



12/09/11

Technical Report for

KRW Consulting, Inc.

XOM FRU 197-33A

1103-03A

Accutest Job Number: D29647

Sampling Date: 11/18/11

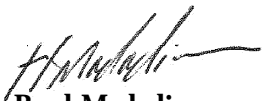
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Total number of pages in report: 136



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: D29647

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

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D29647-1	11/18/11	13:10	DS	11/19/11	SO	Soil	R_P_SUBLINER
D29647-1R	11/18/11	13:10	DS	11/19/11	SO	Soil	R_P_SUBLINER
D29647-1RA	11/18/11	13:10	DS	11/19/11	SO	Soil	R_P_SUBLINER

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: KRW Consulting, Inc.

Job No D29647

Site: XOM FRU 197-33A

Report Dat 12/9/2011 2:49:38 PM

On 11/19/2011, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2.1 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D29647 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix SO

Batch ID: V3V848

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

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO

Batch ID: OP4929

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

Volatiles by GC By Method SW846 8015B

Matrix SO

Batch ID: GGB794

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

Extractables by GC By Method SW846-8015B

Matrix SO

Batch ID: OP4885

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D29644-1MS, D29644-1MSD 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: MP6374

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29649-1RAMS, D29649-1RAMSD were used as the QC samples for the metals analysis.

Matrix SO

Batch ID: MP6361

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

Metals By Method SW846 6020

Matrix SO

Batch ID: MP6362

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

Metals By Method SW846 7471A

Matrix SO

Batch ID: MP6363

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

Wet Chemistry By Method ASTM D1498-76M

Matrix SO

Batch ID: GN12695

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

Wet Chemistry By Method SM19 2540B M

Matrix SO

Batch ID: GN12598

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

Wet Chemistry By Method SW846 3060/7196A M

Matrix SO

Batch ID: R10950

- The data for SW846 3060/7196A M meets quality control requirements.
- D29647-1R for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO

Batch ID: M:GP13867

- The data for SW846 3060A/7196A meets quality control requirements.
- D29647-1R for Chromium, Hexavalent: Analysis performed at Accutest Laboratories, Marlborough, MA.

Wet Chemistry By Method SW846 9045C

Matrix SO

Batch ID: GN12693

- The following sample was run outside of holding time for method SW846 9045C: D29647-1R.

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO

Batch ID: MP6374

- D29647-1RA 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 D29647

Site: KRWCCOL: XOM FRU 197-33A

Report Date 12/2/2011 3:58:41 PM

1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 11/18/2011 and were received at Accutest on 11/19/2011 properly preserved, at 1.6 Deg. C and intact. These Samples received an Accutest job number of D29647. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

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

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO

Batch ID: GP13867

- All samples were distilled within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29612-4DUP, D29612-4MS were used as the QC samples for Chromium, Hexavalent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(D29647).

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	R_P_SUBLINER	
Lab Sample ID:	D29647-1	Date Sampled: 11/18/11
Matrix:	SO - Soil	Date Received: 11/19/11
Method:	SW846 8260B	Percent Solids: 90.1
Project:	XOM FRU 197-33A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V14687.D	1	11/21/11	DC	n/a	n/a	V3V848
Run #2							

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

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	61	27	ug/kg	
108-88-3	Toluene	ND	120	61	ug/kg	
100-41-4	Ethylbenzene	ND	120	30	ug/kg	
1330-20-7	Xylene (total)	ND	240	120	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	102%		61-130%
460-00-4	4-Bromofluorobenzene	109%		53-131%
17060-07-0	1,2-Dichloroethane-D4	100%		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:	R_P_SUBLINER	
Lab Sample ID:	D29647-1	Date Sampled: 11/18/11
Matrix:	SO - Soil	Date Received: 11/19/11
Method:	SW846 8015B	Percent Solids: 90.1
Project:	XOM FRU 197-33A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13992.D	1	11/22/11	SK	n/a	n/a	GGB794
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)	14.6	12	6.1	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:	R_P_SUBLINER	
Lab Sample ID:	D29647-1	Date Sampled: 11/18/11
Matrix:	SO - Soil	Date Received: 11/19/11
Method:	SW846-8015B SW846 3546	Percent Solids: 90.1
Project:	XOM FRU 197-33A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD11792.D	1	11/29/11	TR	11/21/11	OP4885	GFD600
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	189	15	9.6	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	64%		61-142%		

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

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

Report of Analysis

Client Sample ID:	R_P_SUBLINER	
Lab Sample ID:	D29647-1R	Date Sampled: 11/18/11
Matrix:	SO - Soil	Date Received: 11/19/11
Method:	SW846 8270C BY SIM SW846 3546	Percent Solids: 90.1
Project:	XOM FRU 197-33A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	3G07176.D	5	12/08/11	DC	11/30/11	OP4929	E3G262
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	37	30	ug/kg	
120-12-7	Anthracene	ND	37	33	ug/kg	
56-55-3	Benzo(a)anthracene	ND	92	48	ug/kg	
50-32-8	Benzo(a)pyrene	ND	92	66	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	92	68	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	92	41	ug/kg	
218-01-9	Chrysene	ND	92	41	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	92	68	ug/kg	
206-44-0	Fluoranthene	ND	37	37	ug/kg	
86-73-7	Fluorene	79.5	37	31	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	110	100	ug/kg	
91-20-3	Naphthalene	ND	37	35	ug/kg	
129-00-0	Pyrene	ND	37	35	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	78%		10-145%
321-60-8	2-Fluorobiphenyl	71%		10-130%
1718-51-0	Terphenyl-d14	71%		22-130%

(a) Elevated RL due to matrix interference.

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: R_P_SUBLINER

Lab Sample ID: D29647-1R

Matrix: SO - Soil

Project: XOM FRU 197-33A

Date Sampled: 11/18/11

Date Received: 11/19/11

Percent Solids: 90.1

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	5.9	0.46	mg/kg	5	11/30/11	11/30/11 GJ	SW846 6020 ¹	SW846 3050B ⁵
Barium	1090	1.1	mg/kg	1	11/30/11	11/30/11 JB	SW846 6010B ²	SW846 3050B ⁴
Cadmium	< 1.1	1.1	mg/kg	1	11/30/11	11/30/11 JB	SW846 6010B ²	SW846 3050B ⁴
Chromium	33.1	1.1	mg/kg	1	11/30/11	11/30/11 JB	SW846 6010B ²	SW846 3050B ⁴
Copper	11.8	1.1	mg/kg	1	11/30/11	11/30/11 JB	SW846 6010B ²	SW846 3050B ⁴
Lead	11.5	5.7	mg/kg	1	11/30/11	11/30/11 JB	SW846 6010B ²	SW846 3050B ⁴
Mercury	< 0.11	0.11	mg/kg	1	11/30/11	11/30/11 JB	SW846 7471A ³	SW846 7471A ⁶
Nickel	15.6	3.4	mg/kg	1	11/30/11	11/30/11 JB	SW846 6010B ²	SW846 3050B ⁴
Selenium	< 5.7	5.7	mg/kg	1	11/30/11	11/30/11 JB	SW846 6010B ²	SW846 3050B ⁴
Silver	< 3.4	3.4	mg/kg	1	11/30/11	11/30/11 JB	SW846 6010B ²	SW846 3050B ⁴
Zinc	44.1	3.4	mg/kg	1	11/30/11	11/30/11 JB	SW846 6010B ²	SW846 3050B ⁴

(1) Instrument QC Batch: MA2010

(2) Instrument QC Batch: MA2011

(3) Instrument QC Batch: MA2012

(4) Prep QC Batch: MP6361

(5) Prep QC Batch: MP6362

(6) Prep QC Batch: MP6363

RL = Reporting Limit

Report of Analysis

Client Sample ID: R_P_SUBLINER**Lab Sample ID:** D29647-1R**Matrix:** SO - Soil**Project:** XOM FRU 197-33A**Date Sampled:** 11/18/11**Date Received:** 11/19/11**Percent Solids:** 90.1**General Chemistry**

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent ^a	< 0.44	0.44	mg/kg	1	12/01/11 16:06	AMA	SW846 3060A/7196A
Chromium, Trivalent ^b	33.1	1.5	mg/kg	1	12/01/11 16:06	AMA	SW846 3060/7196A M
Redox Potential Vs H2	365		mv	1	11/29/11	JD	ASTM D1498-76M
Specific Conductivity	1110	1.0	umhos/cm	1	12/01/11	JD	DEPT.OF AG, BOOK N9
pH	10.08		su	1	11/29/11 15:00	JD	SW846 9045C

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

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	R_P_SUBLINER	Date Sampled:	11/18/11
Lab Sample ID:	D29647-1RA	Date Received:	11/19/11
Matrix:	SO - Soil	Percent Solids:	90.1
Project:	XOM FRU 197-33A		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	19.2	2.0	mg/l	1	12/01/11	12/02/11 JB	SW846 6010B ¹	EPA 200.7 ²
Magnesium	3.43	1.0	mg/l	1	12/01/11	12/02/11 JB	SW846 6010B ¹	EPA 200.7 ²
Sodium	209	2.0	mg/l	1	12/01/11	12/02/11 JB	SW846 6010B ¹	EPA 200.7 ²

(1) Instrument QC Batch: MA2020

(2) Prep QC Batch: MP6374

RL = Reporting Limit

Report of Analysis

Client Sample ID:	R_P_SUBLINER	Date Sampled:	11/18/11
Lab Sample ID:	D29647-1RA	Date Received:	11/19/11
Matrix:	SO - Soil	Percent Solids:	90.1
Project:	XOM FRU 197-33A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	11.5		ratio	1	12/02/11 11:25	JB	USDA HANDBOOK 60

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

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

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

FEDEX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job # D29647
Requested Analysis (see TEST CODE sheet)	
Matrix Codes	
DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank	
LAB USE ONLY	

Client / Reporting Information		Project Information	
Company Name: KRW Consulting Inc Street Address: 8000 W. 14th Ave Ste 200 City: Lakewood, Co State: 80214 Project Contact: Dwaine Knudson Phone #: 970-675-4066 Fax #: Supervisor(s) Name(s): D. Sanders Phone #: 303-239-9011		Project Name: XOM-FRU-197-33A Street: Billing Information (If different from Report to): Company Name: Street Address: City: State: Zip: Project#: 1103-03A Client PO#: Project Manager: Joe Hess Attention: PO#: 	
Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vol #	Collection
	R-P Subliner		Date: 11/18/11 Time: 13:10 Sampled by: DS Matrix: SO # of bottles: 5 HCl <input type="checkbox"/> NaOH <input type="checkbox"/> PNO3 <input type="checkbox"/> 12504 <input type="checkbox"/> NONE <input checked="" type="checkbox"/> DI Water <input type="checkbox"/> MEOH <input type="checkbox"/> ENCORE <input type="checkbox"/> Burette <input checked="" type="checkbox"/>
Run TPH & BTEX 2-day rush. Hold rest of Table 910 until further notice			

Turnaround Time (Business days) <input type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> Std. 5 Business Days (By Contract only) <input type="checkbox"/> 5 Day R/SH <input type="checkbox"/> 3 Day EMERGENCY <input checked="" type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY	Approved By (Accutest PM): / Date: _____ _____ _____	<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> Commercial "B" + Narrative <input type="checkbox"/> FULLT1 (Level 3-4) <input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format <input checked="" type="checkbox"/> PDF Commercial "A" = Results Only Commercial "B" = Results + QC Summary
---	---	--

Comments / Special Instructions
Please email results to KRW Piceance Creek XOM Team

Sample Custody must be documented below each time samples change possession, including courier delivery.			
Relinquished by: C. R. W. Knudson Date Time: 11-18-11 17:00 Relinquished by: Date Time: Relinquished by: Date Time: 	Received By: Joe Hess Date Time: 11/19 9:00 Received By: Joe Hess Date Time: Received By: Date Time: 	Relinquished By: Joe Hess Date Time: 11-18-11 Relinquished By: Date Time: Relinquished By: Date Time: 	Received By: FedEx Date Time: Received By: Date Time:
Custody Seal # FedEx <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact Preserved where applicable <input type="checkbox"/> On Ice <input checked="" type="checkbox"/> Cooler Temp. 2.1°C			

D29647: Chain of Custody

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Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D29647

Client: KRW CONSULTING INC.

Immediate Client Services Action Required: No

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

No. Coolers: 1

Client Service Action Required at Login: No

Project: XOM FRU 197-33A

Airbill #'s: Fedex

Cooler Security

Y or N

Y or N

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

Cooler Temperature

Y or N

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

Quality Control Preservation

Y or N

N/A

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

Sample Integrity - Documentation

Y or N

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

Sample Integrity - Condition

Y or N

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

Sample Integrity - Instructions

Y or N N/A

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

Comments

Job Change Order: D29647_11/29/2011

Requested	11/29/2011	Received Date:	11/19/2011
Account Name:	KRW Consulting, Inc.	Due Date:	11/23/2011
Project	XOM FRU 197-33A	Deliverable:	COMMBN+
CSR:	RR	TAT (Days):	3
Sample #: D29647-1	Change: Please log the remainder of table 910 to an R sample and analyze on a 3 day turn. Thank you.		

R_P_SUBLINER

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

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

Page 1 of 1

GC/MS Volatiles

5

QC Data Summaries

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: D29647
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 197-33A

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

The QC reported here applies to the following samples:

Method: SW846 8260B

D29647-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	22	ug/kg	
100-41-4	Ethylbenzene	ND	100	25	ug/kg	
108-88-3	Toluene	ND	100	50	ug/kg	
1330-20-7	Xylene (total)	ND	200	100	ug/kg	

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	105% 61-130%
460-00-4	4-Bromofluorobenzene	102% 53-131%
17060-07-0	1,2-Dichloroethane-D4	107% 62-130%

Blank Spike Summary

Page 1 of 1

Job Number: D29647

Account: KRWCCOL KRW Consulting, Inc.

Project: XOM FRU 197-33A

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

The QC reported here applies to the following samples:

Method: SW846 8260B

D29647-1

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

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

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D29647
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 197-33A

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

The QC reported here applies to the following samples:

Method: SW846 8260B

D29647-1

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

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

GC/MS Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3112111.S\
 Data File : 3V14687.D
 Acq On : 21 Nov 2011 5:51 pm
 Operator : DONC
 Sample : D29647-1, 50x
 Misc : MS2987,V3V848,5.039,,100,5,1
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 22 08:29:44 2011
 Quant Method : C:\msdchem\1\METHODS\V3AP830TVH830.M
 Quant Title : 8260
 QLast Update : Mon Nov 07 14:42:41 2011
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.887	168	376099	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.680	114	617763	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.317	117	579710	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.310	152	318775	50.00	ug/l	0.00

System Monitoring Compounds						
33) 1,2-Dichloroethane-d4	12.285	102	49776	50.10	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	100.20%
61) Toluene-d8	14.072	98	881450	50.97	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	101.94%
69) 4-Bromofluorobenzene	16.267	95	307635	54.67	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	109.34%

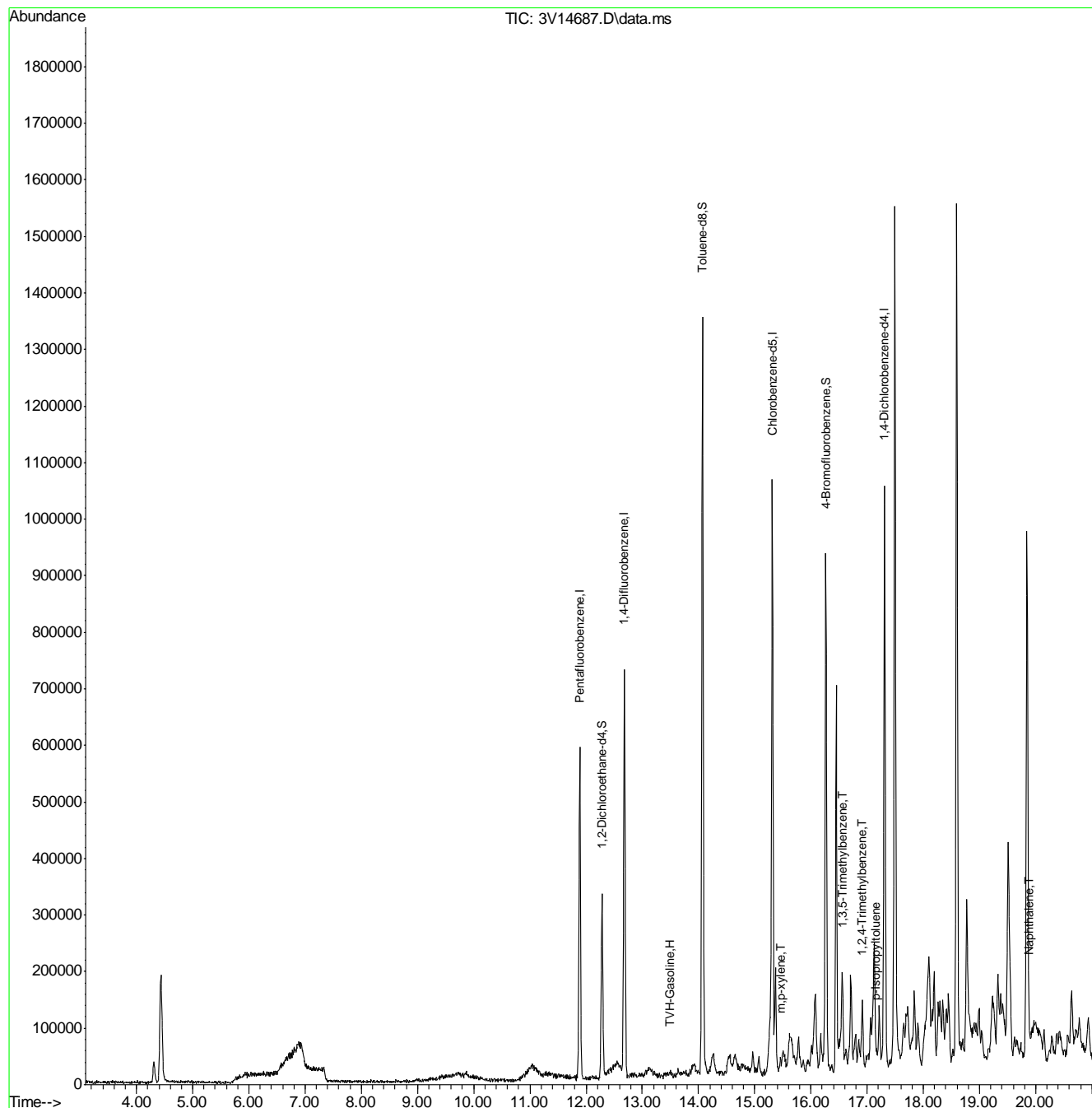
Target Compounds						Qvalue
1) TVH-Gasoline	13.491	TIC	5537625m	324.31	ug/l	
72) m,p-xylene	15.471	106	5911	0.60	ug/l	96
80) 1,3,5-Trimethylbenzene	16.562	105	63463	3.71	ug/l	100
82) 1,2,4-Trimethylbenzene	16.915	105	57364	2.97	ug/l	# 84
86) p-Isopropyltoluene	17.162	119	8427	0.39	ug/l	# 90
91) Naphthalene	19.887	128	32025	1.82	ug/l	100

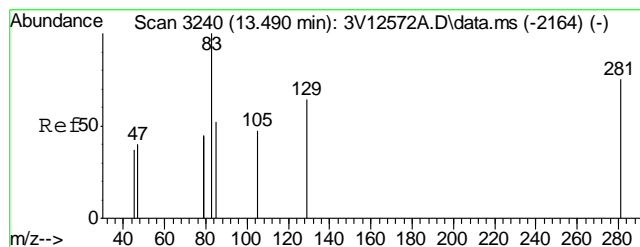
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3112111.S\
Data File : 3V14687.D
Acq On : 21 Nov 2011 5:51 pm
Operator : DONC
Sample : D29647-1, 50x
Misc : MS2987,V3V848,5.039,,100,5,1
ALS Vial : 10 Sample Multiplier: 1

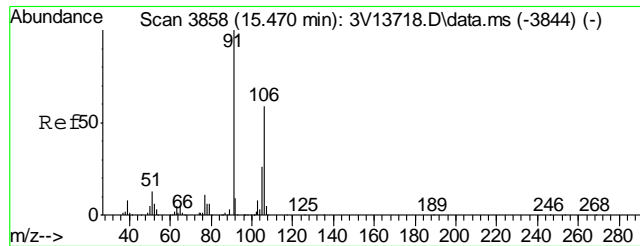
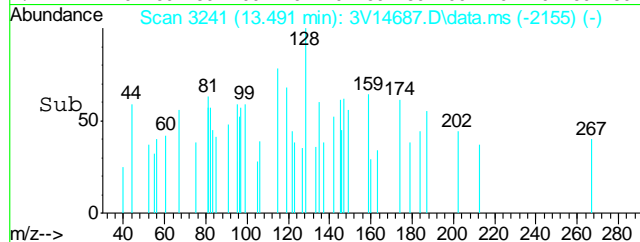
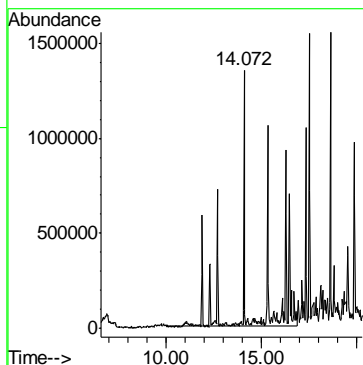
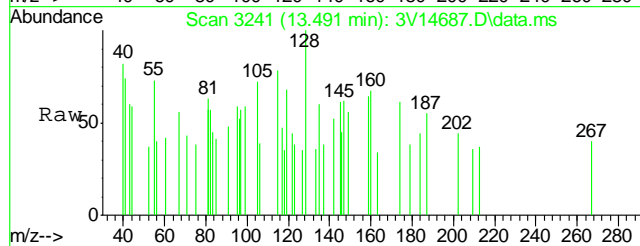
Quant Time: Nov 22 08:29:44 2011
Quant Method : C:\msdchem\1\METHODS\V3AP830TVH830.M
Quant Title : 8260
QLast Update : Mon Nov 07 14:42:41 2011
Response via : Initial Calibration





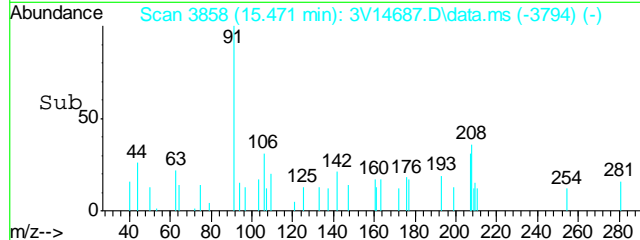
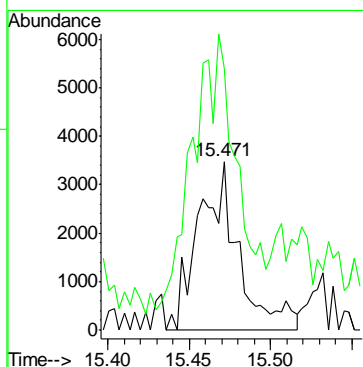
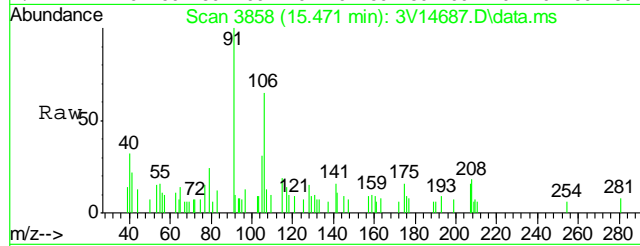
#1
TVH-Gasoline
Concen: 324.31 ug/l m
RT: 13.491 min Scan# 3241
Delta R.T. 0.000 min
Lab File: 3V14687.D
Acq: 21 Nov 2011 5:51 pm

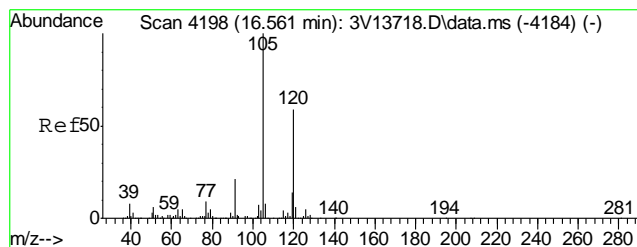
Tgt Ion:TIC Resp: 5537625



#72
m,p-xylene
Concen: 0.60 ug/l
RT: 15.471 min Scan# 3858
Delta R.T. 0.005 min
Lab File: 3V14687.D
Acq: 21 Nov 2011 5:51 pm

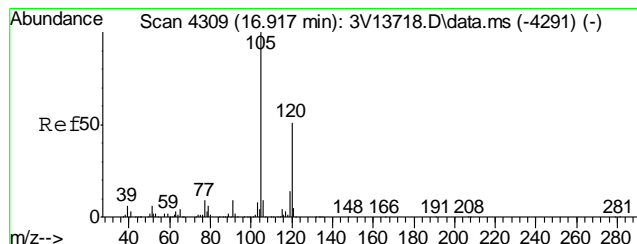
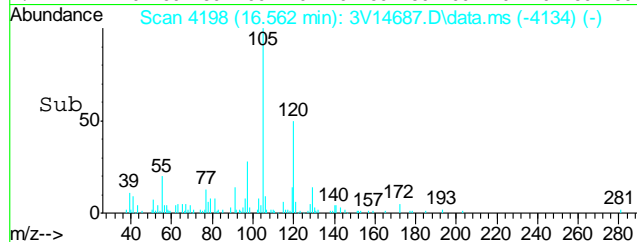
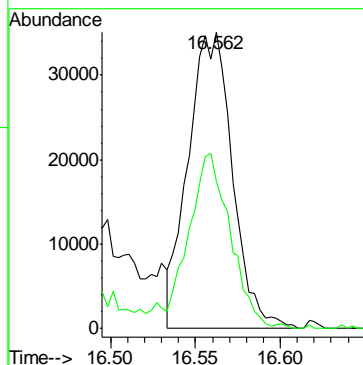
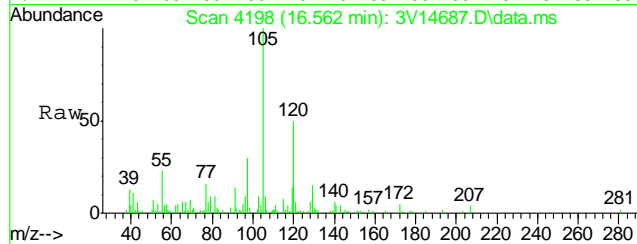
Tgt Ion:106 Resp: 5911
Ion Ratio Lower Upper
106 100
91 178.3 164.7 204.7





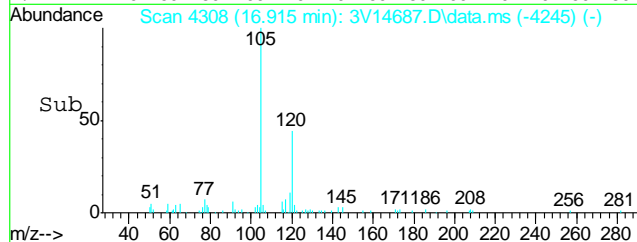
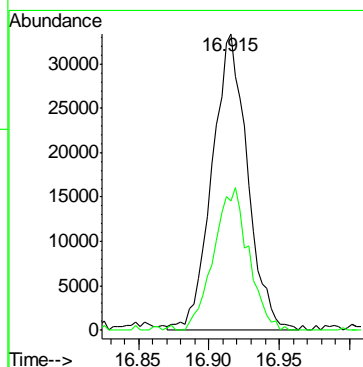
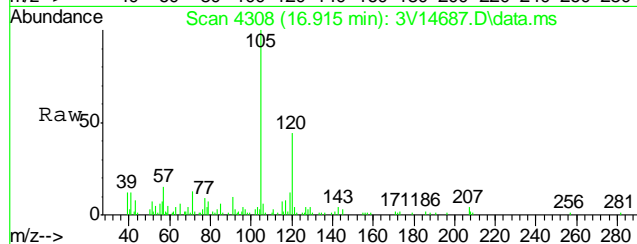
#80
1,3,5-Trimethylbenzene
Concen: 3.71 ug/l
RT: 16.562 min Scan# 4198
Delta R.T. 0.005 min
Lab File: 3V14687.D
Acq: 21 Nov 2011 5:51 pm

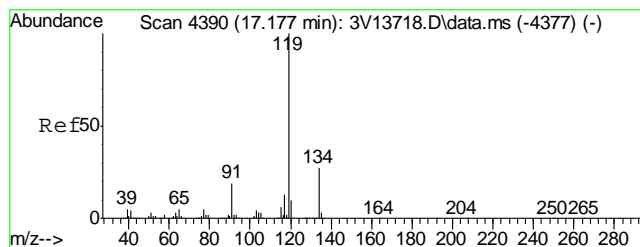
Tgt Ion	Ratio	Lower	Upper
105	100		
120	55.2	43.8	65.8



#82
1,2,4-Trimethylbenzene
Concen: 2.97 ug/l
RT: 16.915 min Scan# 4308
Delta R.T. 0.001 min
Lab File: 3V14687.D
Acq: 21 Nov 2011 5:51 pm

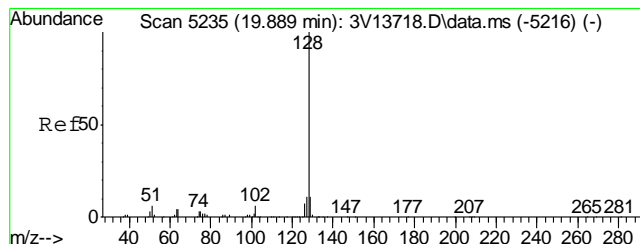
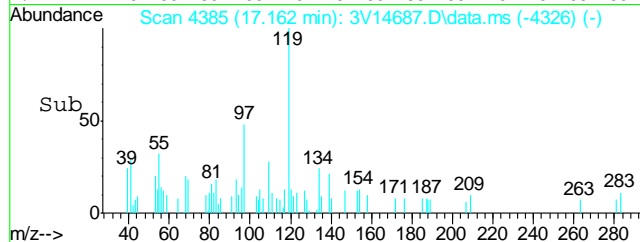
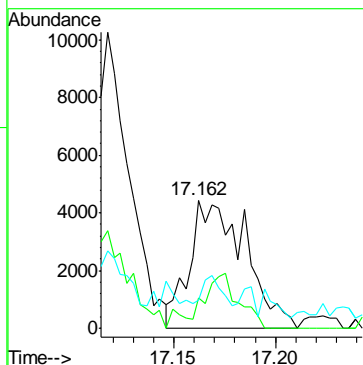
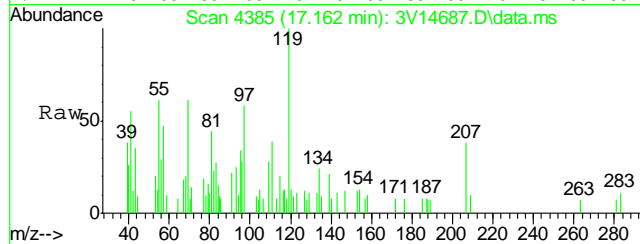
Tgt Ion	Ratio	Lower	Upper
105	100		
120	47.4	47.8	71.6#





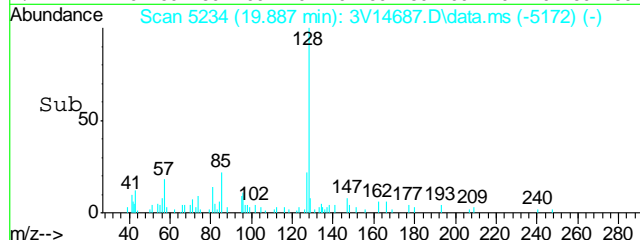
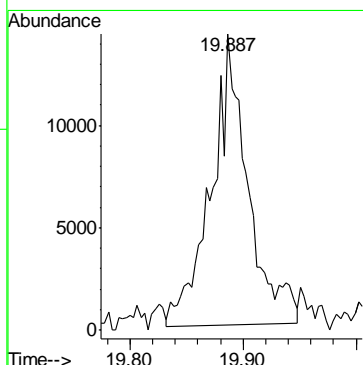
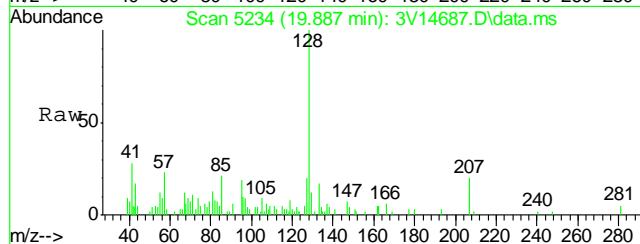
#86
p-Isopropyltoluene
Concen: 0.39 ug/l
RT: 17.162 min Scan# 4385
Delta R.T. -0.012 min
Lab File: 3V14687.D
Acq: 21 Nov 2011 5:51 pm

Tgt Ion:	119	Resp:	8427
Ion Ratio	Lower	Upper	
119	100		
134	24.9	23.4	35.0
91	14.3	16.3	24.5#



#91
Naphthalene
Concen: 1.82 ug/l
RT: 19.887 min Scan# 5234
Delta R.T. -0.002 min
Lab File: 3V14687.D
Acq: 21 Nov 2011 5:51 pm

Tgt Ion:	128	Resp:	32025
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Quantitation Report (QT Reviewed)

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

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

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

System Monitoring Compounds

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

Target Compounds

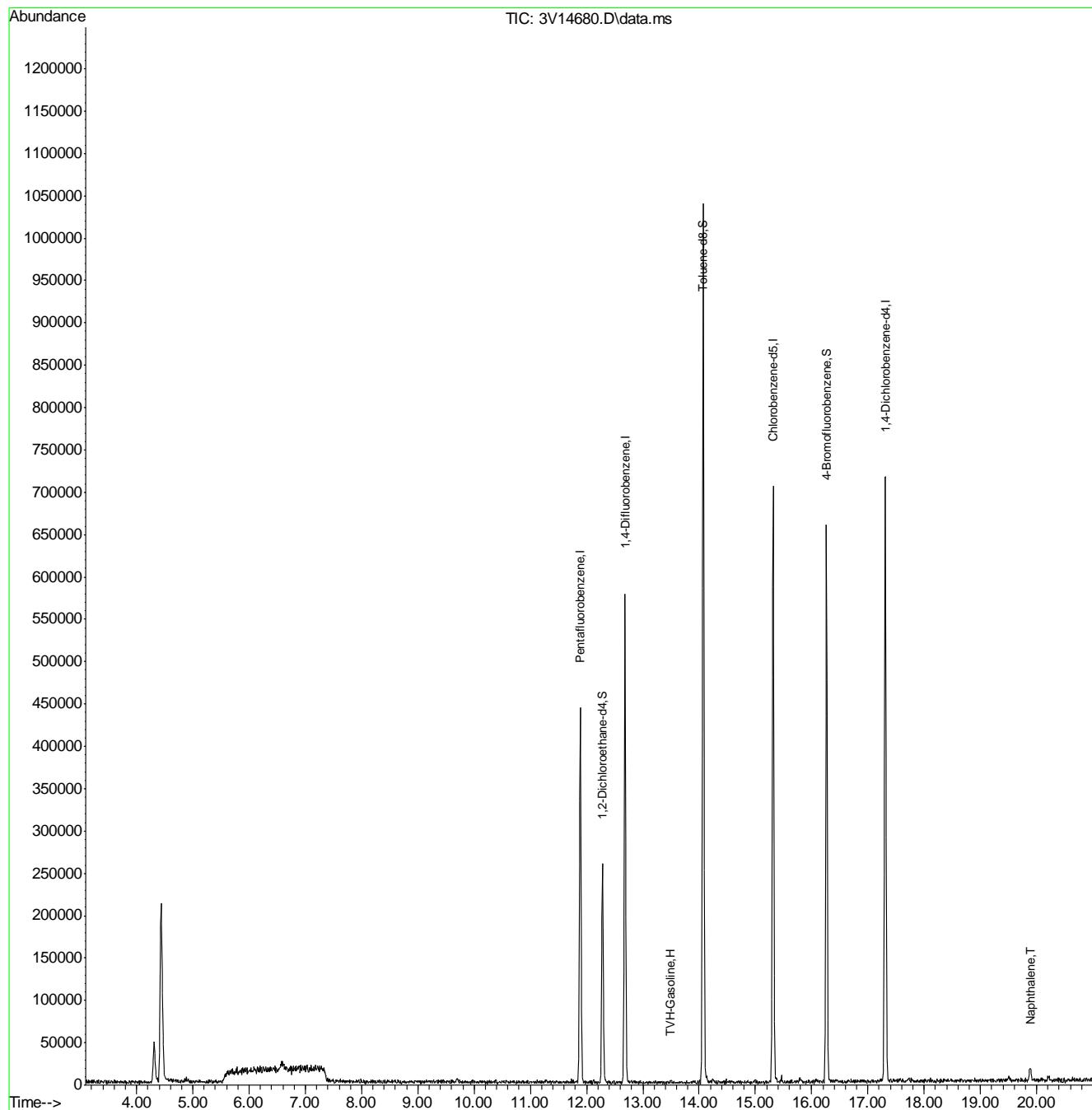
					Qvalue
1) TVH-Gasoline	13.491	TIC	174727m	22.29	ug/l
91) Naphthalene	19.893	128	18848	1.49	ug/l

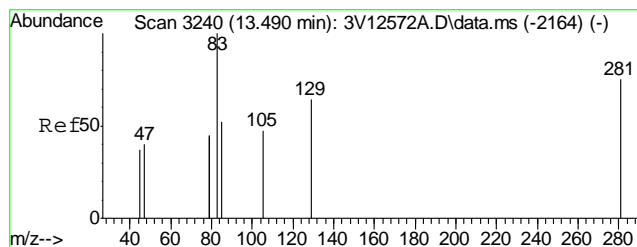
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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

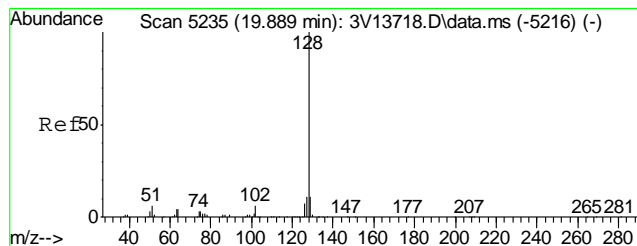
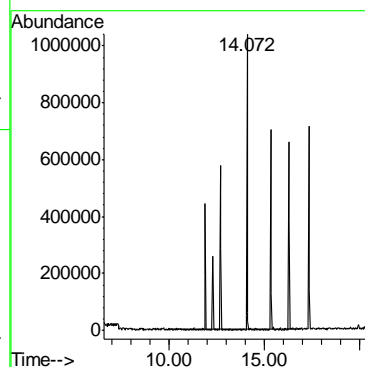
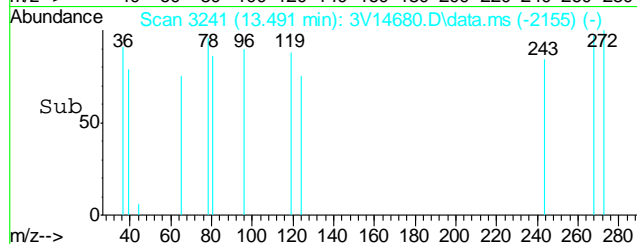
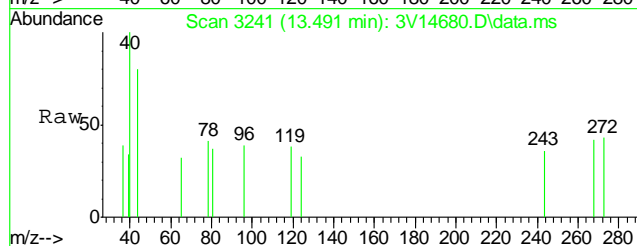
Quant Time: Nov 22 08:19:59 2011
Quant Method : C:\msdchem\1\METHODS\V3AP830TVH830.M
Quant Title : 8260
QLast Update : Mon Nov 07 14:42:41 2011
Response via : Initial Calibration





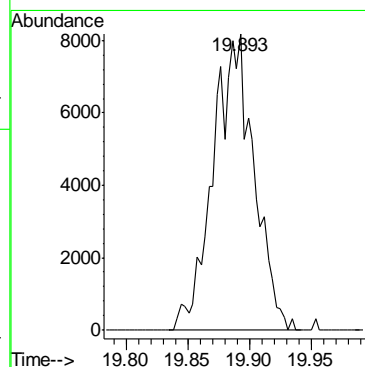
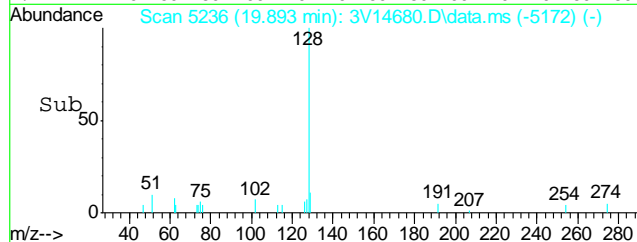
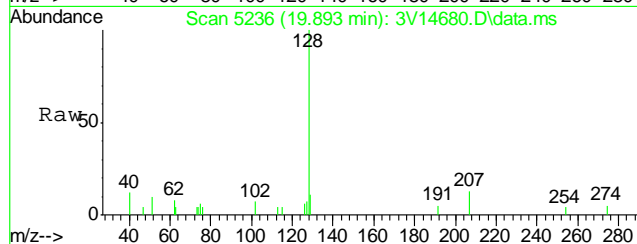
#1
TVH-Gasoline
Concen: 22.29 ug/l m
RT: 13.491 min Scan# 3241
Delta R.T. 0.000 min
Lab File: 3V14680.D
Acq: 21 Nov 2011 2:11 pm

Tgt Ion:TIC Resp: 174727



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

Tgt Ion:128 Resp: 18848



GC/MS Semi-volatiles

QC Data Summaries

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: D29647
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 197-33A

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

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

D29647-1R

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

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

Blank Spike Summary

Page 1 of 1

Job Number: D29647

Account: KRWCCOL KRW Consulting, Inc.

Project: XOM FRU 197-33A

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

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D29647-1R

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

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

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D29647
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 197-33A

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

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D29647-1R

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

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

(a) Elevated RL due to matrix interference.

GC/MS Semi-volatiles

Raw Data

∞

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\120711\
 Data File : 3g07176.D
 Acq On : 8 Dec 2011 1:26 pm
 Operator : DONC
 Sample : D29647-1R, 5x
 Misc : OP4929,E3G261,30.08,,,1,5
 ALS Vial : 36 Sample Multiplier: 1

Quant Time: Dec 09 07:31:54 2011
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G262.M
 Quant Title : PAHSIM BASE
 QLast Update : Thu Dec 08 09:26:11 2011
 Response via : Initial Calibration

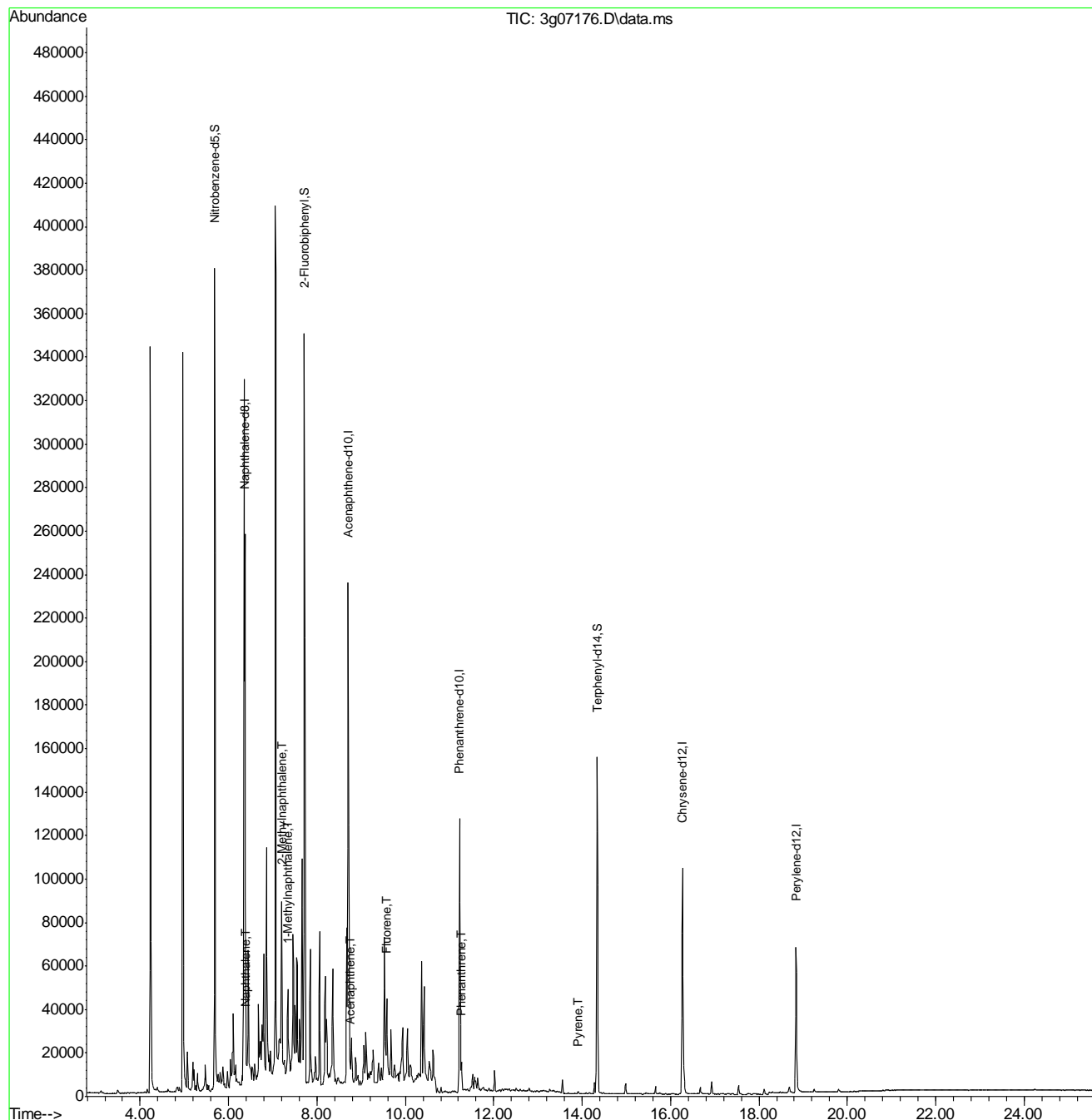
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	6.370	136	212787	4.00	ug/mL	0.00
6) Acenaphthene-d10	8.709	164	107341	4.00	ug/mL	0.00
14) Phenanthrene-d10	11.232	188	143728	4.00	ug/mL	0.00
18) Chrysene-d12	16.269	240	123591	4.00	ug/mL	0.00
23) Perylene-d12	18.838	264	88357	4.00	ug/mL	0.00
System Monitoring Compounds						
2) Nitrobenzene-d5	5.685	82	196737	7.75	ug/mL	-0.01
7) 2-Fluorobiphenyl	7.716	172	299035	7.10	ug/mL	-0.01
20) Terphenyl-d14	14.342	244	175567	7.10	ug/mL	-0.02
Target Compounds						
					Qvalue	
3) N-Nitrosodimethylamine	0.000		0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000		0	N.D.	d	
5) Naphthalene	6.395	128	9967	0.15	ug/mL#	1
8) 2-Methylnaphthalene	7.206	142	43244	1.10	ug/mL	83
9) 1-Methylnaphthalene	7.343	142	16006	0.43	ug/mL#	64
10) Acenaphthylene	0.000		0	N.D.	d	
11) Acenaphthene	8.756	154	2445	0.08	ug/mL#	50
12) Fluorene	9.583	166	15538	0.43	ug/mL#	11
13) Diphenylamine	0.000		0	N.D.	d	
15) Phenanthrene	11.271	178	14203	0.27	ug/mL	74
16) Anthracene	0.000		0	N.D.	d	
17) Fluoranthene	0.000		0	N.D.	d	
19) Pyrene	13.907	202	1197	0.02	ug/mL	90
21) Benzo(a)anthracene	0.000		0	N.D.	d	
22) Chrysene	0.000		0	N.D.	d	
24) Benzo(b)fluoranthene	0.000		0	N.D.	d	
25) Benzo(k)fluoranthene	0.000		0	N.D.	d	
26) Benzo(a)pyrene	0.000		0	N.D.	d	
27) Indeno(1,2,3-cd)pyrene	0.000		0	N.D.	d	
28) Dibenz(a,h)anthracene	0.000		0	N.D.	d	
29) Benzo(g,h,i)perylene	0.000		0	N.D.	d	

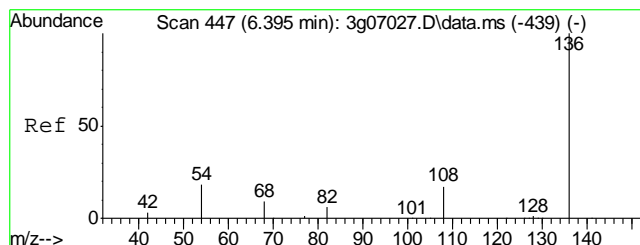
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\120711\
Data File : 3g07176.D
Acq On : 8 Dec 2011 1:26 pm
Operator : DONC
Sample : D29647-1R, 5x
Misc : OP4929,E3G261,30.08,,,1,5
ALS Vial : 36 Sample Multiplier: 1

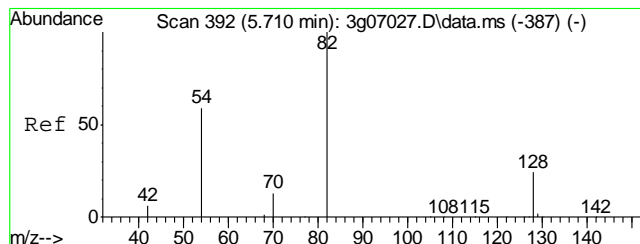
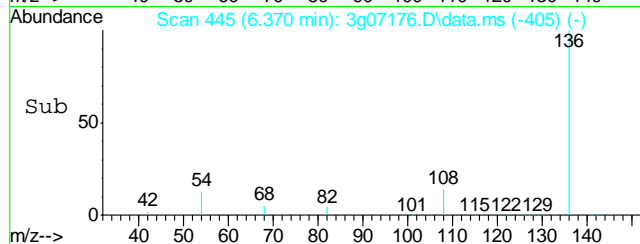
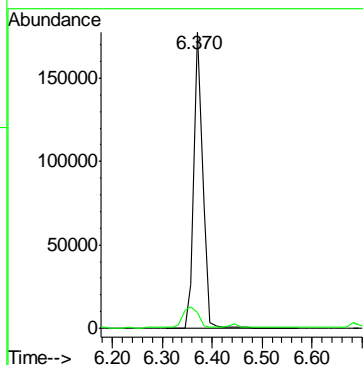
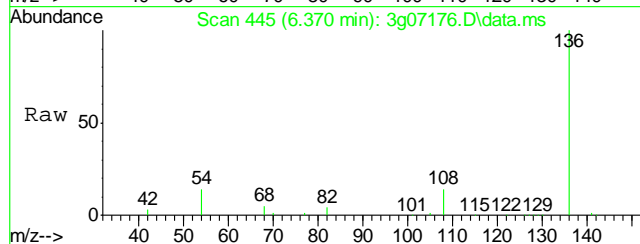
Quant Time: Dec 09 07:31:54 2011
Quant Method : C:\msdchem\1\METHODS\SIMPE3G262.M
Quant Title : PAHSIM BASE
QLast Update : Thu Dec 08 09:26:11 2011
Response via : Initial Calibration





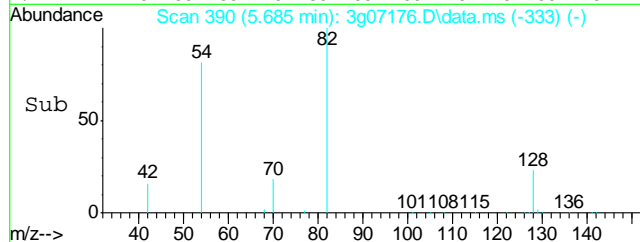
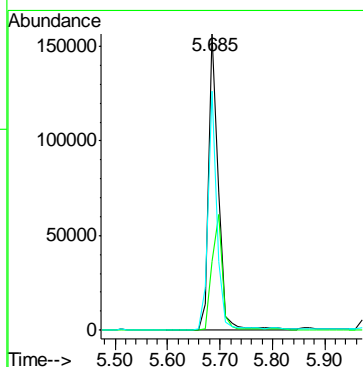
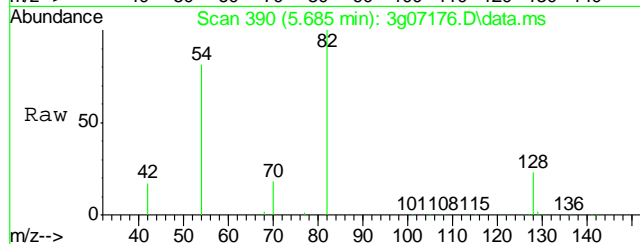
#1
Naphthalene-d8
Concen: 4.00 ug/mL
RT: 6.370 min Scan# 445
Delta R.T. 0.000 min
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

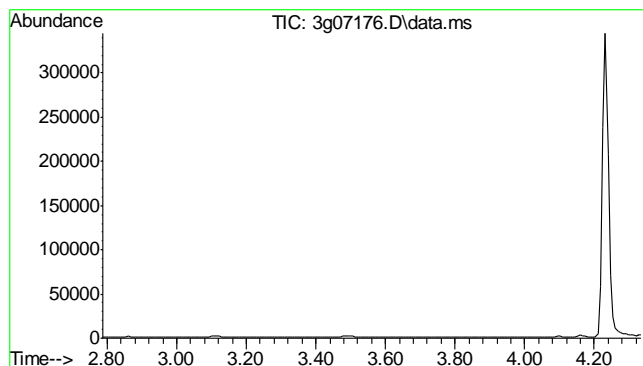
Tgt Ion	Ratio	Lower	Upper
136	100		
68	13.2	0.0	27.5



#2
Nitrobenzene-d5
Concen: 7.75 ug/mL
RT: 5.685 min Scan# 390
Delta R.T. -0.012 min
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

Tgt Ion	Ratio	Lower	Upper
82	100		
128	42.3	22.2	62.2
54	74.2	32.9	72.9#

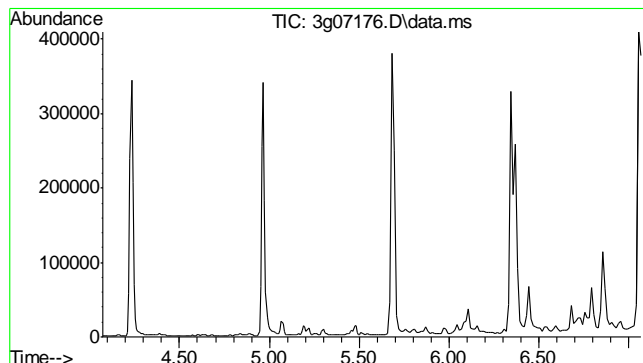
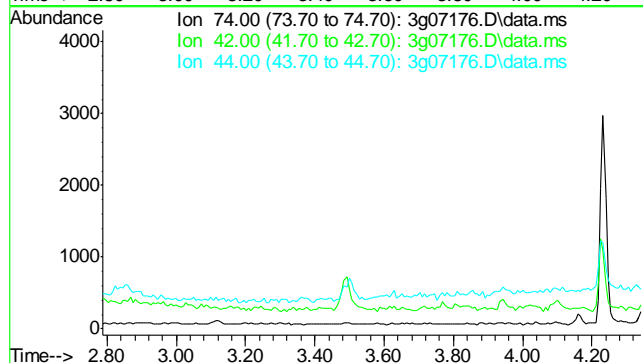




#3
 N-Nitrosodimethylamine
 Concen: N.D. ug/mL
 Expected RT: 2.84 min

 Lab File: 3g07176.D
 Acq: 8 Dec 11 1:26 pm

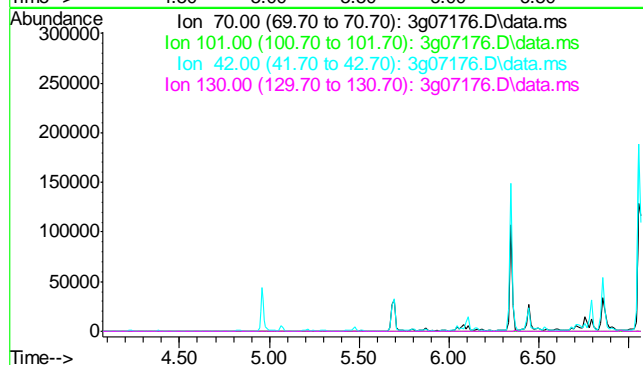
Tgt Ion	Exp Ratio
74	100
42	62.7
44	4.7

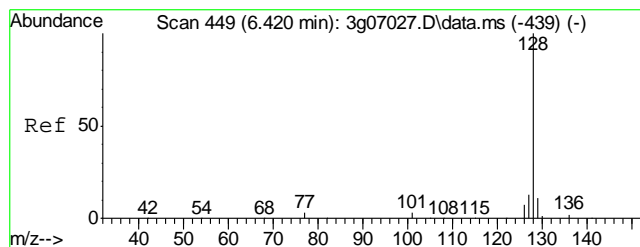


#4
 N-Nitrosodi-propylamine
 Concen: N.D. ug/mL
 Expected RT: 5.57 min

 Lab File: 3g07176.D
 Acq: 8 Dec 11 1:26 pm

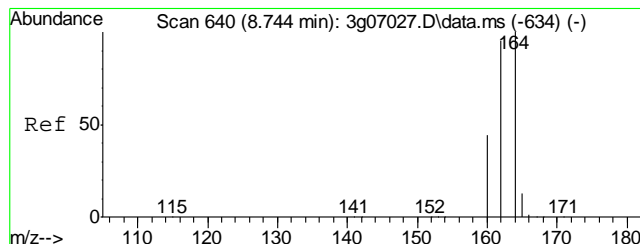
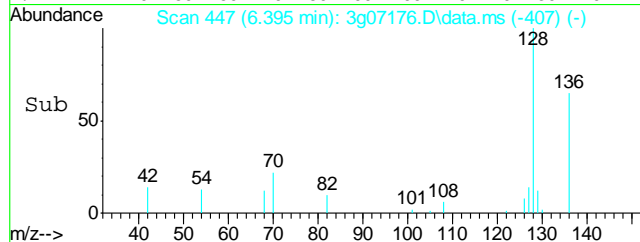
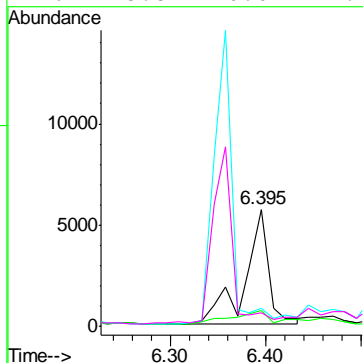
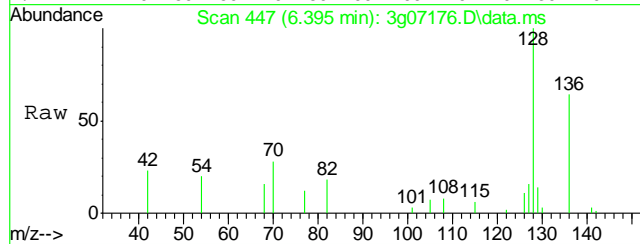
Tgt Ion	Exp Ratio
70	100
101	12.9
42	56.3
130	25.7





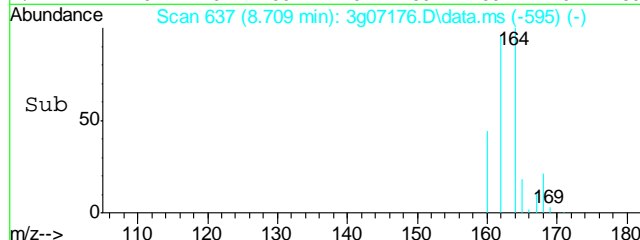
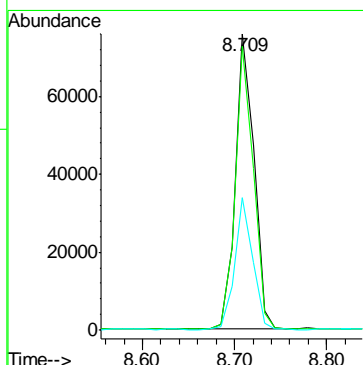
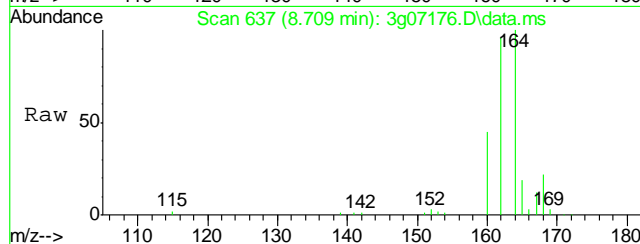
#5
Naphthalene
Concen: 0.15 ug/mL
RT: 6.395 min Scan# 447
Delta R.T. 0.000 min
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

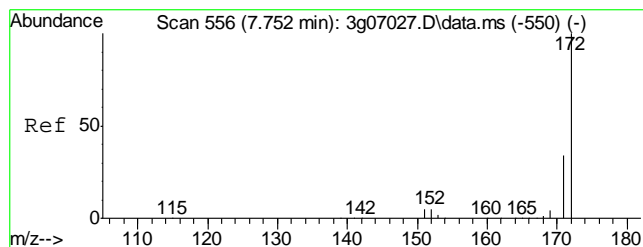
Tgt Ion	Ratio	Lower	Upper
128	100		
129	19.8	0.0	31.0
127	191.1	0.0	32.5#
126	125.8	0.0	27.2#



#6
Acenaphthene-d10
Concen: 4.00 ug/mL
RT: 8.709 min Scan# 637
Delta R.T. 0.000 min
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

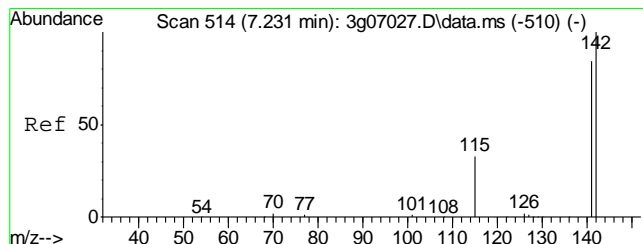
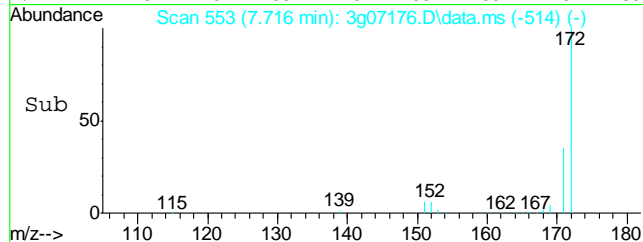
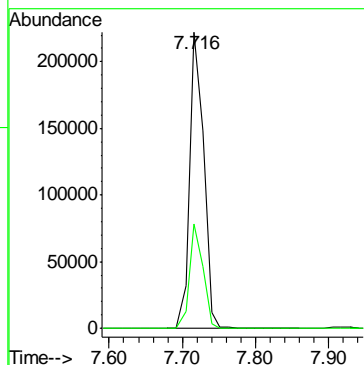
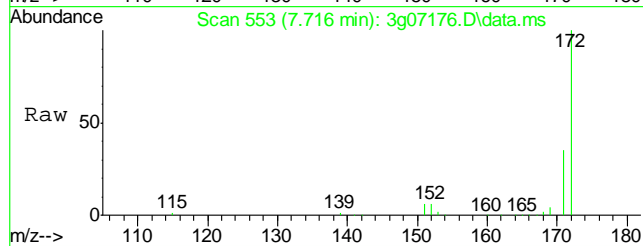
Tgt Ion	Ratio	Lower	Upper
164	100		
162	92.8	71.7	111.7
160	42.8	21.3	61.3





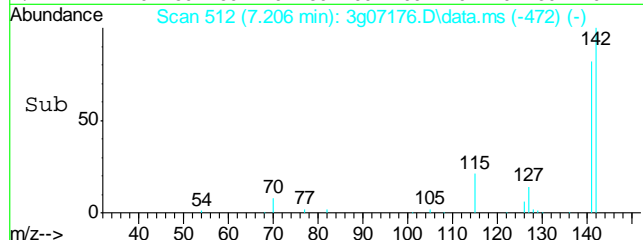
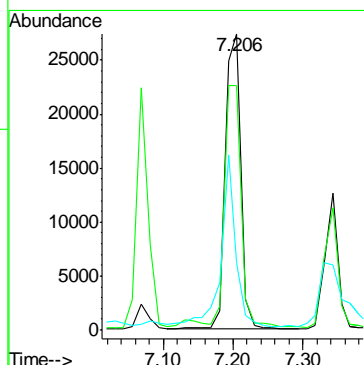
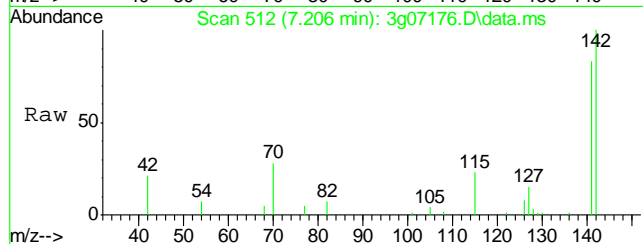
#7
2-Fluorobiphenyl
Concen: 7.10 ug/mL
RT: 7.716 min Scan# 553
Delta R.T. -0.012 min
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

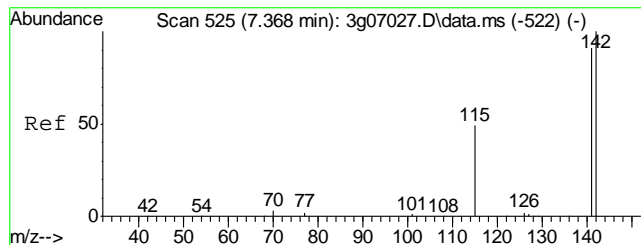
Tgt Ion	Ratio	Lower	Upper
172	100		
171	34.1	12.5	52.5



#8
2-Methylnaphthalene
Concen: 1.10 ug/mL
RT: 7.206 min Scan# 512
Delta R.T. 0.000 min
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

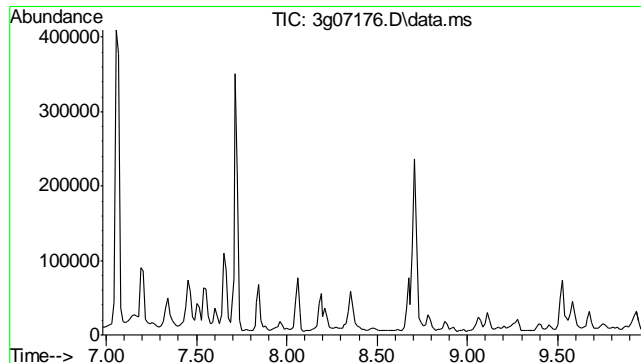
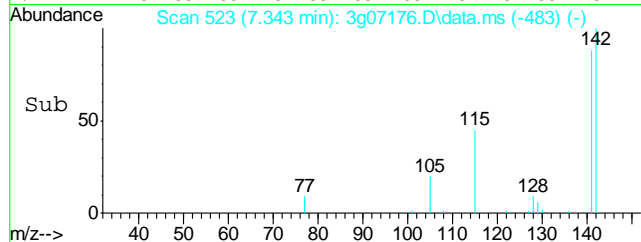
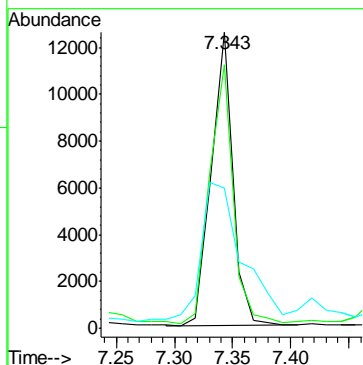
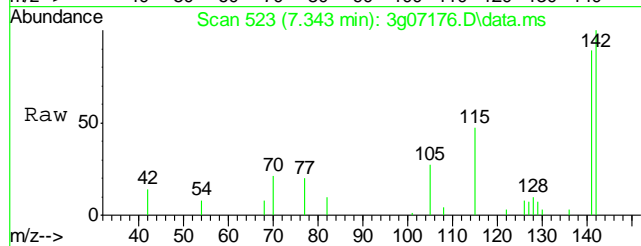
Tgt Ion	Ratio	Lower	Upper
142	100		
141	91.9	62.4	102.4
115	55.0	16.5	56.5





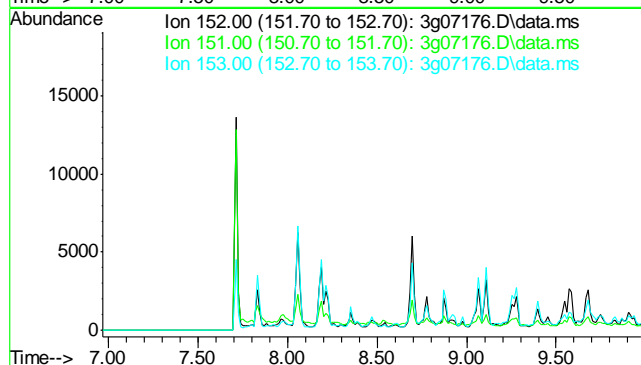
#9
1-Methylnaphthalene
Concen: 0.43 ug/mL
RT: 7.343 min Scan# 523
Delta R.T. 0.000 min
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

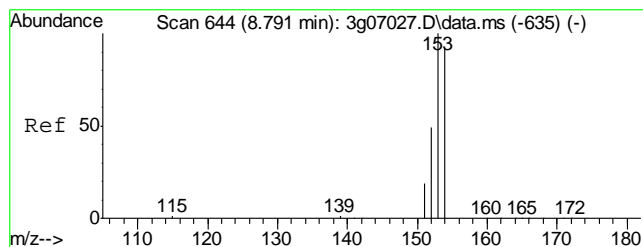
Tgt Ion: 142	Resp: 16006
Ion Ratio	Lower Upper
142	100
141	96.7 68.1 102.1
115	93.1 31.3 46.9#



#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 8.47 min
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

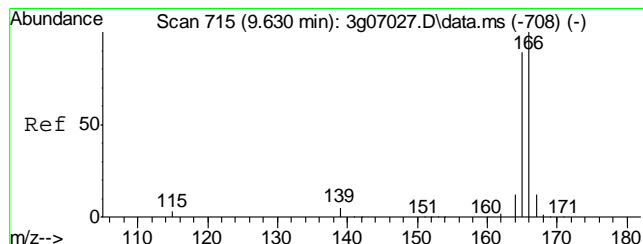
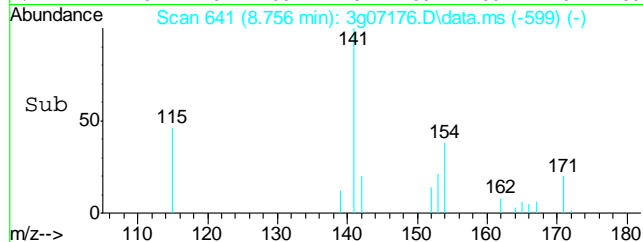
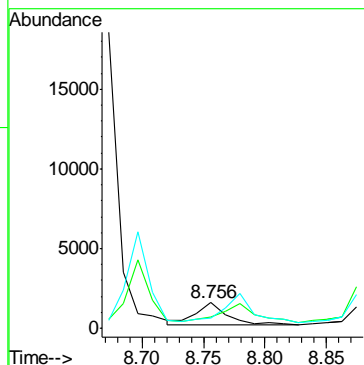
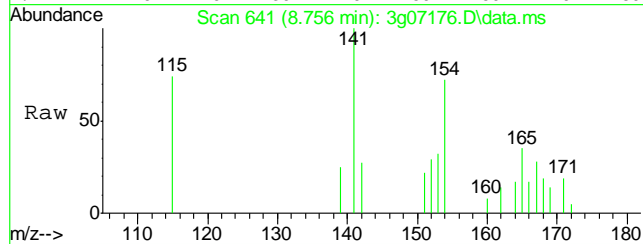
Tgt Ion: 152	
Sig	Exp Ratio
152	100
151	18.8
153	13.0





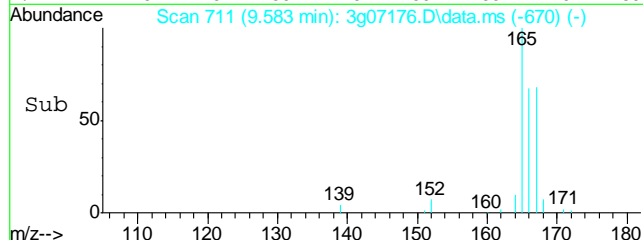
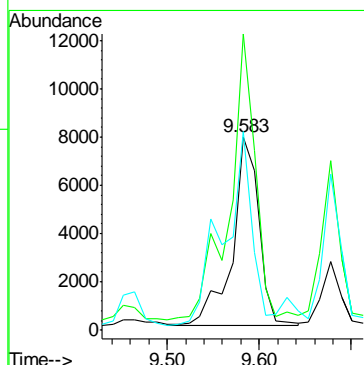
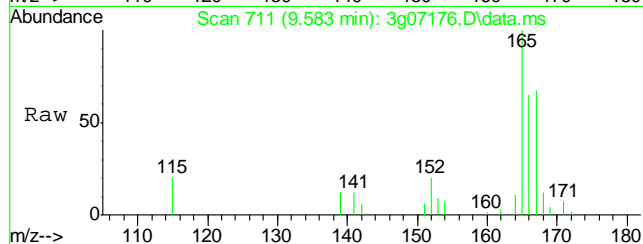
#11
Acenaphthene
Concen: 0.08 ug/mL
RT: 8.756 min Scan# 641
Delta R.T. 0.000 min
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

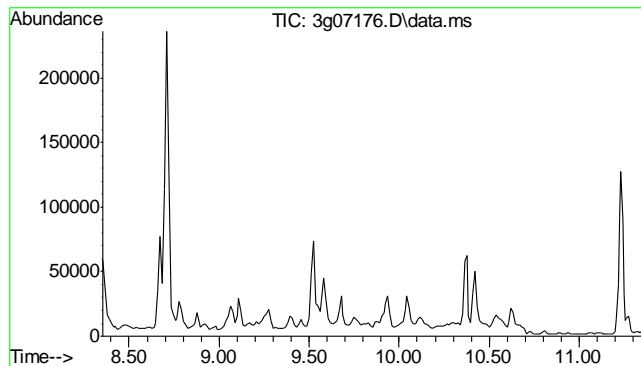
Tgt Ion	Ratio	Lower	Upper
154	100		
153	108.7	82.1	122.1
152	145.0	28.4	68.4



#12
Fluorene
Concen: 0.43 ug/mL
RT: 9.583 min Scan# 711
Delta R.T. -0.012 min
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

Tgt Ion	Ratio	Lower	Upper
166	100		
165	150.9	69.2	109.2
167	112.0	0.0	32.0

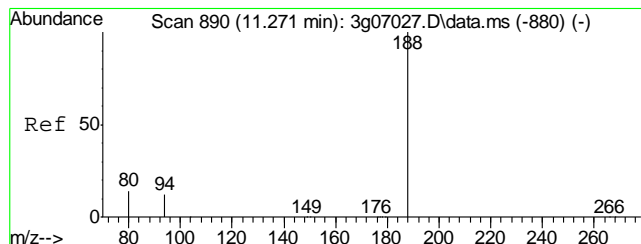
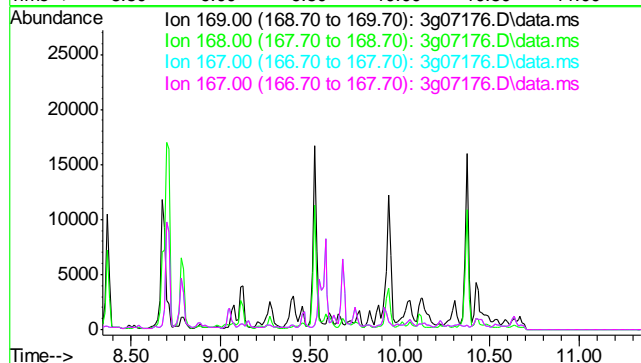




#13
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 9.84 min

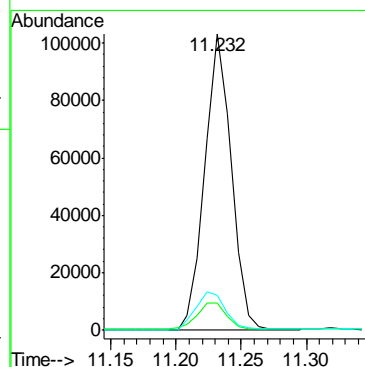
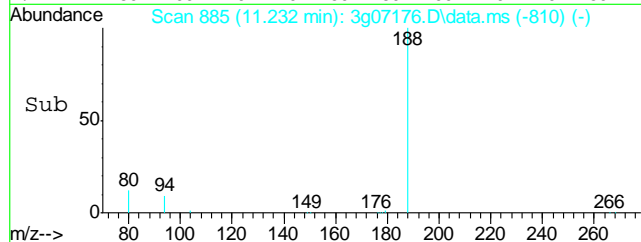
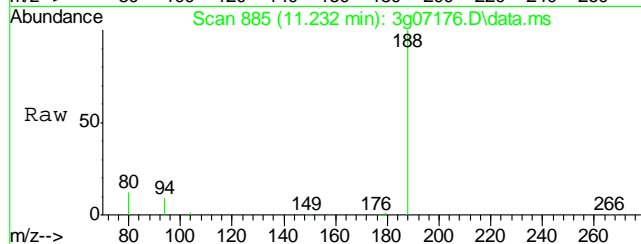
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

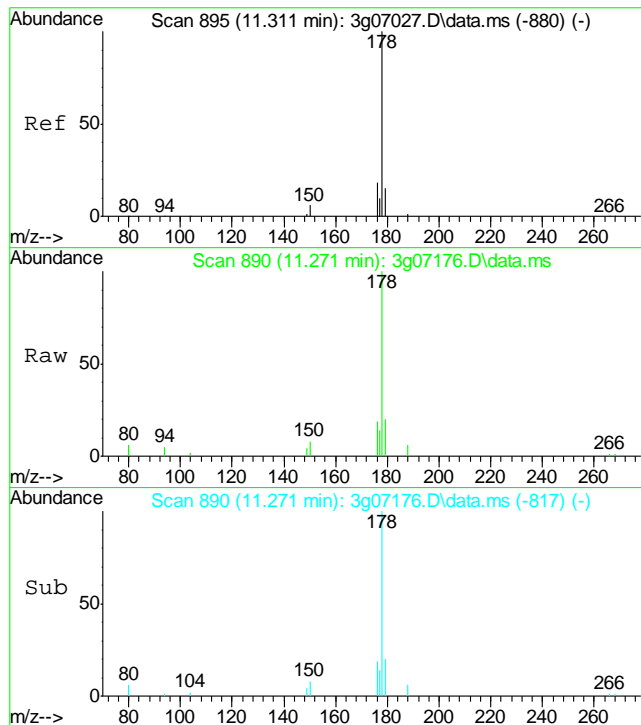
Tgt Ion: 169
Sig Exp Ratio
169 100
168 60.5
167 32.9
167 32.9



#14
Phenanthrene-d10
Concen: 4.00 ug/mL
RT: 11.232 min Scan# 885
Delta R.T. 0.000 min
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

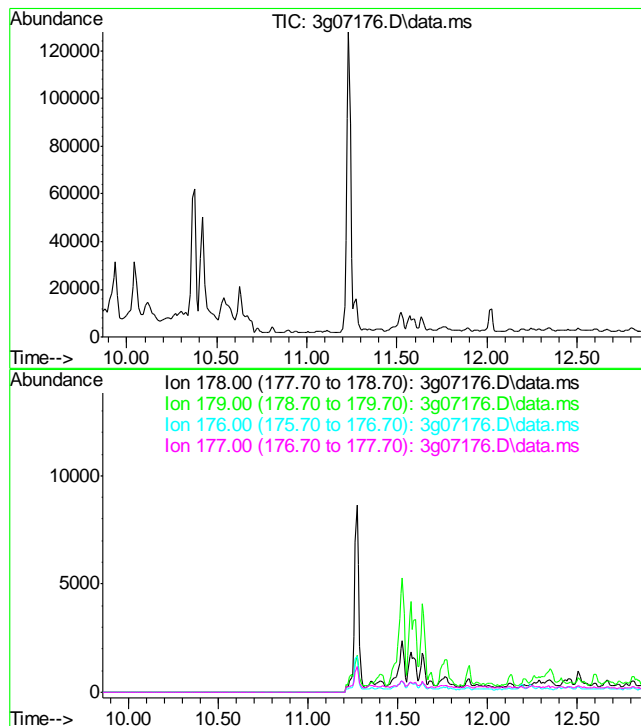
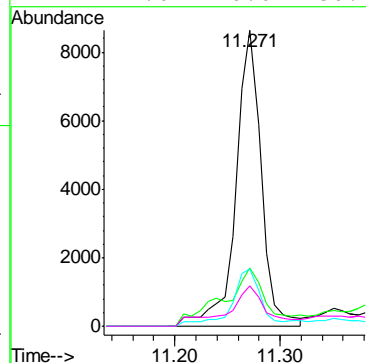
Tgt Ion: 188 Resp: 143728
Ion Ratio Lower Upper
188 100
94 9.8 0.0 34.2
80 15.9 0.0 36.8





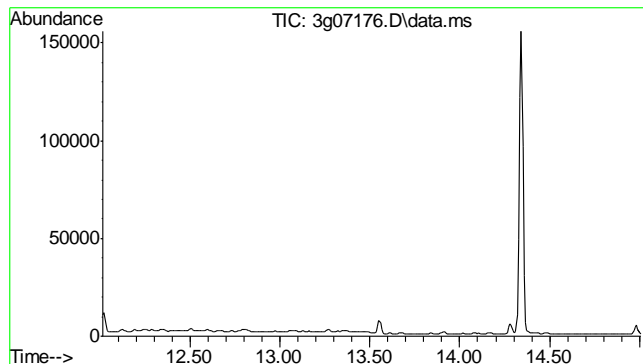
#15
Phenanthrene
Concen: 0.27 ug/mL
RT: 11.271 min Scan# 890
Delta R.T. -0.008 min
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

Tgt Ion: 178	Resp: 14203
Ion Ratio	Lower Upper
178 100	
179 32.8	0.0 35.3
176 22.6	0.0 38.3
177 21.0	0.0 30.1



#16
Anthracene
Concen: N.D. ug/mL
Expected RT: 11.36 min
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

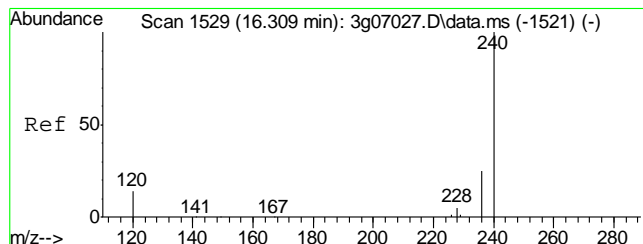
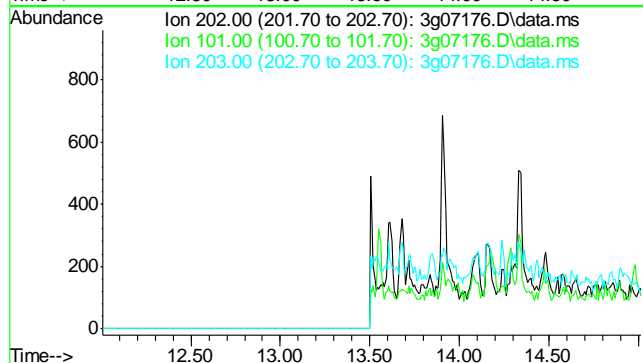
Tgt Ion: 178	
Sig	Exp Ratio
178 100	
179 15.1	
176 17.8	
177 8.7	



#17
 Fluoranthene
 Concen: N.D. ug/mL
 Expected RT: 13.51 min

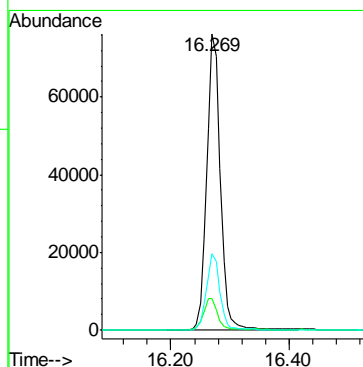
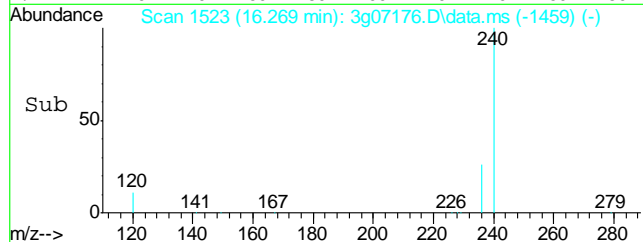
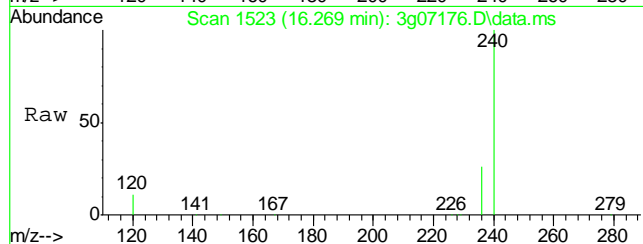
 Lab File: 3g07176.D
 Acq: 8 Dec 11 1:26 pm

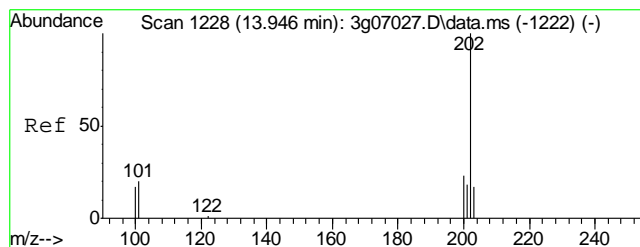
Tgt Ion: 202
 Sig Exp Ratio
 202 100
 101 12.8
 203 18.0



#18
 Chrysene-d12
 Concen: 4.00 ug/mL
 RT: 16.269 min Scan# 1523
 Delta R.T. -0.006 min
 Lab File: 3g07176.D
 Acq: 8 Dec 11 1:26 pm

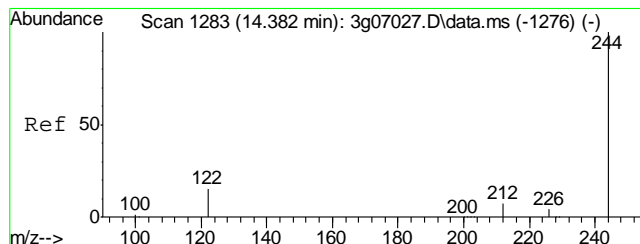
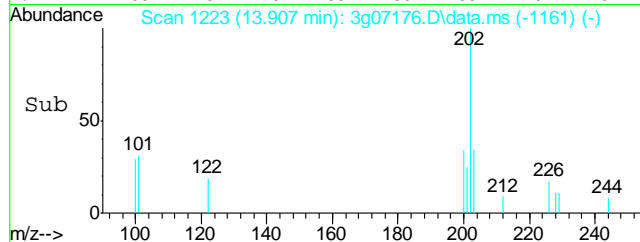
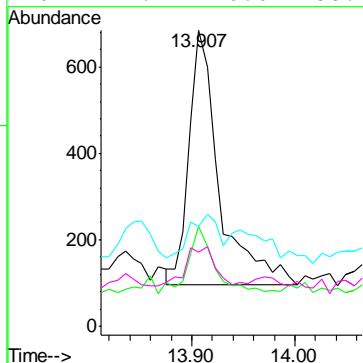
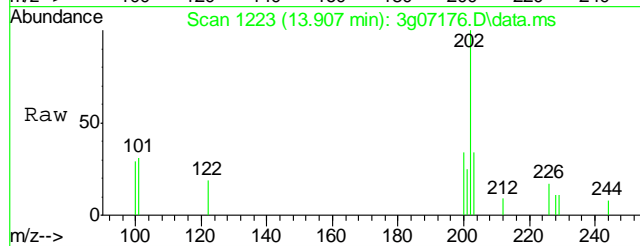
Tgt Ion: 240 Resp: 123591
 Ion Ratio Lower Upper
 240 100
 120 11.4 0.0 38.6
 236 26.0 5.2 45.2





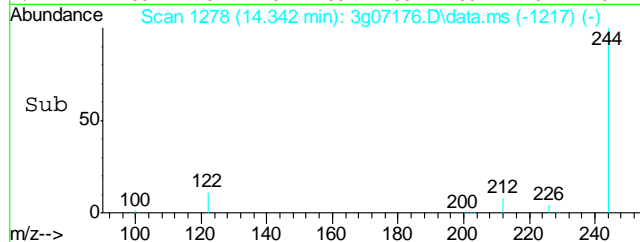
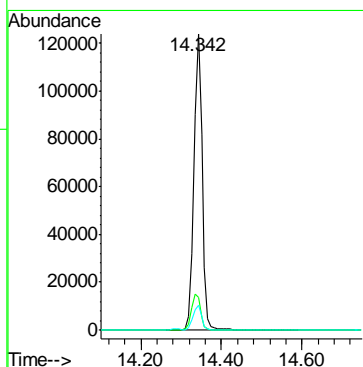
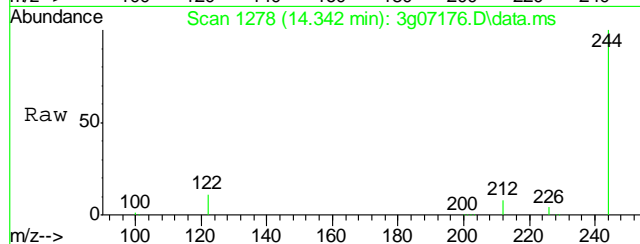
#19
Pyrene
Concen: 0.02 ug/mL
RT: 13.907 min Scan# 1223
Delta R.T. -0.008 min
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

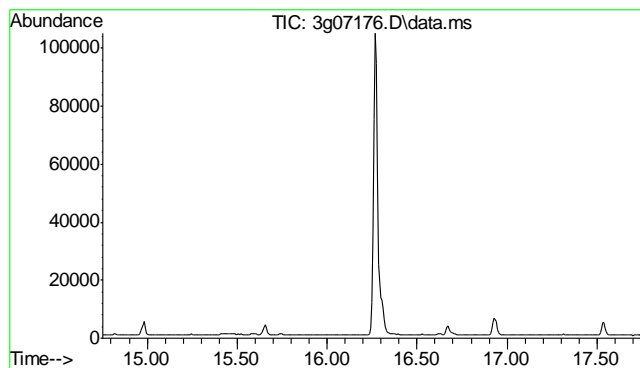
Tgt Ion:	202	Resp:	1197
Ion Ratio	Lower	Upper	
202	100		
200	18.9	2.1	42.1
203	13.1	0.0	37.8
201	12.7	0.0	38.2



#20
Terphenyl-d14
Concen: 7.10 ug/mL
RT: 14.342 min Scan# 1278
Delta R.T. -0.016 min
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

Tgt Ion:	244	Resp:	175567
Ion Ratio	Lower	Upper	
244	100		
122	12.9	0.8	40.8
212	8.4	0.0	27.2

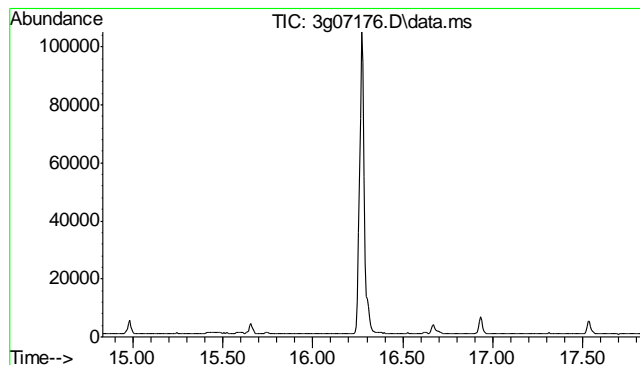
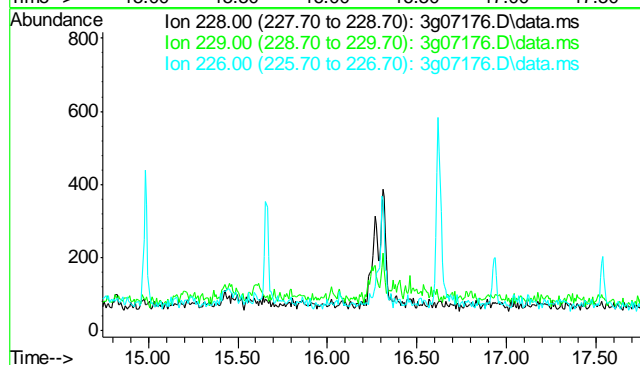




#21
 Benzo(a)anthracene
 Concen: N.D. ug/mL
 Expected RT: 16.25 min

Lab File: 3g07176.D
 Acq: 8 Dec 11 1:26 pm

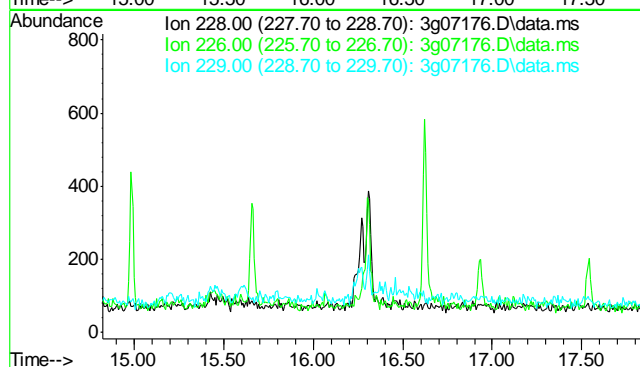
Tgt Ion	Exp Ratio
228	100
229	19.6
226	26.6

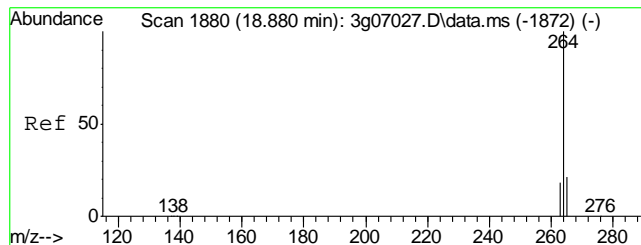


#22
 Chrysene
 Concen: N.D. ug/mL
 Expected RT: 16.33 min

Lab File: 3g07176.D
 Acq: 8 Dec 11 1:26 pm

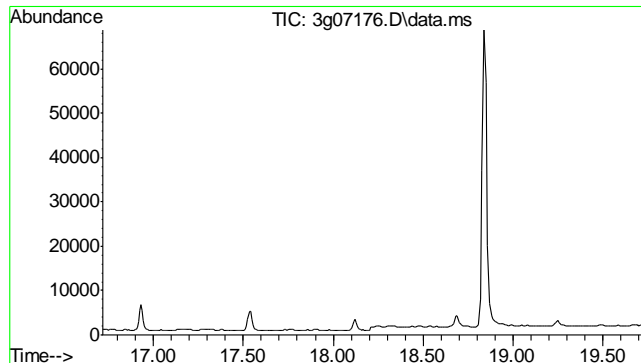
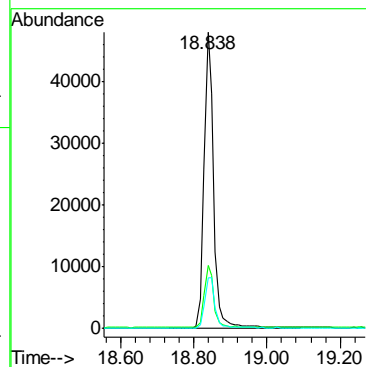
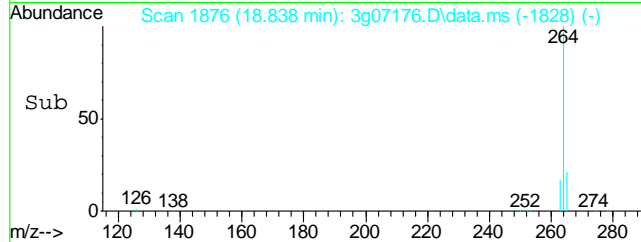
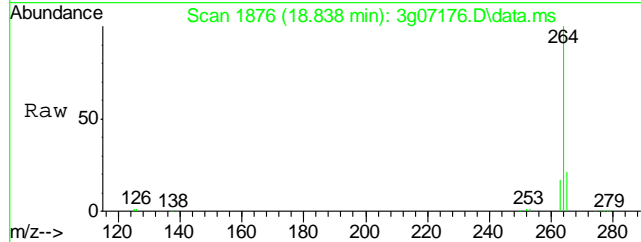
Tgt Ion	Exp Ratio
228	100
226	27.4
229	19.2





#23
Perylene-d12
Concen: 4.00 ug/mL
RT: 18.838 min Scan# 1876
Delta R.T. 0.000 min
Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

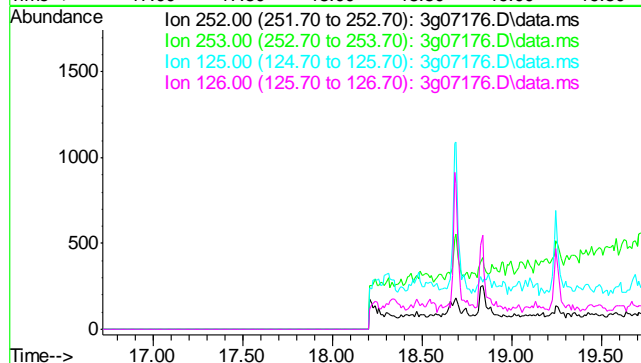
Tgt Ion:	264	Resp:	88357
Ion Ratio	Lower	Upper	
264	100		
265	21.5	1.0	41.0
263	18.5	0.0	38.6

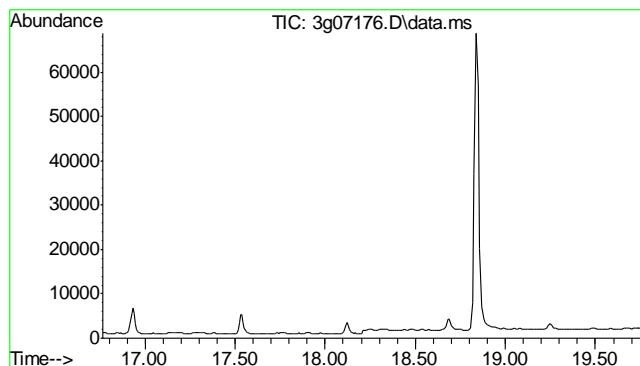


#24
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 18.22 min

Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

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

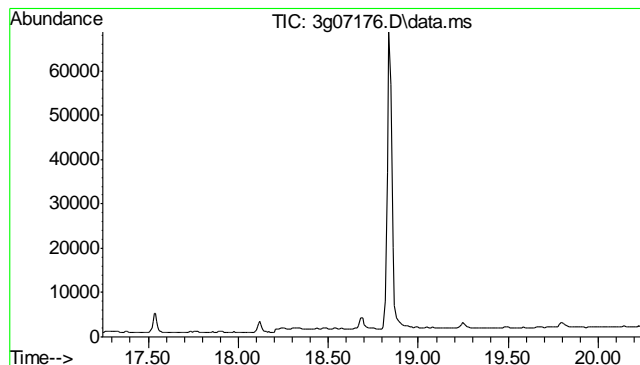
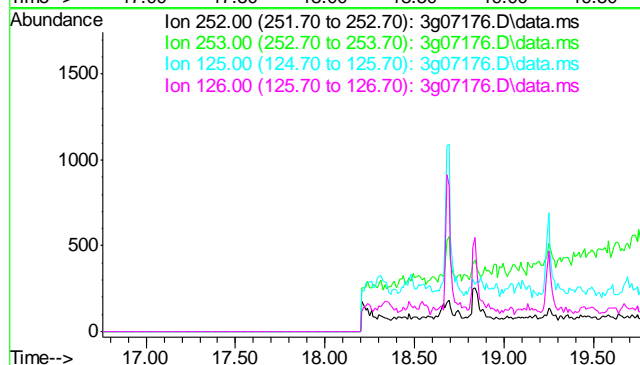




#25
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 18.26 min

Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

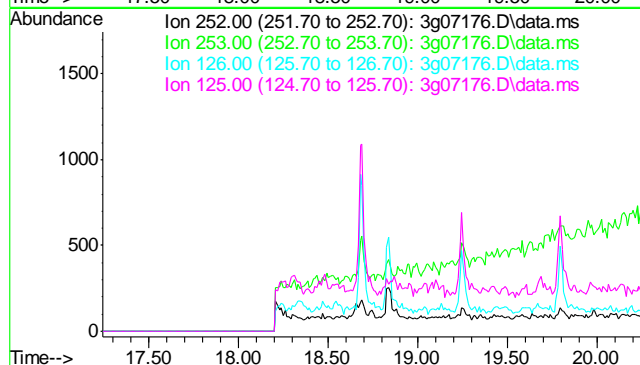
Tgt Ion	Exp Ratio
252	100
253	37.7
125	20.1
126	28.7

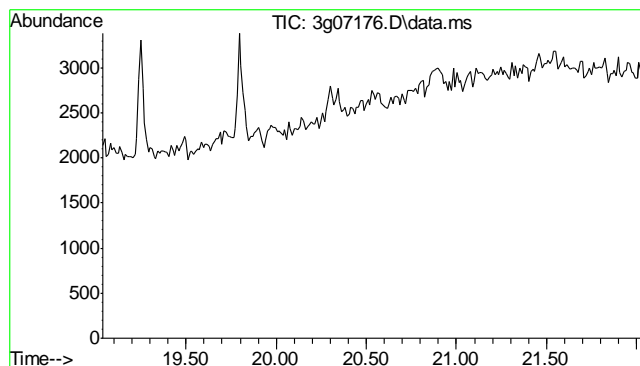


#26
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 18.74 min

Lab File: 3g07176.D
Acq: 8 Dec 11 1:26 pm

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

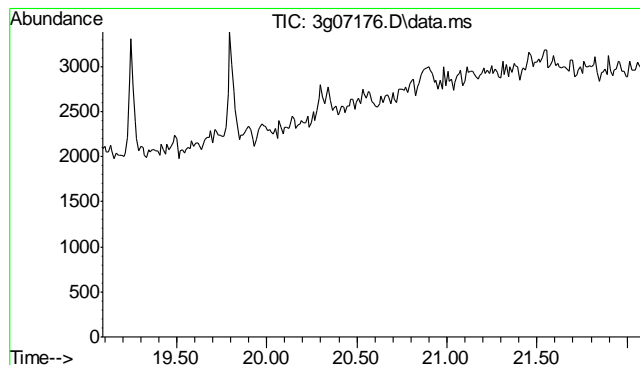
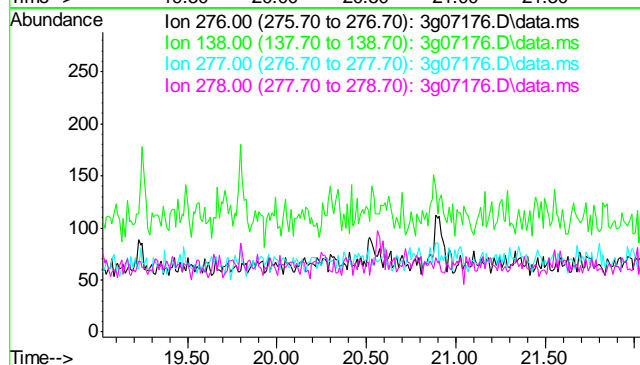




#27
 Indeno(1,2,3-cd)pyrene
 Concen: N.D. ug/mL
 Expected RT: 20.53 min

 Lab File: 3g07176.D
 Acq: 8 Dec 11 1:26 pm

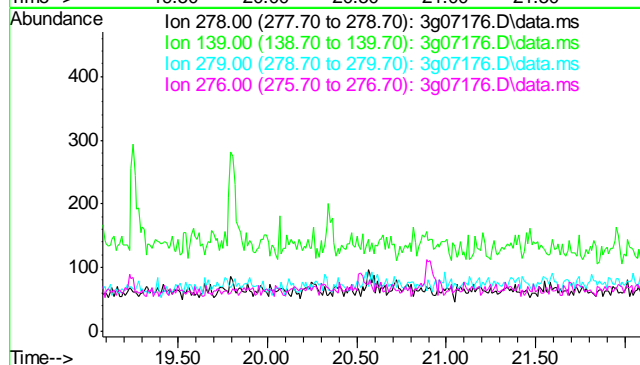
Tgt Ion	Exp Ratio
276	100
138	28.2
277	28.3
278	3.7

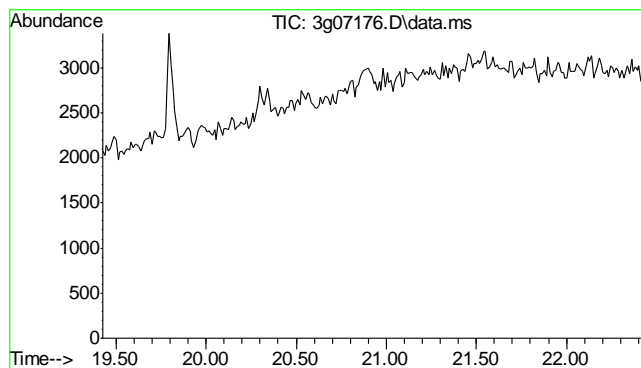


#28
 Dibenzo(a,h)anthracene
 Concen: N.D. ug/mL
 Expected RT: 20.58 min

 Lab File: 3g07176.D
 Acq: 8 Dec 11 1:26 pm

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

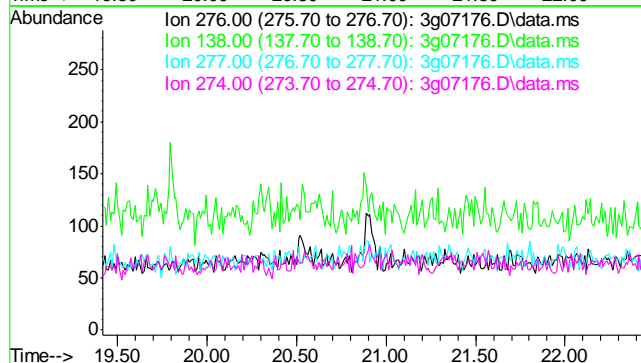




#29
 Benzo(g,h,i)perylene
 Concen: N.D. ug/mL
 Expected RT: 20.92 min

 Lab File: 3g07176.D
 Acq: 8 Dec 11 1:26 pm

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



Quantitation Report (QT Reviewed)

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

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

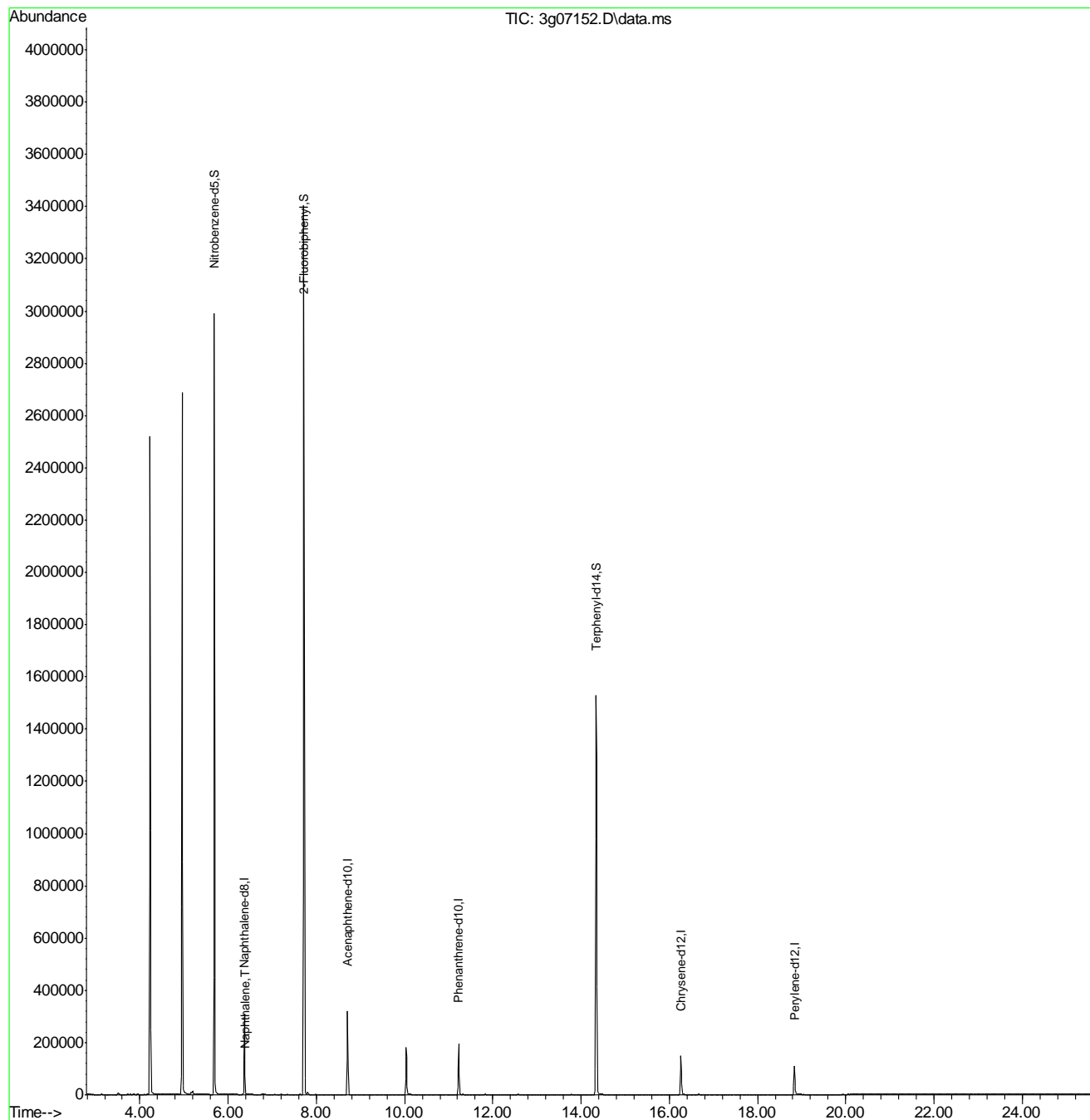
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	6.370	136	271050	4.00	ug/mL	0.00
6) Acenaphthene-d10	8.709	164	166538	4.00	ug/mL	0.00
14) Phenanthrene-d10	11.232	188	222176	4.00	ug/mL	0.00
18) Chrysene-d12	16.263	240	176214	4.00	ug/mL	-0.01
23) Perylene-d12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

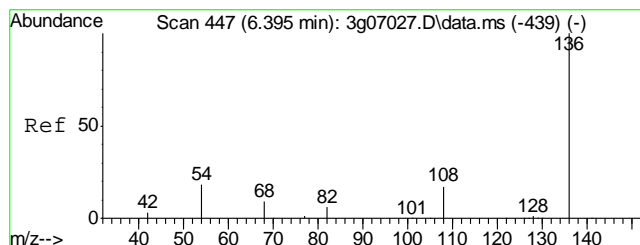
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

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

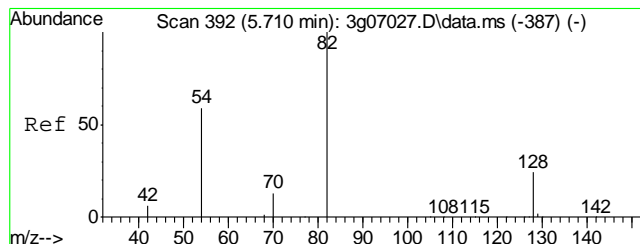
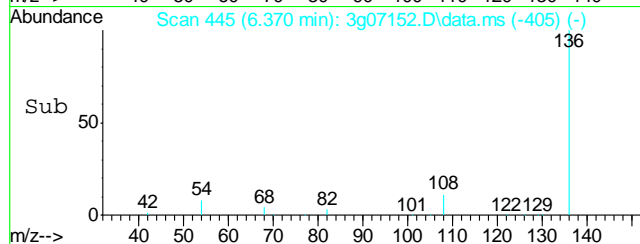
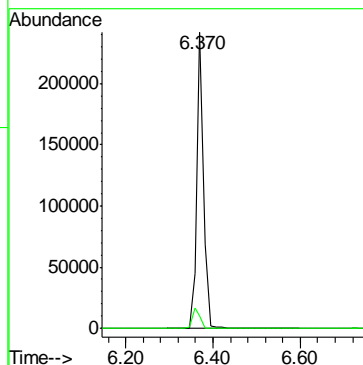
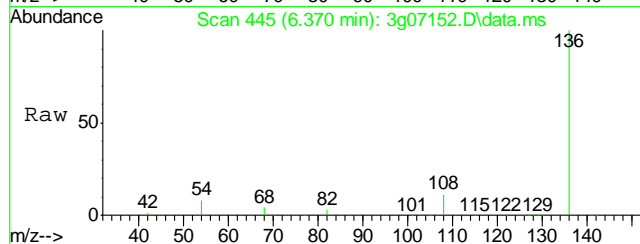
Quant Time: Dec 08 09:47:15 2011
Quant Method : C:\msdchem\1\METHODS\SIMPE3G262.M
Quant Title : PAHSIM BASE
QLast Update : Thu Dec 08 09:26:11 2011
Response via : Initial Calibration





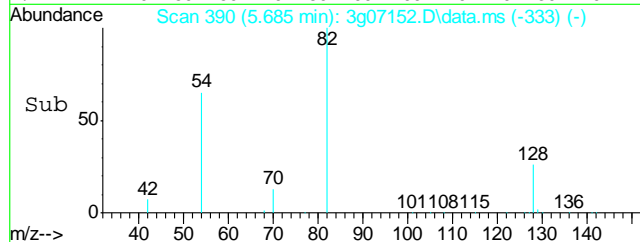
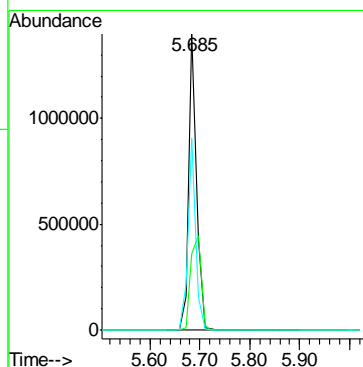
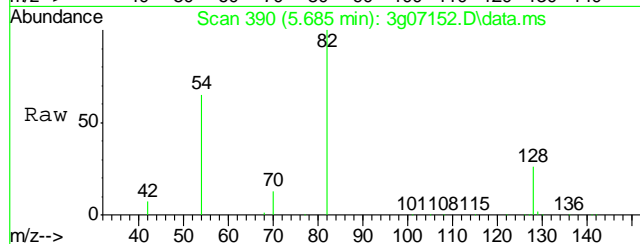
#1
Naphthalene-d8
Concen: 4.00 ug/mL
RT: 6.370 min Scan# 445
Delta R.T. 0.000 min
Lab File: 3g07152.D
Acq: 7 Dec 11 9:58 pm

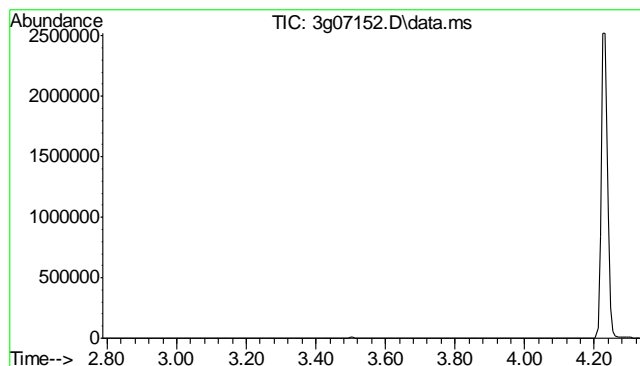
Tgt Ion: 136 Resp: 271050
Ion Ratio Lower Upper
136 100
68 7.9 0.0 27.5



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

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

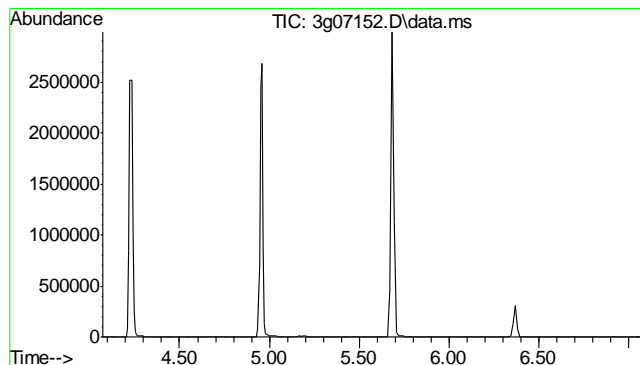
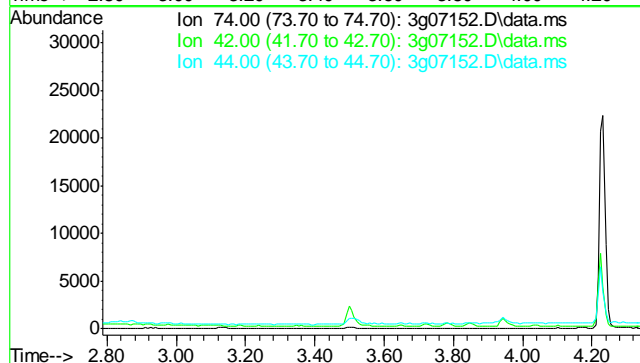




#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.84 min

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

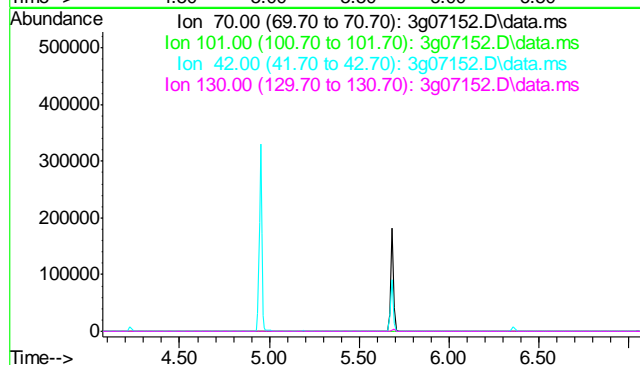
Tgt Ion:	74
Sig	Exp Ratio
74	100
42	62.7
44	4.7

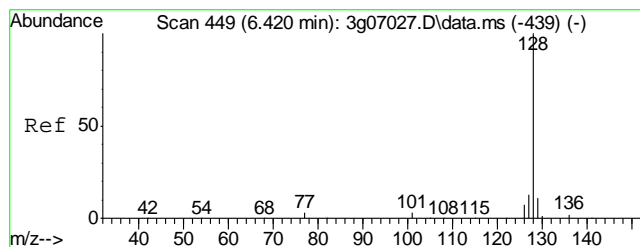


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 5.57 min

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

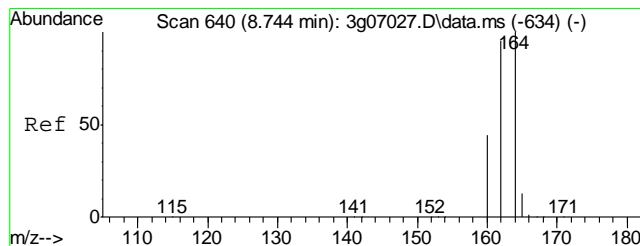
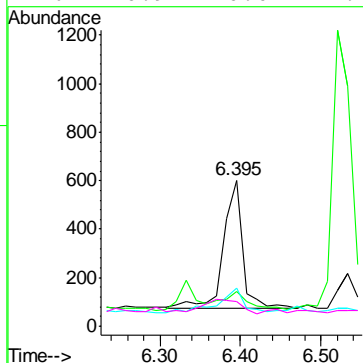
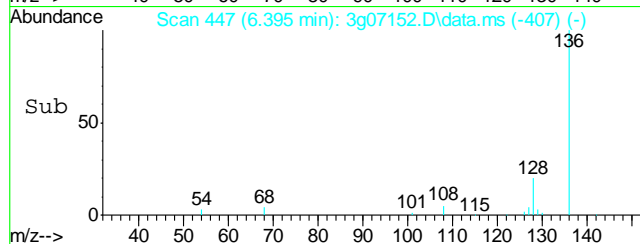
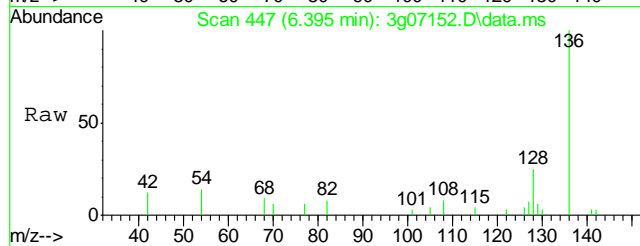
Tgt Ion:	70
Sig	Exp Ratio
70	100
101	12.9
42	56.3
130	25.7





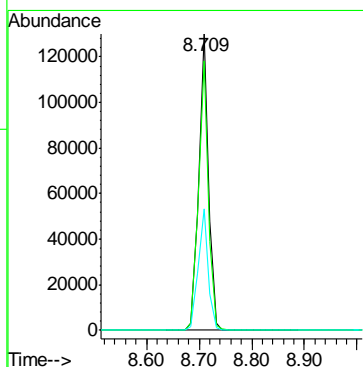
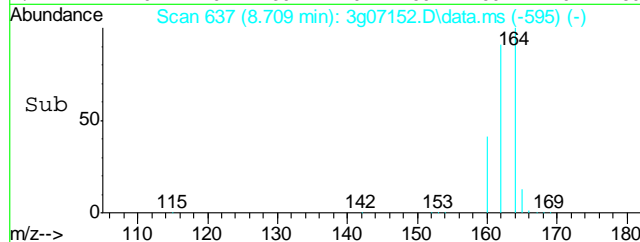
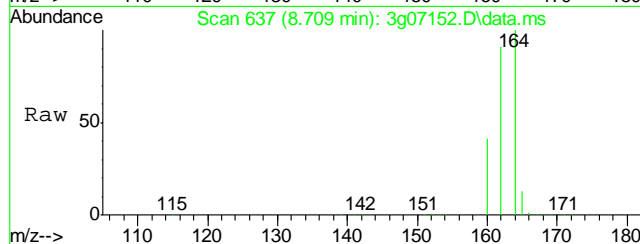
#5
Naphthalene
Concen: 0.01 ug/mL
RT: 6.395 min Scan# 447
Delta R.T. 0.000 min
Lab File: 3g07152.D
Acq: 7 Dec 11 9:58 pm

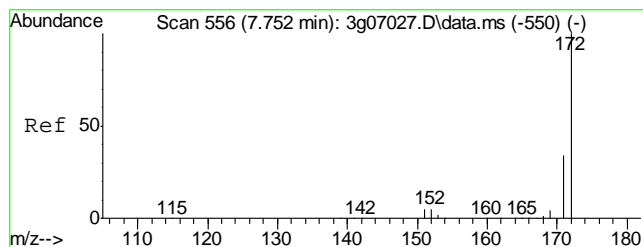
Tgt Ion:128	Resp:	862
Ion Ratio	Lower	Upper
128	100	
129	19.1	0.0 31.0
127	24.4	0.0 32.5
126	20.9	0.0 27.2



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

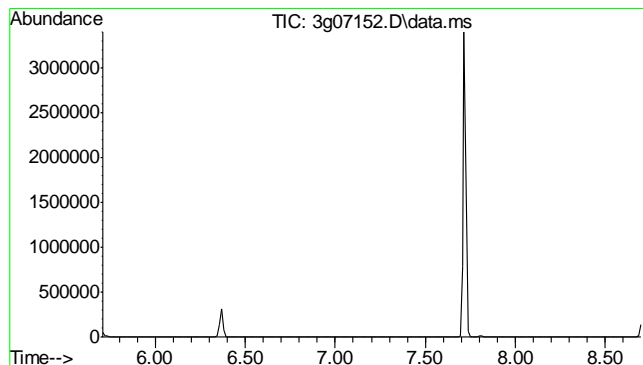
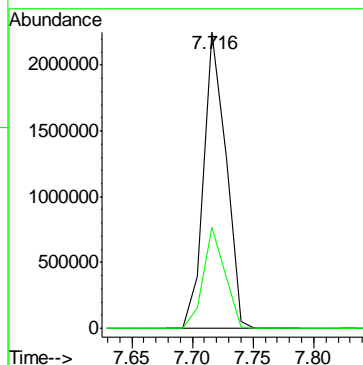
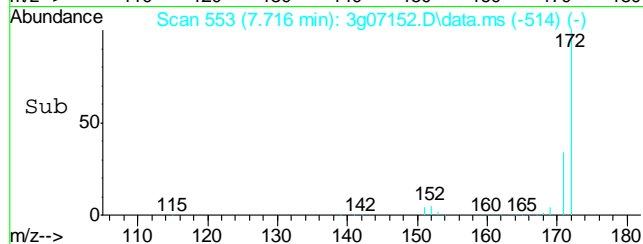
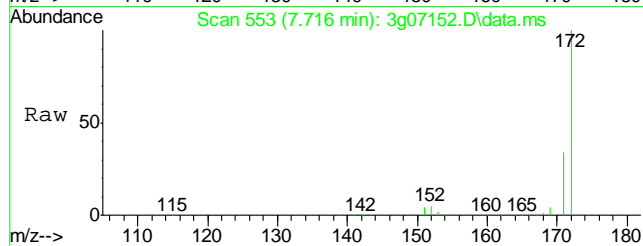
Tgt Ion:164	Resp:	166538
Ion Ratio	Lower	Upper
164	100	
162	91.0	71.7 111.7
160	41.2	21.3 61.3





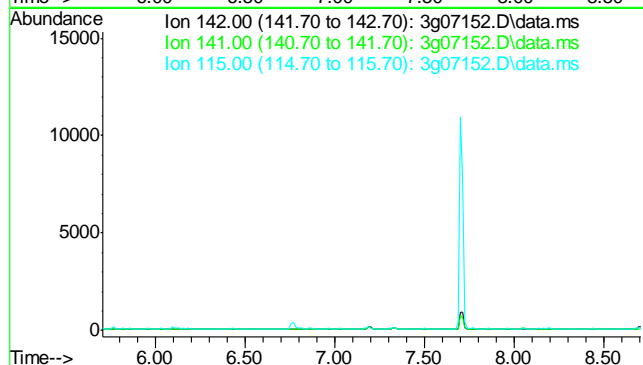
#7
2-Fluorobiphenyl
Concen: 43.84 ug/mL
RT: 7.716 min Scan# 553
Delta R.T. -0.012 min
Lab File: 3g07152.D
Acq: 7 Dec 11 9:58 pm

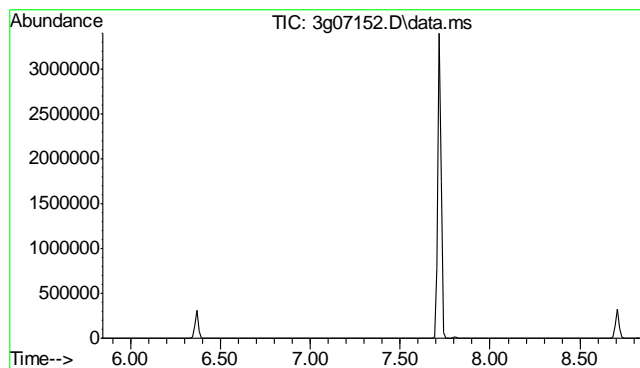
Tgt Ion: 172 Resp: 2865854
Ion Ratio Lower Upper
172 100
171 33.1 12.5 52.5



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

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

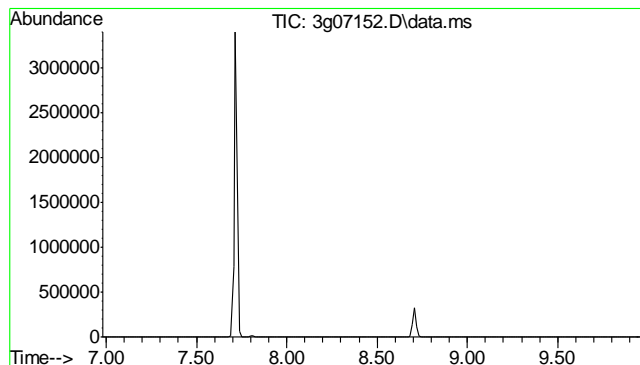
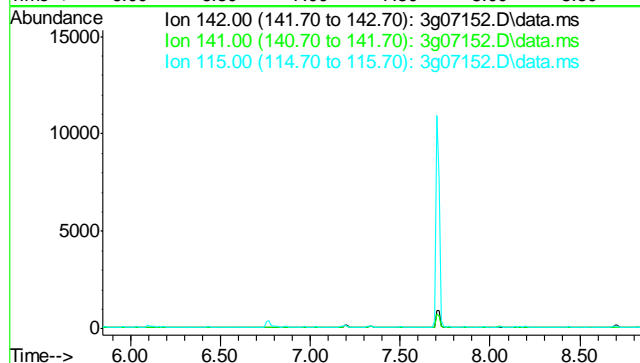




#9
1-Methylnaphthalene
Concen: N.D. ug/mL
Expected RT: 7.34 min

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

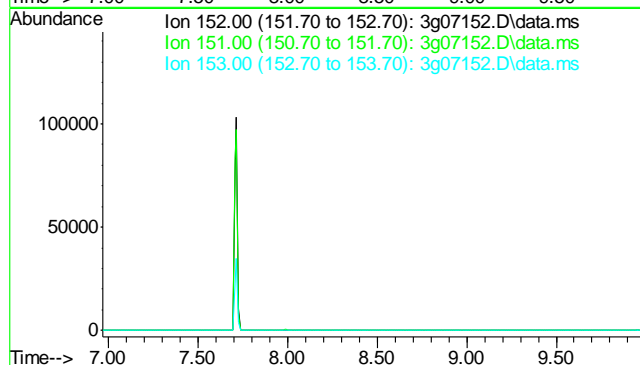
Tgt Ion:	142
Sig	Exp Ratio
142	100
141	85.1
115	39.1

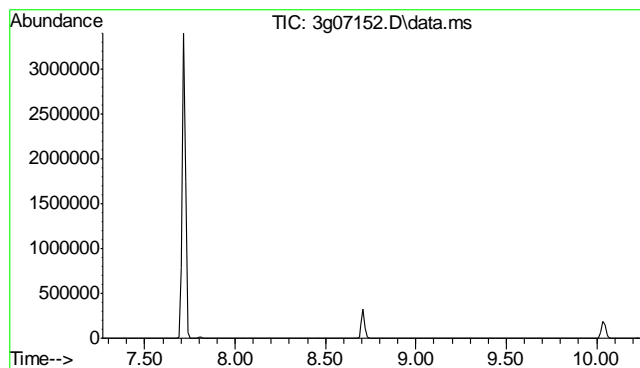


#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 8.47 min

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

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

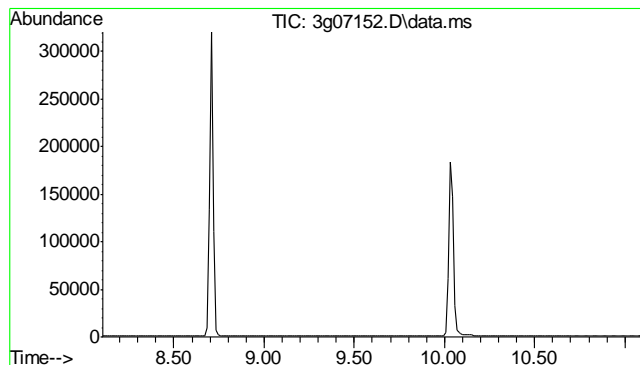
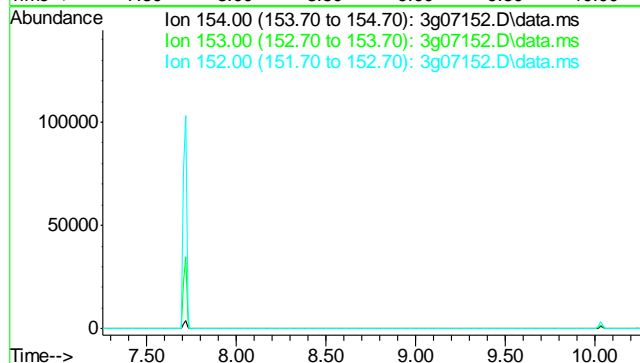




#11
Acenaphthene
Concen: N.D. ug/mL
Expected RT: 8.76 min

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

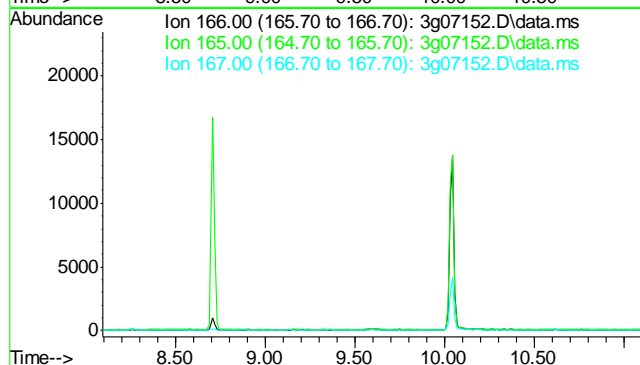
Tgt Ion: 154
Sig Exp Ratio
154 100
153 102.1
152 48.4

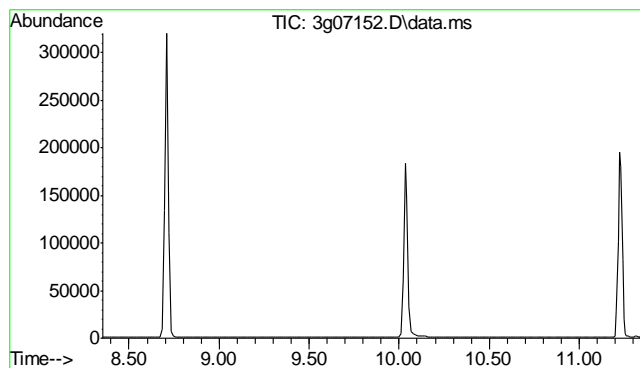


#12
Fluorene
Concen: N.D. ug/mL
Expected RT: 9.59 min

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

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

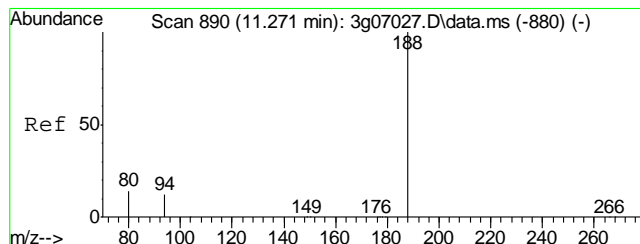
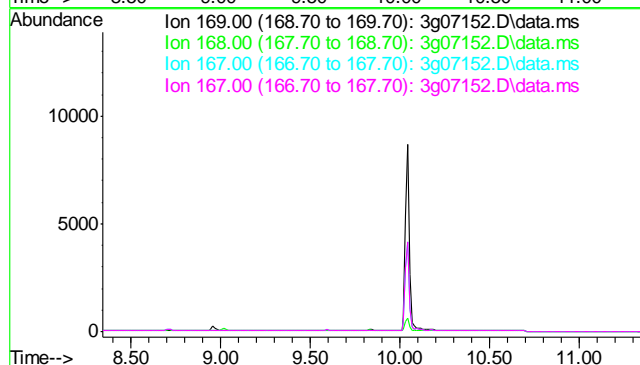




#13
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 9.84 min

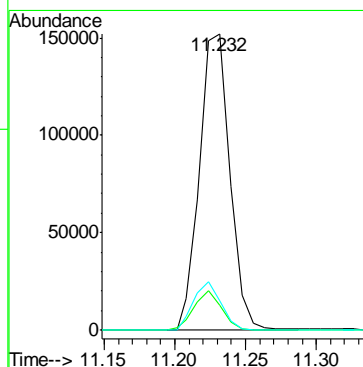
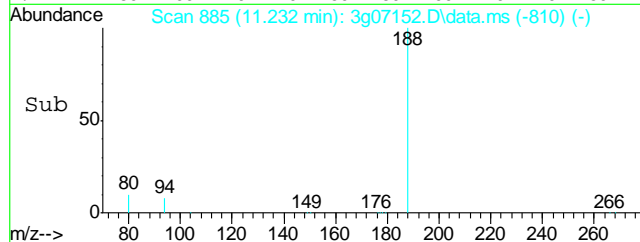
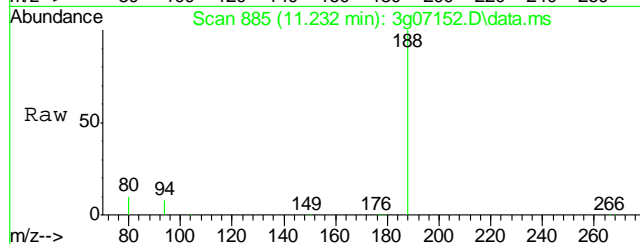
Lab File: 3g07152.D
Acq: 7 Dec 11 9:58 pm

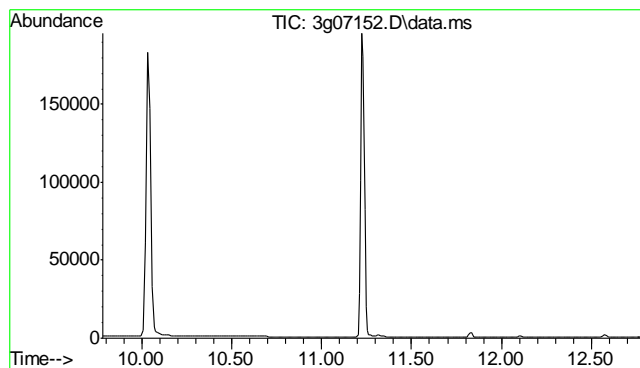
Tgt Ion: 169
Sig Exp Ratio
169 100
168 60.5
167 32.9
167 32.9



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

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

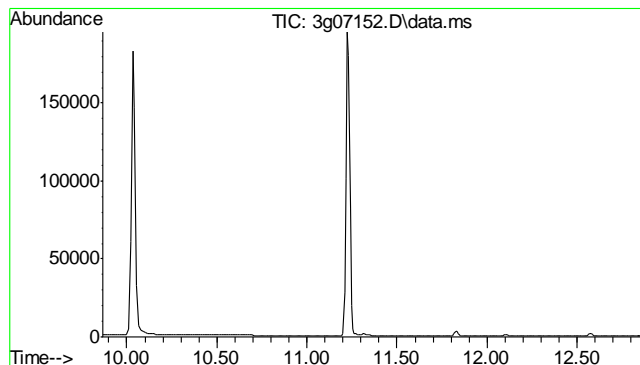
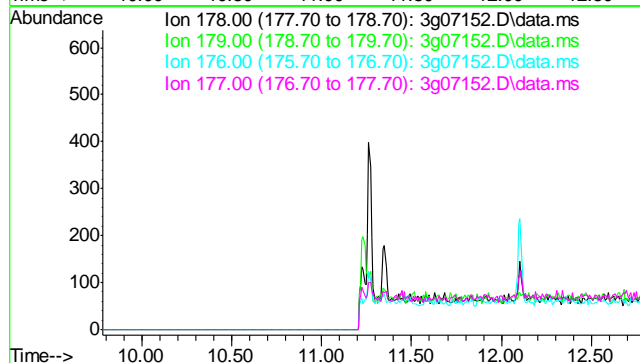




#15
Phenanthrene
Concen: N.D. ug/mL
Expected RT: 11.28 min

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

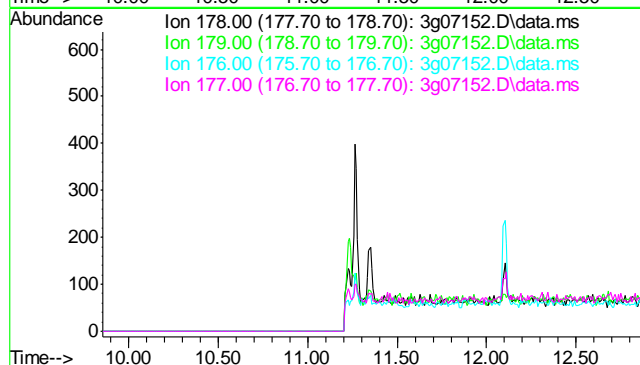
Tgt Ion: 178
Sig Exp Ratio
178 100
179 15.3
176 18.3
177 10.1

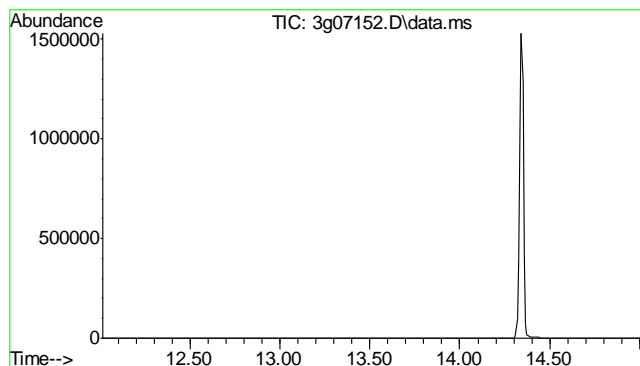


#16
Anthracene
Concen: N.D. ug/mL
Expected RT: 11.36 min

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

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

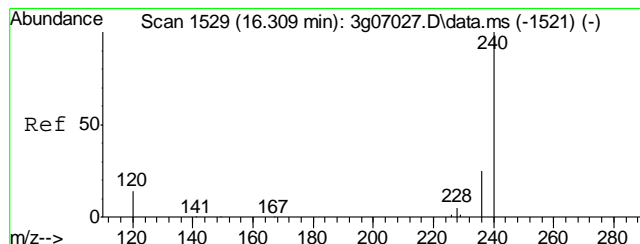
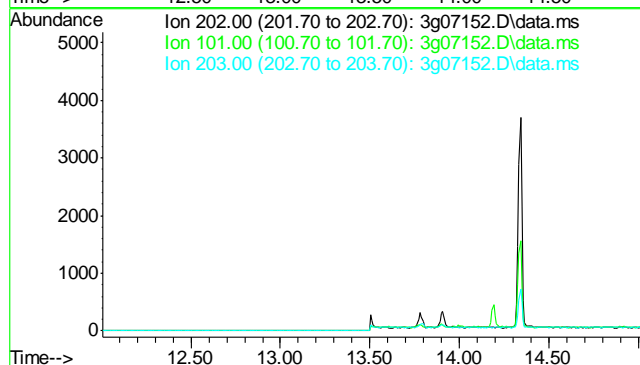




#17
Fluoranthene
Concen: N.D. ug/mL
Expected RT: 13.51 min

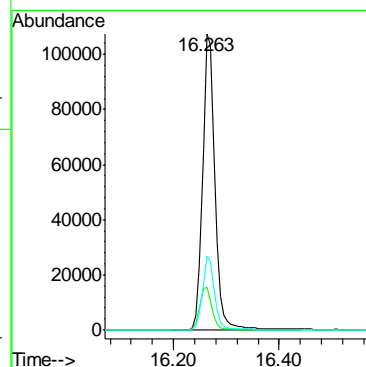
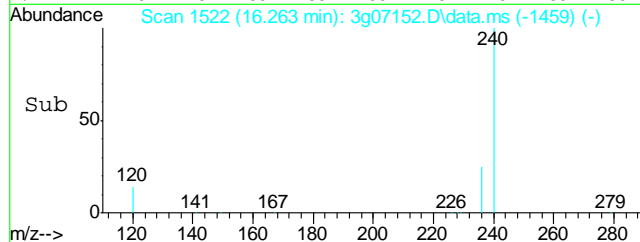
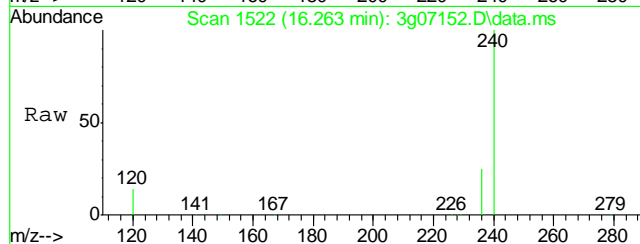
Lab File: 3g07152.D
Acq: 7 Dec 11 9:58 pm

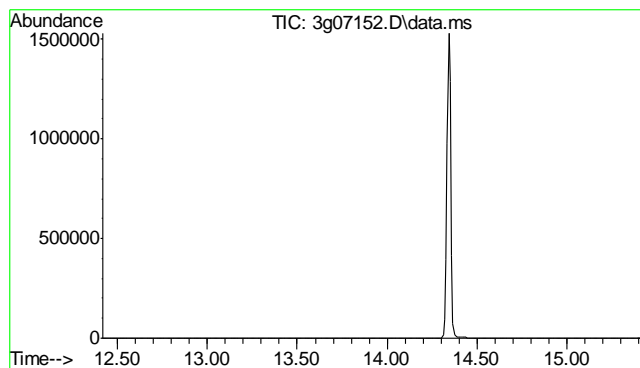
Tgt Ion:	202
Sig	Exp Ratio
202	100
101	12.8
203	18.0



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

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

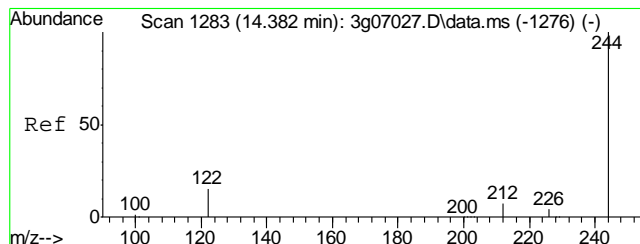
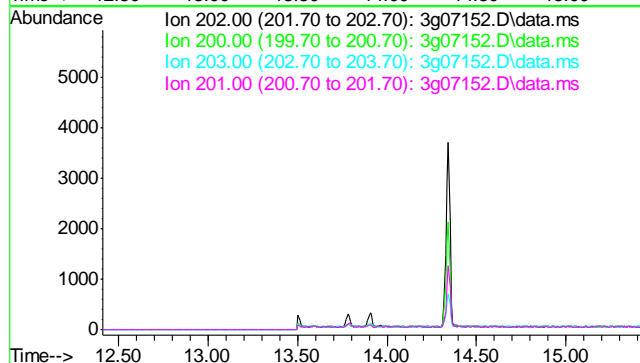




#19
Pyrene
Concen: N.D. ug/mL
Expected RT: 13.91 min

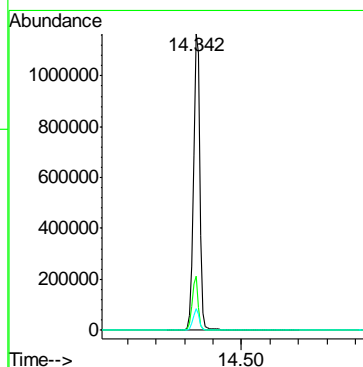
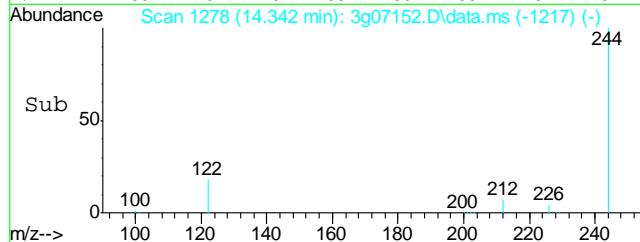
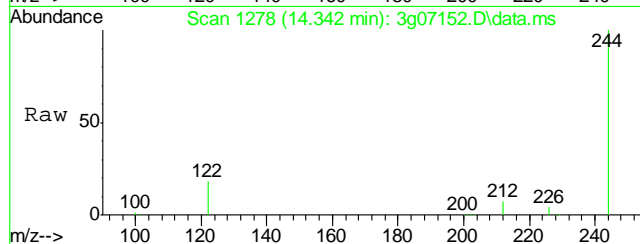
Lab File: 3g07152.D
Acq: 7 Dec 11 9:58 pm

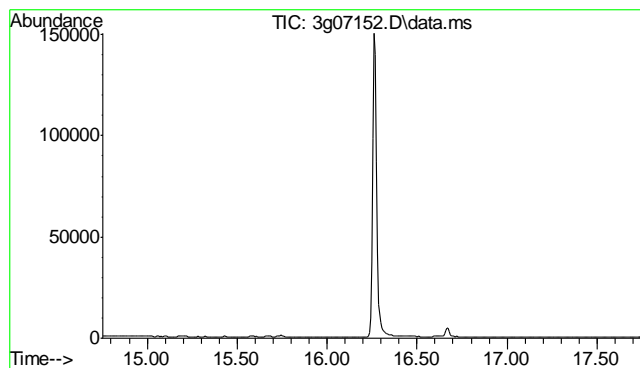
Tgt Ion:	202
Sig	Exp Ratio
202	100
200	22.1
203	17.8
201	18.2



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

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

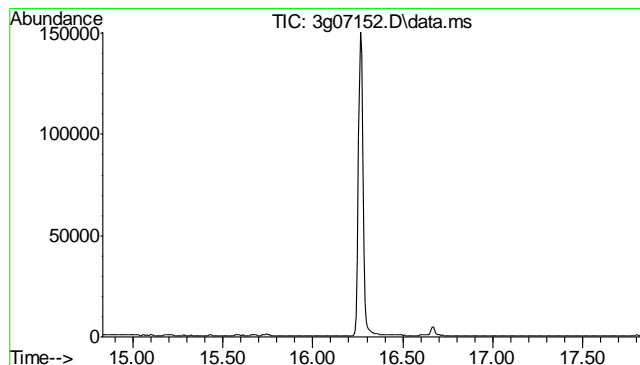
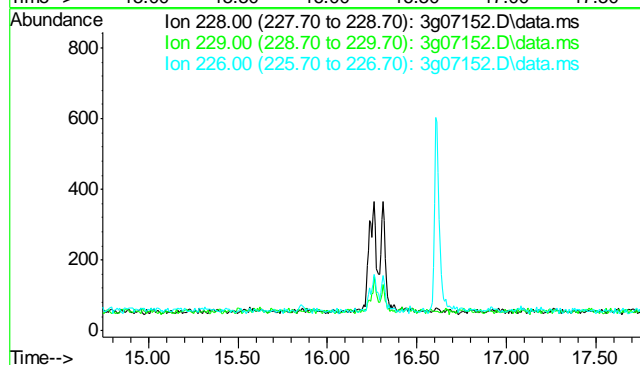




#21
Benzo(a)anthracene
Concen: N.D. ug/mL
Expected RT: 16.25 min

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

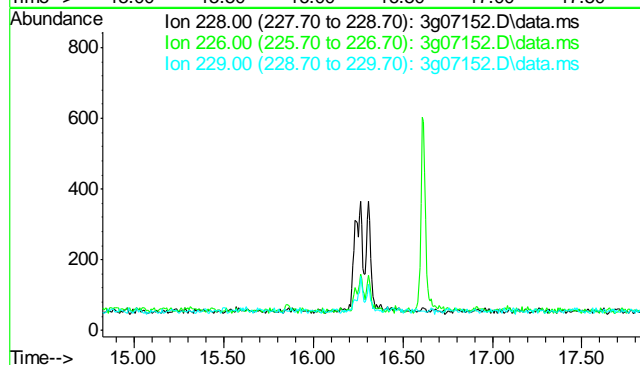
Tgt Ion:	228
Sig	Exp Ratio
228	100
229	19.6
226	26.6

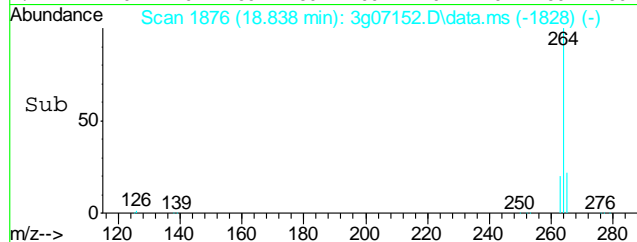
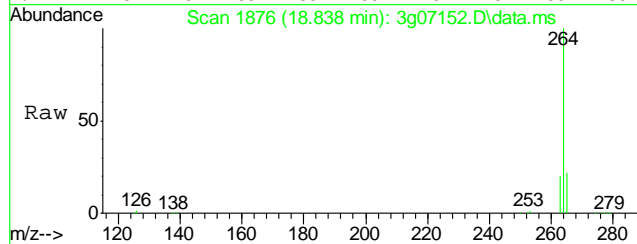
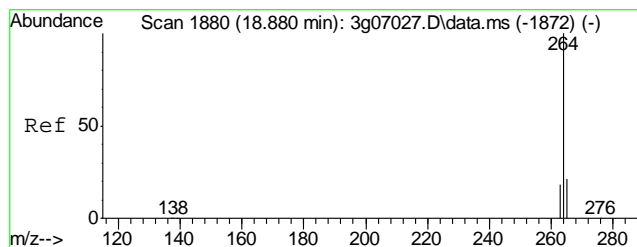


#22
Chrysene
Concen: N.D. ug/mL
Expected RT: 16.33 min

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

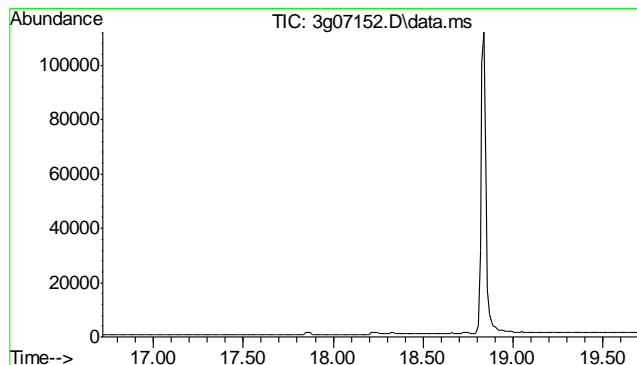
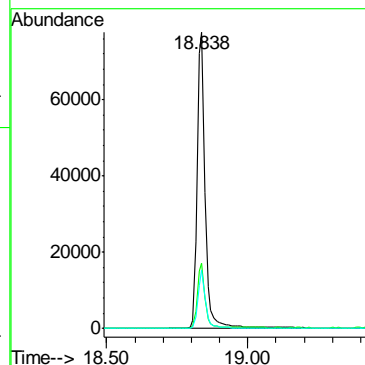
Tgt Ion:	228
Sig	Exp Ratio
228	100
226	27.4
229	19.2





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

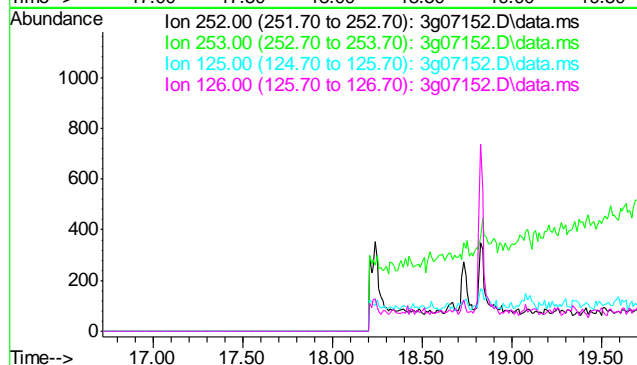
Tgt Ion	Ratio	Lower	Upper
264	100		
265	21.1	1.0	41.0
263	18.4	0.0	38.6

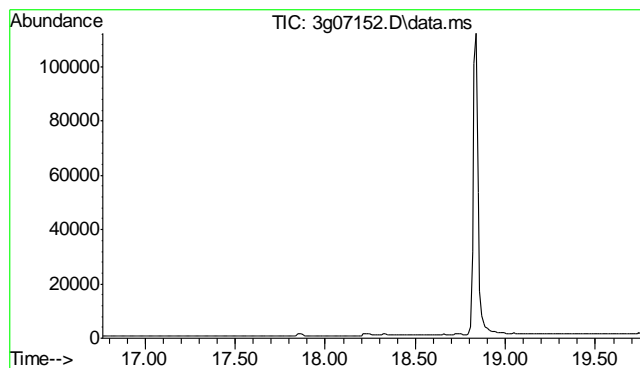


#24
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 18.22 min

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

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

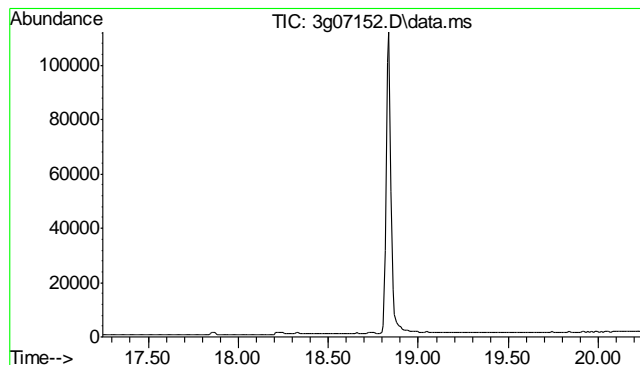
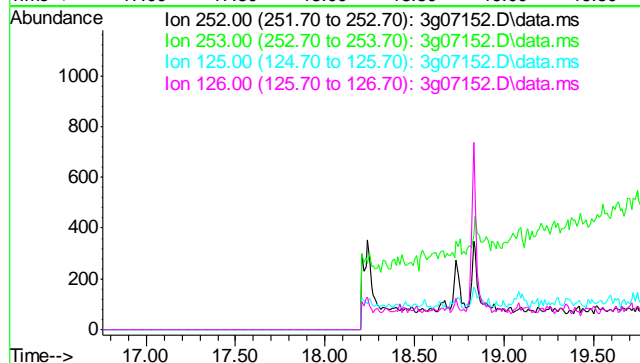




#25
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 18.26 min

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

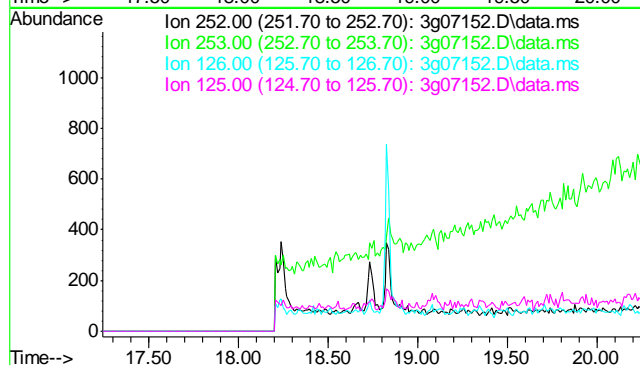
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	37.7
125	20.1
126	28.7

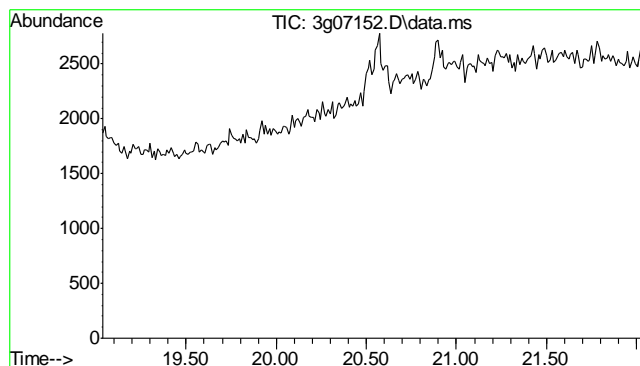


#26
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 18.74 min

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

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

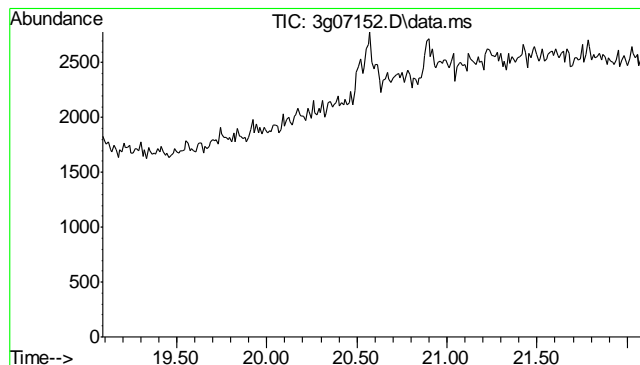
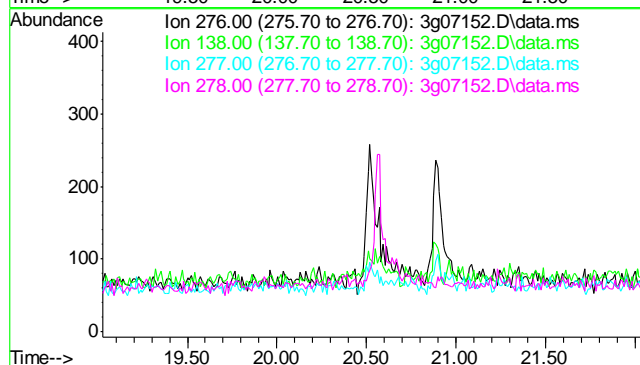




#27
Indeno(1,2,3-cd)pyrene
Concen: N.D. ug/mL
Expected RT: 20.53 min

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

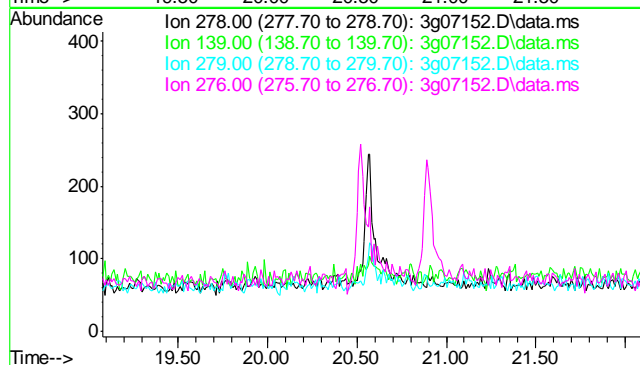
Tgt Ion:	276
Sig	Exp Ratio
276	100
138	28.2
277	28.3
278	3.7

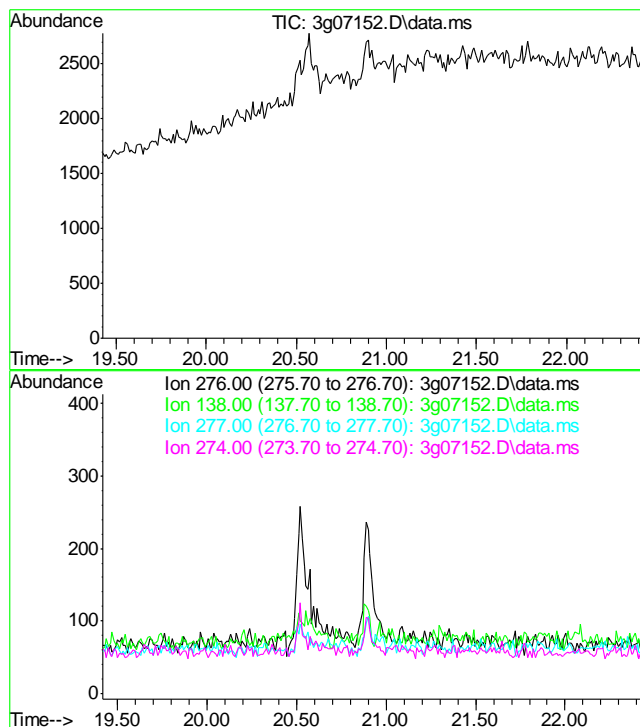


#28
Dibenz(a,h)anthracene
Concen: N.D. ug/mL
Expected RT: 20.58 min

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

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





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

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

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

GC Volatiles

QC Data Summaries

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: D29647**Account:** KRWCCOL KRW Consulting, Inc.**Project:** XOM FRU 197-33A

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

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

D29647-1

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

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	97% 60-140%

9.1.1

9

Blank Spike Summary

Job Number: D29647
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 197-33A

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

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

D29647-1

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

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

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D29647
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 197-33A

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

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

D29647-1

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

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

GC Volatiles

Raw Data

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\112111\GB13992.D\FID1A.CH Vial: 16
Signal #2 : Y:\1\DATA\112111\GB13992.D\FID2B.CH
Acq On : 22 Nov 2011 12:30 am Operator: StephK
Sample : D29647-1, 50X Inst : GC/MS Ins
Misc : GC2426,GGB794,5.039,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Nov 22 08:15:07 2011 Quant Results File: TB791GB791SOIL.RES

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

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

	Compound	R.T.	Response	Conc	Units

System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.41	2804724	95.871 %	m
10) S	1,2,4-Trichlorobenzene (P)	14.41	28449276	123.779 %	
Target Compounds					
1) H	TVH-Gasoline	7.32	17199366	0.242 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	7.73	130009	0.229 ug/L	
7) T	Ethylbenzene	0.00	0	N.D. ug/L	d
8) T	m,p-Xylene	10.53	625460	0.684 ug/L	
9) T	o-Xylene	11.02	216772	0.172 ug/L	
11) T	Naphthalene	14.60	10042661	39.016 ug/L	

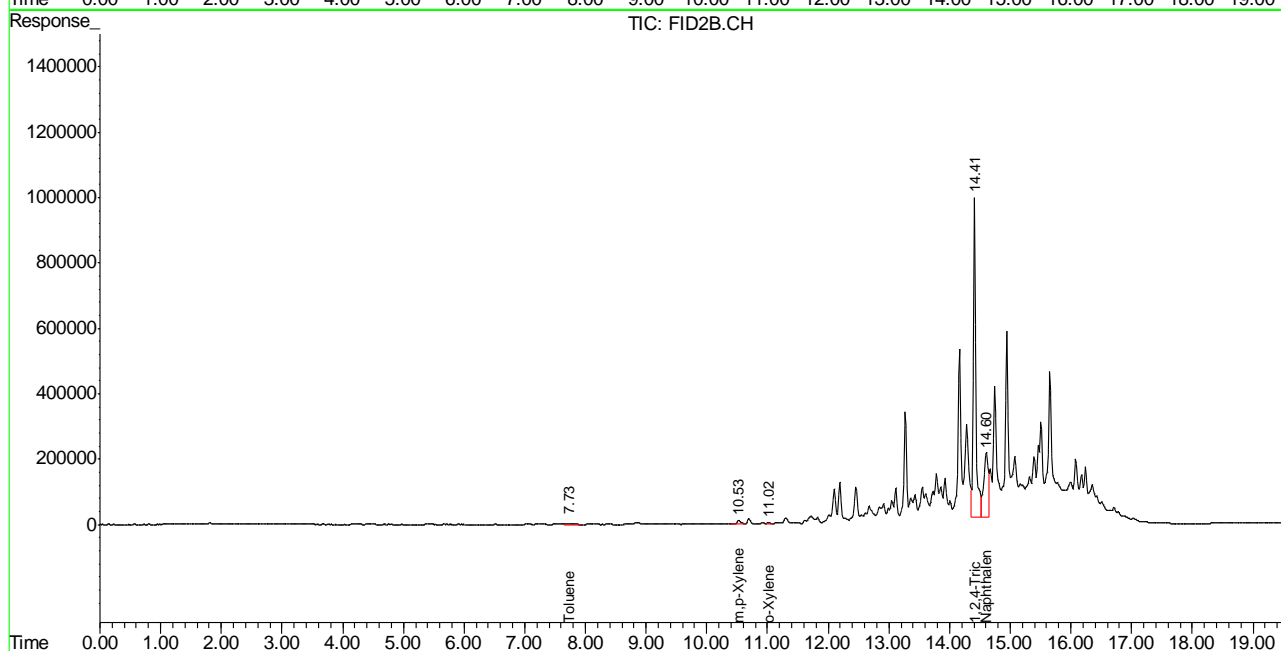
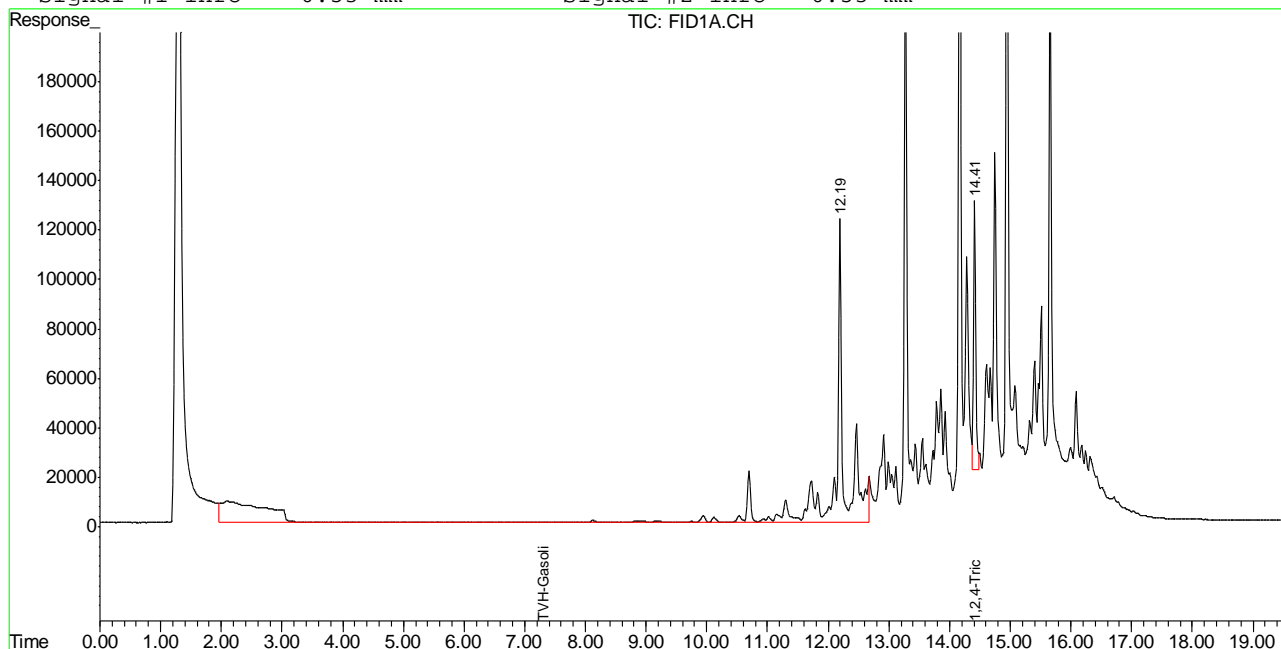
10.1.1
10

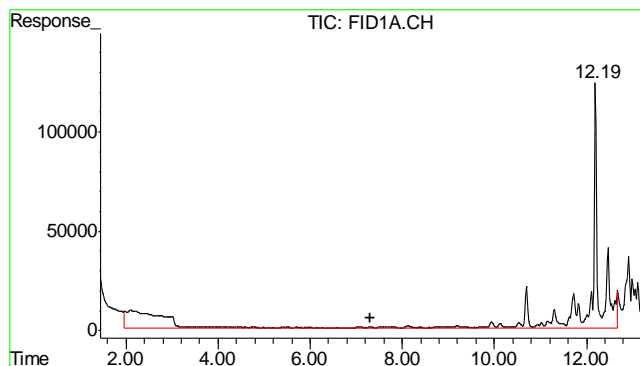
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\112111\GB13992.D\FID1A.CH Vial: 16
 Signal #2 : Y:\1\DATA\112111\GB13992.D\FID2B.CH
 Acq On : 22 Nov 2011 12:30 am Operator: StephK
 Sample : D29647-1, 50X Inst : GC/MS Ins
 Misc : GC2426,GGB794,5.039,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Nov 22 8:19 2011 Quant Results File: TB791GB791SOIL.RES

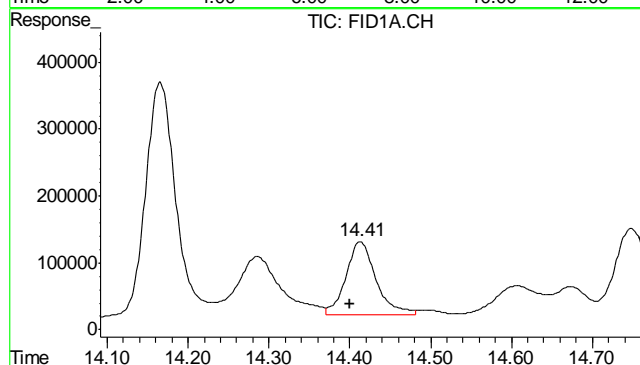
Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Tue Nov 22 08:14:15 2011
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

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

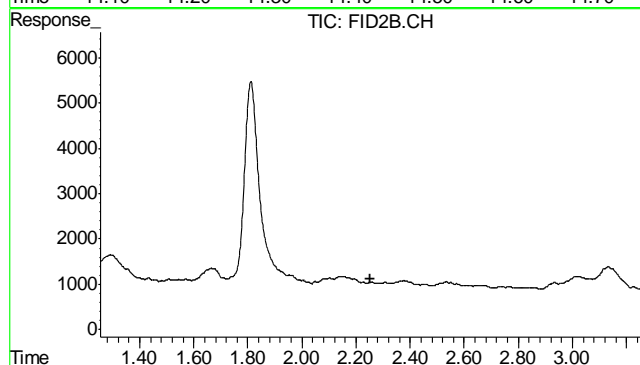




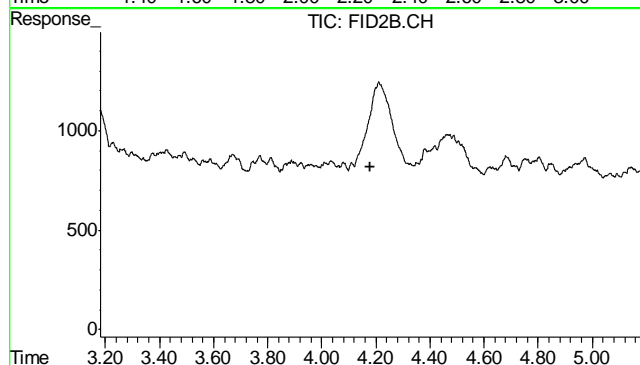
#1 TVH-Gasoline
 R.T.: 7.315 min
 Delta R.T.: 0.000 min
 Response: 17199366
 Conc: 0.24 mg/L m



#2 1,2,4-Trichlorobenzene
 R.T.: 14.413 min
 Delta R.T.: 0.013 min
 Response: 2804724
 Conc: 95.87 % m

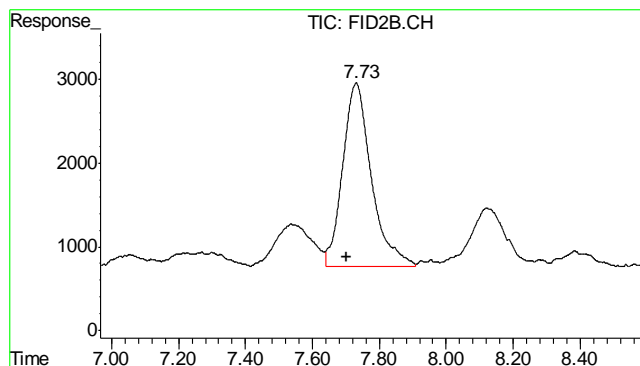


#4 Methyl-t-butyl-ether
 R.T.: 0.000 min
 Exp R.T.: 2.254 min
 Response: 0
 Conc: N.D.

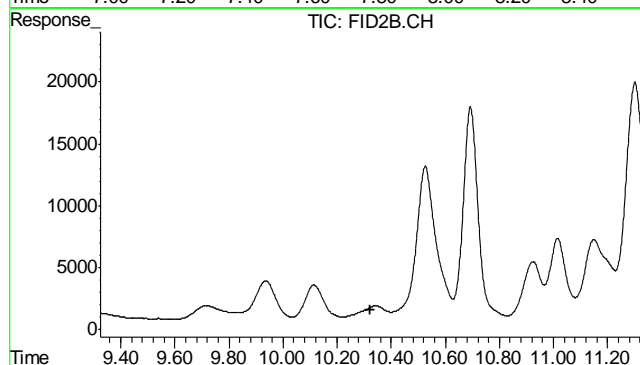


#5 Benzene
 R.T.: 0.000 min
 Exp R.T.: 4.180 min
 Response: 0
 Conc: N.D.

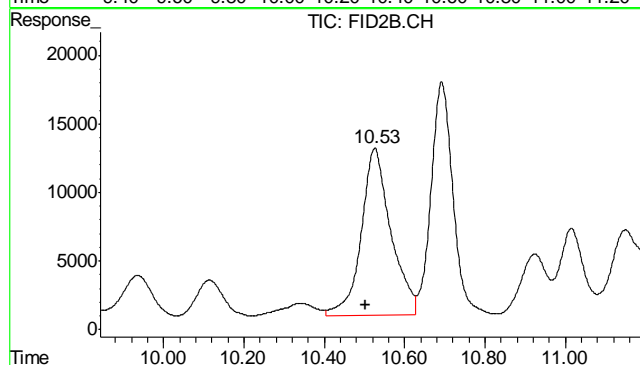
10.1.1
 10



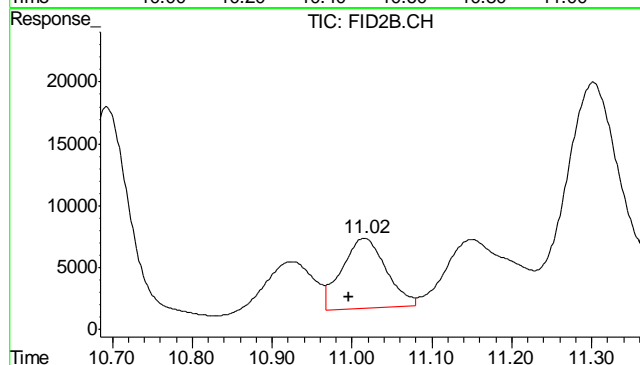
#6 Toluene
 R.T.: 7.732 min
 Delta R.T.: 0.031 min
 Response: 130009
 Conc: 0.23 ug/L



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

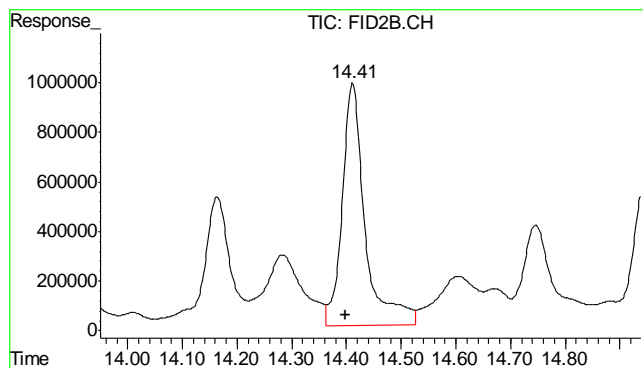


#8 m,p-Xylene
 R.T.: 10.526 min
 Delta R.T.: 0.023 min
 Response: 625460
 Conc: 0.68 ug/L



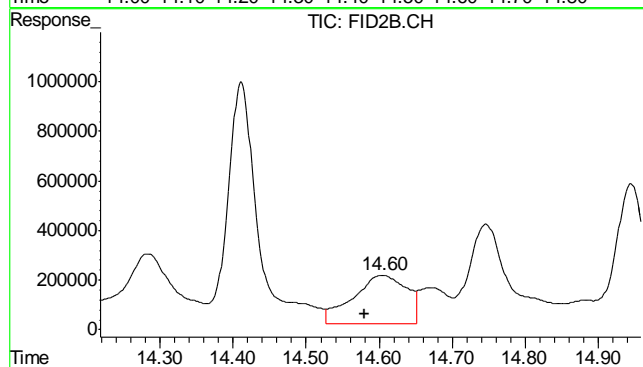
#9 o-Xylene
 R.T.: 11.015 min
 Delta R.T.: 0.019 min
 Response: 216772
 Conc: 0.17 ug/L

10.1.1
 10



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

R.T.: 14.411 min
 Delta R.T.: 0.014 min
 Response: 28449276
 Conc: 123.78 %



#11 Naphthalene

R.T.: 14.605 min
 Delta R.T.: 0.025 min
 Response: 10042661
 Conc: 39.02 ug/L

10.1.1
 10

Quantitation Report (QT Reviewed)

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

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

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

	Compound	R.T.	Response	Conc	Units

System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.40	2831394	96.783	%
10) S	1,2,4-Trichlorobenzene (P)	14.40	23494418	102.221	%
Target Compounds					
1) H	TVH-Gasoline	7.32	5609938	<MDL	mg/L
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T	Benzene	0.00	0	N.D.	ug/L d
6) T	Toluene	7.70	197556	0.349	ug/L
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	0.00	0	N.D.	ug/L d
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.58	441310	1.715	ug/L

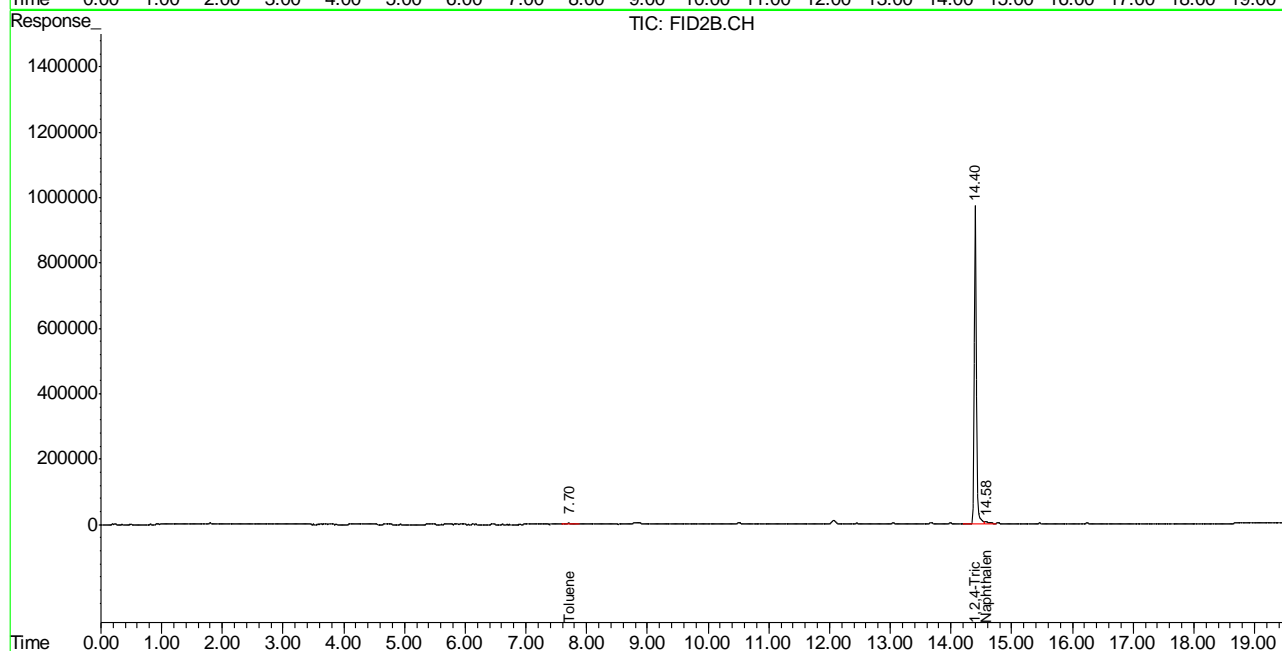
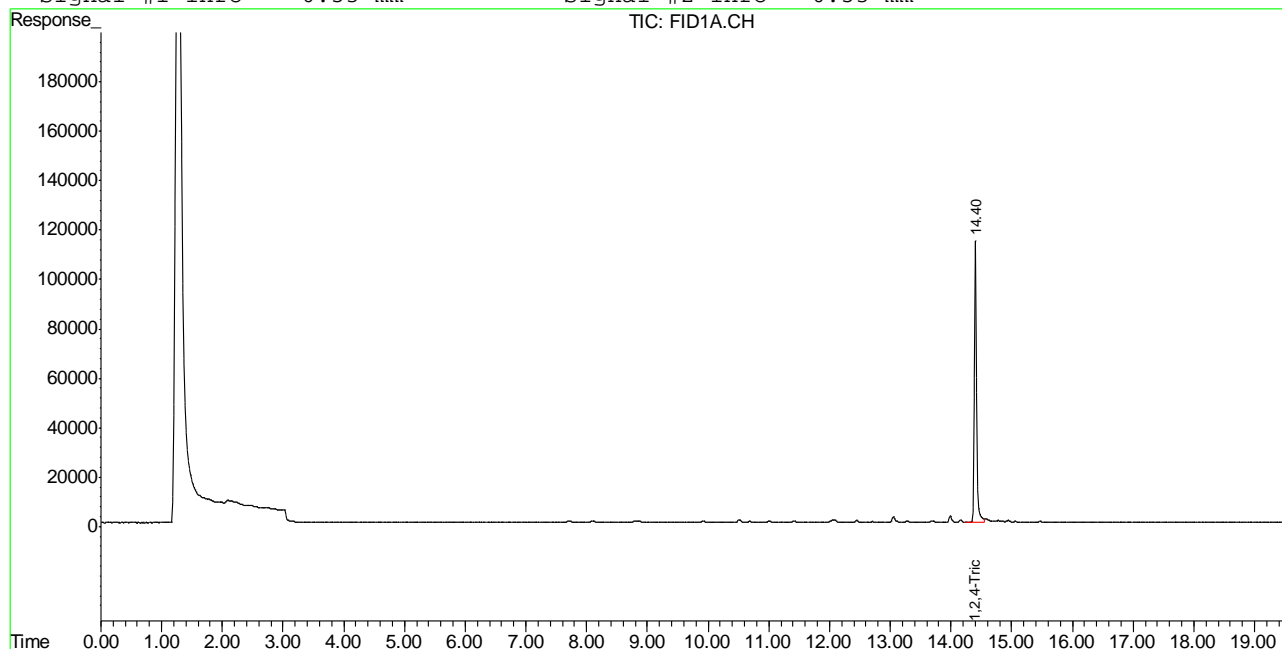
 (f)=RT Delta > 1/2 Window (m)=manual int.
 GB13979.D TB791GB791SOIL.M Tue Nov 22 08:23:29 2011 GC

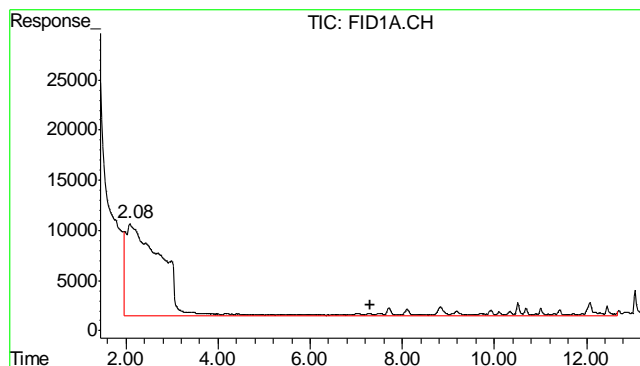
Quantitation Report (QT Reviewed)

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

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

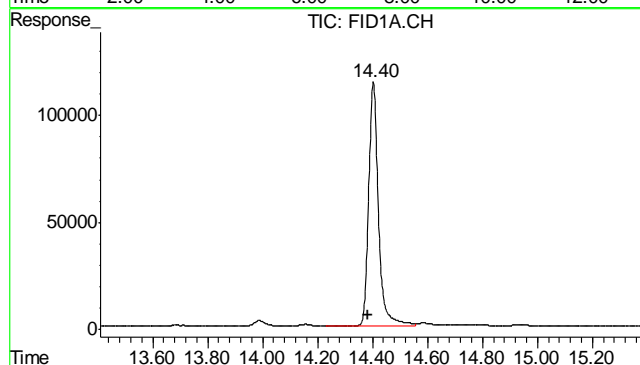
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





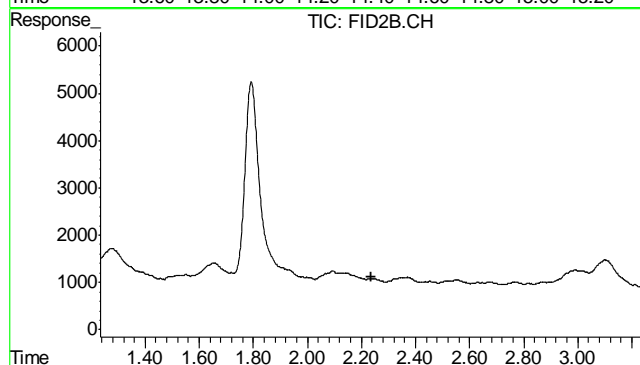
#1 TVH-Gasoline

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



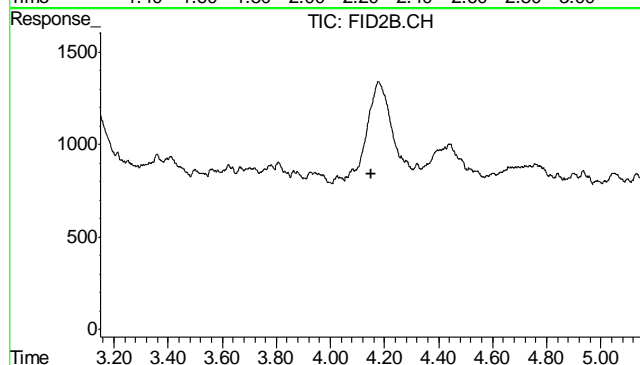
#2 1,2,4-Trichlorobenzene

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



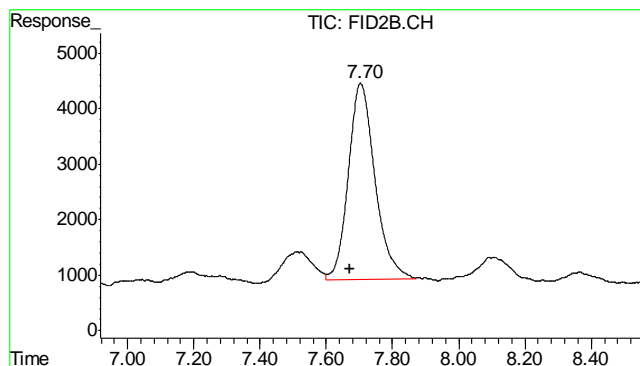
#4 Methyl-t-butyl-ether

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



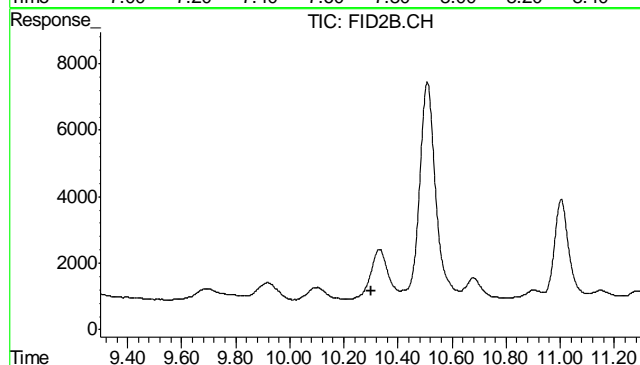
#5 Benzene

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



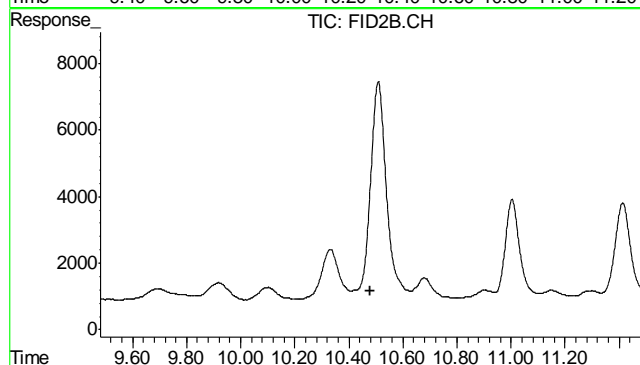
#6 Toluene

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



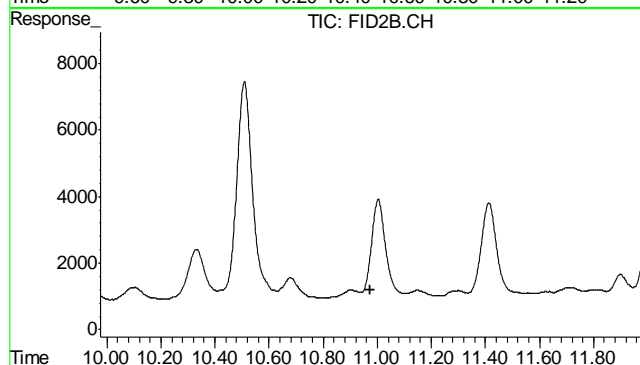
#7 Ethylbenzene

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



#8 m,p-Xylene

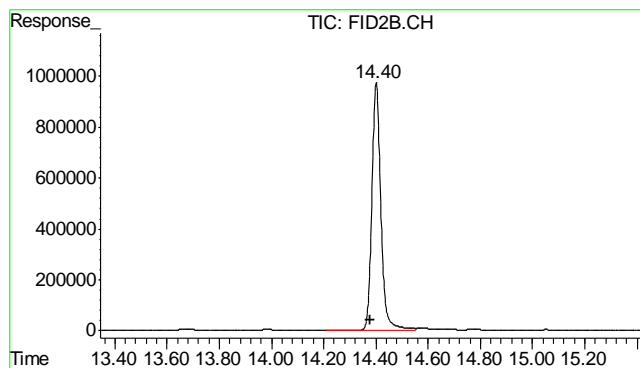
R.T.: 0.000 min
Exp R.T.: 10.480 min
Response: 0
Conc: N.D.



#9 o-Xylene

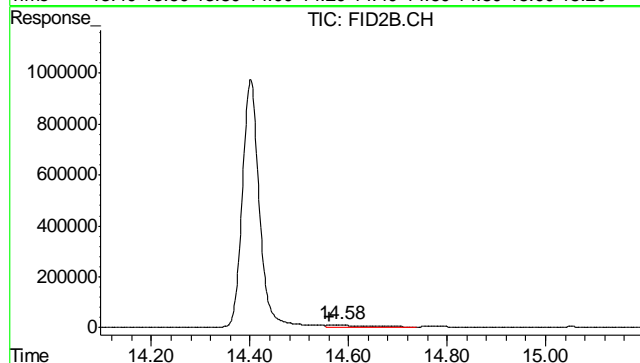
R.T.: 0.000 min
Exp R.T.: 10.976 min
Response: 0
Conc: N.D.

10.2.1 10



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

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



#11 Naphthalene

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

10.2.1
10

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: D29647**Account:** KRWCCOL KRW Consulting, Inc.**Project:** XOM FRU 197-33A

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

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

D29647-1

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

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	94% 61-142%

11.1.1
11

Blank Spike Summary

Job Number: D29647
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 197-33A

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

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

D29647-1

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

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

11.2.1
11

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D29647
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM FRU 197-33A

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

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

D29647-1

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

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

11.3.1
11

GC Semi-volatiles

Raw Data

Judy Melson
11/29/11 13:24

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2011\NOV\FD112911\FD11792.D Vial: 4
Acq On : 29 Nov 2011 12:27 pm Operator: TEDR
Sample : D29647-1 Inst : FID5
Misc : OP4885,GFD600,30.04,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 29 13:09:22 2011 Quant Results File: GFD599.RES

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

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

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S O-Terphenyl	9.68	34100347	640.299 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	7.46	131259361	2556.688 mg/L

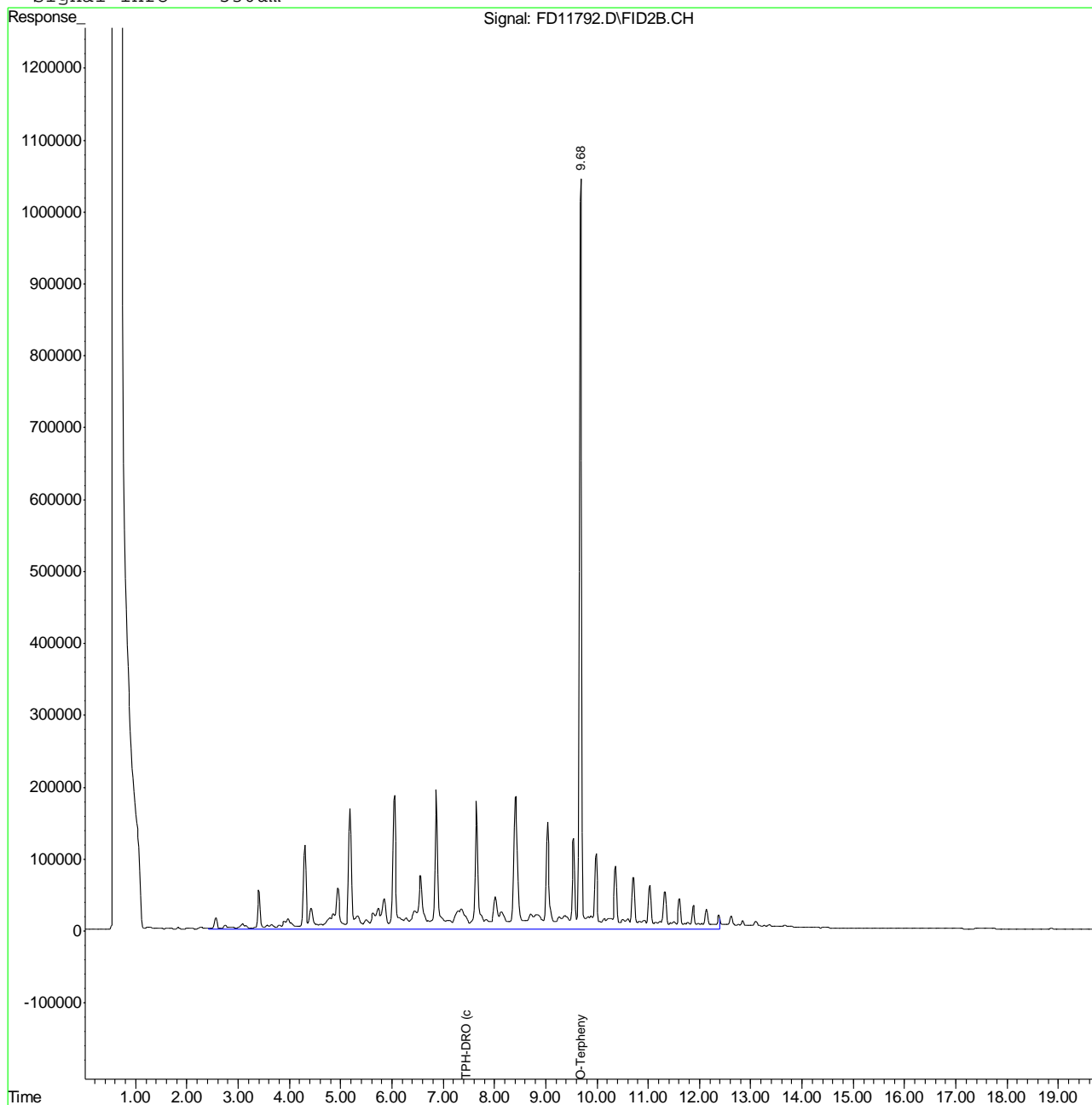
12.1.1
12

Quantitation Report (QT Reviewed)

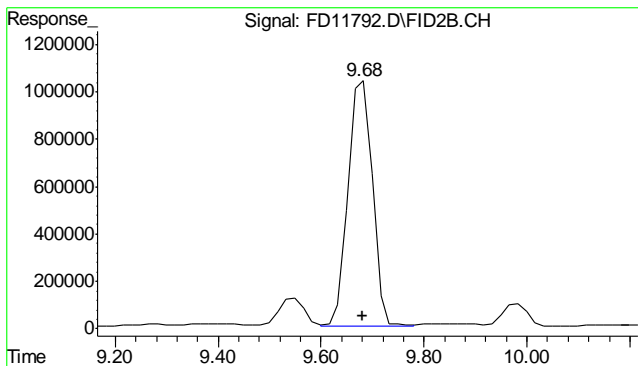
Data File : C:\MSDCHEM\2\DATA\2011\NOV\FD112911\FD11792.D Vial: 4
Acq On : 29 Nov 2011 12:27 pm Operator: TEDR
Sample : D29647-1 Inst : FID5
Misc : OP4885,GFD600,30.04,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 29 13:10 2011 Quant Results File: GFD599.RES

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

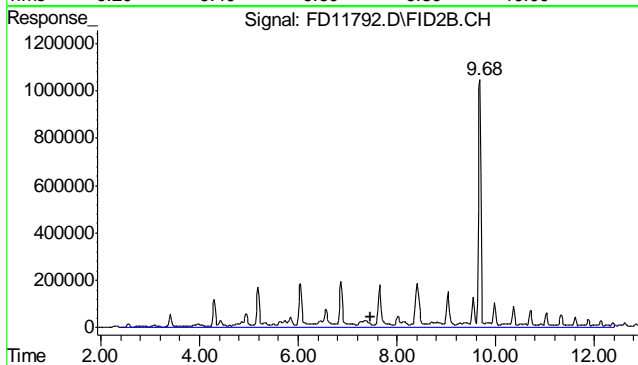
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um



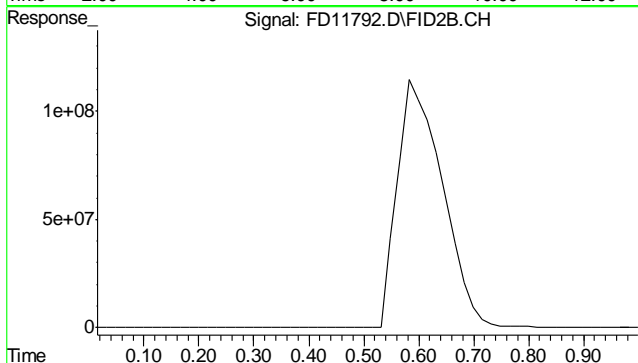
12.1.1
12



#1 O-Terphenyl
R.T.: 9.675 min
Delta R.T.: -0.005 min
Response: 34100347
Conc: 640.30 mg/L m



#2 TPH-DRO (c10-c28)
R.T.: 7.455 min
Delta R.T.: 0.000 min
Response: 131259361
Conc: 2556.69 mg/L m



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

12.1.1
12

Judy Melson
11/29/11 12:07

Quantitation Report (QT Reviewed)

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

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

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

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S O-Terphenyl	9.68	49721277	942.239 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	7.46	2428144	46.985 mg/L

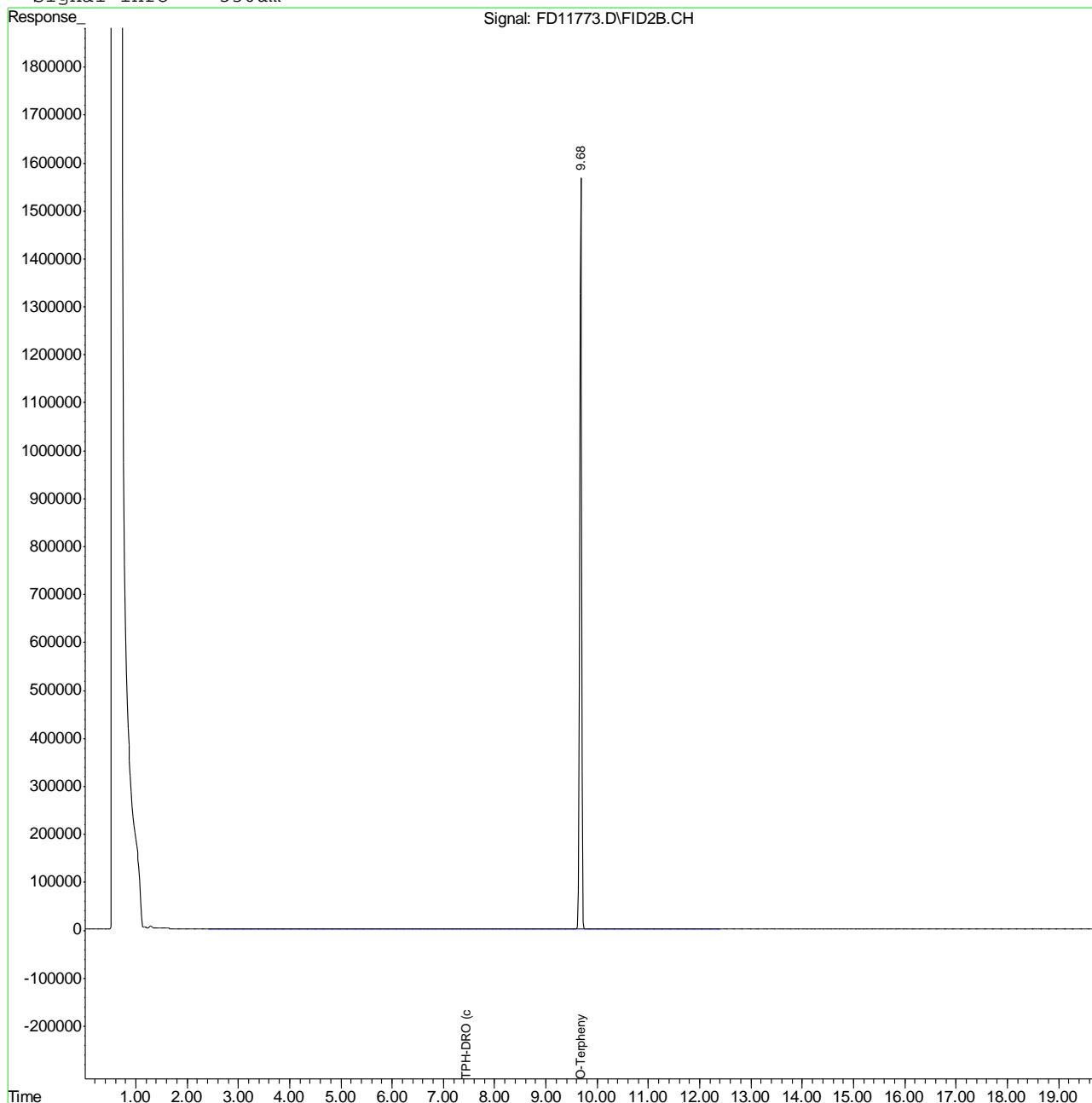
(f)=RT Delta > 1/2 Window (m)=manual int.
FD11773.D GFD599.M Tue Nov 29 10:40:25 2011 GC

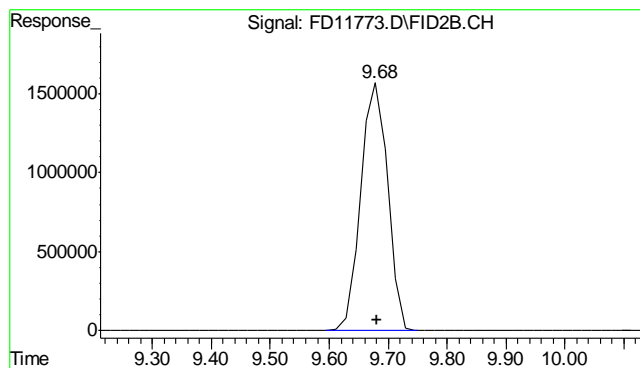
Quantitation Report (QT Reviewed)

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

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

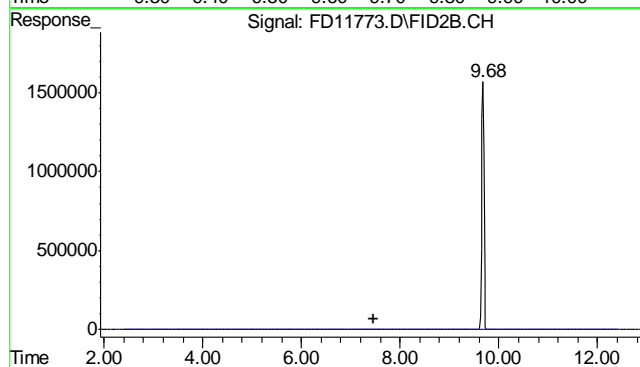
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um





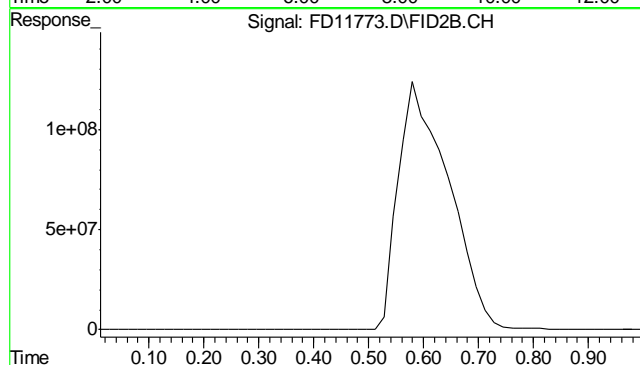
#1 O-Terphenyl

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



#2 TPH-DRO (c10-c28)

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



#9 5a-Androstane

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

12.2.1
12

Metals Analysis

QC Data Summaries

Includes the following where applicable:

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6361
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 11/30/11

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

Associated samples MP6361: D29647-1R

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6361
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6361
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 11/30/11

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

Associated samples MP6361: D29647-1R

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6361
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6361
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 11/30/11

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

Associated samples MP6361: D29647-1R

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6361
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29647
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6361
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: mg/kg

Prep Date: 11/30/11

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

Associated samples MP6361: D29647-1R

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6361
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

13.1.3

13

SERIAL DILUTION RESULTS SUMMARY

Login Number: D29647
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6361
 Matrix Type: SOLID

Methods: SW846 6010B
 Units: ug/l

Prep Date: 11/30/11

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

Associated samples MP6361: D29647-1R

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

13.1.4
13

SERIAL DILUTION RESULTS SUMMARY

Login Number: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6361
Matrix Type: SOLID

Methods: SW846 6010B
Units: ug/l

Prep Date:

Metal

- (anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
(b) Serial dilution indicates possible matrix interference.

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6362
Matrix Type: SOLID

Methods: SW846 6020
Units: mg/kg

Prep Date: 11/30/11

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

Associated samples MP6362: D29647-1R

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29647
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6362
 Matrix Type: SOLID

Methods: SW846 6020
 Units: mg/kg

Prep Date: 11/30/11

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

Associated samples MP6362: D29647-1R

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: D29647
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6362
 Matrix Type: SOLID

Methods: SW846 6020
 Units: mg/kg

Prep Date: 11/30/11

Metal	D29759-1 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	4.5	129	119	104.4	0.0	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP6362: D29647-1R

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: D29647
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6362
 Matrix Type: SOLID

Methods: SW846 6020
 Units: mg/kg

Prep Date: 11/30/11

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

Associated samples MP6362: D29647-1R

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D29647
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6362
 Matrix Type: SOLID

Methods: SW846 6020
 Units: ug/l

Prep Date: 11/30/11

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

Associated samples MP6362: D29647-1R

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6363
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 11/30/11

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

Associated samples MP6363: D29647-1R

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: D29647
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6363
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 11/30/11

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

Associated samples MP6363: D29647-1R

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: D29647
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6363
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 11/30/11

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

Associated samples MP6363: D29647-1R

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: D29647
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6363
 Matrix Type: SOLID

Methods: SW846 7471A
 Units: mg/kg

Prep Date: 11/30/11

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

Associated samples MP6363: D29647-1R

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: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6374
Matrix Type: AQUEOUS

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

Prep Date: 12/01/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	30	30		
Antimony	150	16	16		
Arsenic	130	30	30		
Barium	50	5.5	5.5		
Beryllium	50	2.2	2.5		
Boron	250	24	24		
Cadmium	50	1.4	1.4		
Calcium	2000	48	75	-18	<2000
Chromium	50	.9	4		
Cobalt	25	1.8	1.8		
Copper	50	4.3	14		
Iron	350	17	65		
Lead	250	8	11		
Lithium	10	1.4	6		
Magnesium	1000	29	50	22.0	<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	-38	<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 MP6374: D29647-1RA

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6374
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: D29647
 Account: KRWCCOL - KRW Consulting, Inc.
 Project: XOM FRU 197-33A

QC Batch ID: MP6374
 Matrix Type: AQUEOUS

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

Prep Date: 12/01/11

Metal	D29649-1RA Original MS		Spikelot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	210000	347000	125000	109.6	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	221	130000	125000	103.8	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	488000	608000	125000	96.0	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6374: D29647-1RA

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

13.4.2
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MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6374
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: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6374
Matrix Type: AQUEOUS

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

Prep Date: 12/01/11

Metal	D29649-1RA Original MSD		Spikelot MPICPAL % Rec		MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	210000	364000	125000	123.2	4.8	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	221	128000	125000	102.2	1.6	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	488000	661000	125000	138.4N(a	8.4	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP6374: D29647-1RA

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6374
Matrix Type: AQUEOUS

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

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6374
Matrix Type: AQUEOUS

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

Prep Date: 12/01/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	141000	125000	112.8	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	126000	125000	100.8	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	128000	125000	102.4	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6374: D29647-1RA

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D29647
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM FRU 197-33A

QC Batch ID: MP6374
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: D29647
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	GP6037/GN12726			umhos/cm	10008	9900	98.9	90-110%
pH	GN12693			su	8.00	8.00	100.0	99.3-100.7%

Associated Samples:
Batch GN12693: D29647-1R
Batch GP6037: D29647-1R
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D29647
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	GN12695	D29644-1R	mv	204	223	8.7	0-20%

Associated Samples:
Batch GN12695: D29647-1R
(*) 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

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: D29647
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	GP13867/GN37071	0.40	0.0	mg/kg	40	40.8	102.0	80-120%
Chromium, Hexavalent	GP13867/GN37071			mg/kg	1230	1430	116.3	80-120%

Associated Samples:
Batch GP13867: D29647-1R
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D29647
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	GP13867/GN37071	D29612-4	mg/kg	0.0	0.0	0.0	0-20%

Associated Samples:
Batch GP13867: D29647-1R
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D29647
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	GP13867/GN37071	D29612-4	mg/kg	0.0	43.6	44.2	101.5	75-125%
Chromium, Hexavalent	GP13867/GN37071	D29612-4	mg/kg	0.0	754	903	119.7	75-125%

Associated Samples:
Batch GP13867: D29647-1R
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits