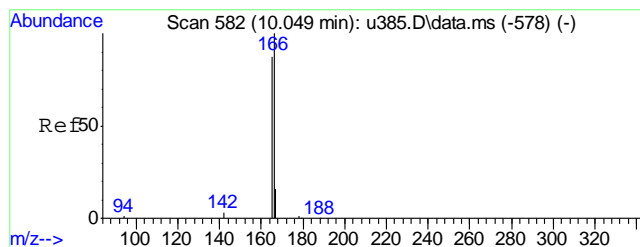
Tgt Ion:142 Resp: 6379
Ion Ratio Lower Upper
142 100
141 83.6 71.2 111.2



#16
Dibenzofuran
Concen: 0.13 ppb
RT: 9.480 min Scan# 543
Delta R.T. -0.017 min
Lab File: u3859.D
Acq: 13 Dec 2011 2:24 pm

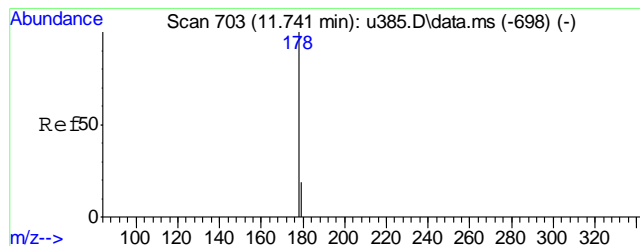
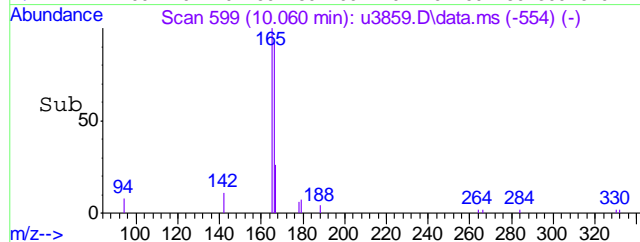
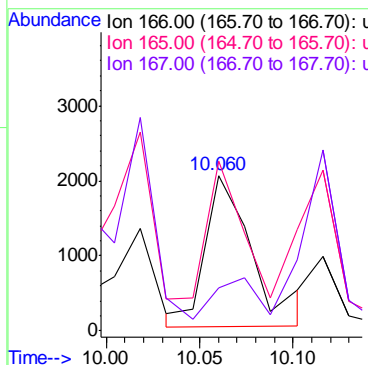
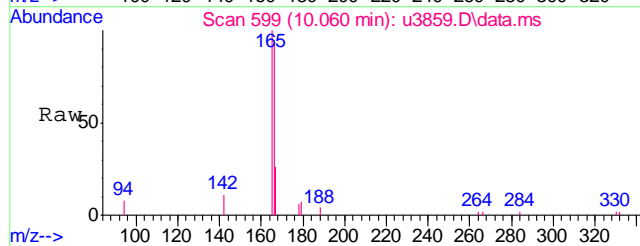
Tgt Ion:168 Resp: 1455
Ion Ratio Lower Upper
168 100
139 11.8 8.6 68.6





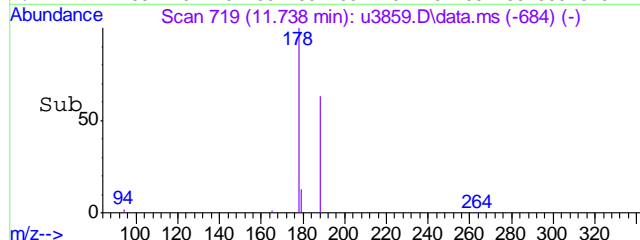
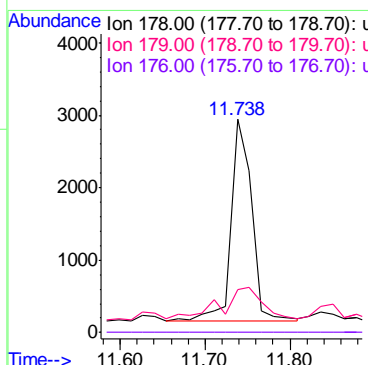
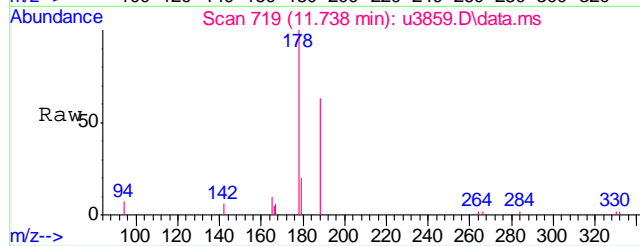
#17
Fluorene
Concen: 0.39 ppb
RT: 10.060 min Scan# 599
Delta R.T. -0.014 min
Lab File: u3859.D
Acq: 13 Dec 2011 2:24 pm

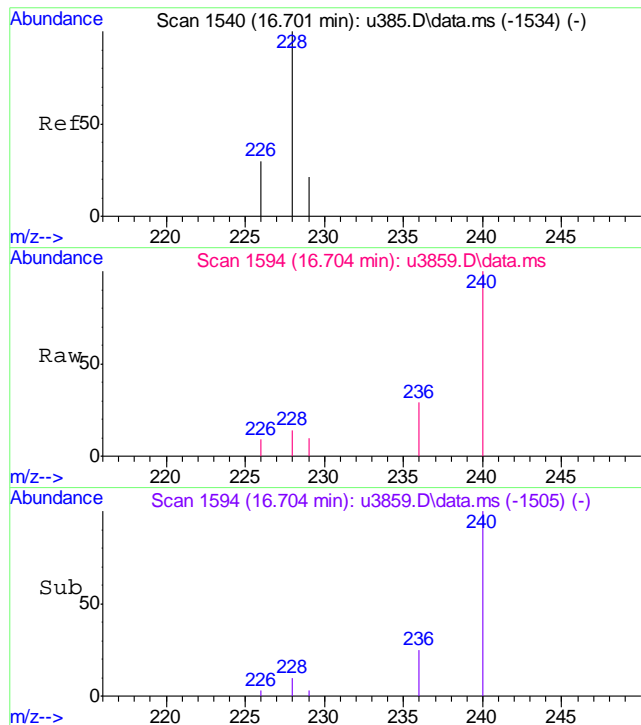
Tgt Ion	Ratio	Lower	Upper
166	100		
165	100.1	54.0	114.0
167	7.6	0.0	44.8



#22
Phenanthrene
Concen: 0.38 ppb
RT: 11.738 min Scan# 719
Delta R.T. -0.014 min
Lab File: u3859.D
Acq: 13 Dec 2011 2:24 pm

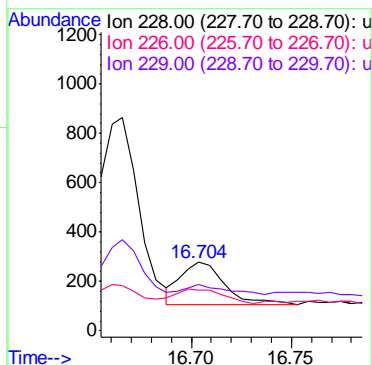
Tgt Ion	Ratio	Lower	Upper
178	100		
179	14.3	0.0	45.6
176	0.0	0.0	30.0





#30
Chrysene
Concen: 0.03 ppb
RT: 16.704 min Scan# 1594
Delta R.T. -0.017 min
Lab File: u3859.D
Acq: 13 Dec 2011 2:24 pm

Tgt Ion:	228	Resp:	258
Ion Ratio	Lower	Upper	
228	100		
226	25.4	0.4	60.4
229	18.9	0.0	49.5



Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\
 Data File : u3774.D
 Acq On : 10 Dec 2011 12:31 pm
 Operator : KristinR
 Sample : OP27186-MB
 Misc : op27186,msu228,20.10,,,1,1
 ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 10 13:07:37 2011
 Quant Method : C:\msdchem\1\METHODS\U120911_sim8270.m
 Quant Title : SW-846-Method 8270 by SIM
 QLast Update : Fri Dec 09 14:42:46 2011
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) 1,4-Dichlorobenzene-d4	5.446	152	237372	40.00	ppb	0.01
5) Naphthalene-d8	6.734	136	799253	40.00	ppb	0.00
10) Acenaphthene-d10	9.195	164	418616	40.00	ppb	0.00
18) Phenanthrene-d10	11.711	188	757638	40.00	ppb	0.00
26) Chrysene-d12	16.671	240	686545	40.00	ppb	0.00
31) Perylene-d12	19.206	264	589967	40.00	ppb	0.00

System Monitoring Compounds

2) 2-Fluorophenol	4.309	112	306240	50.87	ppb	0.01
Spiked Amount	100.000	Range	10 - 110	Recovery	=	50.87%
3) Phenol-d5	5.138	99	337866	48.73	ppb	0.00
Spiked Amount	100.000	Range	10 - 110	Recovery	=	48.73%
6) Nitrobenzene-d5	5.991	82	166103	26.07	ppb	0.00
Spiked Amount	50.000	Range	30 - 119	Recovery	=	52.14%
12) 2-Fluorobiphenyl	8.141	172	379396	25.15	ppb	0.00
Spiked Amount	50.000	Range	40 - 110	Recovery	=	50.30%
19) 2,4,6-Tribromophenol	10.536	330	66429	51.56	ppb	0.00
Spiked Amount	100.000	Range	10 - 157	Recovery	=	51.56%
28) Terphenyl-d14	14.719	244	374800	32.52	ppb	0.00
Spiked Amount	50.000	Range	30 - 124	Recovery	=	65.04%

Target Compounds

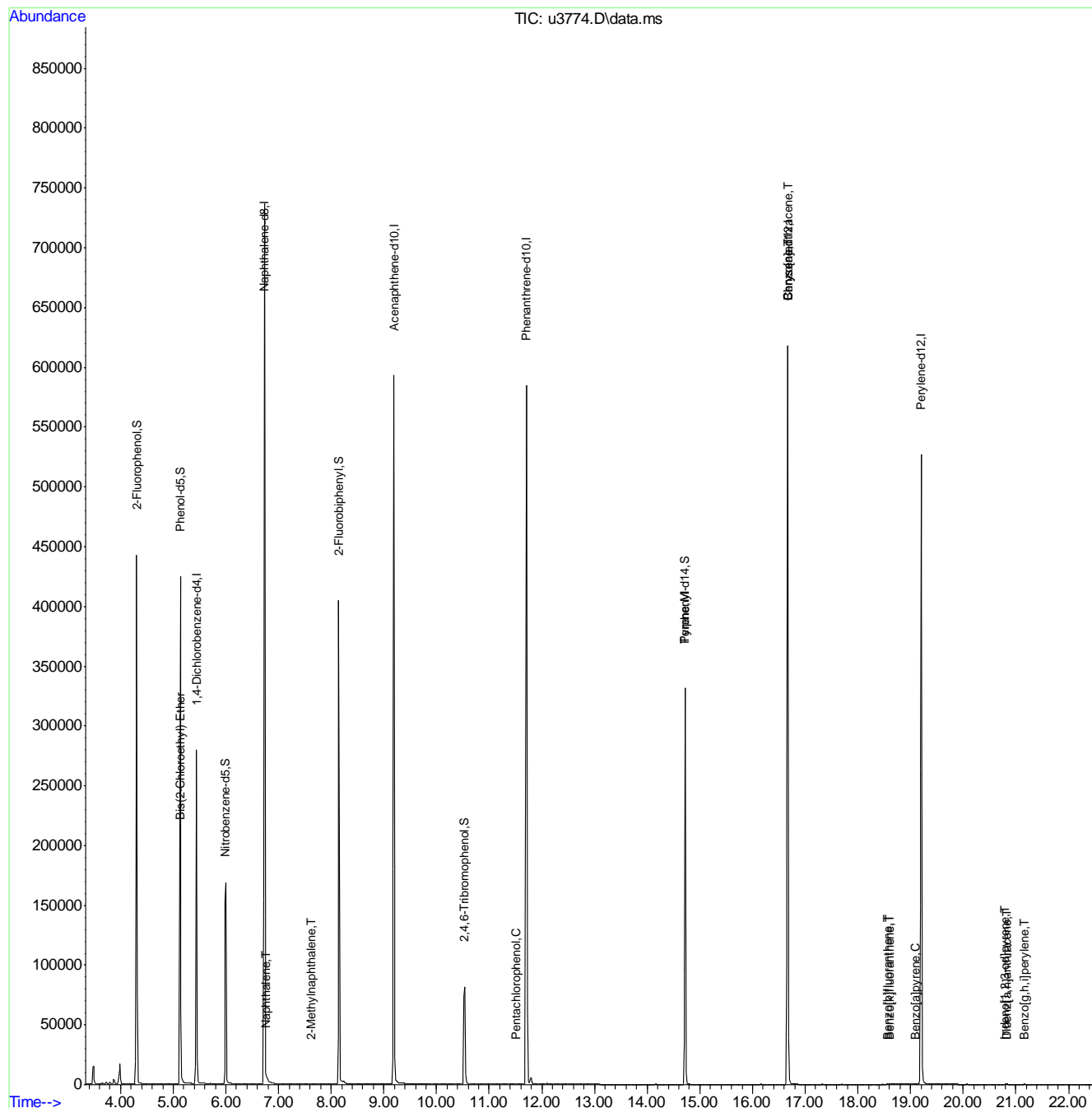
					Qvalue
4) Bis(2-Chloroethyl) Ether	5.126	63	1520	0.32 ug/l	# 6
7) Naphthalene	6.759	128	366	0.02 ppb	93
8) 2-Methylnaphthalene	7.612	142	142	0.01 ppb	98
21) Pentachlorophenol	11.501	266	54	0.02 ppb	93
27) Pyrene	14.719	202	1719	0.08 ppb	86
29) Benzo[a]anthracene	16.666	228	1992	0.11 ppb	74
30) Chrysene	16.666	228	1992	0.11 ppb	69
32) Benzo[b]fluoranthene	18.564	252	184	0.01 ppb	91
33) Benzo[k]fluoranthene	18.603	252	212	0.01 ppb	96
34) Benzo[a]pyrene	19.097	252	274	0.01 ppb	73
35) Indeno[1,2,3-cd]pyrene	20.798	276	445	0.02 ppb	71
36) Dibenz[a,h]anthracene	20.820	278	353	0.02 ppb	76
37) Benzo[g,h,i]perylene	21.157	276	341	0.02 ppb	73

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

Quantitation Report (Not Reviewed)

Data Path : C:\msdchem\1\DATA\
Data File : u3774.D
Acq On : 10 Dec 2011 12:31 pm
Operator : KristinR
Sample : OP27186-MB
Misc : op27186,msu228,20.10,,,1,1
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 10 13:07:37 2011
Quant Method : C:\msdchem\1\METHODS\U120911_sim8270.m
Quant Title : SW-846-Method 8270 by SIM
QLast Update : Fri Dec 09 14:42:46 2011
Response via : Initial Calibration



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: D29896
Account: ALMS - Accutest Mountain States
Project: KRWCCOL: XOM FRU 197-33A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP13918/GN37214	0.40	0.17	mg/kg	40	37.4	93.5	80-120%
Chromium, Hexavalent	GP13918/GN37214			mg/kg	837	883	105.5	80-120%

Associated Samples:
Batch GP13918: D29896-1R
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D29896
Account: ALMS - Accutest Mountain States
Project: KRWCCOL: XOM FRU 197-33A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP13918/GN37214	D30086-11	mg/kg	0.0	0.0	0.0	0-20%

Associated Samples:
Batch GP13918: D29896-1R
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D29896
Account: ALMS - Accutest Mountain States
Project: KRWCCOL: XOM FRU 197-33A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP13918/GN37214	D30086-11	mg/kg	0.0	41.1	43.9	106.9	75-125%
Chromium, Hexavalent	GP13918/GN37214	D30086-11	mg/kg	0.0	742	882	118.8	75-125%

Associated Samples:
Batch GP13918: D29896-1R
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits