



02/16/12

Technical Report for

XTO Energy

PCU 296-7A

1007-02

Accutest Job Number: D31778

Sampling Date: 02/09/12


Report to:

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Total number of pages in report: 141



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: Renea Jackson 303-425-6021

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

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Test results relate only to samples analyzed.

Table of Contents

-1-

Section 1: Sample Summary	4
Section 2: Case Narrative/Conformance Summary	5
Section 3: Sample Results	9
3.1: D31778-1: RP SUBLINER	10
3.2: D31778-1A: RP SUBLINER	16
Section 4: Misc. Forms	18
4.1: Chain of Custody	19
Section 5: GC/MS Volatiles - QC Data Summaries	21
5.1: Method Blank Summary	22
5.2: Blank Spike Summary	23
5.3: Matrix Spike/Matrix Spike Duplicate Summary	24
Section 6: GC/MS Volatiles - Raw Data	25
6.1: Samples	26
6.2: Method Blanks	35
Section 7: GC/MS Semi-volatiles - QC Data Summaries	40
7.1: Method Blank Summary	41
7.2: Blank Spike Summary	42
7.3: Matrix Spike/Matrix Spike Duplicate Summary	43
Section 8: GC/MS Semi-volatiles - Raw Data	44
8.1: Samples	45
8.2: Method Blanks	62
Section 9: GC Volatiles - QC Data Summaries	79
9.1: Method Blank Summary	80
9.2: Blank Spike Summary	81
9.3: Matrix Spike/Matrix Spike Duplicate Summary	82
Section 10: GC Volatiles - Raw Data	83
10.1: Samples	84
10.2: Method Blanks	89
Section 11: GC Semi-volatiles - QC Data Summaries	94
11.1: Method Blank Summary	95
11.2: Blank Spike Summary	96
11.3: Matrix Spike/Matrix Spike Duplicate Summary	97
Section 12: GC Semi-volatiles - Raw Data	98
12.1: Samples	99
12.2: Method Blanks	102
Section 13: Metals Analysis - QC Data Summaries	105
13.1: Prep QC MP6836: Hg	106
13.2: Prep QC MP6839: Ba,Cd,Cr,Cu,Pb,Ni,Se,Ag,Zn	110
13.3: Prep QC MP6840: As	120
13.4: Prep QC MP6851: Ca,Mg,Na,Sodium Adsorption Ratio	125
Section 14: General Chemistry - QC Data Summaries	133
14.1: Method Blank and Spike Results Summary	134

Table of Contents

-2-

Section 15: Misc. Forms (Accutest Labs of New England, Inc.) 135

15.1: Chain of Custody 136

Section 16: General Chemistry - QC Data (Accutest Labs of New England, Inc.) 138

16.1: Method Blank and Spike Results Summary 139

16.2: Duplicate Results Summary 140

16.3: Matrix Spike Results Summary 141

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16



Sample Summary

XTO Energy

Job No: D31778

PCU 296-7A
Project No: 1007-02

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D31778-1	02/09/12	12:00 DS	02/10/12	SO	Soil	RP SUBLINER
D31778-1A	02/09/12	12:00 DS	02/10/12	SO	Soil	RP SUBLINER

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: XTO Energy

Job No D31778

Site: PCU 296-7A

Report Dat 2/16/2012 4:27:44 PM

On 02/10/2012, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D31778 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: V5V1160
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D31779-1MS, D31779-1MSD were used as the QC samples indicated.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO	Batch ID: OP5346
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D31778-1MS, D31778-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The matrix spike (MS) and matrix spike duplicate (MSD) recovery(s) of multiple analytes are outside control limits. Recoveries outside control limits due to dilution.
- The matrix spike (MS) recovery(s) of Fluorene are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- The RPD(s) for the MS and MSD recoveries of Naphthalene are outside control limits for sample OP5346-MSD. Probable cause due to sample homogeneity.
- D31778-1: Dilution required due to matrix interference. Internal standard recoveries were low in 1x and 4x dilutions.

Volatiles by GC By Method SW846 8015B

Matrix SO	Batch ID: GGB838
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) D31777-2MS, D31777-2MSD 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: OP5344
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D31777-1MS, D31777-1MSD were used as the QC samples indicated.

Metals By Method SW846 6010C

Matrix AQ

Batch ID: MP6851

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D31737-5AMS, D31737-5AMSD were used as the QC samples for the metals analysis.

Matrix SO

Batch ID: MP6839

- All samples were digested and analyzed within the recommended method holding time.
- Sample(s) D31778-1MS, D31778-1MSD, D31778-1SDL 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 Lead are outside control limits for sample MP6839-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP6839-MB1 for Copper: All sample results < RL or > 10x MB concentration.
- MP6839-S1 for Zinc: Spike recovery indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix SO

Batch ID: MP6840

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D31778-1MS, D31778-1MSD, D31778-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Arsenic are outside control limits for sample MP6840-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals By Method SW846 7471B

Matrix SO

Batch ID: MP6836

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D31747-1MS, D31747-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO

Batch ID: GN13639

- The data for ASTM D1498-76M meets quality control requirements.

Wet Chemistry By Method SM19 2540B M

Matrix SO

Batch ID: GN13652

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

Wet Chemistry By Method SW846 3060/7196A M

Matrix SO

Batch ID: R11765

- The data for SW846 3060/7196A M meets quality control requirements.
- D31778-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 3060A/7196A**Matrix** SO**Batch ID:** M:GP14155

- The data for SW846 3060A/7196A meets quality control requirements.
- D31778-1 for Chromium, Hexavalent: Analysis performed at Accutest Laboratories, Marlborough, MA.

Wet Chemistry By Method USDA HANDBOOK 60**Matrix** SO**Batch ID:** MP6851

- D31778-1A for Sodium Adsorption Ratio: Calculated as: $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

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

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

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

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Accutest Mountain States**Job No** D31778**Site:** XTOKRWR: XTO PCU 296-7A**Report Date** 2/15/2012 2:33:13 PM

1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 02/09/2012 and were received at Accutest on 02/10/2012 properly preserved, at 1.0 Deg. C and intact. These Samples received an Accutest job number of D31778. 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:** GP14155

- 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) D31778-1DUP, D31778-1MS 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(D31778).

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	RP SUBLINER	Date Sampled:	02/09/12
Lab Sample ID:	D31778-1	Date Received:	02/10/12
Matrix:	SO - Soil	Percent Solids:	80.6
Method:	SW846 8260B		
Project:	PCU 296-7A		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V19418.D	1	02/12/12	BR	n/a	n/a	V5V1160
Run #2							

Run #	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.06 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.073	0.032	mg/kg	
108-88-3	Toluene	ND	0.15	0.073	mg/kg	
100-41-4	Ethylbenzene	ND	0.15	0.037	mg/kg	
1330-20-7	Xylene (total)	0.216	0.29	0.15	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	67%		61-130%
460-00-4	4-Bromofluorobenzene	86%		53-131%
17060-07-0	1,2-Dichloroethane-D4	74%		62-130%

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

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

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	RP SUBLINER	Date Sampled:	02/09/12
Lab Sample ID:	D31778-1	Date Received:	02/10/12
Matrix:	SO - Soil	Percent Solids:	80.6
Method:	SW846 8270C BY SIM SW846 3546		
Project:	PCU 296-7A		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	3G07992.D	20	02/16/12	DC	02/13/12	OP5346	E3G317
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.16	0.13	mg/kg	
120-12-7	Anthracene	ND	0.16	0.15	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.41	0.21	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.41	0.30	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.41	0.30	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.41	0.18	mg/kg	
218-01-9	Chrysene	ND	0.41	0.18	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.41	0.30	mg/kg	
206-44-0	Fluoranthene	ND	0.16	0.16	mg/kg	
86-73-7	Fluorene	0.480	0.16	0.14	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.49	0.45	mg/kg	
91-20-3	Naphthalene	0.326	0.16	0.16	mg/kg	
129-00-0	Pyrene	ND	0.16	0.16	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	107%		10-145%
321-60-8	2-Fluorobiphenyl	107%		10-130%
1718-51-0	Terphenyl-d14	107%		22-130%

(a) Dilution required due to matrix interference. Internal standard recoveries were low in 1x and 4x dilutions.

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

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

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	RP SUBLINER	Date Sampled:	02/09/12
Lab Sample ID:	D31778-1	Date Received:	02/10/12
Matrix:	SO - Soil	Percent Solids:	80.6
Method:	SW846 8015B		
Project:	PCU 296-7A		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB14842.D	1	02/13/12	SK	n/a	n/a	GGB838
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	21.9	15	7.3	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	102%		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:	RP SUBLINER	Date Sampled:	02/09/12
Lab Sample ID:	D31778-1	Date Received:	02/10/12
Matrix:	SO - Soil	Percent Solids:	80.6
Method:	SW846-8015B SW846 3546		
Project:	PCU 296-7A		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH001255.D	1	02/13/12	TR	02/10/12	OP5344	GFH54
Run #2							

Run #	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)	1620	17	11	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	84%		43-136%		

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

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

Report of Analysis

Client Sample ID: RP SUBLINER
 Lab Sample ID: D31778-1
 Matrix: SO - Soil
 Project: PCU 296-7A

Date Sampled: 02/09/12
 Date Received: 02/10/12
 Percent Solids: 80.6

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	2.6	0.48	mg/kg	5	02/13/12	02/14/12 GJ	SW846 6020A ²	SW846 3050B ⁶
Barium	3460	6.0	mg/kg	5	02/13/12	02/14/12 JM	SW846 6010C ³	SW846 3050B ⁵
Cadmium	< 1.2	1.2	mg/kg	1	02/13/12	02/14/12 JM	SW846 6010C ³	SW846 3050B ⁵
Chromium	45.2	1.2	mg/kg	1	02/13/12	02/14/12 JM	SW846 6010C ³	SW846 3050B ⁵
Copper	11.4	1.2	mg/kg	1	02/13/12	02/14/12 JM	SW846 6010C ³	SW846 3050B ⁵
Lead	9.8	6.0	mg/kg	1	02/13/12	02/14/12 JM	SW846 6010C ³	SW846 3050B ⁵
Mercury	< 0.12	0.12	mg/kg	1	02/13/12	02/13/12 MC	SW846 7471B ¹	SW846 7471B ⁴
Nickel	19.1	3.6	mg/kg	1	02/13/12	02/14/12 JM	SW846 6010C ³	SW846 3050B ⁵
Selenium	< 6.0	6.0	mg/kg	1	02/13/12	02/14/12 JM	SW846 6010C ³	SW846 3050B ⁵
Silver	< 3.6	3.6	mg/kg	1	02/13/12	02/14/12 JM	SW846 6010C ³	SW846 3050B ⁵
Zinc	42.9	3.6	mg/kg	1	02/13/12	02/14/12 JM	SW846 6010C ³	SW846 3050B ⁵

- (1) Instrument QC Batch: MA2179
 (2) Instrument QC Batch: MA2181
 (3) Instrument QC Batch: MA2183
 (4) Prep QC Batch: MP6836
 (5) Prep QC Batch: MP6839
 (6) Prep QC Batch: MP6840

RL = Reporting Limit

Report of Analysis

Client Sample ID: RP SUBLINER
Lab Sample ID: D31778-1
Matrix: SO - Soil
Project: PCU 296-7A

Date Sampled: 02/09/12
Date Received: 02/10/12
Percent Solids: 80.6

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent ^a	0.56	0.49	mg/kg	1	02/14/12 15:00	AMA	SW846 3060A/7196A
Chromium, Trivalent ^b	44.6	1.7	mg/kg	1	02/14/12 15:08	JM	SW846 3060/7196A M
Redox Potential Vs H2	338		mv	1	02/10/12	JD	ASTM D1498-76M
Solids, Percent	80.6		%	1	02/13/12	SWT	SM19 2540B M
Specific Conductivity	3840	1.0	umhos/cm	1	02/14/12	CJ	DEPT.OF AG, BOOK N9
pH	10.22		su	1	02/10/12 15:30	CT	SW846 9045C

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

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

RL = Reporting Limit

Report of Analysis

Client Sample ID:	RP SUBLINER	Date Sampled:	02/09/12
Lab Sample ID:	D31778-1A	Date Received:	02/10/12
Matrix:	SO - Soil	Percent Solids:	80.6
Project:	PCU 296-7A		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	71.3	2.0	mg/l	1	02/14/12	02/14/12 JM	SW846 6010C ¹	EPA 200.7 ²
Magnesium	6.18	1.0	mg/l	1	02/14/12	02/14/12 JM	SW846 6010C ¹	EPA 200.7 ²
Sodium	712	2.0	mg/l	1	02/14/12	02/14/12 JM	SW846 6010C ¹	EPA 200.7 ²

- (1) Instrument QC Batch: MA2183
- (2) Prep QC Batch: MP6851

RL = Reporting Limit

Report of Analysis

Client Sample ID:	RP SUBLINER	Date Sampled:	02/09/12
Lab Sample ID:	D31778-1A	Date Received:	02/10/12
Matrix:	SO - Soil	Percent Solids:	80.6
Project:	PCU 296-7A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	21.7		ratio	1	02/14/12 23:09	JM	USDA HANDBOOK 60

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

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

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

ACCUTEST LABORATORIES		Accutest Laboratories Mountain States 4036 Youngfield Street Wheat Ridge, Co 80033 TEL. 303-425-6021 877-737-4521 FAX 303-425-6021		FED-EX Tracking # _____ Accutest Quote # _____		Bottle Order Control # _____ Accutest Job # D31778	
Client / Reporting Information Company Name KRW CONSULTING Street Address 5000 W 14TH AVE STE 200 City LAKEWOOD CO State CO Zip 80214 Project Contact DWAYNE KNUDSEN E-mail _____ Phone # 303 239 9011 Fax # _____ Sample(s) Name(s) Dave SANDERS F20 233 994 Phone # _____		Project Information Project Name XTO FCU 296-7A Street: _____ Billing Information (If different from Report to) Company Name XTO ENERGY Street Address 21459 CR5 City RIFLE CO State CO Zip 81650 Client PO# 1007-02 Project Manager JOE HESS Attention JESSICA DOOLING PO# _____		Requested Analysis (see TEST CODE sheet) <div style="border: 1px solid black; padding: 5px; width: 100px; float: right; transform: rotate(-90deg); transform-origin: right top;">TABLE 910</div>		Matrix Codes DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe PB-Field Blank EB- Equipment Blank RS- Rinse Blank TB-Trip Blank	
Accutest Sample # Field ID / Point of Collection RP SWIBLINER		Collection Date 2-9-12 Time 12:00 M/L DLs SO 5 Matrix _____ # of bottles _____ HCl _____ NaOH _____ HNO3 _____ H2SO4 _____ HNO2 _____ NONE _____ DI Water _____ MEOH _____ ENCORE _____ Stabilize _____		Number of preserved bottles HCl _____ NaOH _____ HNO3 _____ H2SO4 _____ HNO2 _____ NONE _____ DI Water _____ MEOH _____ ENCORE _____ Stabilize _____		LAB USE ONLY <div style="border: 1px solid black; padding: 5px; width: 100px; float: right; transform: rotate(-90deg); transform-origin: right top;">TABLE 910</div>	
Turnaround Time (Business days) <input type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> Std. 5 Business Days (By Contract only) <input type="checkbox"/> 5 Day R/ SH <input checked="" type="checkbox"/> 3 Day EMERGENC <input type="checkbox"/> 2 Day EMERGENC <input type="checkbox"/> 1 Day EMERGENC		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		Comments / Special Instructions PLEASE EMAIL RESULTS TO KRW PICEANCE TEAM	
Emergency & Rush T/A data available VIA Lablink		Commercial "A" = Results Only Commercial "B" = Results + QC Summary					
Sample Custody must be documented below each time samples change possession, including courier delivery.							
Relinquished by Sampler 1 <i>[Signature]</i> Date/Time: 2/9/12 1800		Received By: 1 <i>[Signature]</i> Rifle Service Center		Relinquished By: 2 <i>[Signature]</i>		Received By: 2 <i>[Signature]</i> American Courier	
Relinquished by Sampler: 3		Received By: 3		Relinquished By: 4		Received By: 4 <i>[Signature]</i> Jacob Porter	
Relinquished by: 5		Received By: 5		Custody Seal # HID100 <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact		Preserved where applicable On Ice <input checked="" type="checkbox"/> Cooler Temp. 4.0	

D31778: Chain of Custody

Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D31778

Client: KRW

Immediate Client Services Action Required: No

Date / Time Received: 2/10/2012 2:00:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: PCU 296-7A

Airbill #'s: CO

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

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

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

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

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

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

Comments

Accutest Laboratories
V:(303) 425-6021

4036 Youngfield Street
F: (303) 425-6854

Wheat Ridge, CO
www.accutest.com

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: D31778
Account: XTOKRWR XTO Energy
Project: PCU 296-7A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1160-MB	5V19407.D	1	02/11/12	BR	n/a	n/a	V5V1160

The QC reported here applies to the following samples:

Method: SW846 8260B

D31778-1

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	76% 61-130%
460-00-4	4-Bromofluorobenzene	94% 53-131%
17060-07-0	1,2-Dichloroethane-D4	84% 62-130%

Blank Spike Summary

Page 1 of 1

Job Number: D31778
Account: XTOKRWR XTO Energy
Project: PCU 296-7A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1160-BS	5V19408.D	1	02/11/12	BR	n/a	n/a	V5V1160

The QC reported here applies to the following samples:

Method: SW846 8260B

D31778-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	49.7	99	70-130
100-41-4	Ethylbenzene	50	50.4	101	70-130
108-88-3	Toluene	50	46.9	94	70-130
1330-20-7	Xylene (total)	150	159	106	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	78%	61-130%
460-00-4	4-Bromofluorobenzene	97%	53-131%
17060-07-0	1,2-Dichloroethane-D4	83%	62-130%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D31778
Account: XTOKRWR XTO Energy
Project: PCU 296-7A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D31779-1MS	5V19410.D	1	02/11/12	BR	n/a	n/a	V5V1160
D31779-1MSD	5V19411.D	1	02/11/12	BR	n/a	n/a	V5V1160
D31779-1	5V19409.D	1	02/11/12	BR	n/a	n/a	V5V1160

The QC reported here applies to the following samples:

Method: SW846 8260B

D31778-1

CAS No.	Compound	D31779-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3280	3050	93	3670	112	18	70-134/30
100-41-4	Ethylbenzene	ND		3280	3050	93	3710	113	20	70-137/30
108-88-3	Toluene	ND		3280	2780	85	3390	103	20	70-130/30
1330-20-7	Xylene (total)	ND		9840	10000	102	12000	122	18	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D31779-1	Limits
2037-26-5	Toluene-D8	75%	84%	79%	61-130%
460-00-4	4-Bromofluorobenzene	105%	115%	96%	53-131%
17060-07-0	1,2-Dichloroethane-D4	79%	86%	83%	62-130%

GC/MS Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5021112.S\
 Data File : 5V19418.D
 Acq On : 12 Feb 2012 12:19 am
 Operator : brianr
 Sample : D31778-1, 50X
 Misc : MS3387,V5V1160,5.058,,100,5,1
 ALS Vial : 14 Sample Multiplier: 1

Quant Time: Feb 14 13:39:26 2012
 Quant Method : C:\msdchem\1\METHODS\V5AP1131TVH1131.M
 Quant Title : 8260
 QLast Update : Sat Jan 21 11:35:36 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	306142	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.446	114	491135	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.095	117	608023	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.070	152	414785	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.035	102	36802	36.93	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	73.86%
61) Toluene-d8	13.850	98	756831	33.71	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	67.42%#
69) 4-Bromofluorobenzene	16.043	95	395333	42.77	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	85.54%

Target Compounds

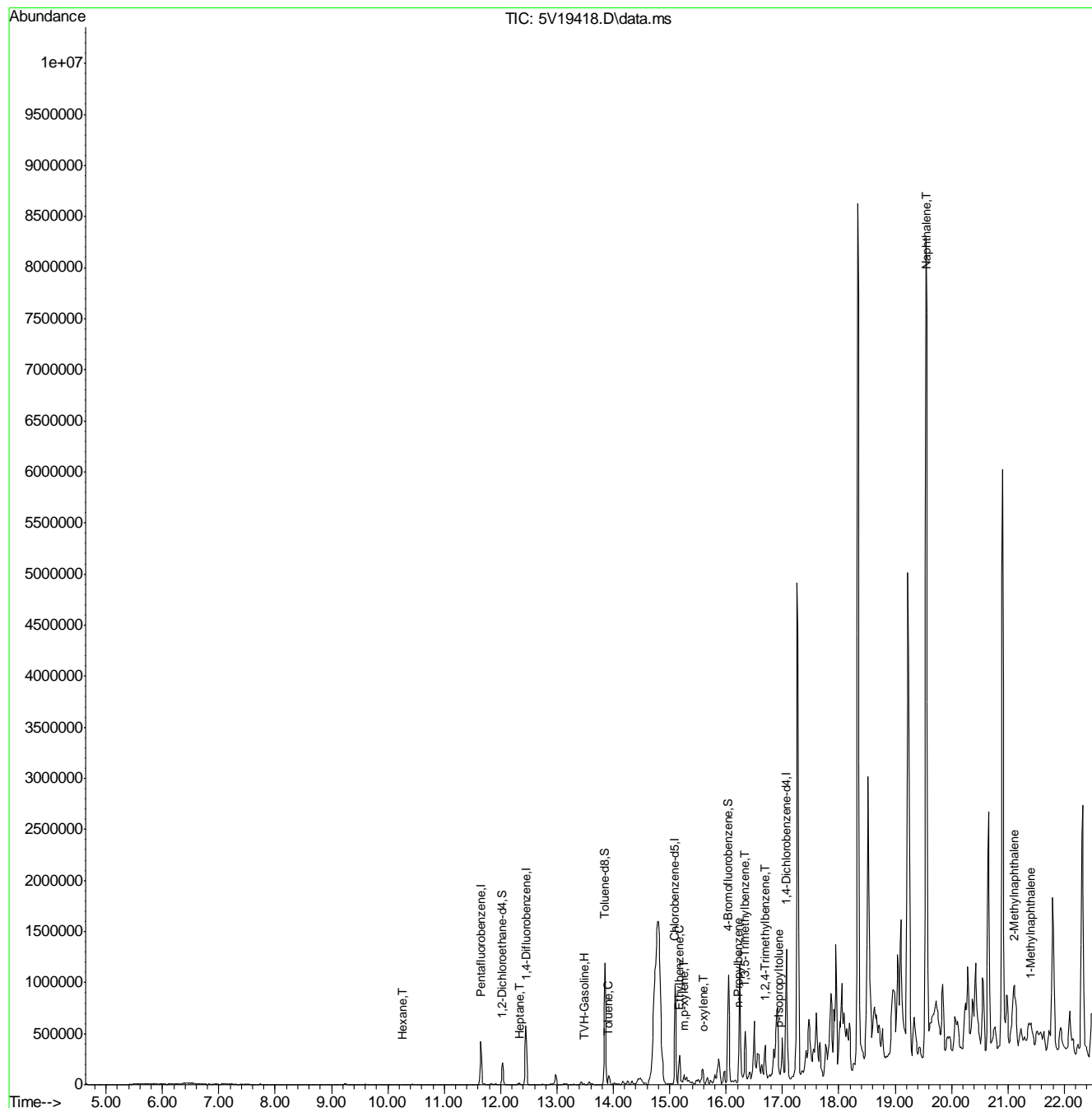
						Qvalue
1) TVH-Gasoline	13.491	TIC	19331412m	591.25	ug/l	
41) Hexane	10.254	57	1658	0.22	ug/l	100
43) Heptane	12.332	43	5488	0.63	ug/l #	83
62) Toluene	13.908	92	3726	0.23	ug/l	90
66) Ethylbenzene	15.175	91	10405	0.35	ug/l	98
72) m,p-xylene	15.255	106	23732	2.08	ug/l	97
73) o-xylene	15.597	106	9654	0.87	ug/l	100
77) n-Propylbenzene	16.225	91	13845	0.33	ug/l #	52
80) 1,3,5-Trimethylbenzene	16.339	105	285746	9.82	ug/l	98
82) 1,2,4-Trimethylbenzene	16.693	105	189647	6.51	ug/l	90
86) p-Isopropyltoluene	16.944	119	18846	0.60	ug/l	97
91) Naphthalene	19.559	128	110064	4.88	ug/l	100
94) 2-Methylnaphthalene	21.112	142	404351	56.09	ug/l	96
95) 1-Methylnaphthalene	21.408	142	134858	18.61	ug/l #	82

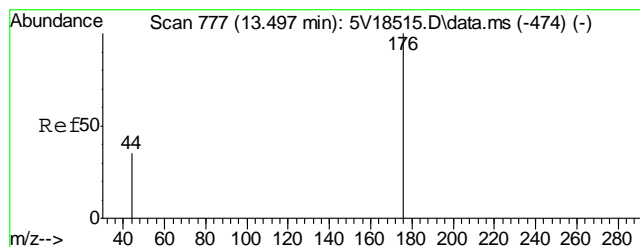
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5021112.S\
Data File : 5V19418.D
Acq On : 12 Feb 2012 12:19 am
Operator : brianr
Sample : D31778-1, 50X
Misc : MS3387,V5V1160,5.058,,100,5,1
ALS Vial : 14 Sample Multiplier: 1

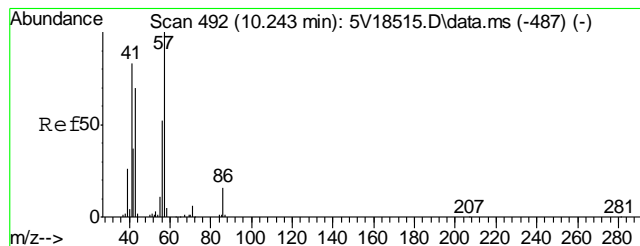
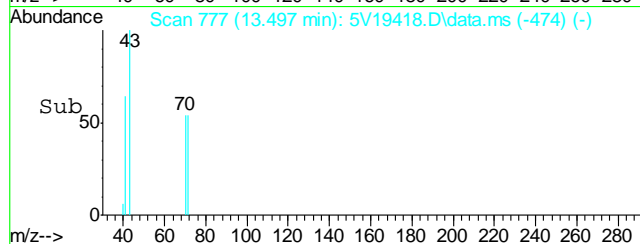
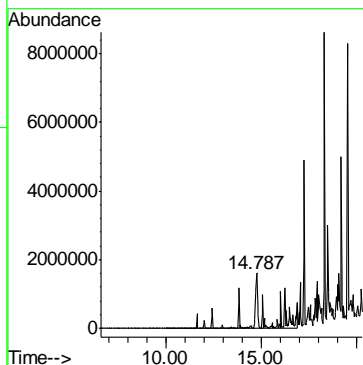
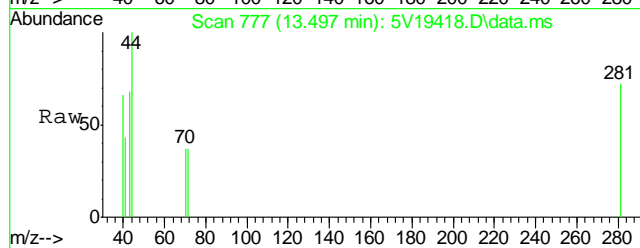
Quant Time: Feb 14 13:39:26 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1131TVH1131.M
Quant Title : 8260
QLast Update : Sat Jan 21 11:35:36 2012
Response via : Initial Calibration





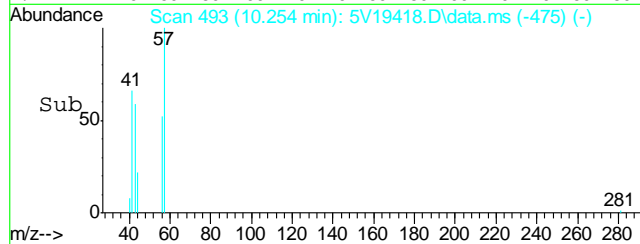
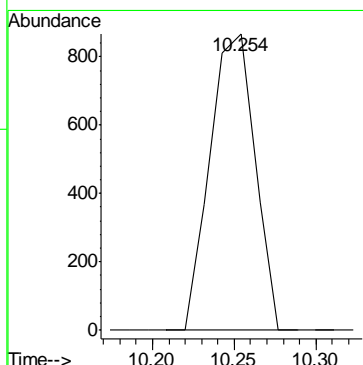
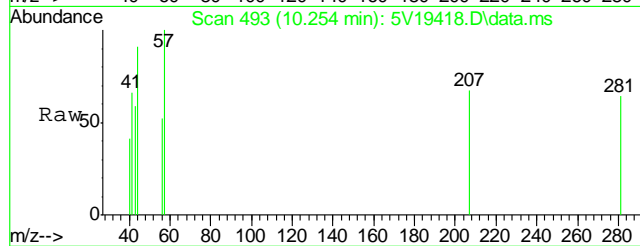
#1
TVH-Gasoline
Concen: 591.25 ug/l m
RT: 13.491 min Scan# 777
Delta R.T. 0.000 min
Lab File: 5V19418.D
Acq: 12 Feb 2012 12:19 am

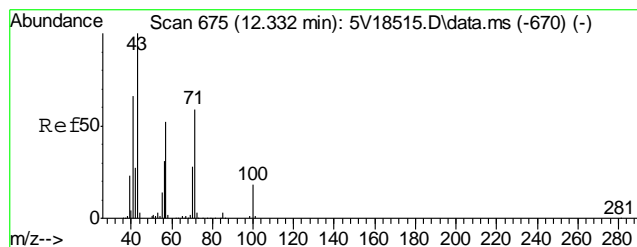
Tgt Ion:TIC Resp:19331412



#41
Hexane
Concen: 0.22 ug/l
RT: 10.254 min Scan# 493
Delta R.T. 0.000 min
Lab File: 5V19418.D
Acq: 12 Feb 2012 12:19 am

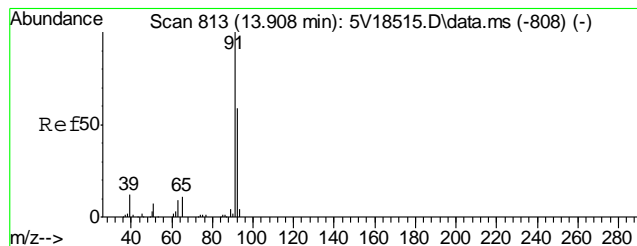
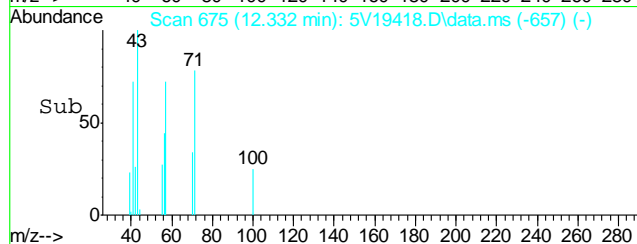
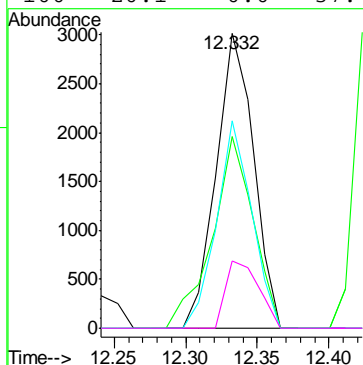
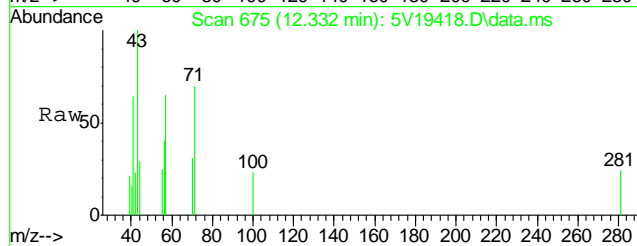
Tgt Ion: 57 Resp: 1658





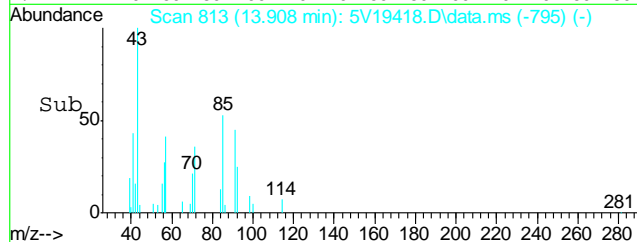
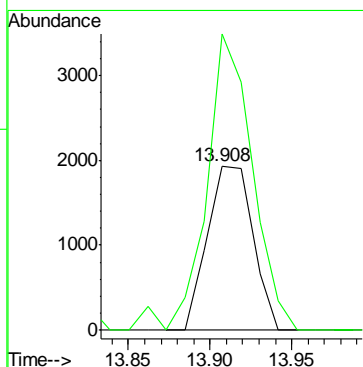
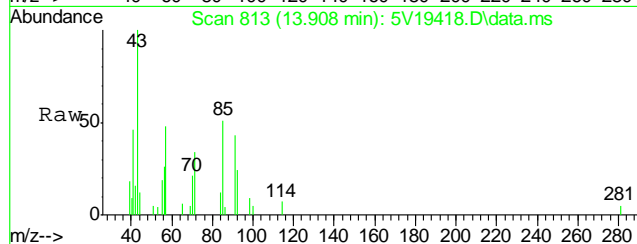
#43
Heptane
Concen: 0.63 ug/l
RT: 12.332 min Scan# 675
Delta R.T. 0.000 min
Lab File: 5V19418.D
Acq: 12 Feb 2012 12:19 am

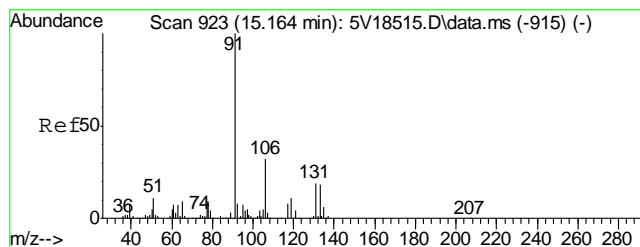
Tgt Ion: 43 Resp: 5488
Ion Ratio Lower Upper
43 100
57 71.1 30.6 70.6#
71 66.0 38.9 78.9
100 20.1 0.0 37.4



#62
Toluene
Concen: 0.23 ug/l
RT: 13.908 min Scan# 813
Delta R.T. 0.000 min
Lab File: 5V19418.D
Acq: 12 Feb 2012 12:19 am

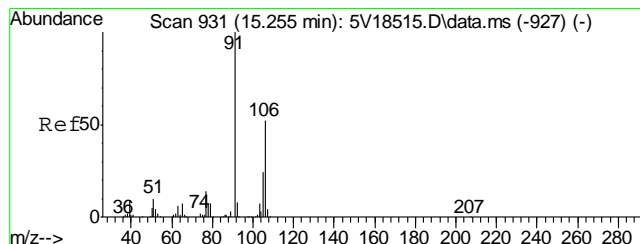
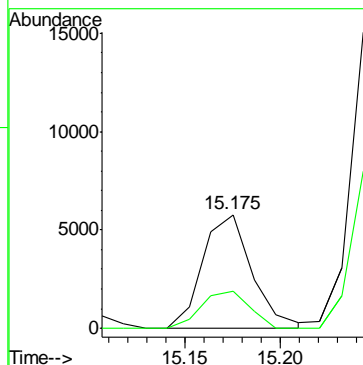
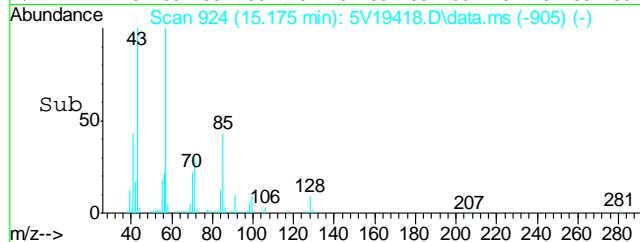
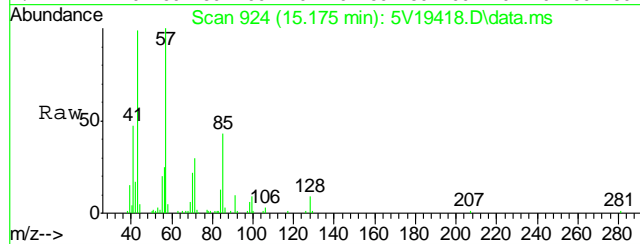
Tgt Ion: 92 Resp: 3726
Ion Ratio Lower Upper
92 100
91 183.4 149.8 189.8





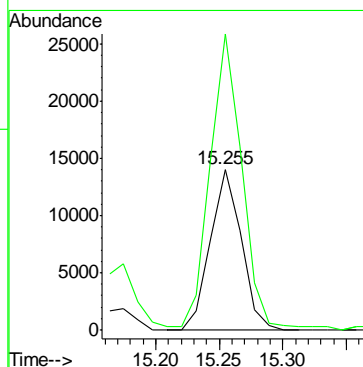
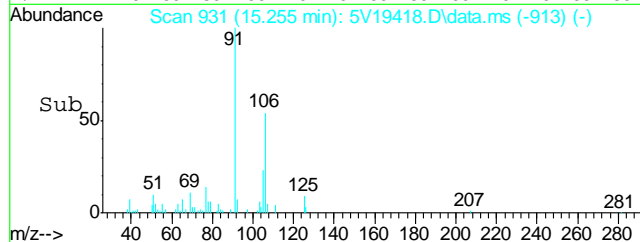
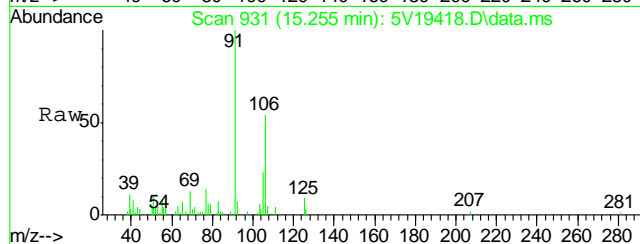
#66
Ethylbenzene
Concen: 0.35 ug/l
RT: 15.175 min Scan# 924
Delta R.T. 0.011 min
Lab File: 5V19418.D
Acq: 12 Feb 2012 12:19 am

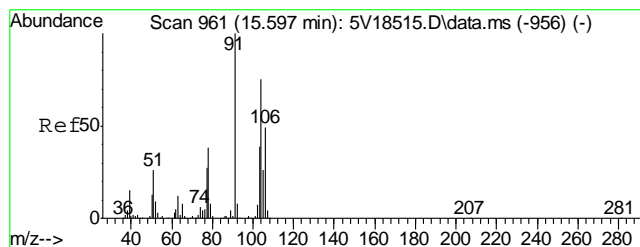
Tgt Ion: 91 Resp: 10405
Ion Ratio Lower Upper
91 100
106 32.6 11.7 51.7



#72
m,p-xylene
Concen: 2.08 ug/l
RT: 15.255 min Scan# 931
Delta R.T. 0.000 min
Lab File: 5V19418.D
Acq: 12 Feb 2012 12:19 am

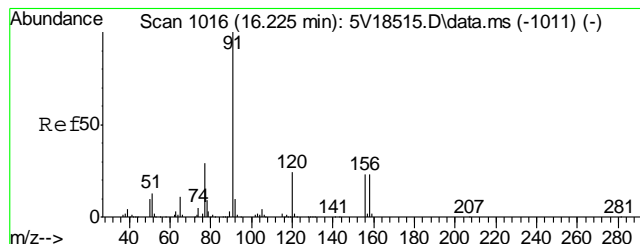
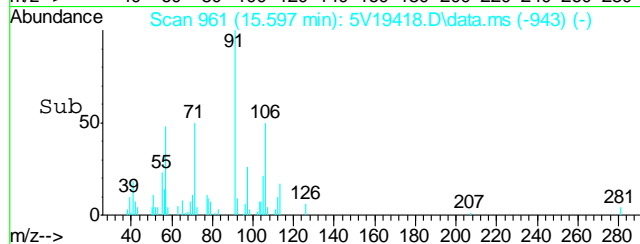
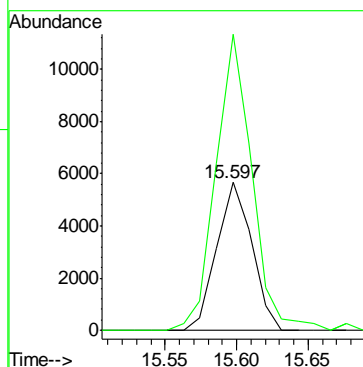
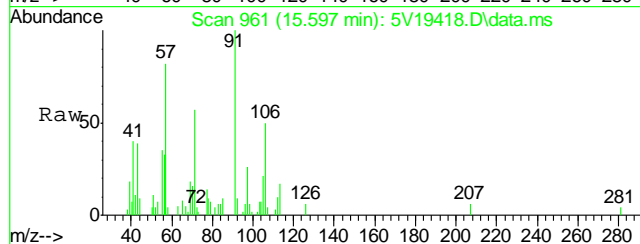
Tgt Ion: 106 Resp: 23732
Ion Ratio Lower Upper
106 100
91 192.0 177.1 217.1





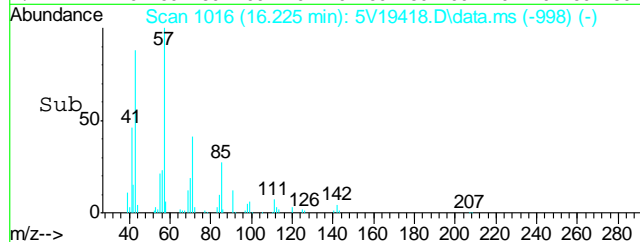
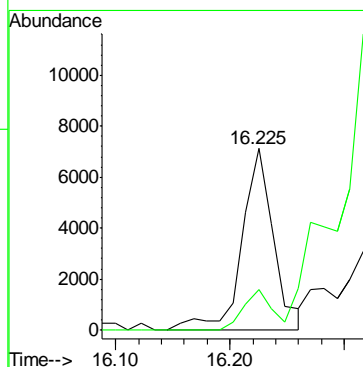
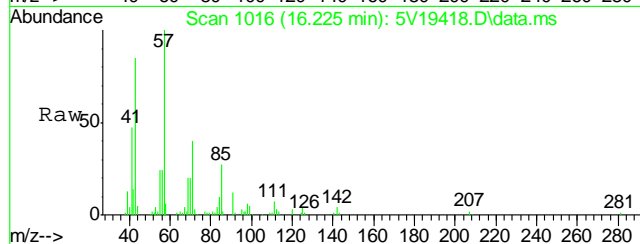
#73
o-xylene
Concen: 0.87 ug/l
RT: 15.597 min Scan# 961
Delta R.T. 0.000 min
Lab File: 5V19418.D
Acq: 12 Feb 2012 12:19 am

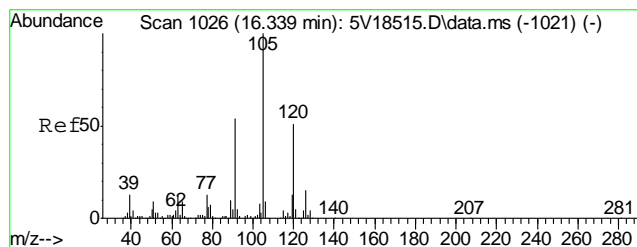
Tgt Ion: 106 Resp: 9654
Ion Ratio Lower Upper
106 100
91 207.6 166.6 249.8



#77
n-Propylbenzene
Concen: 0.33 ug/l
RT: 16.225 min Scan# 1016
Delta R.T. 0.000 min
Lab File: 5V19418.D
Acq: 12 Feb 2012 12:19 am

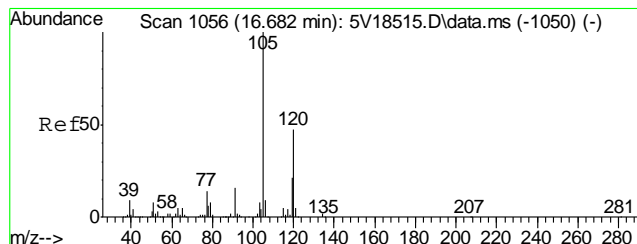
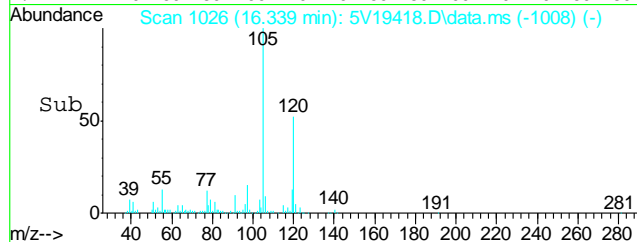
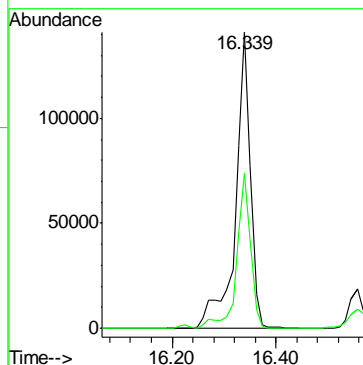
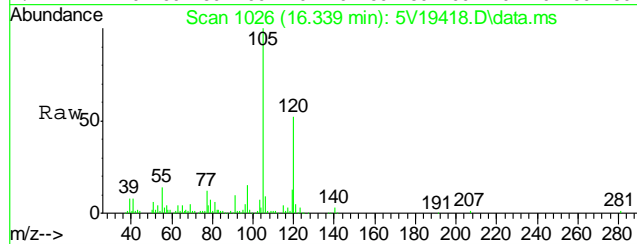
Tgt Ion: 91 Resp: 13845
Ion Ratio Lower Upper
91 100
120 0.0 18.6 27.8#





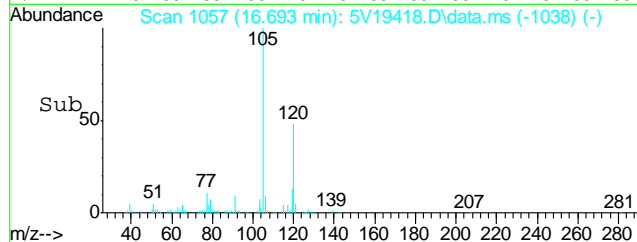
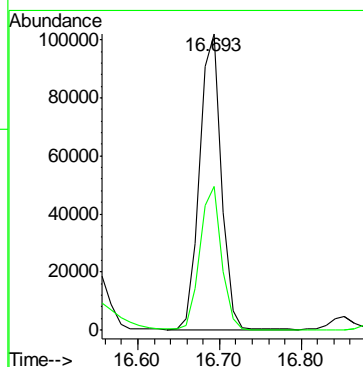
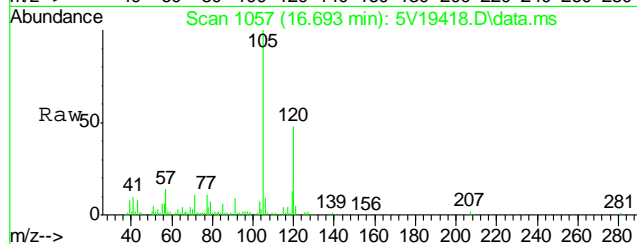
#80
1,3,5-Trimethylbenzene
Concen: 9.82 ug/l
RT: 16.339 min Scan# 1026
Delta R.T. 0.000 min
Lab File: 5V19418.D
Acq: 12 Feb 2012 12:19 am

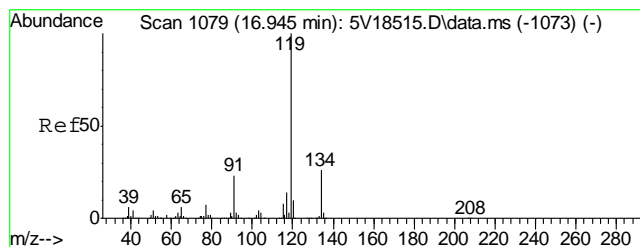
Tgt Ion	Ratio	Lower	Upper
105	100		
120	48.5	40.1	60.1



#82
1,2,4-Trimethylbenzene
Concen: 6.51 ug/l
RT: 16.693 min Scan# 1057
Delta R.T. 0.011 min
Lab File: 5V19418.D
Acq: 12 Feb 2012 12:19 am

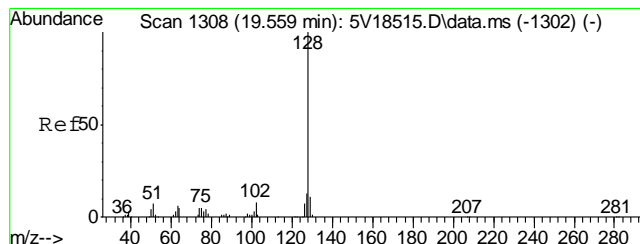
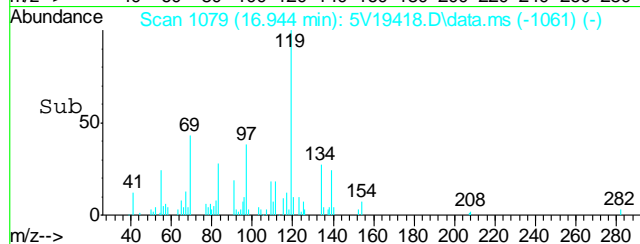
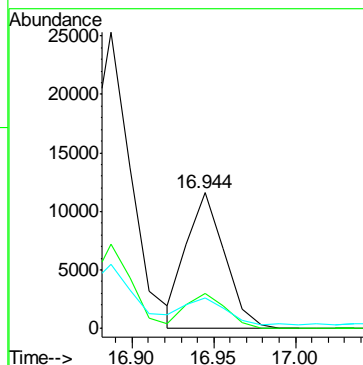
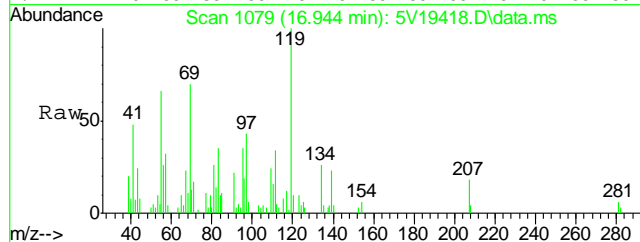
Tgt Ion	Ratio	Lower	Upper
105	100		
120	47.9	43.8	65.8





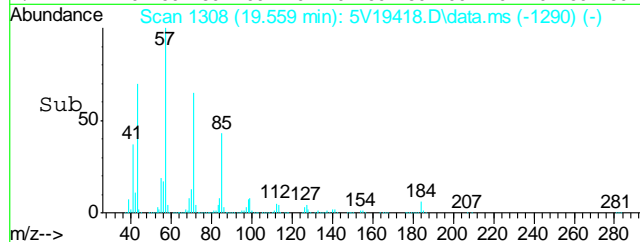
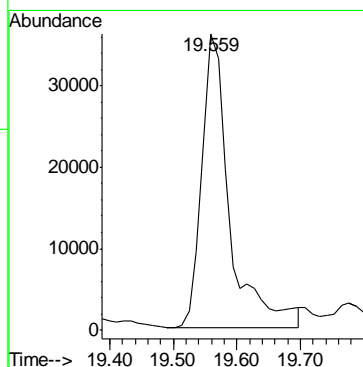
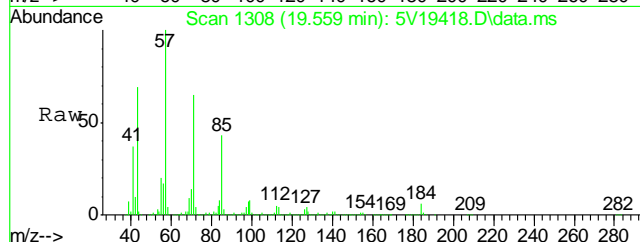
#86
p-Isopropyltoluene
Concen: 0.60 ug/l
RT: 16.944 min Scan# 1079
Delta R.T. 0.000 min
Lab File: 5V19418.D
Acq: 12 Feb 2012 12:19 am

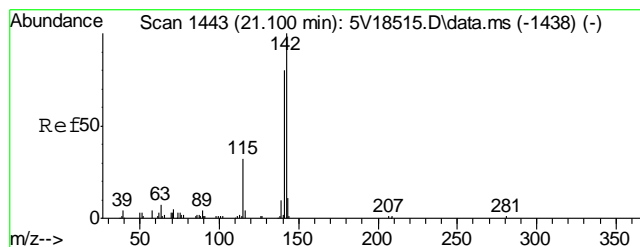
Tgt Ion	Ratio	Lower	Upper
119	100		
134	27.0	21.3	31.9
91	20.8	19.0	28.6



#91
Naphthalene
Concen: 4.88 ug/l
RT: 19.559 min Scan# 1308
Delta R.T. 0.001 min
Lab File: 5V19418.D
Acq: 12 Feb 2012 12:19 am

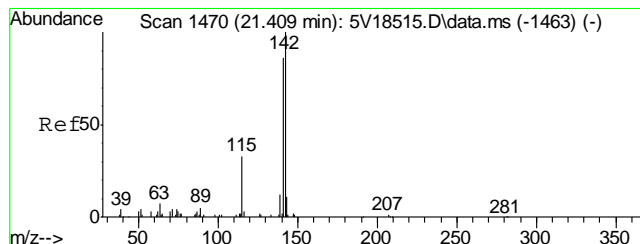
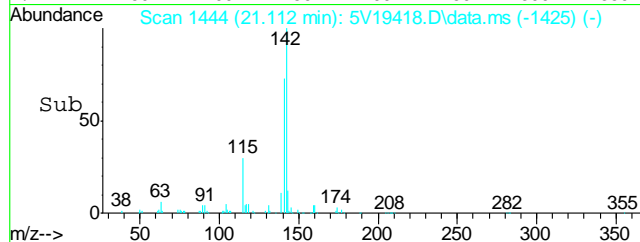
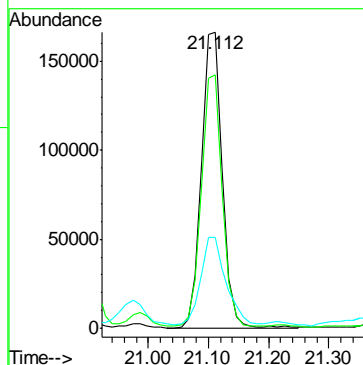
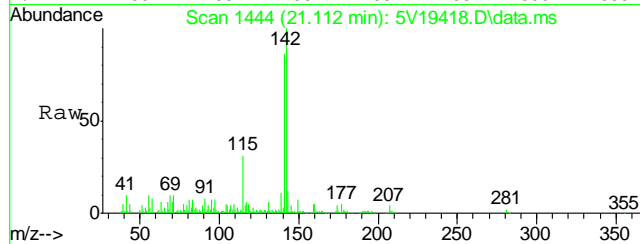
Tgt Ion:128 Resp: 110064





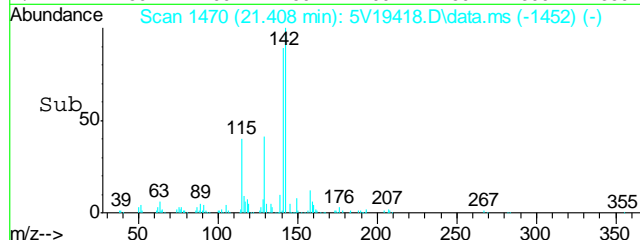
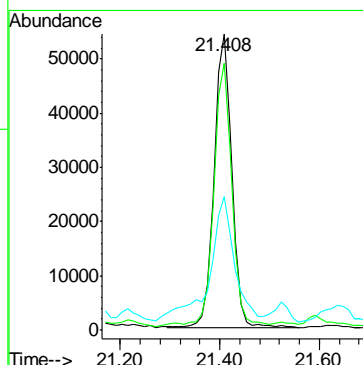
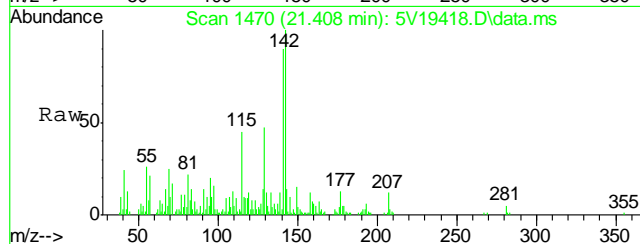
#94
2-Methylnaphthalene
Concen: 56.09 ug/l
RT: 21.112 min Scan# 1444
Delta R.T. 0.012 min
Lab File: 5V19418.D
Acq: 12 Feb 2012 12:19 am

Tgt Ion	Ratio	Lower	Upper
142	100		
141	85.3	66.2	99.4
115	35.7	25.9	38.9



#95
1-Methylnaphthalene
Concen: 18.61 ug/l
RT: 21.408 min Scan# 1470
Delta R.T. 0.000 min
Lab File: 5V19418.D
Acq: 12 Feb 2012 12:19 am

Tgt Ion	Ratio	Lower	Upper
142	100		
141	92.2	68.9	103.3
115	61.0	27.3	40.9#



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5021112.S\
 Data File : 5V19407.D
 Acq On : 11 Feb 2012 5:36 pm
 Operator : brianr
 Sample : MB
 Misc : MS3387,V5V1160,5.000,,100,5,1
 ALS Vial : 3 Sample Multiplier: 1

Quant Time: Feb 14 11:00:17 2012
 Quant Method : C:\msdchem\1\METHODS\V5AP1131TVH1131.M
 Quant Title : 8260
 QLast Update : Sat Jan 21 11:35:36 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	280433	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.446	114	450230	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.095	117	552557	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.070	152	371847	50.00	ug/l	0.00

System Monitoring Compounds						
33) 1,2-Dichloroethane-d4	12.035	102	38192	41.84	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	83.68%
61) Toluene-d8	13.851	98	775065	37.98	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	75.96%
69) 4-Bromofluorobenzene	16.043	95	392996	46.79	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	93.58%

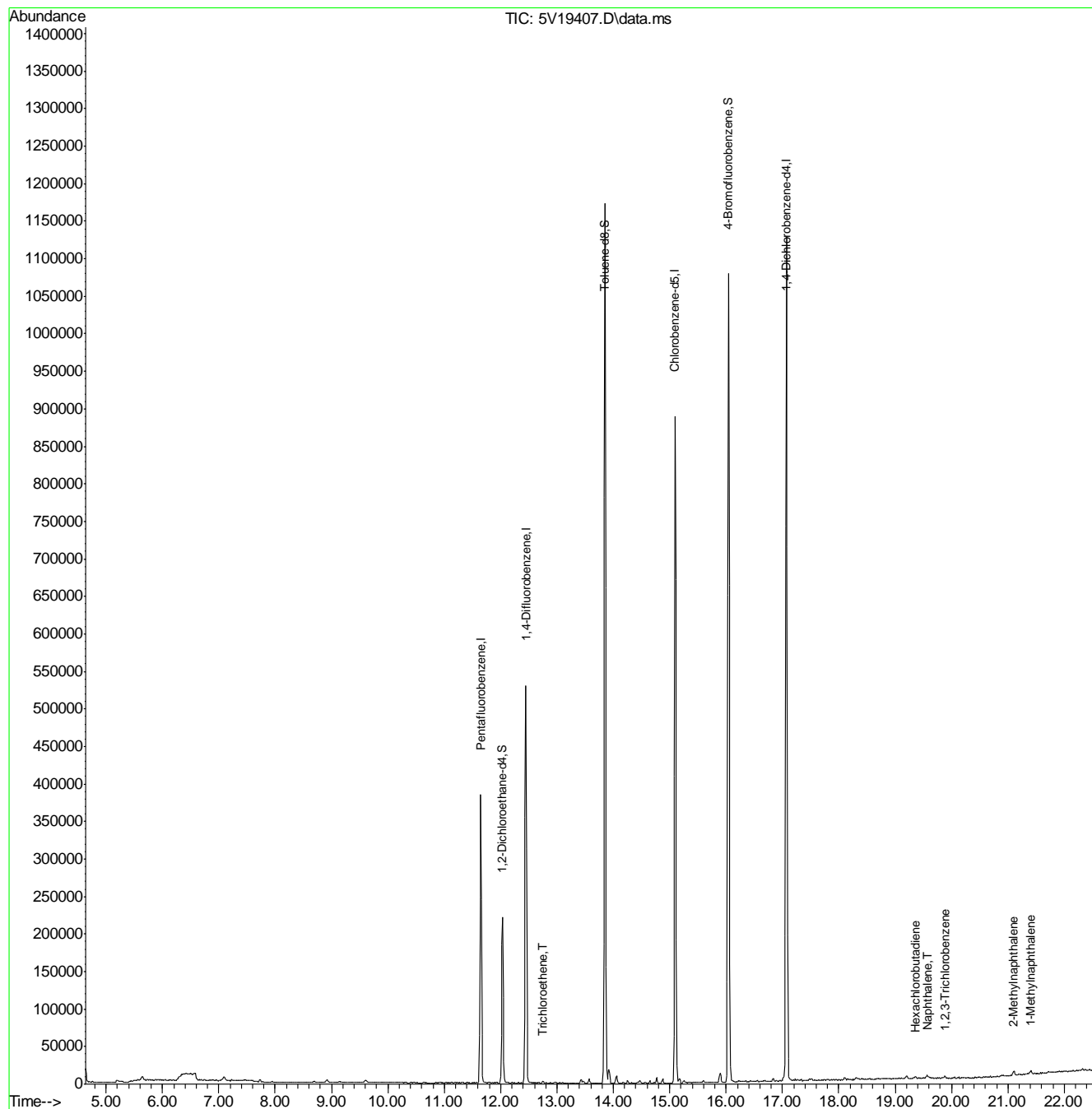
Target Compounds						Qvalue
48) Trichloroethene	12.743	95	974	0.20	ug/l	91
91) Naphthalene	19.570	128	7853	0.39	ug/l	100
92) Hexachlorobutadiene	19.354	225	1271	0.21	ug/l	# 82
93) 1,2,3-Trichlorobenzene	19.879	180	2498	0.30	ug/l	94
94) 2-Methylnaphthalene	21.100	142	4685	0.79	ug/l	92
95) 1-Methylnaphthalene	21.409	142	4623	0.73	ug/l	94

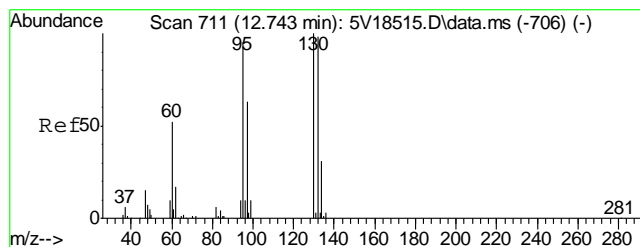
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5021112.S\
Data File : 5V19407.D
Acq On : 11 Feb 2012 5:36 pm
Operator : brianr
Sample : MB
Misc : MS3387,V5V1160,5.000,,100,5,1
ALS Vial : 3 Sample Multiplier: 1

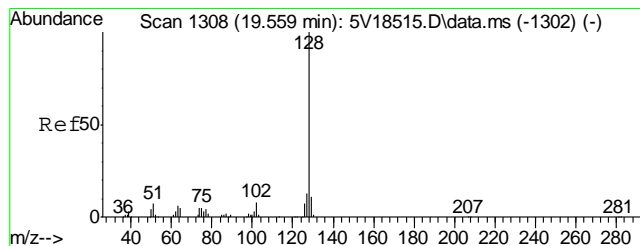
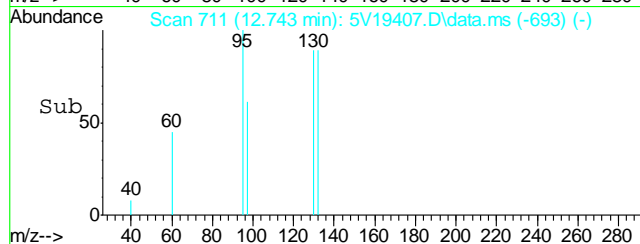
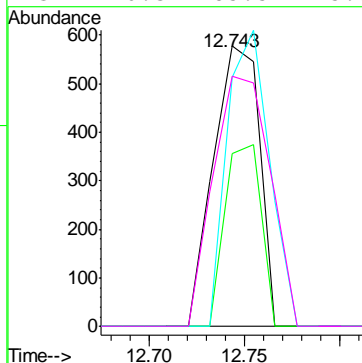
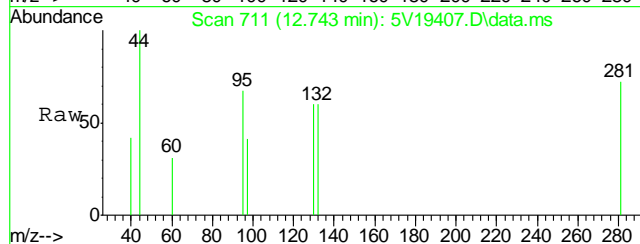
Quant Time: Feb 14 11:00:17 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1131TVH1131.M
Quant Title : 8260
QLast Update : Sat Jan 21 11:35:36 2012
Response via : Initial Calibration





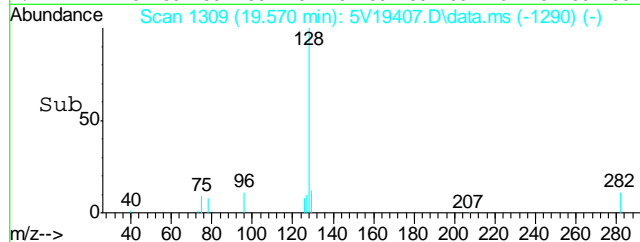
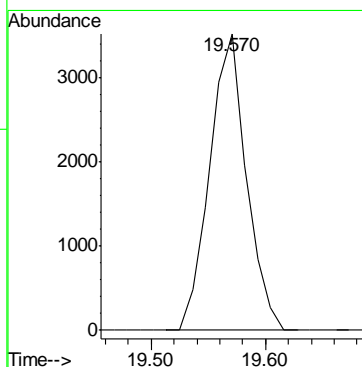
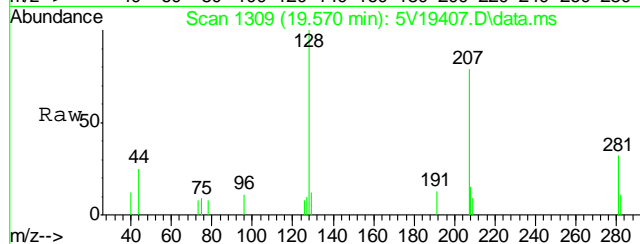
#48
Trichloroethene
Concen: 0.20 ug/l
RT: 12.743 min Scan# 711
Delta R.T. 0.000 min
Lab File: 5V19407.D
Acq: 11 Feb 2012 5:36 pm

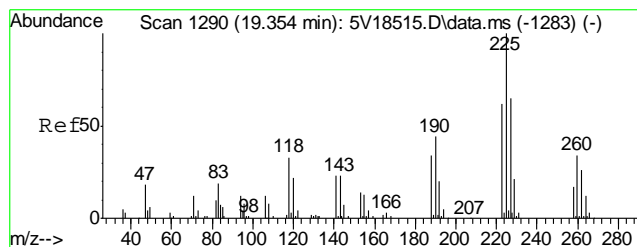
Tgt Ion	95	Resp	974
Ion Ratio	Lower	Upper	
95	100		
97	51.3	47.1	87.1
130	97.1	85.2	125.2
132	110.3	85.5	125.5



#91
Naphthalene
Concen: 0.39 ug/l
RT: 19.570 min Scan# 1309
Delta R.T. 0.012 min
Lab File: 5V19407.D
Acq: 11 Feb 2012 5:36 pm

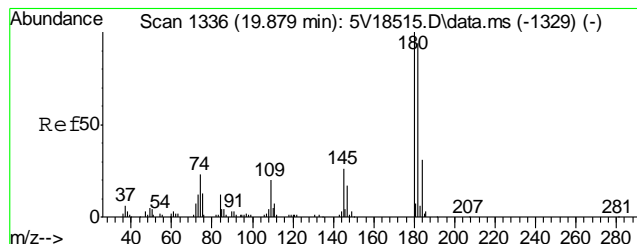
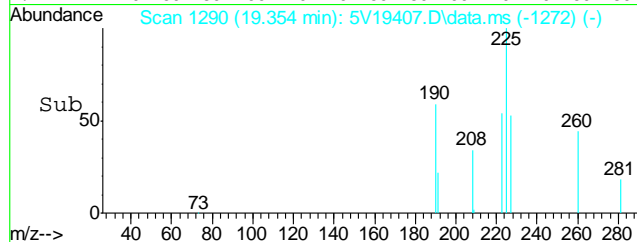
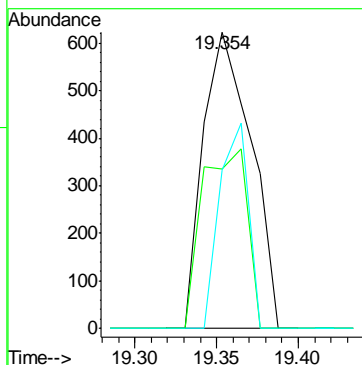
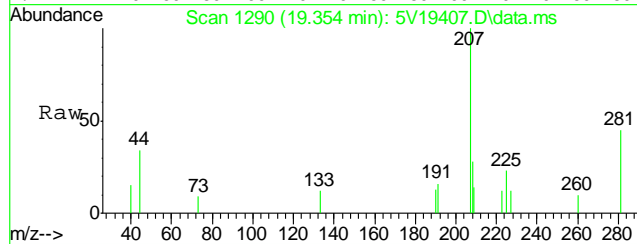
Tgt Ion: 128 Resp: 7853





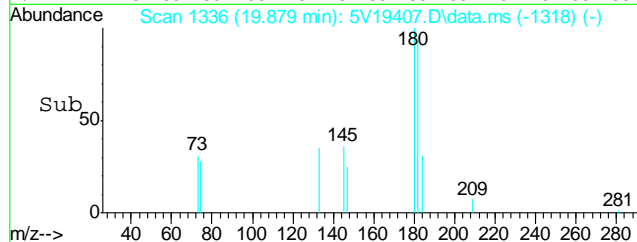
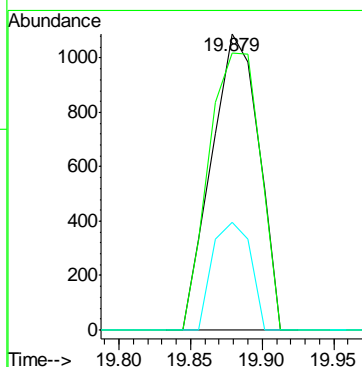
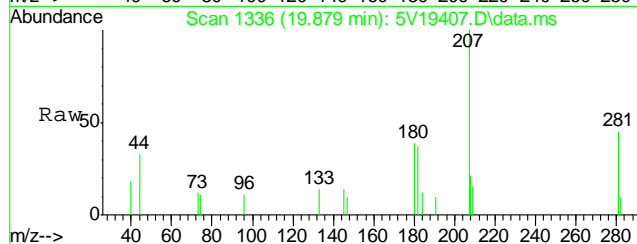
#92
Hexachlorobutadiene
Concen: 0.21 ug/l
RT: 19.354 min Scan# 1290
Delta R.T. 0.000 min
Lab File: 5V19407.D
Acq: 11 Feb 2012 5:36 pm

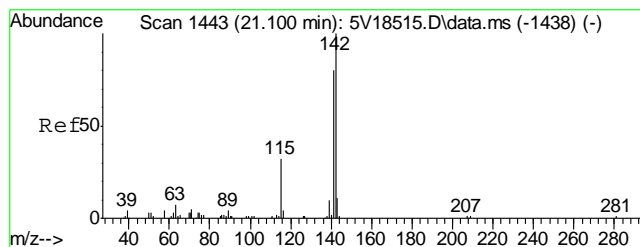
Tgt Ion:	225	Resp:	1271
Ion Ratio	Lower	Upper	
225	100		
223	56.7	49.5	74.3
227	41.1	51.1	76.7#



#93
1,2,3-Trichlorobenzene
Concen: 0.30 ug/l
RT: 19.879 min Scan# 1336
Delta R.T. 0.000 min
Lab File: 5V19407.D
Acq: 11 Feb 2012 5:36 pm

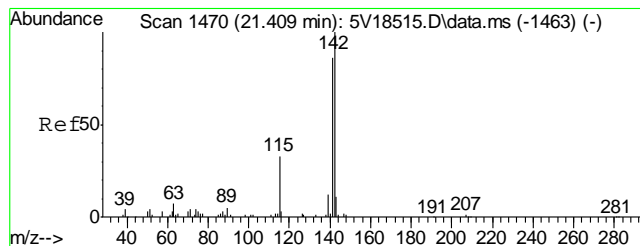
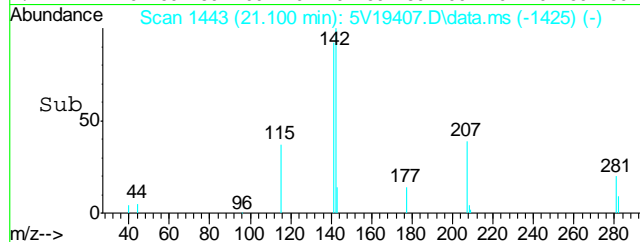
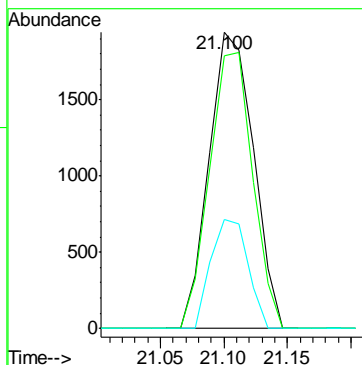
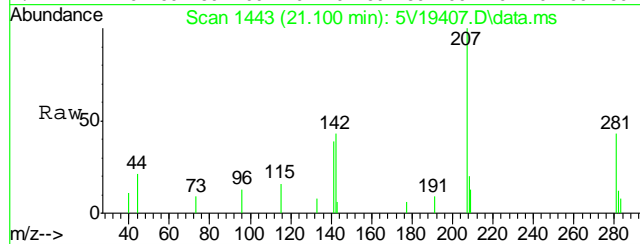
Tgt Ion:	180	Resp:	2498
Ion Ratio	Lower	Upper	
180	100		
182	101.6	76.0	114.0
145	29.0	21.4	32.0





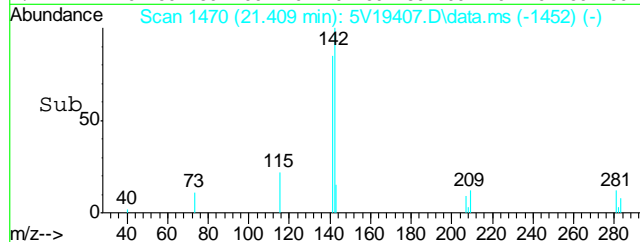
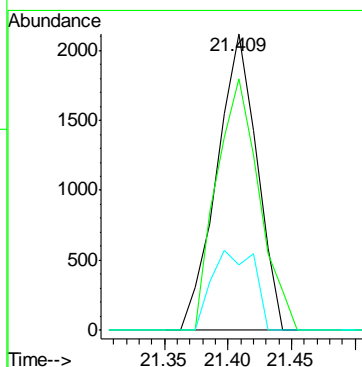
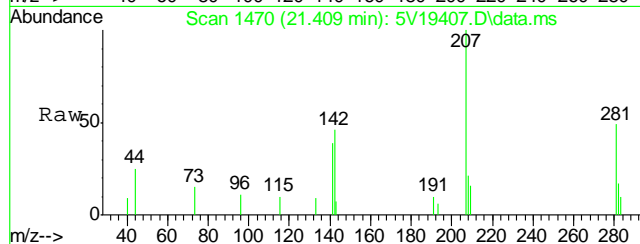
#94
2-Methylnaphthalene
Concen: 0.79 ug/l
RT: 21.100 min Scan# 1443
Delta R.T. 0.000 min
Lab File: 5V19407.D
Acq: 11 Feb 2012 5:36 pm

Tgt Ion:	142	Resp:	4685
Ion Ratio	Lower	Upper	
142	100		
141	91.1	66.2	99.4
115	30.7	25.9	38.9



#95
1-Methylnaphthalene
Concen: 0.73 ug/l
RT: 21.409 min Scan# 1470
Delta R.T. 0.001 min
Lab File: 5V19407.D
Acq: 11 Feb 2012 5:36 pm

Tgt Ion:	142	Resp:	4623
Ion Ratio	Lower	Upper	
142	100		
141	90.5	68.9	103.3
115	28.4	27.3	40.9



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: D31778
Account: XTOKRWR XTO Energy
Project: PCU 296-7A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5346-MB	3G07943.D	1	02/14/12	JR	02/13/12	OP5346	E3G314

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D31778-1

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	89% 10-145%
321-60-8	2-Fluorobiphenyl	82% 10-130%
1718-51-0	Terphenyl-d14	107% 22-130%

Blank Spike Summary

Page 1 of 1

Job Number: D31778
Account: XTOKRWR XTO Energy
Project: PCU 296-7A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5346-BS	3G07944.D	1	02/14/12	JR	02/13/12	OP5346	E3G314

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D31778-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	70.0	84	34-130
120-12-7	Anthracene	83.3	76.7	92	35-130
56-55-3	Benzo(a)anthracene	83.3	73.3	88	36-130
50-32-8	Benzo(a)pyrene	83.3	65.3	78	36-130
205-99-2	Benzo(b)fluoranthene	83.3	67.2	81	35-130
207-08-9	Benzo(k)fluoranthene	83.3	70.1	84	37-130
218-01-9	Chrysene	83.3	75.1	90	40-130
53-70-3	Dibenzo(a,h)anthracene	83.3	82.1	99	32-130
206-44-0	Fluoranthene	83.3	73.5	88	38-130
86-73-7	Fluorene	83.3	76.5	92	35-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	75.5	91	28-130
91-20-3	Naphthalene	83.3	74.9	90	35-130
129-00-0	Pyrene	83.3	78.2	94	37-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	87%	10-145%
321-60-8	2-Fluorobiphenyl	80%	10-130%
1718-51-0	Terphenyl-d14	97%	22-130%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D31778
Account: XTOKRWR XTO Energy
Project: PCU 296-7A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5346-MS ^a	3G07993.D	20	02/16/12	DC	02/13/12	OP5346	E3G317
OP5346-MSD ^a	3G07994.D	20	02/16/12	DC	02/13/12	OP5346	E3G317
D31778-1 ^b	3G07992.D	20	02/16/12	DC	02/13/12	OP5346	E3G317

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D31778-1

CAS No.	Compound	D31778-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		103	200	194*	202	196*	1	10-155/30
120-12-7	Anthracene	ND		103	ND	0*	ND	0*	nc	10-155/30
56-55-3	Benzo(a)anthracene	ND		103	ND	0*	ND	0*	nc	10-175/30
50-32-8	Benzo(a)pyrene	ND		103	ND	0*	ND	0*	nc	10-164/30
205-99-2	Benzo(b)fluoranthene	ND		103	ND	0*	ND	0*	nc	10-165/30
207-08-9	Benzo(k)fluoranthene	ND		103	ND	0*	ND	0*	nc	10-178/30
218-01-9	Chrysene	ND		103	ND	0*	ND	0*	nc	10-147/30
53-70-3	Dibenzo(a,h)anthracene	ND		103	ND	0*	ND	0*	nc	10-144/30
206-44-0	Fluoranthene	ND		103	ND	0*	ND	0*	nc	10-207/30
86-73-7	Fluorene	480		103	736	249* ^c	782	293* ^c	6	10-163/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		103	ND	0*	ND	0*	nc	10-180/30
91-20-3	Naphthalene	326		103	2630	2237* ^c	548	216* ^c	131*	10-198/30
129-00-0	Pyrene	ND		103	ND	0*	ND	0*	nc	10-189/30

CAS No.	Surrogate Recoveries	MS	MSD	D31778-1	Limits
4165-60-0	Nitrobenzene-d5	120%	115%	107%	10-145%
321-60-8	2-Fluorobiphenyl	100%	98%	107%	10-130%
1718-51-0	Terphenyl-d14	105%	110%	107%	22-130%

(a) Recoveries outside control limits due to dilution.

(b) Dilution required due to matrix interference. Internal standard recoveries were low in 1x and 4x dilutions.

(c) Outside control limits due to high level in sample relative to spike amount.

GC/MS Semi-volatiles

Raw Data

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Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\021612\
 Data File : 3g07992.D
 Acq On : 16 Feb 2012 11:16 am
 Operator : DONC
 Sample : D31778-1, 20x
 Misc : OP5346,E3G317,30.11,,,1,20
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Feb 16 12:54:45 2012
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G305.M
 Quant Title : PAHSIM BASE
 QLast Update : Tue Feb 07 13:46:29 2012
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

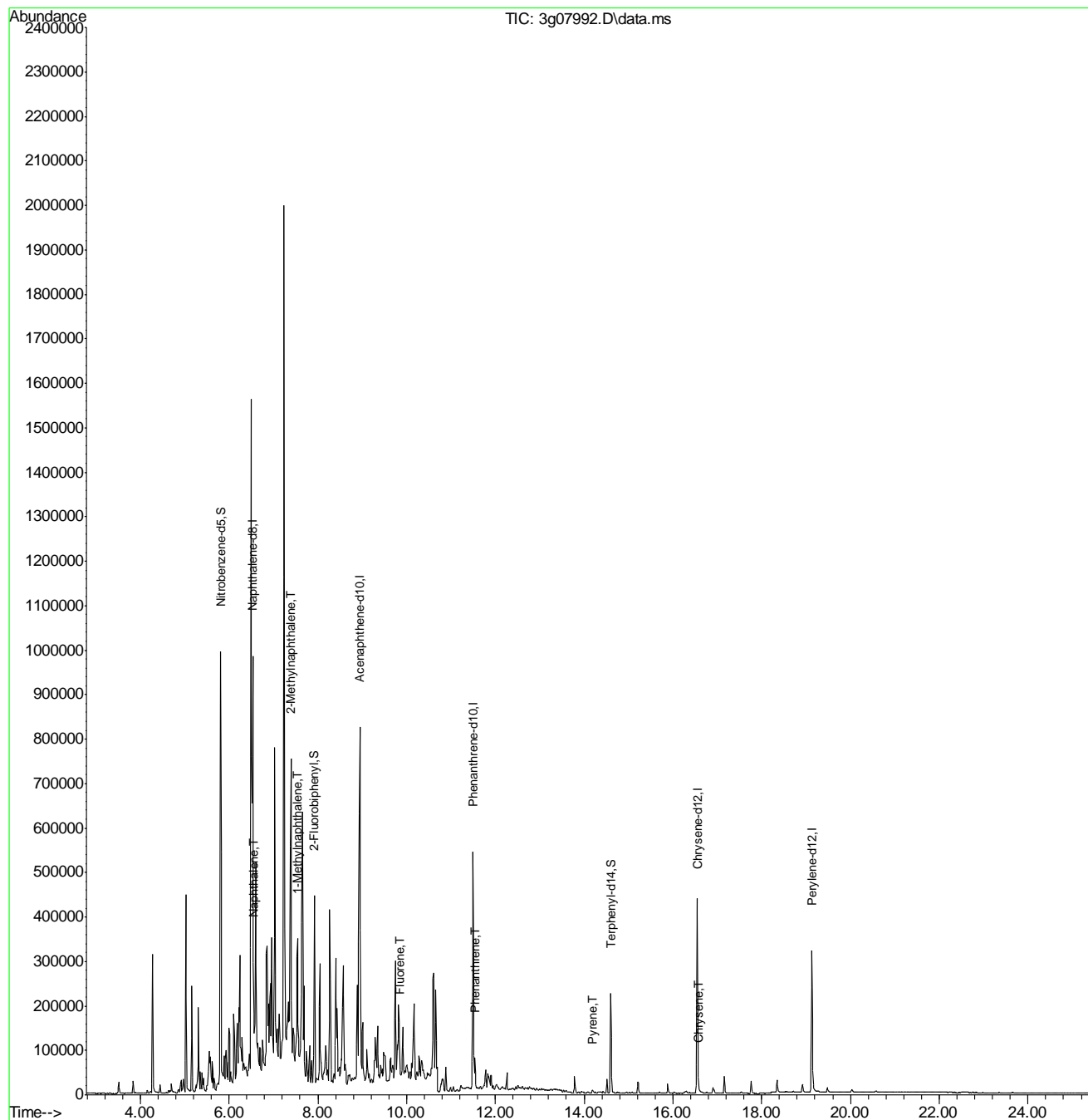
Internal Standards						
1) Naphthalene-d8	6.532	136	857086	4.00	ug/mL	0.00
6) Acenaphthene-d10	8.945	164	411358	4.00	ug/mL	0.00
14) Phenanthrene-d10	11.501	188	569313	4.00	ug/mL	0.00
18) Chrysene-d12	16.553	240	456678	4.00	ug/mL	0.00
23) Perylene-d12	19.132	264	398137	4.00	ug/mL	0.00
System Monitoring Compounds						
2) Nitrobenzene-d5	5.809	82	312308	2.67	ug/mL	-0.01
Spiked Amount 50.000	Range 25 - 135		Recovery	=	5.34%#	
7) 2-Fluorobiphenyl	7.917	172	429421	2.67	ug/mL	-0.01
Spiked Amount 50.000	Range 25 - 135		Recovery	=	5.34%#	
20) Terphenyl-d14	14.603	244	254224	2.69	ug/mL	-0.02
Spiked Amount 50.000	Range 25 - 135		Recovery	=	5.38%#	
Target Compounds						
					Qvalue	
3) N-Nitrosodimethylamine	0.000		0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000		0	N.D.	d	
5) Naphthalene	6.545	128	109394	0.40	ug/mL	90
8) 2-Methylnaphthalene	7.393	142	345835	2.18	ug/mL	91
9) 1-Methylnaphthalene	7.542	142	132195m	0.88	ug/mL	
10) Acenaphthylene	0.000		0	N.D.	d	
11) Acenaphthene	0.000		0	N.D.	d	
12) Fluorene	9.843	166	84159	0.58	ug/mL#	19
13) Diphenylamine	0.000		0	N.D.	d	
15) Phenanthrene	11.540	178	66296	0.33	ug/mL	99
16) Anthracene	0.000		0	N.D.	d	
17) Fluoranthene	0.000		0	N.D.	d	
19) Pyrene	14.192	202	6871	0.03	ug/mL	87
21) Benzo(a)anthracene	0.000		0	N.D.	d	
22) Chrysene	16.587	228	3288	0.02	ug/mL	91
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	

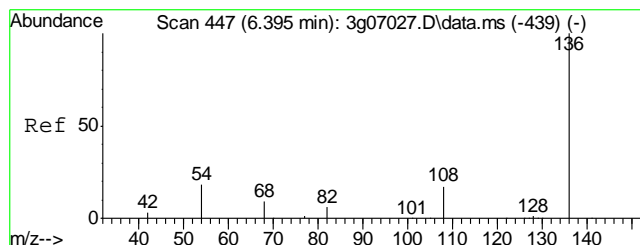
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\021612\
Data File : 3g07992.D
Acq On : 16 Feb 2012 11:16 am
Operator : DONC
Sample : D31778-1, 20x
Misc : OP5346,E3G317,30.11,,,1,20
ALS Vial : 4 Sample Multiplier: 1

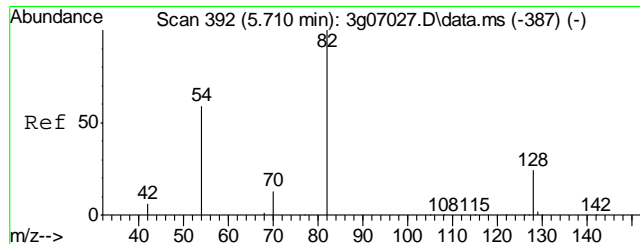
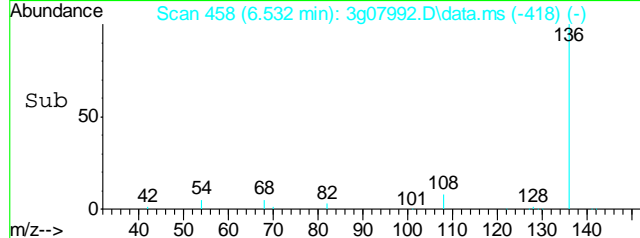
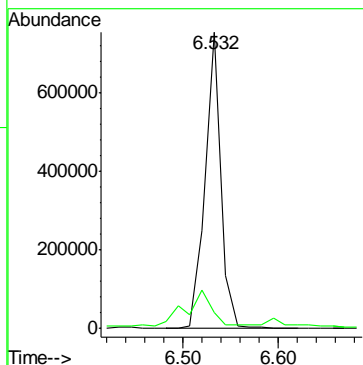
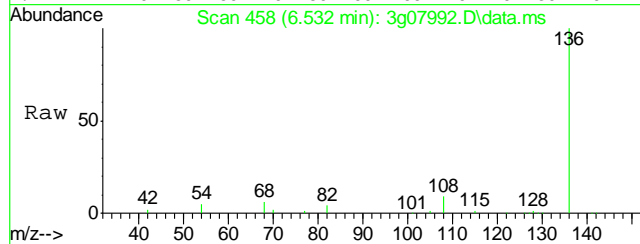
Quant Time: Feb 16 12:54:45 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G305.M
Quant Title : PAHSIM BASE
QLast Update : Tue Feb 07 13:46:29 2012
Response via : Initial Calibration





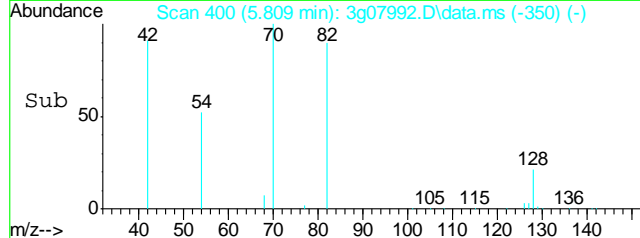
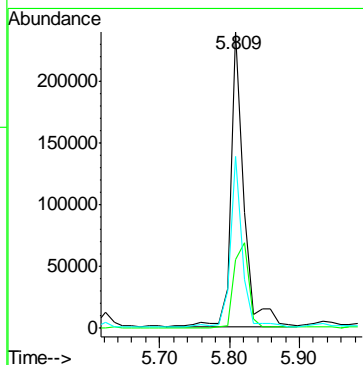
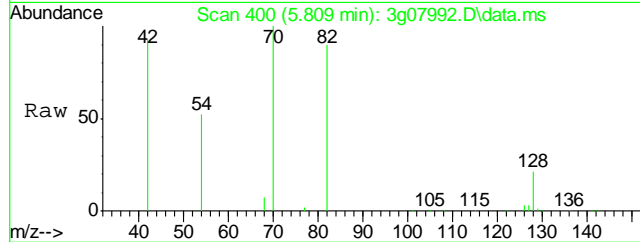
#1
Naphthalene-d8
Concen: 4.00 ug/mL
RT: 6.532 min Scan# 458
Delta R.T. -0.000 min
Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

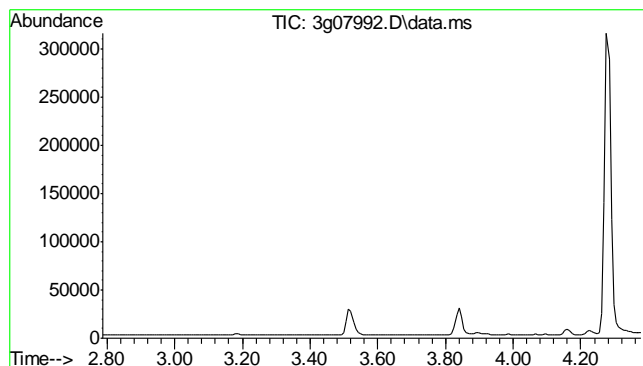
Tgt Ion	Ratio	Lower	Upper
136	100		
68	22.7	0.0	31.7



#2
Nitrobenzene-d5
Concen: 2.67 ug/mL
RT: 5.809 min Scan# 400
Delta R.T. -0.013 min
Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

Tgt Ion	Ratio	Lower	Upper
82	100		
128	32.6	17.9	57.9
54	54.1	25.6	65.6

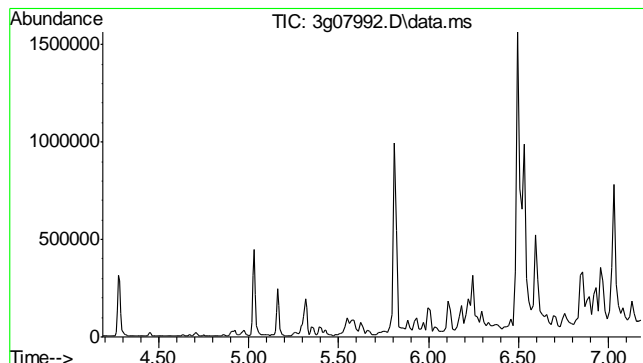
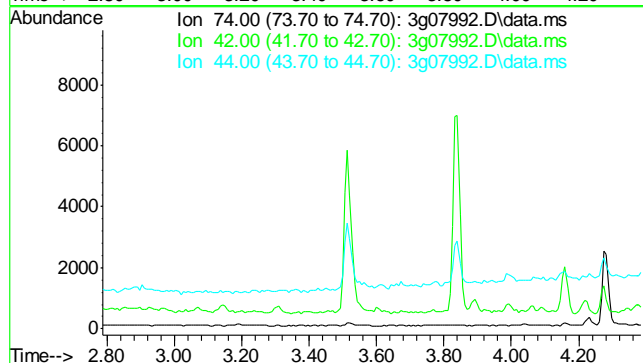




#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.88 min

Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

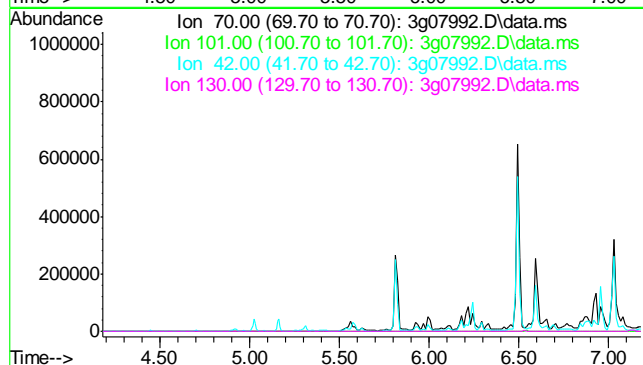
Tgt Ion	Exp Ratio
74	100
42	56.1
44	4.0

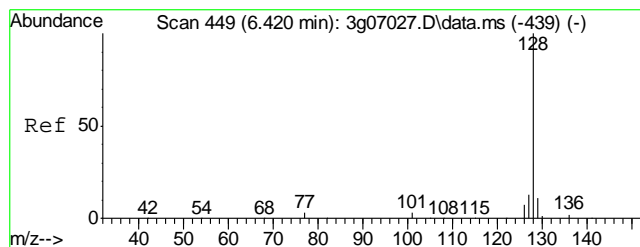


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 5.68 min

Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

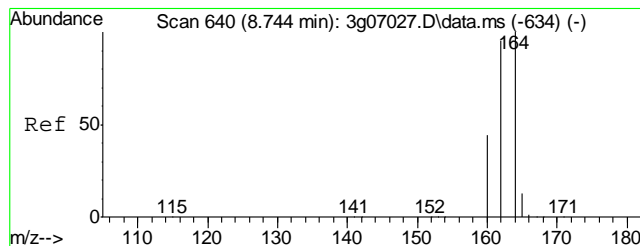
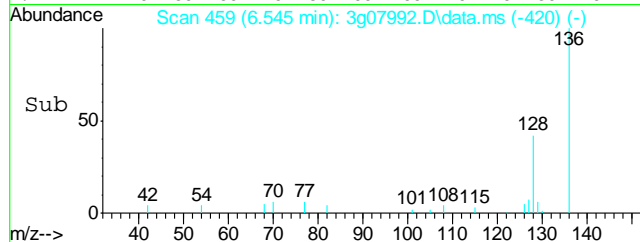
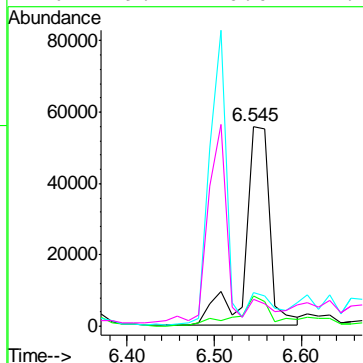
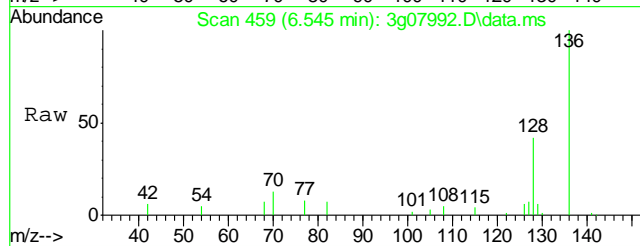
Tgt Ion	Exp Ratio
70	100
101	11.0
42	48.6
130	21.4





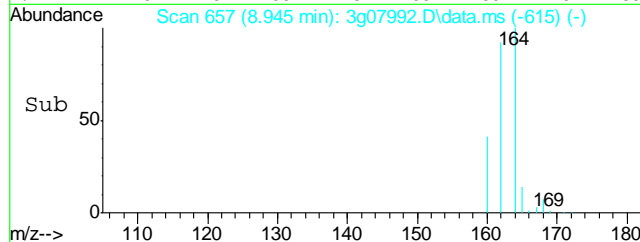
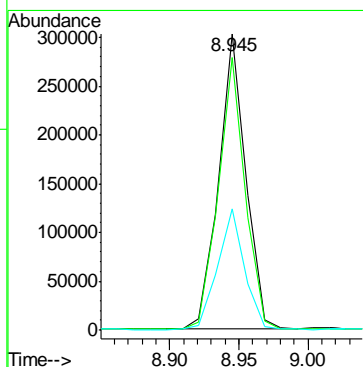
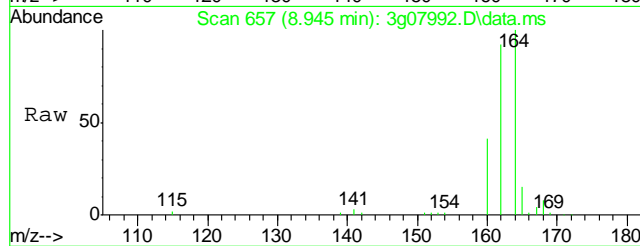
#5
Naphthalene
Concen: 0.40 ug/mL
RT: 6.545 min Scan# 459
Delta R.T. -0.013 min
Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

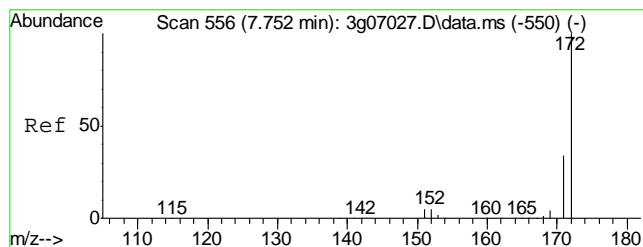
Tgt Ion:	128	Resp:	109394
Ion Ratio	Lower	Upper	
128	100		
129	20.3	0.0	30.7
127	12.0	0.0	32.0
126	9.4	0.0	27.4



#6
Acenaphthene-d10
Concen: 4.00 ug/mL
RT: 8.945 min Scan# 657
Delta R.T. -0.000 min
Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

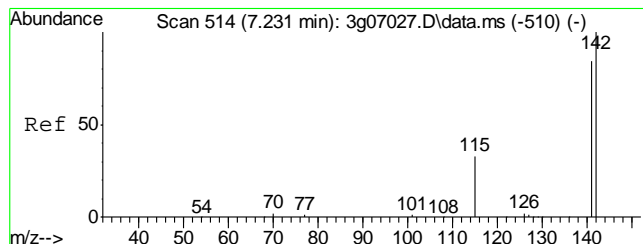
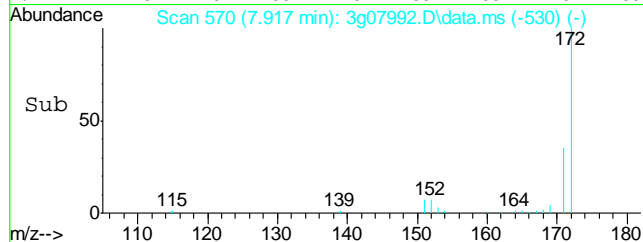
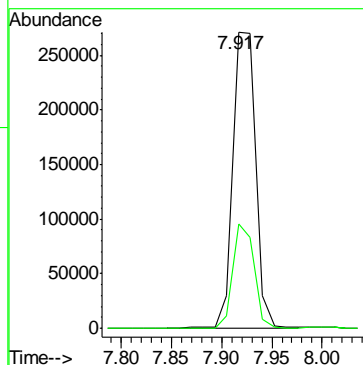
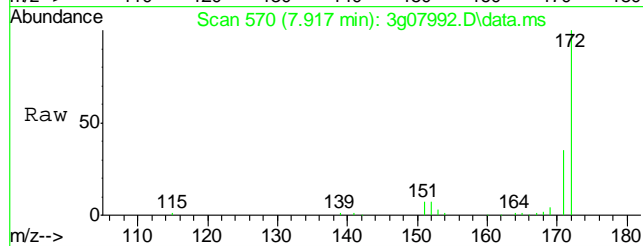
Tgt Ion:	164	Resp:	411358
Ion Ratio	Lower	Upper	
164	100		
162	90.7	74.0	114.0
160	40.6	23.2	63.2





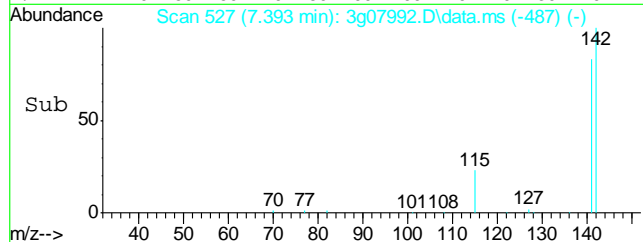
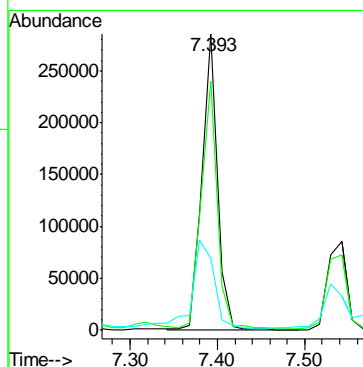
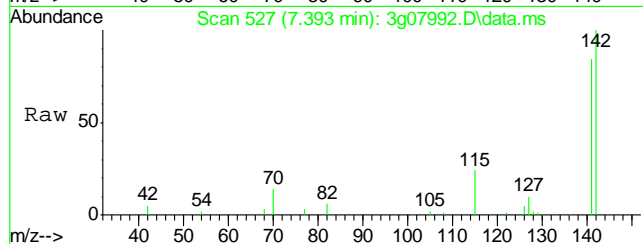
#7
2-Fluorobiphenyl
Concen: 2.67 ug/mL
RT: 7.917 min Scan# 570
Delta R.T. -0.012 min
Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

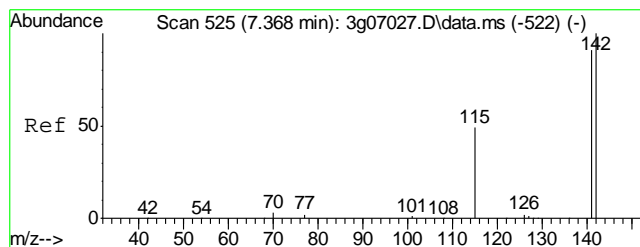
Tgt Ion	Ratio	Lower	Upper
172	100		
171	33.0	12.9	52.9



#8
2-Methylnaphthalene
Concen: 2.18 ug/mL
RT: 7.393 min Scan# 527
Delta R.T. -0.000 min
Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

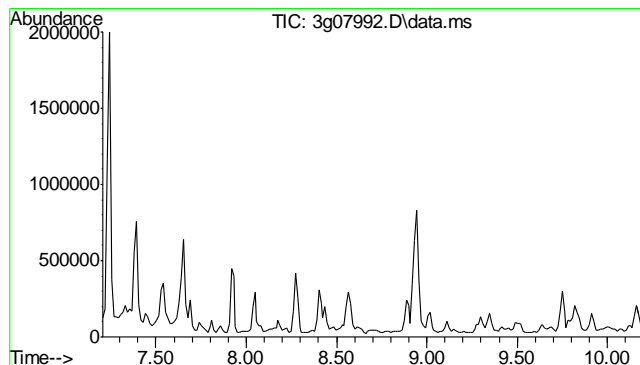
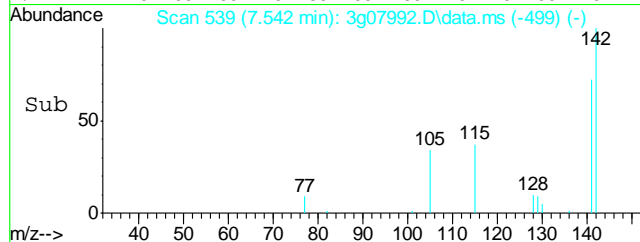
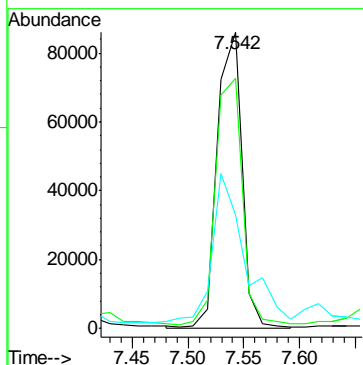
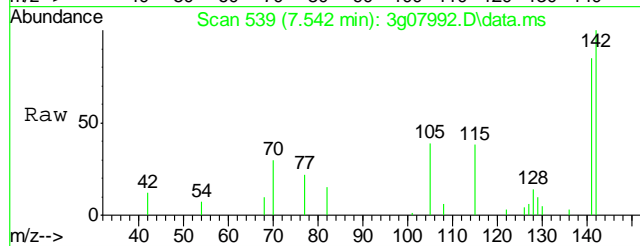
Tgt Ion	Ratio	Lower	Upper
142	100		
141	88.1	62.6	102.6
115	43.5	13.5	53.5





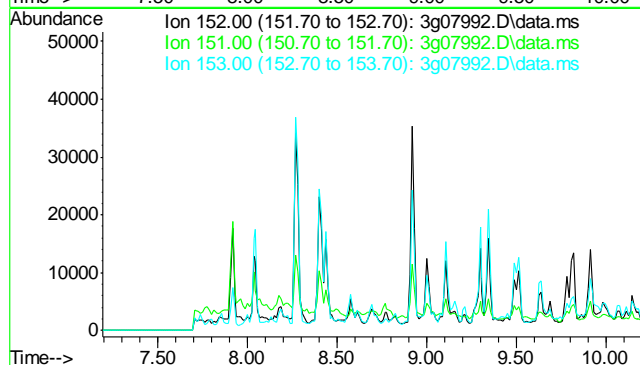
#9
1-Methylnaphthalene
Concen: 0.88 ug/mL m
RT: 7.542 min Scan# 539
Delta R.T. -0.000 min
Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

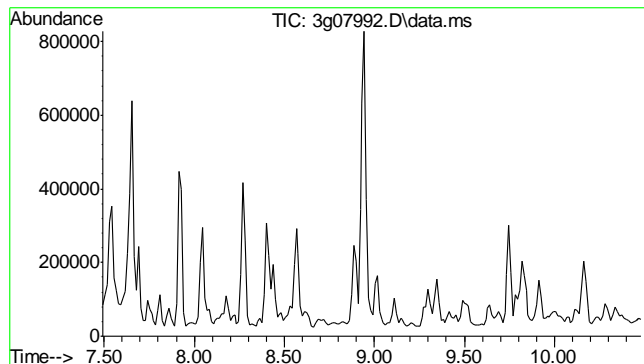
Tgt Ion	Ratio	Lower	Upper
142	100		
141	230.7	66.1	106.1#
115	113.7	16.0	56.0#



#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 8.70 min
Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

Tgt Ion	Sig	Exp Ratio
152	100	
151	18.7	
153	12.9	



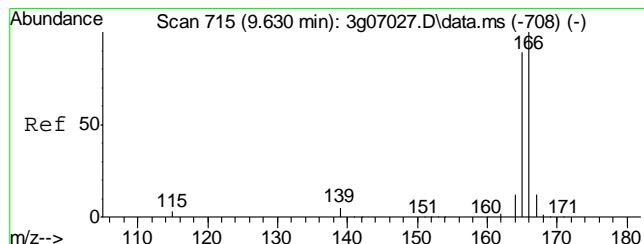
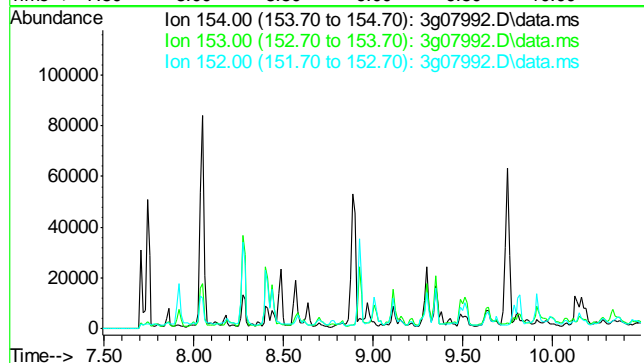


#11
 Acenaphthene
 Concen: N.D. ug/mL
 Expected RT: 8.99 min

 Lab File: 3g07992.D
 Acq: 16 Feb 12 11:16 am

Tgt Ion: 154

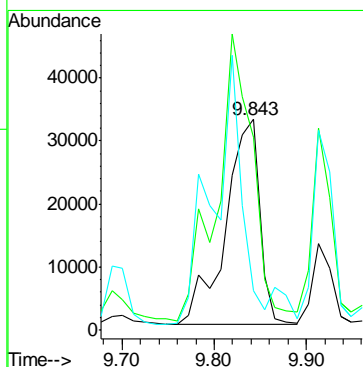
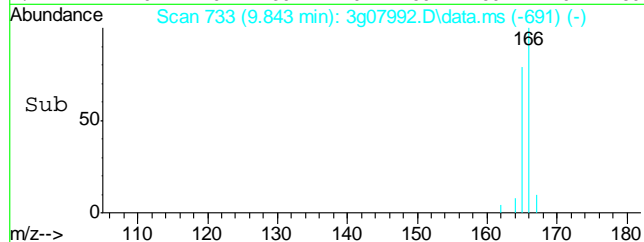
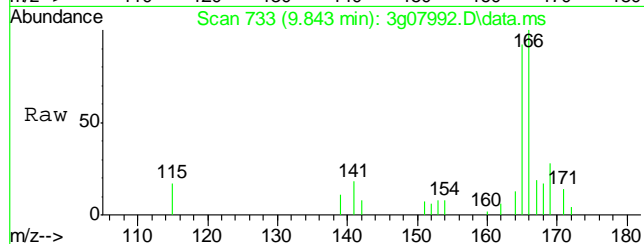
Sig	Exp Ratio
154	100
153	103.9
152	49.2

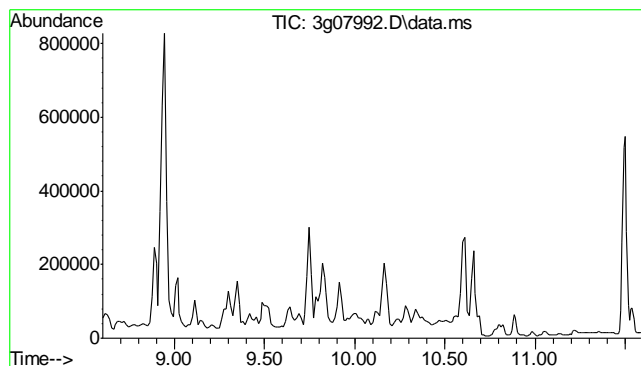


#12
 Fluorene
 Concen: 0.58 ug/mL
 RT: 9.843 min Scan# 733
 Delta R.T. -0.000 min
 Lab File: 3g07992.D
 Acq: 16 Feb 12 11:16 am

Tgt Ion: 166 Resp: 84159

Ion	Ratio	Lower	Upper
166	100		
165	144.5	70.9	110.9#
167	112.2	0.0	33.1#

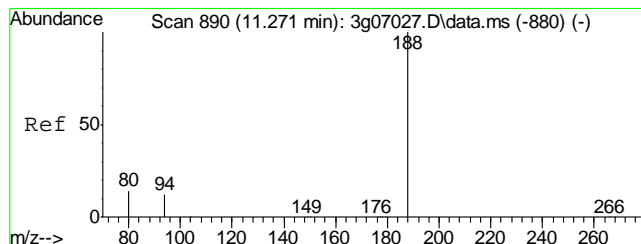
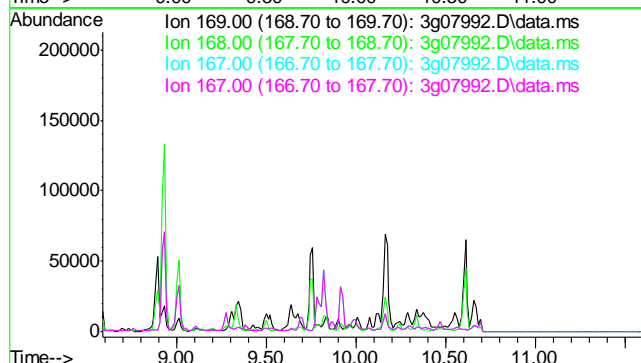




#13
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 10.09 min

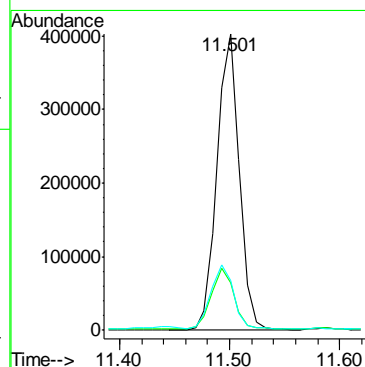
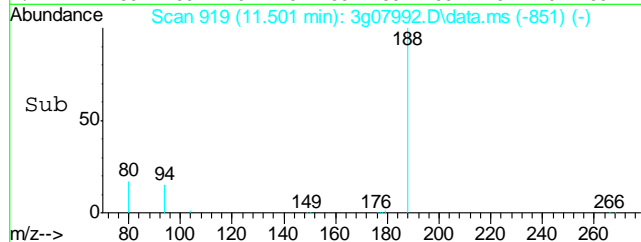
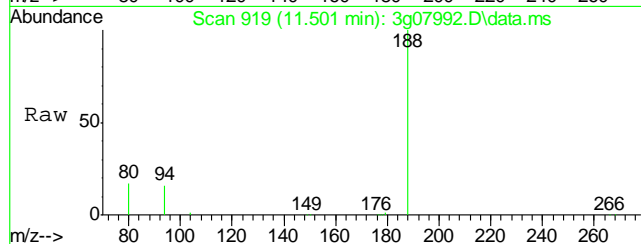
Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

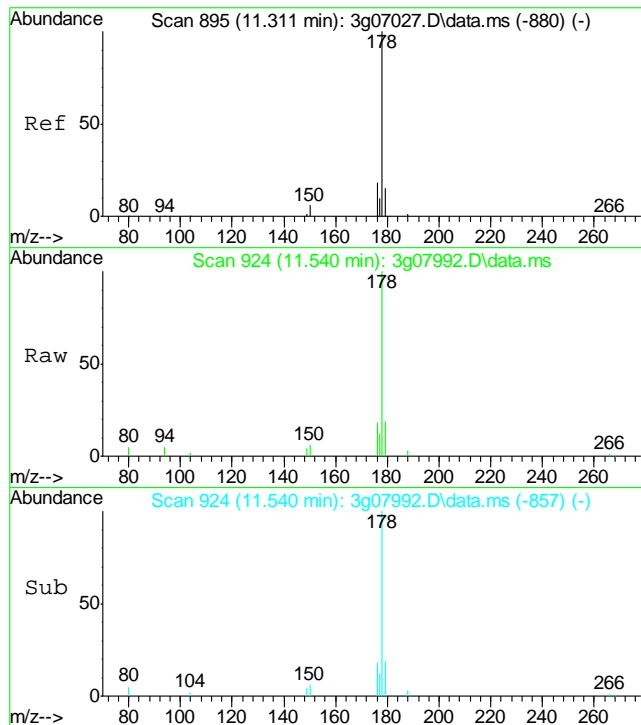
Tgt Ion	Exp Ratio
169	100
168	61.2
167	33.1
167	33.1



#14
Phenanthrene-d10
Concen: 4.00 ug/mL
RT: 11.501 min Scan# 919
Delta R.T. -0.000 min
Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

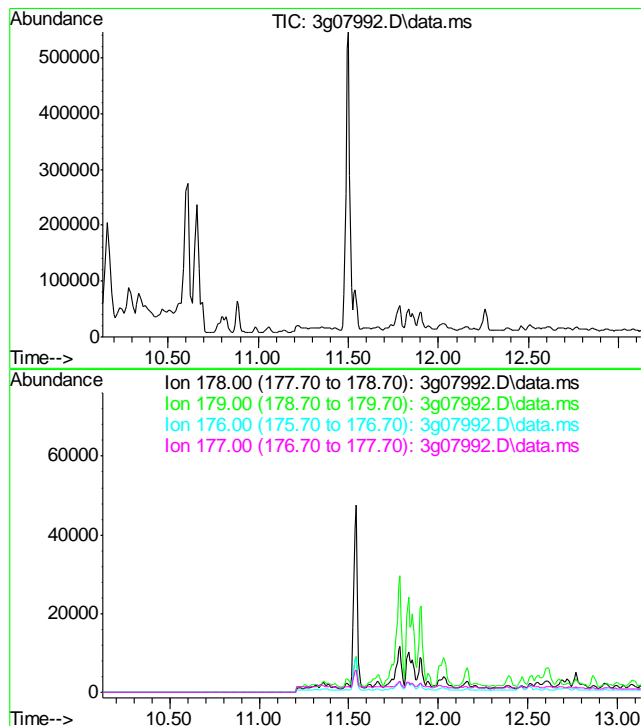
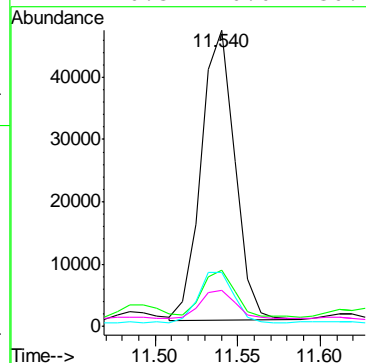
Tgt Ion	Ratio	Lower	Upper
188	100		
94	20.3	0.0	39.4
80	21.7	0.2	40.2





#15
Phenanthrene
Concen: 0.33 ug/mL
RT: 11.540 min Scan# 924
Delta R.T. -0.000 min
Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

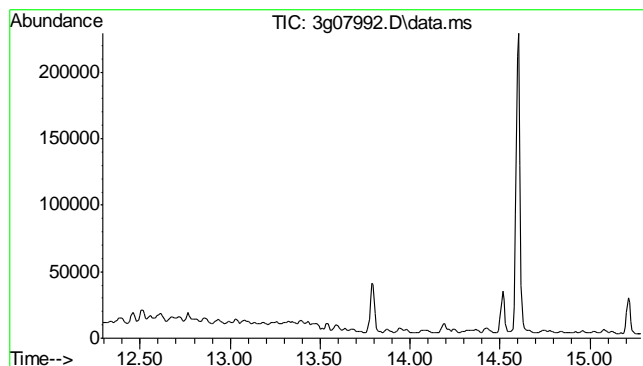
Tgt Ion:	178	Resp:	66296
Ion Ratio	Lower	Upper	
178	100		
179	15.9	0.0	35.1
176	18.1	0.0	38.4
177	10.3	0.0	30.1



#16
Anthracene
Concen: N.D. ug/mL
Expected RT: 11.63 min

Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

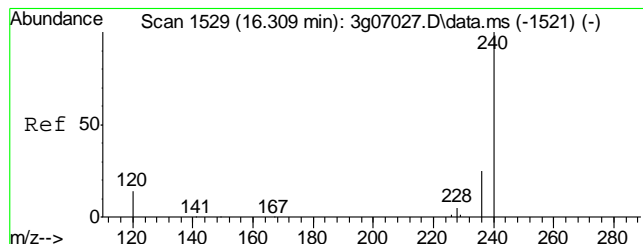
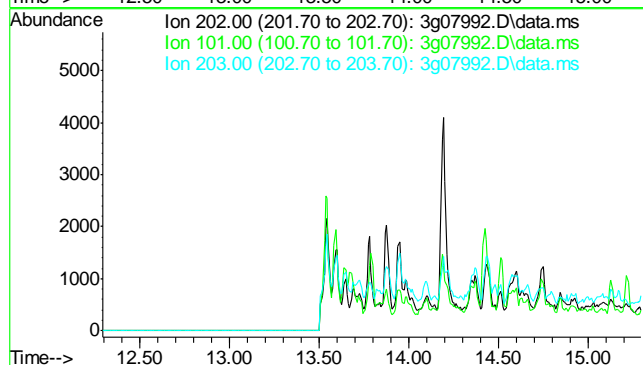
Tgt Ion:	178
Sig	Exp Ratio
178	100
179	15.0
176	17.6
177	8.6



#17
 Fluoranthene
 Concen: N.D. ug/mL
 Expected RT: 13.79 min

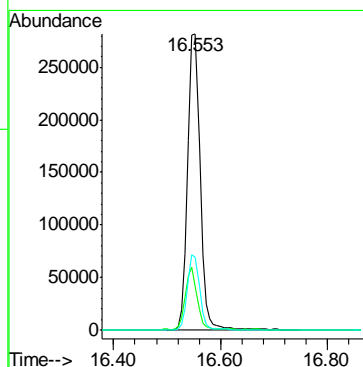
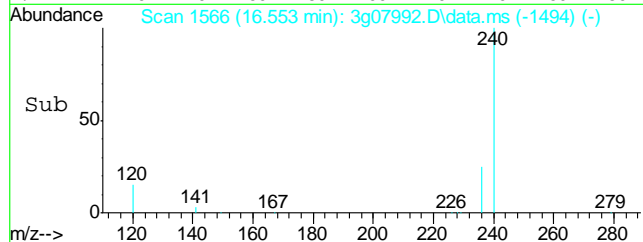
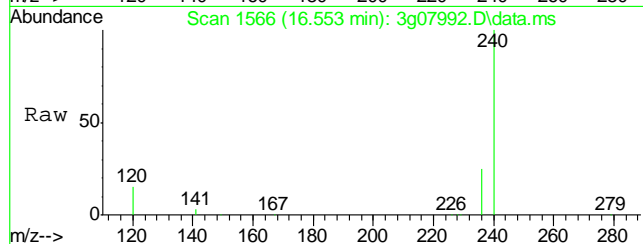
 Lab File: 3g07992.D
 Acq: 16 Feb 12 11:16 am

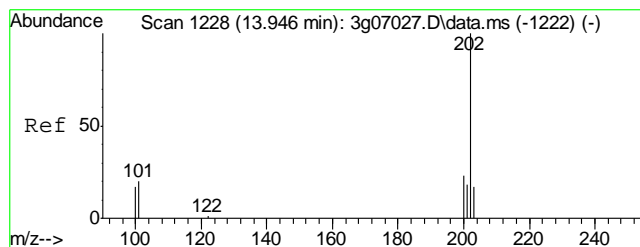
Tgt Ion	Exp Ratio
202	100
101	19.8
203	17.2



#18
 Chrysene-d12
 Concen: 4.00 ug/mL
 RT: 16.553 min Scan# 1566
 Delta R.T. -0.000 min
 Lab File: 3g07992.D
 Acq: 16 Feb 12 11:16 am

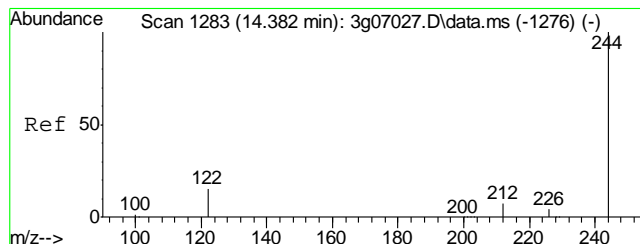
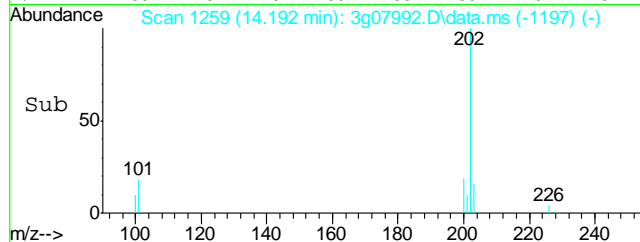
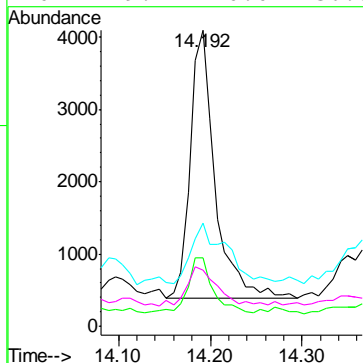
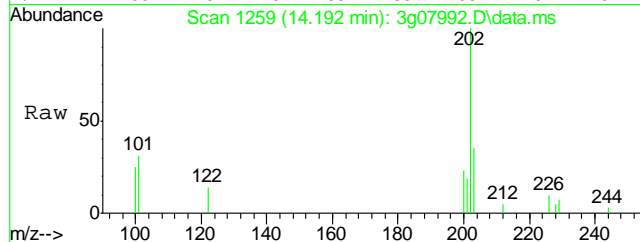
Tgt Ion	Ratio	Lower	Upper
240	100		
120	20.2	10.4	50.4
236	24.9	5.8	45.8





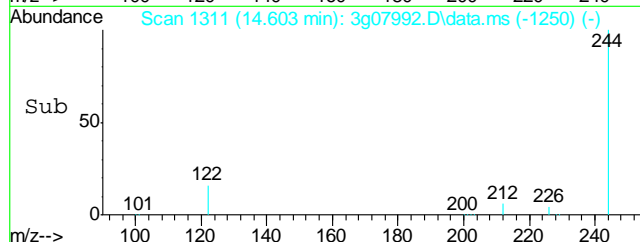
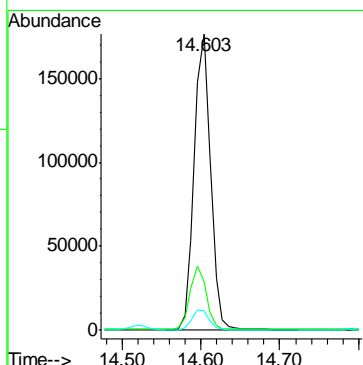
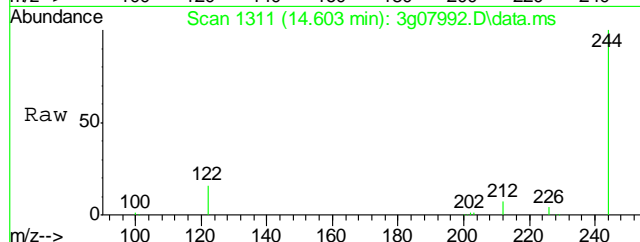
#19
Pyrene
Concen: 0.03 ug/mL
RT: 14.192 min Scan# 1259
Delta R.T. -0.008 min
Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

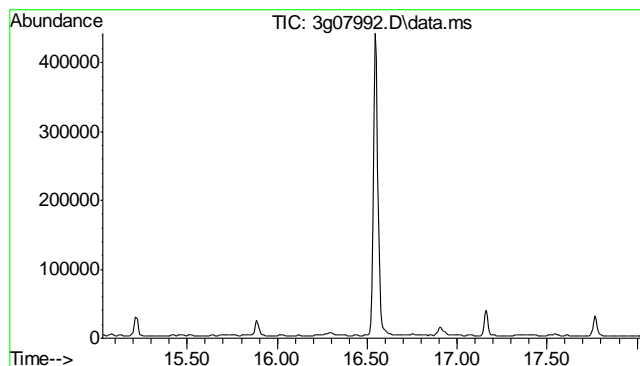
Tgt Ion:	202	Resp:	6871
Ion Ratio	Lower	Upper	
202	100		
200	21.1	0.1	40.1
203	31.3	0.0	37.8
201	19.1	0.0	36.5



#20
Terphenyl-d14
Concen: 2.69 ug/mL
RT: 14.603 min Scan# 1311
Delta R.T. -0.016 min
Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

Tgt Ion:	244	Resp:	254224
Ion Ratio	Lower	Upper	
244	100		
122	21.1	9.9	49.9
212	6.9	0.0	27.9

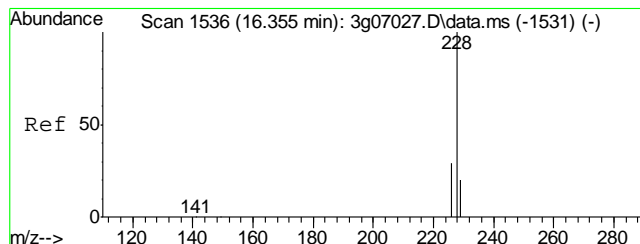
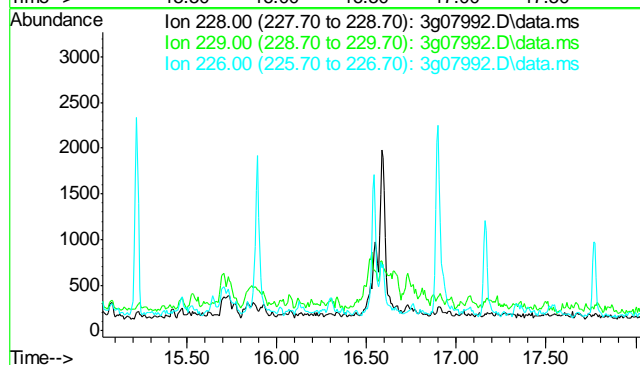




#21
Benzo(a)anthracene
Concen: N.D. ug/mL
Expected RT: 16.53 min

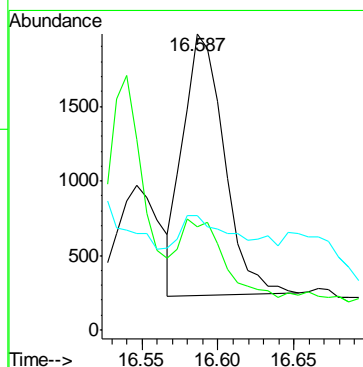
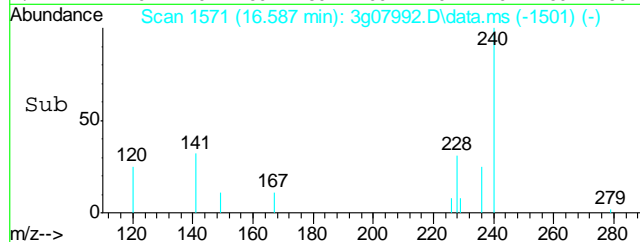
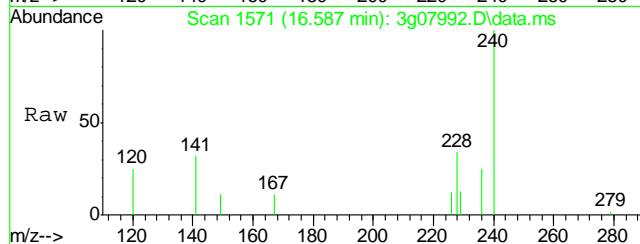
Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

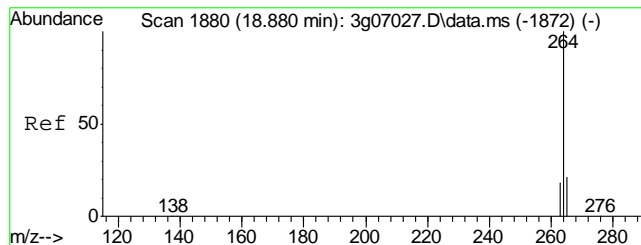
Tgt Ion: 228
Sig Exp Ratio
228 100
229 19.6
226 26.2



#22
Chrysene
Concen: 0.02 ug/mL
RT: 16.587 min Scan# 1571
Delta R.T. -0.020 min
Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

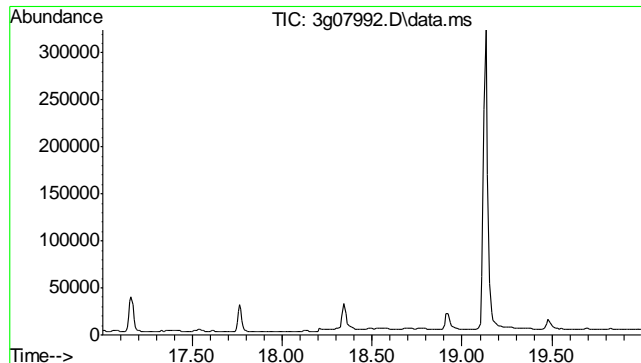
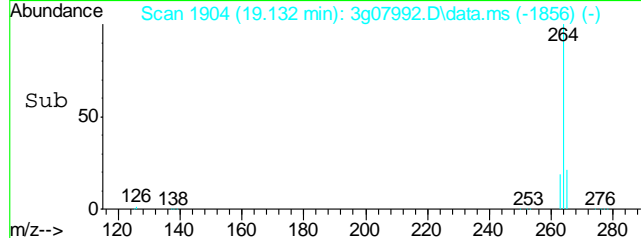
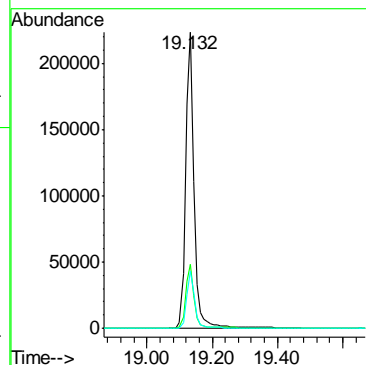
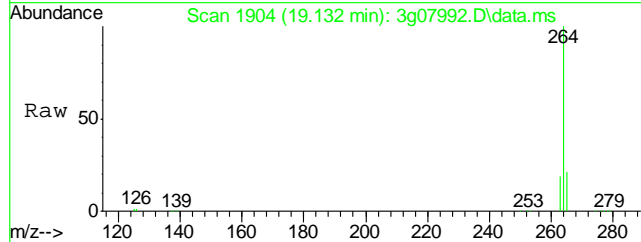
Tgt Ion: 228 Resp: 3288
Ion Ratio Lower Upper
228 100
226 32.0 8.7 48.7
229 13.3 0.0 39.3





#23
Perylene-d12
Concen: 4.00 ug/mL
RT: 19.132 min Scan# 1904
Delta R.T. -0.000 min
Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

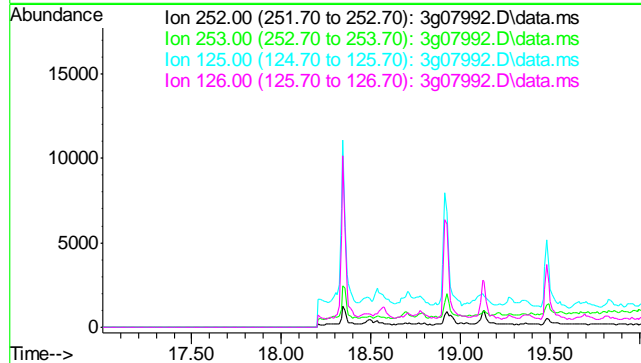
Tgt Ion:	264	Resp:	398137
Ion Ratio	Lower	Upper	
264	100		
265	21.4	1.1	41.1
263	18.6	0.0	39.2

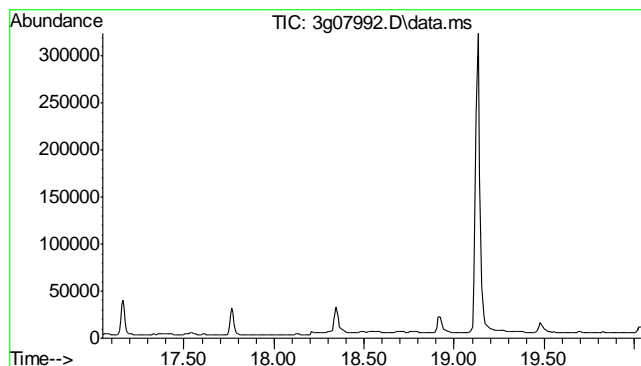


#24
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 18.50 min

Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

Tgt Ion:	252
Sig	Exp Ratio
252	100
253	21.4
125	18.7
126	26.3

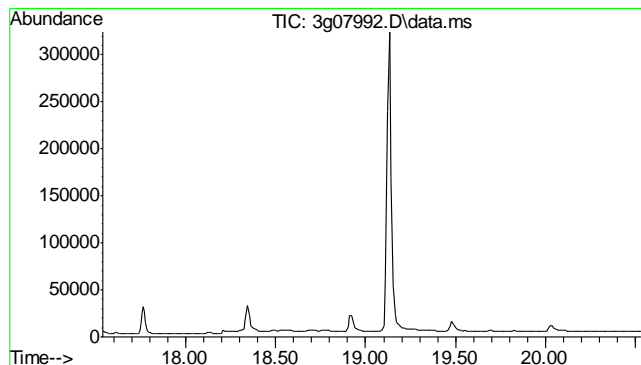
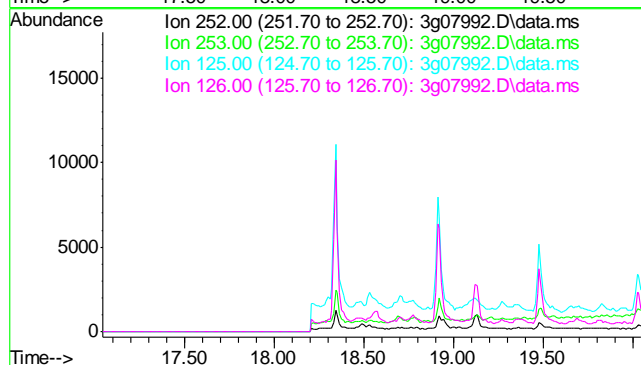




#25
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 18.54 min

Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

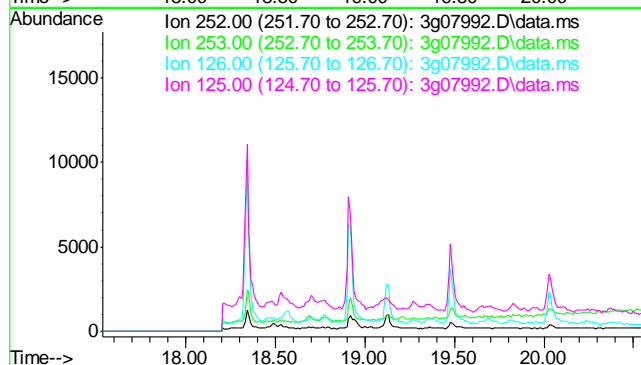
Tgt Ion	Exp Ratio
252	100
253	21.6
125	22.6
126	35.2

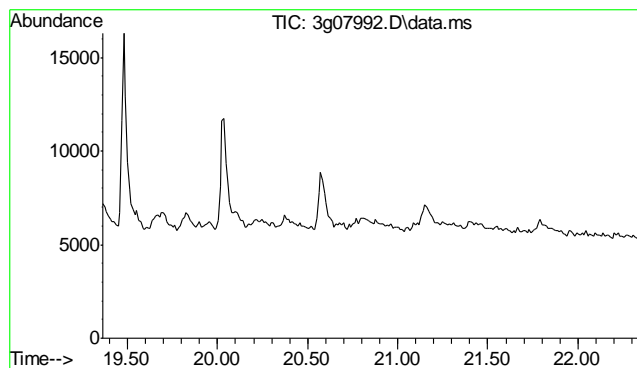


#26
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 19.04 min

Lab File: 3g07992.D
Acq: 16 Feb 12 11:16 am

Tgt Ion	Exp Ratio
252	100
253	20.5
126	30.6
125	23.4

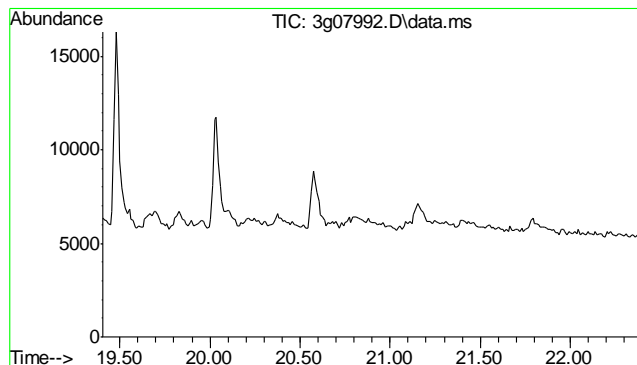
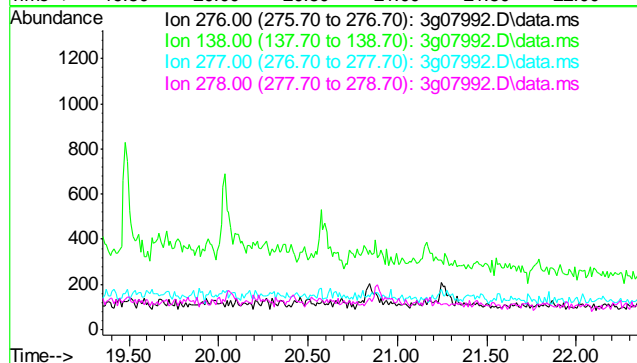




#27
 Indeno(1,2,3-cd)pyrene
 Concen: N.D. ug/mL
 Expected RT: 20.86 min

Lab File: 3g07992.D
 Acq: 16 Feb 12 11:16 am

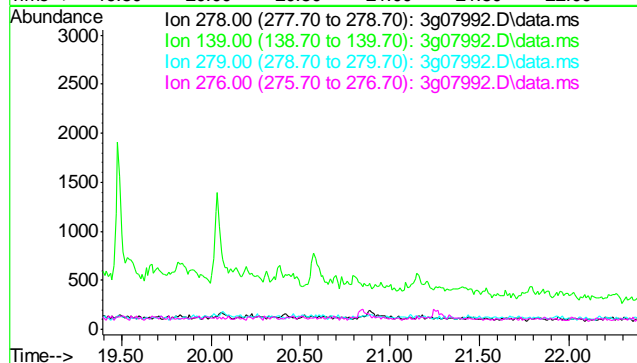
Tgt Ion: 276	
Sig	Exp Ratio
276	100
138	20.3
277	25.0
278	79.9

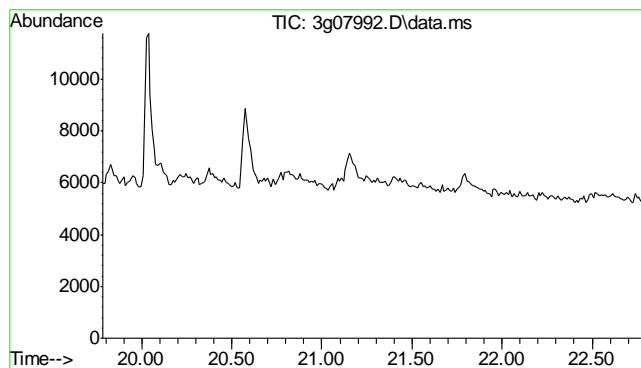


#28
 Dibenzo(a,h)anthracene
 Concen: N.D. ug/mL
 Expected RT: 20.90 min

Lab File: 3g07992.D
 Acq: 16 Feb 12 11:16 am

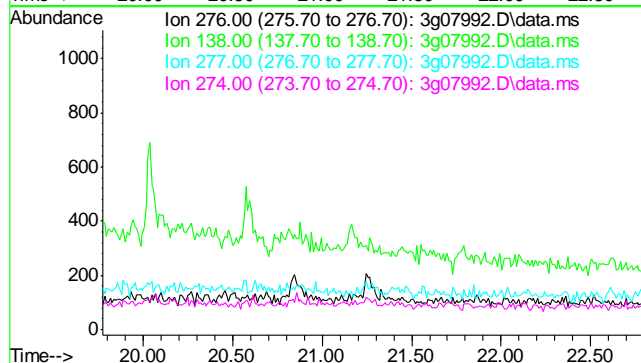
Tgt Ion: 278	
Sig	Exp Ratio
278	100
139	26.9
279	23.2
276	125.2





#29
 Benzo(g,h,i)perylene
 Concen: N.D. ug/mL
 Expected RT: 21.28 min
 Lab File: 3g07992.D
 Acq: 16 Feb 12 11:16 am

Tgt Ion	Exp Ratio
276	100
138	32.8
277	23.5
274	20.8



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\021412\
 Data File : 3g07943.D
 Acq On : 14 Feb 2012 11:12 am
 Operator : JAMESR
 Sample : OP5346-MB
 Misc : OP5346,E3G314,30,,,1,1
 ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 15 10:42:35 2012
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G305.M
 Quant Title : PAHSIM BASE
 QLast Update : Tue Feb 07 13:46:29 2012
 Response via : Initial Calibration

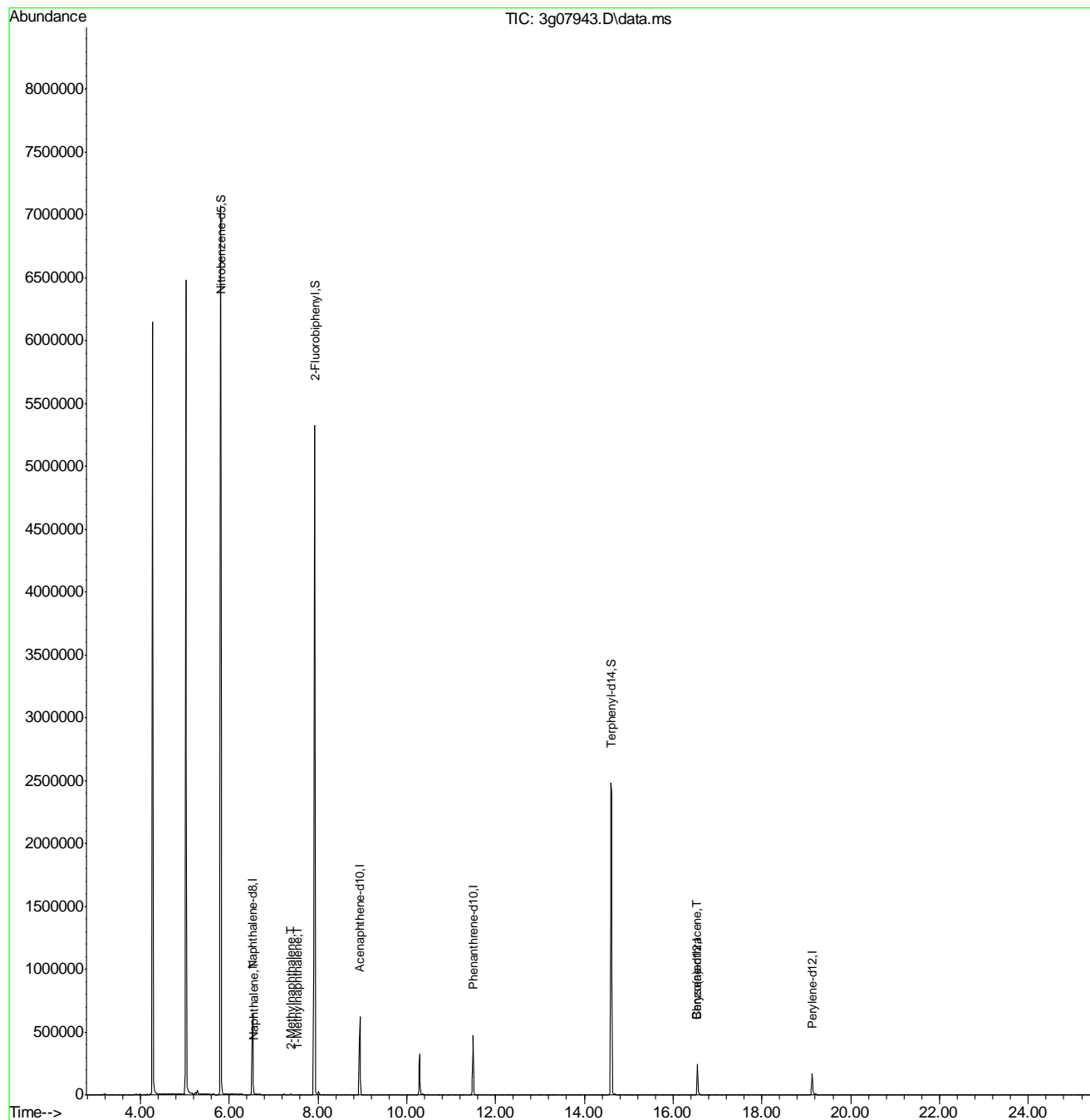
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Naphthalene-d8	6.532	136	673341	4.00	ug/mL	0.00
6) Acenaphthene-d10	8.945	164	357558	4.00	ug/mL	0.00
14) Phenanthrene-d10	11.493	188	480475	4.00	ug/mL	0.00
18) Chrysene-d12	16.547	240	270777	4.00	ug/mL	0.00
23) Perylene-d12	19.132	264	224462	4.00	ug/mL	0.00
System Monitoring Compounds						
2) Nitrobenzene-d5	5.809	82	4070883	44.26	ug/mL	-0.01
Spiked Amount	50.000	Range	25 - 135	Recovery	=	88.52%
7) 2-Fluorobiphenyl	7.929	172	5758126	41.12	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	82.24%
20) Terphenyl-d14	14.611	244	3001980	53.48	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	106.96%
Target Compounds						
					Qvalue	
3) N-Nitrosodimethylamine	0.000		0	N.D.	d	
4) N-Nitrosodi-propylamine	0.000		0	N.D.	d	
5) Naphthalene	6.545	128	4191	0.02	ug/mL	90
8) 2-Methylnaphthalene	7.393	142	1160	0.01	ug/mL	87
9) 1-Methylnaphthalene	7.530	142	595	0.00	ug/mL#	73
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	16.547	228	740	0.01	ug/mL#	69
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	

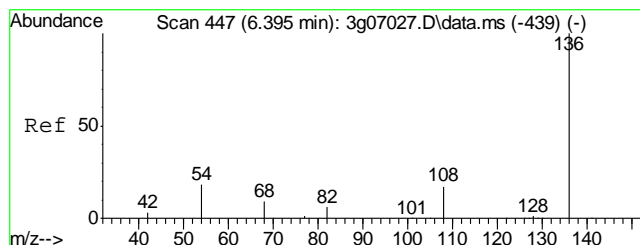
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\021412\
Data File : 3g07943.D
Acq On : 14 Feb 2012 11:12 am
Operator : JAMESR
Sample : OP5346-MB
Misc : OP5346,E3G314,30,,,1,1
ALS Vial : 7 Sample Multiplier: 1

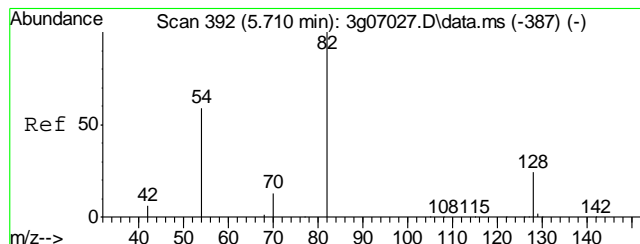
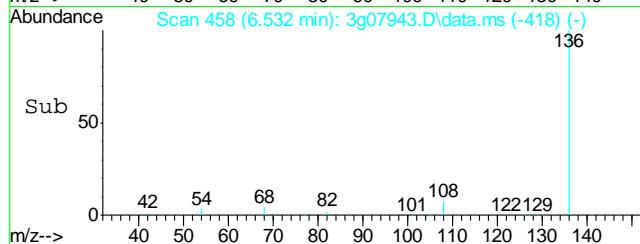
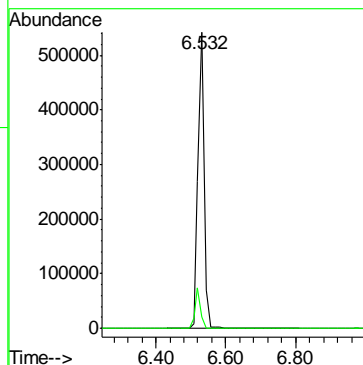
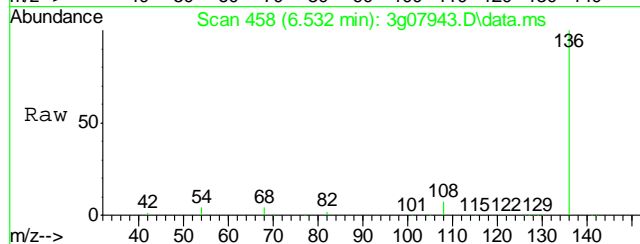
Quant Time: Feb 15 10:42:35 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G305.M
Quant Title : PAHSIM BASE
QLast Update : Tue Feb 07 13:46:29 2012
Response via : Initial Calibration





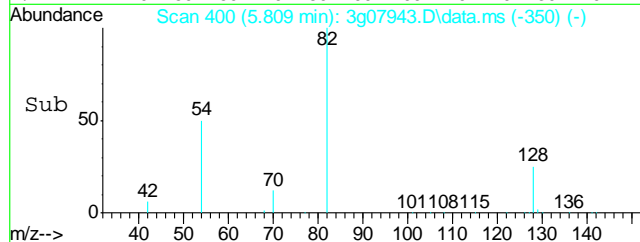
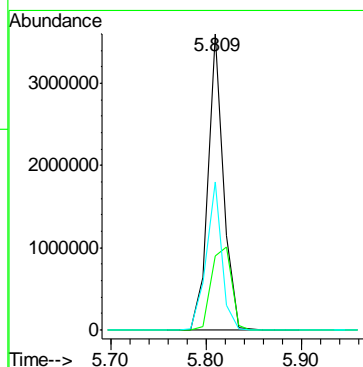
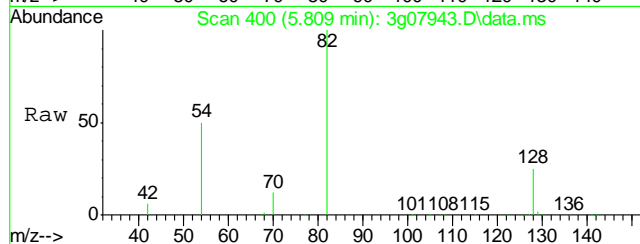
#1
Naphthalene-d8
Concen: 4.00 ug/mL
RT: 6.532 min Scan# 458
Delta R.T. 0.000 min
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

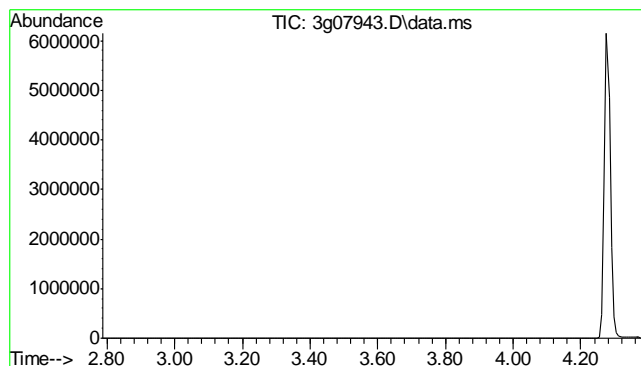
Tgt Ion: 136 Resp: 673341
Ion Ratio Lower Upper
136 100
68 12.6 0.0 31.7



#2
Nitrobenzene-d5
Concen: 44.26 ug/mL
RT: 5.809 min Scan# 400
Delta R.T. -0.012 min
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

Tgt Ion: 82 Resp: 4070883
Ion Ratio Lower Upper
82 100
128 37.1 17.9 57.9
54 49.7 25.6 65.6

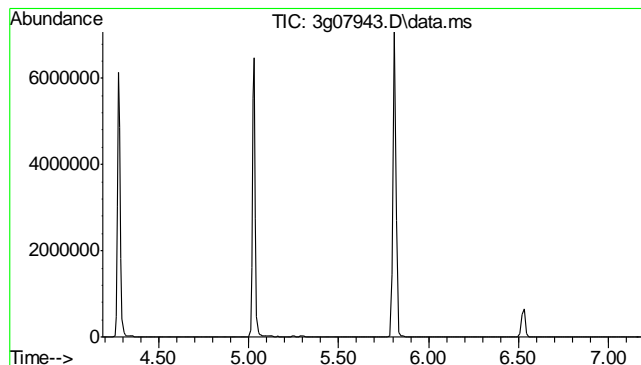
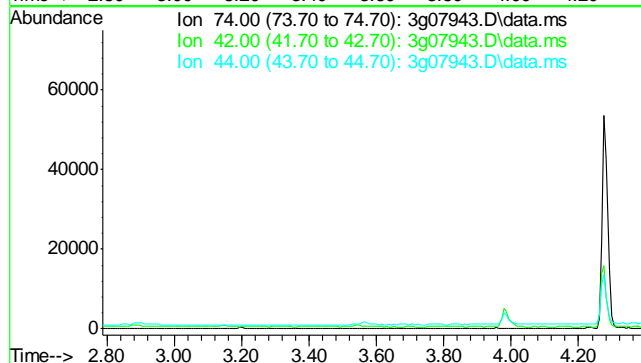




#3
N-Nitrosodimethylamine
Concen: N.D. ug/mL
Expected RT: 2.88 min

Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

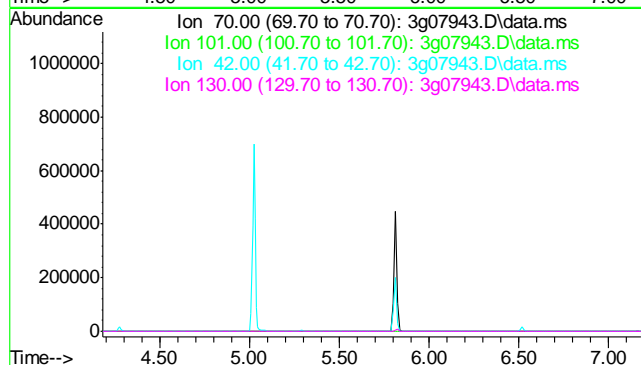
Tgt Ion:	74
Sig	Exp Ratio
74	100
42	56.1
44	4.0

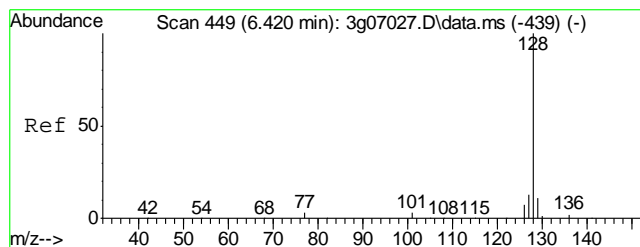


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 5.68 min

Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

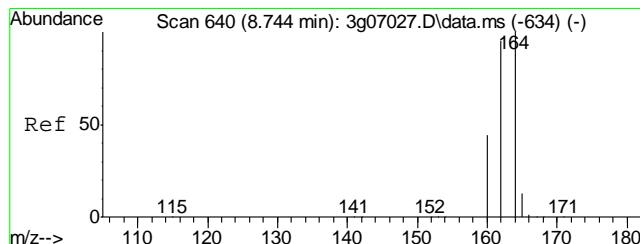
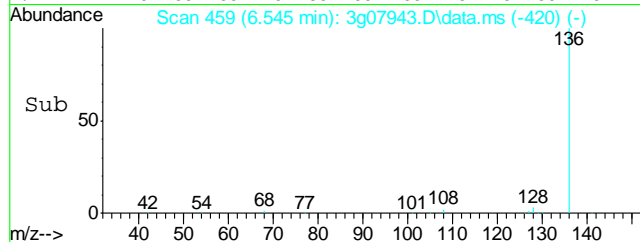
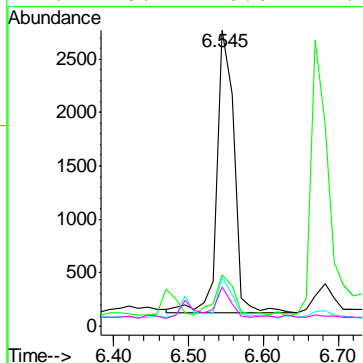
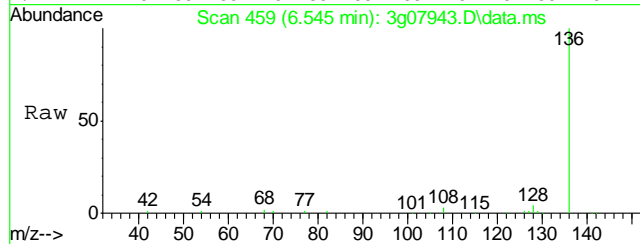
Tgt Ion:	70
Sig	Exp Ratio
70	100
101	11.0
42	48.6
130	21.4





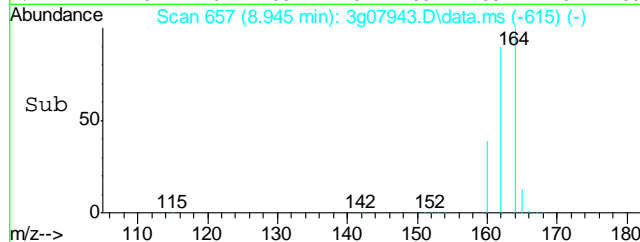
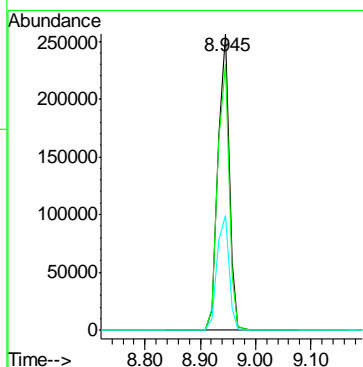
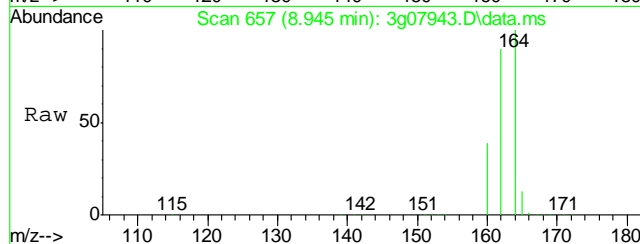
#5
Naphthalene
Concen: 0.02 ug/mL
RT: 6.545 min Scan# 459
Delta R.T. -0.012 min
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

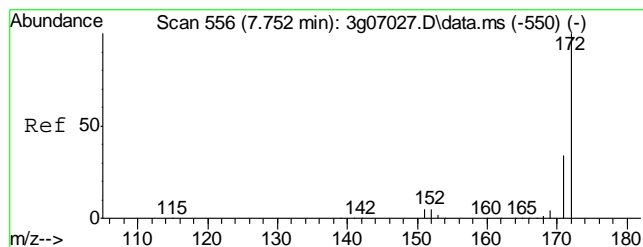
Tgt Ion	Ratio	Lower	Upper
128	100		
129	18.2	0.0	30.7
127	13.6	0.0	32.0
126	8.7	0.0	27.4



#6
Acenaphthene-d10
Concen: 4.00 ug/mL
RT: 8.945 min Scan# 657
Delta R.T. 0.000 min
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

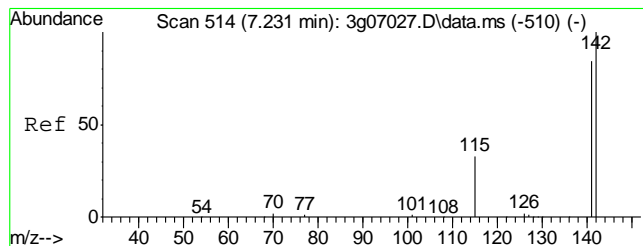
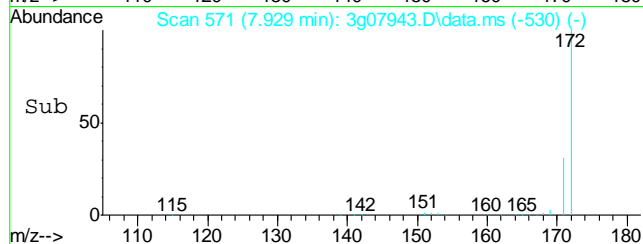
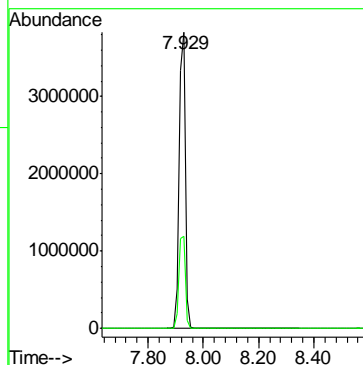
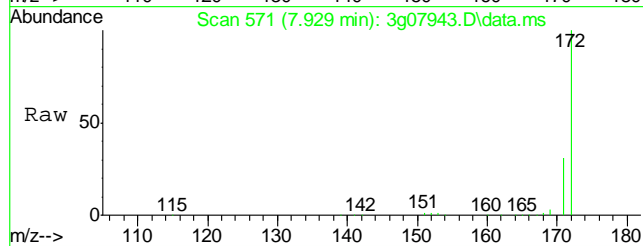
Tgt Ion	Ratio	Lower	Upper
164	100		
162	92.3	74.0	114.0
160	41.2	23.2	63.2





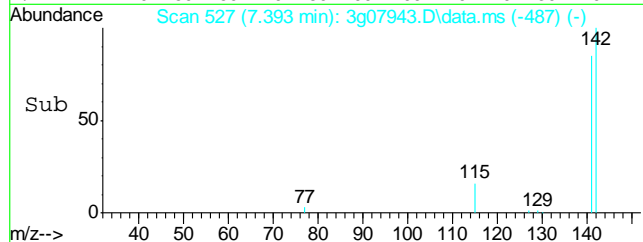
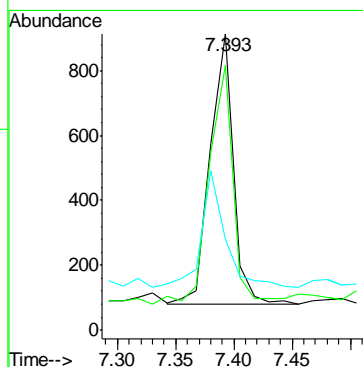
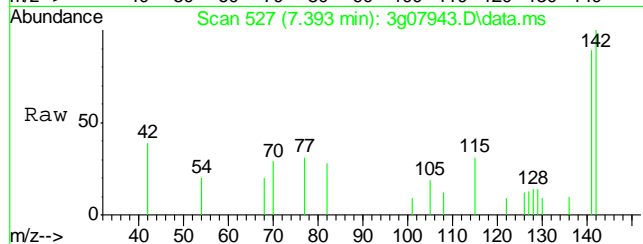
#7
2-Fluorobiphenyl
Concen: 41.12 ug/mL
RT: 7.929 min Scan# 571
Delta R.T. 0.000 min
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

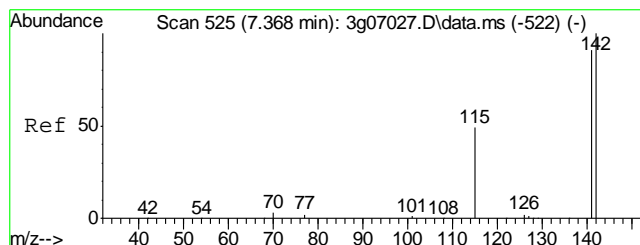
Tgt Ion:172 Resp: 5758126
Ion Ratio Lower Upper
172 100
171 33.0 12.9 52.9



#8
2-Methylnaphthalene
Concen: 0.01 ug/mL
RT: 7.393 min Scan# 527
Delta R.T. 0.000 min
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

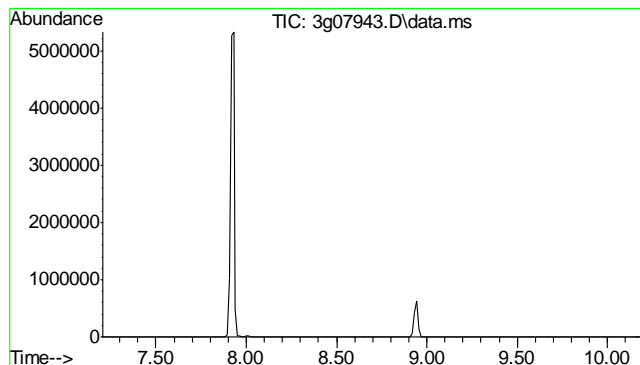
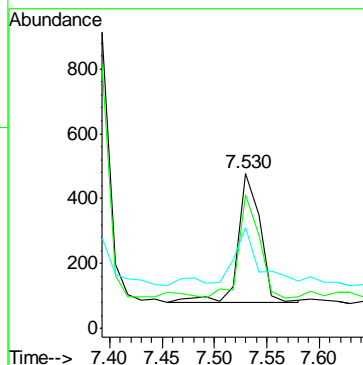
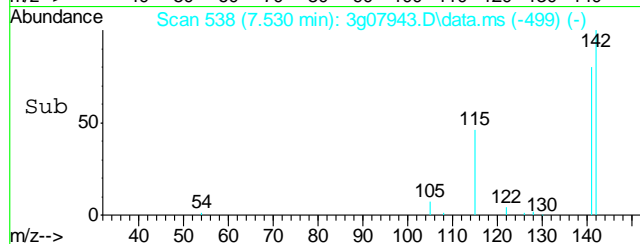
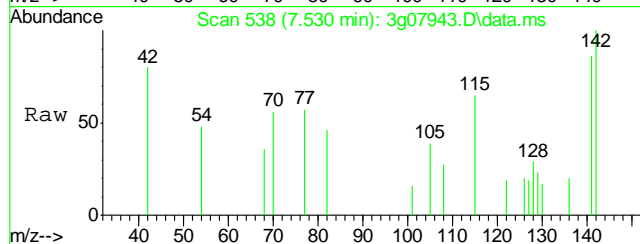
Tgt Ion:142 Resp: 1160
Ion Ratio Lower Upper
142 100
141 91.6 62.6 102.6
115 44.4 13.5 53.5





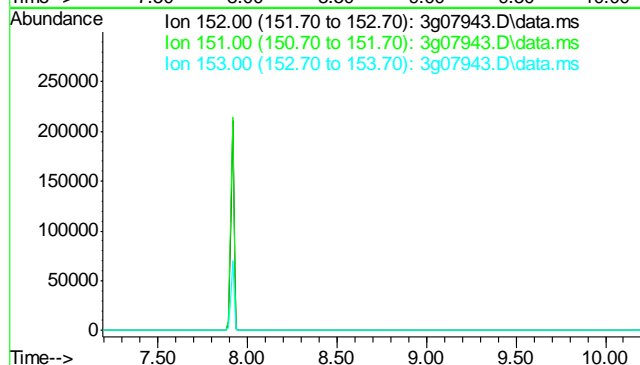
#9
1-Methylnaphthalene
Concen: 0.00 ug/mL
RT: 7.530 min Scan# 538
Delta R.T. -0.012 min
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

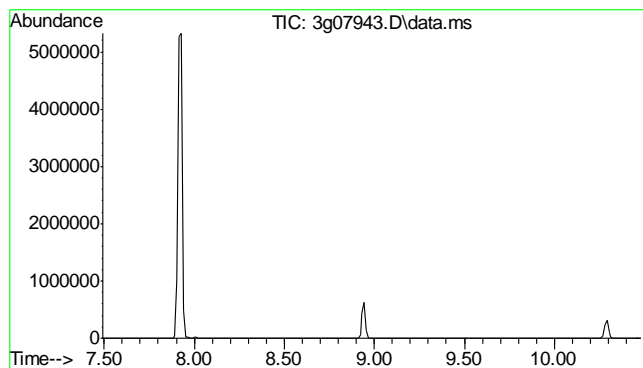
Tgt Ion: 142 Resp: 595
Ion Ratio Lower Upper
142 100
141 73.9 66.1 106.1
115 0.0 16.0 56.0#



#10
Acenaphthylene
Concen: N.D. ug/mL
Expected RT: 8.70 min
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

Tgt Ion: 152
Sig Exp Ratio
152 100
151 18.7
153 12.9

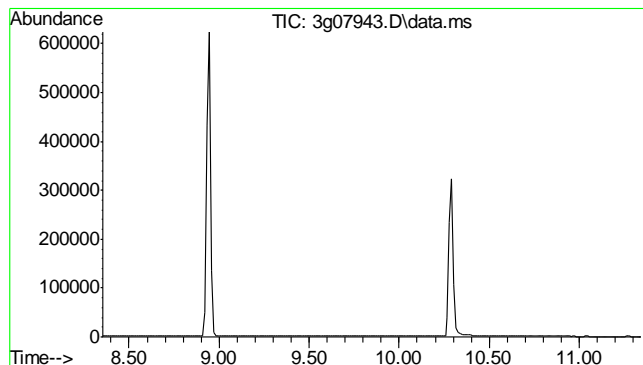
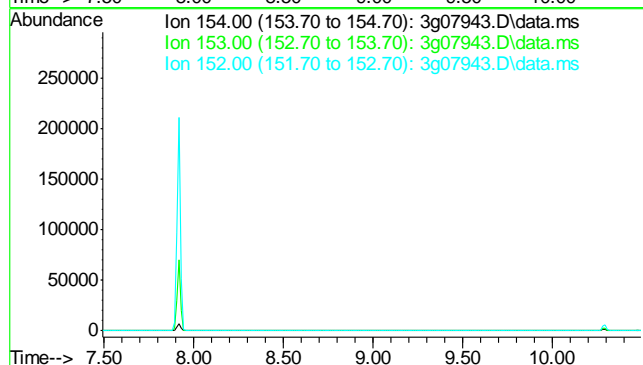




#11
Acenaphthene
Concen: N.D. ug/mL
Expected RT: 8.99 min

Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

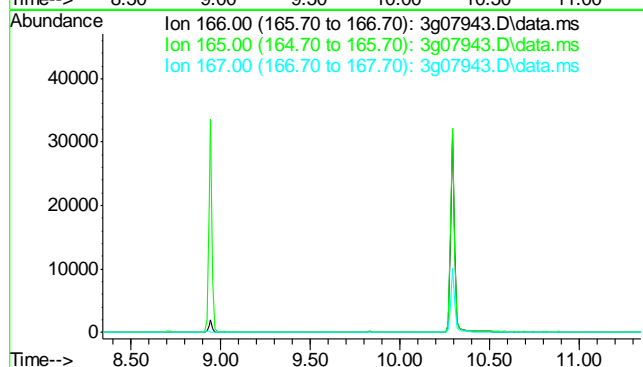
Tgt Ion:	154
Sig	Exp Ratio
154	100
153	103.9
152	49.2

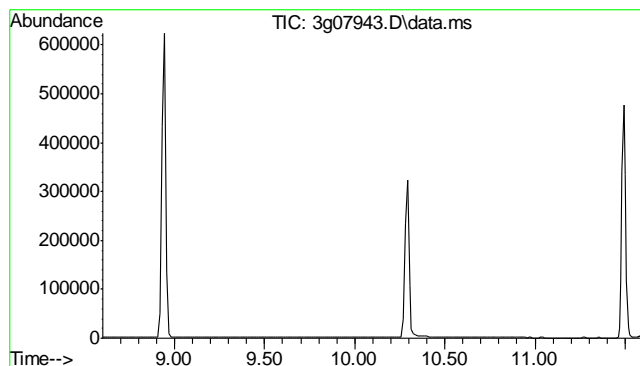


#12
Fluorene
Concen: N.D. ug/mL
Expected RT: 9.84 min

Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

Tgt Ion:	166
Sig	Exp Ratio
166	100
165	90.9
167	13.1

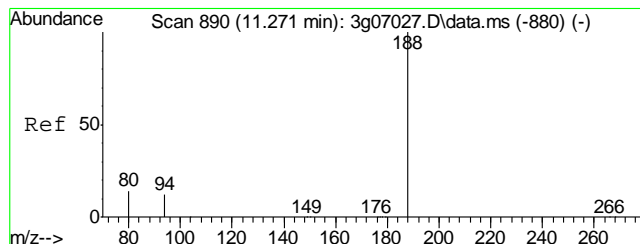
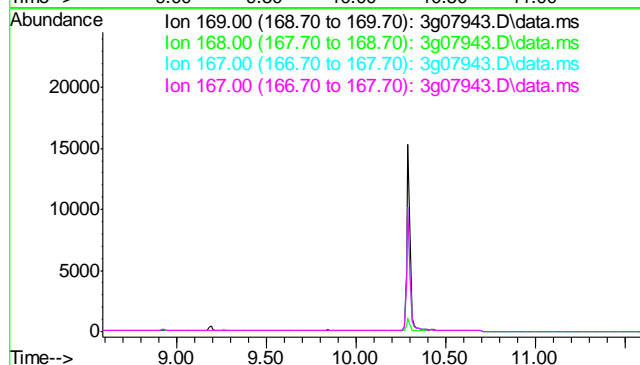




#13
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 10.09 min

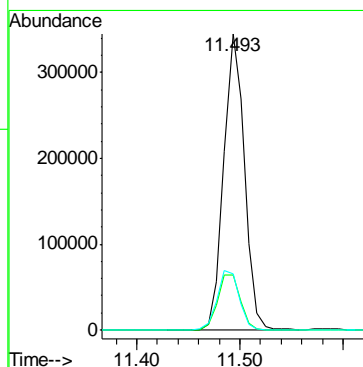
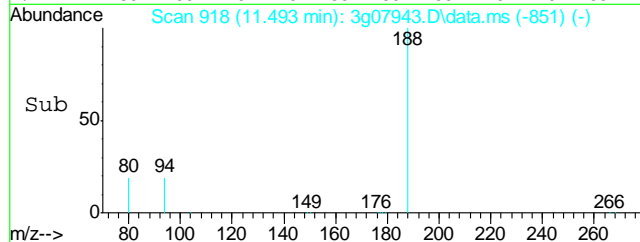
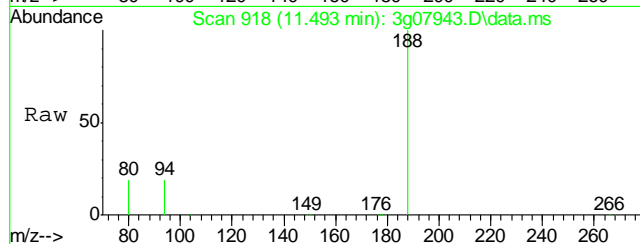
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

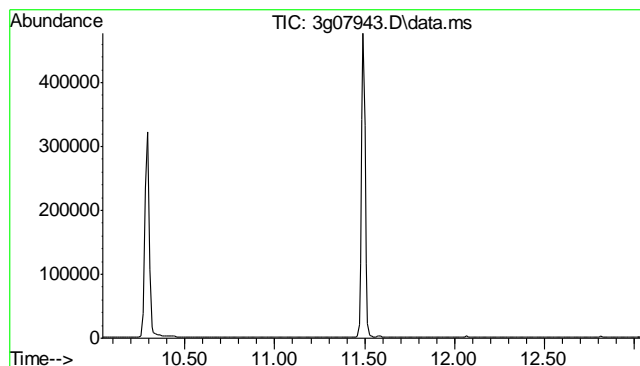
Tgt Ion:	169
Sig	Exp Ratio
169	100
168	61.2
167	33.1
167	33.1



#14
Phenanthrene-d10
Concen: 4.00 ug/mL
RT: 11.493 min Scan# 918
Delta R.T. -0.008 min
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

Tgt Ion:	188	Resp:	480475
Ion	Ratio	Lower	Upper
188	100		
94	20.4	0.0	39.4
80	21.1	0.2	40.2

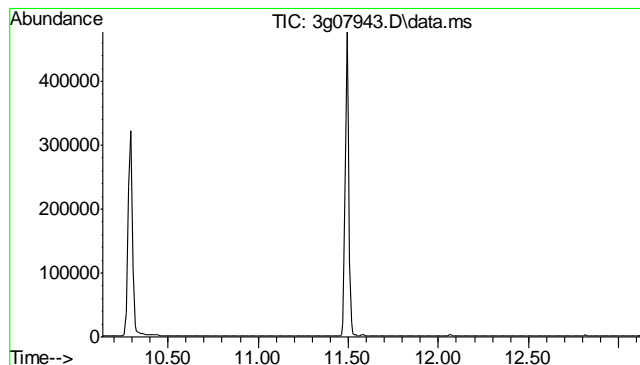
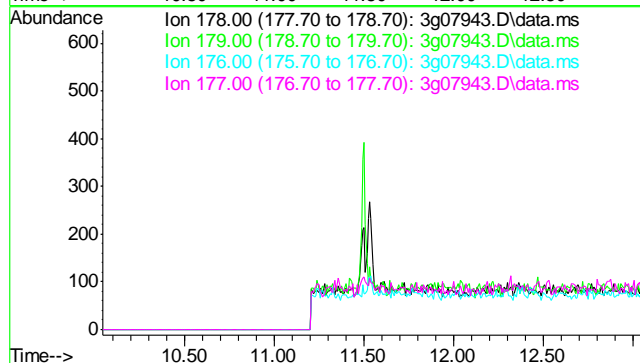




#15
Phenanthrene
Concen: N.D. ug/mL
Expected RT: 11.54 min

Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

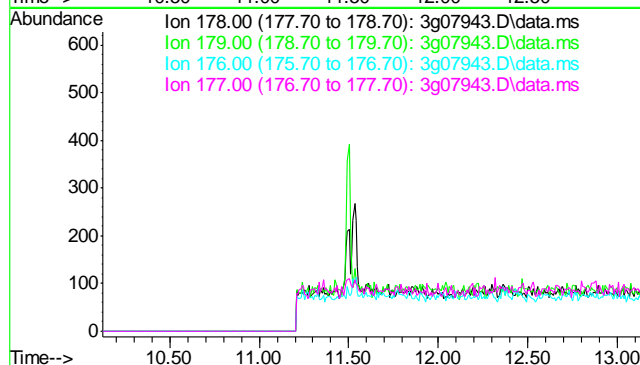
Tgt Ion:	178
Sig	Exp Ratio
178	100
179	15.1
176	18.4
177	10.1

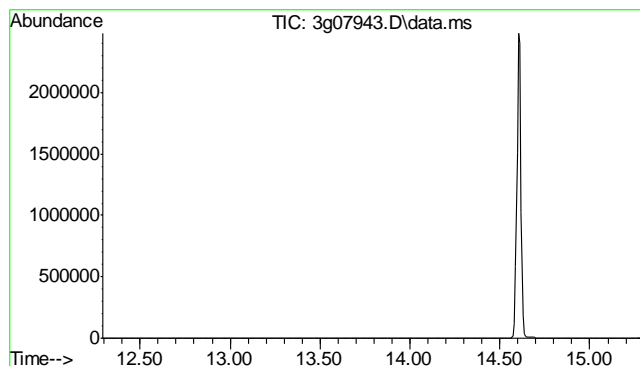


#16
Anthracene
Concen: N.D. ug/mL
Expected RT: 11.63 min

Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

Tgt Ion:	178
Sig	Exp Ratio
178	100
179	15.0
176	17.6
177	8.6

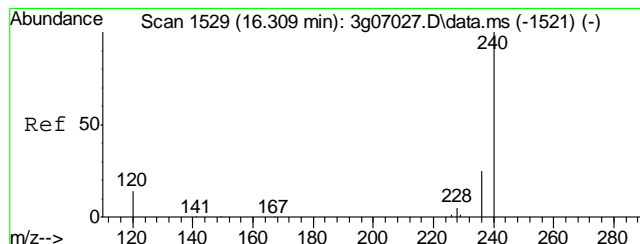
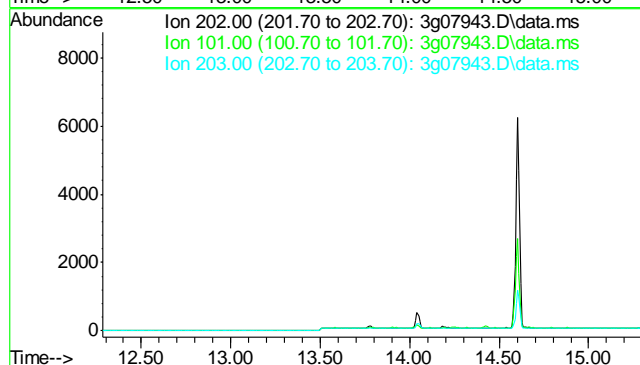




#17
Fluoranthene
Concen: N.D. ug/mL
Expected RT: 13.79 min

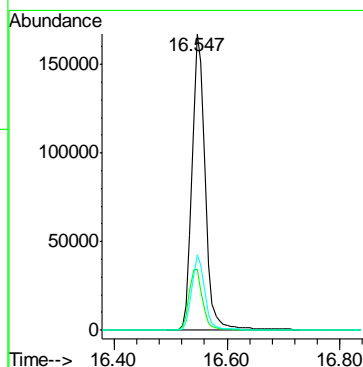
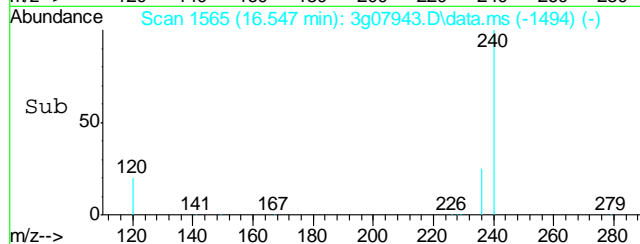
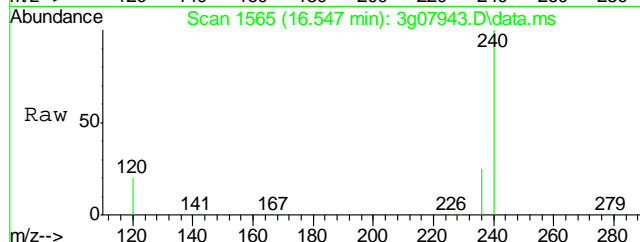
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

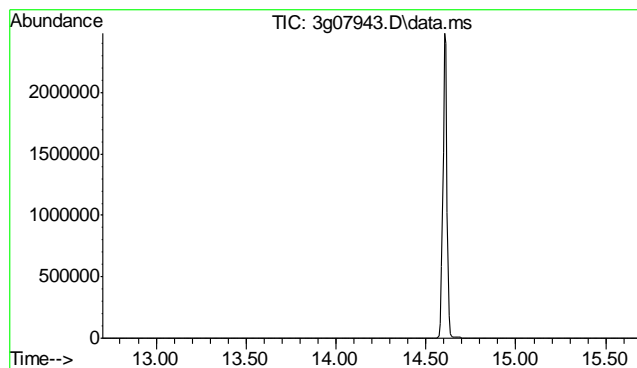
Tgt Ion:	202
Sig	Exp Ratio
202	100
101	19.8
203	17.2



#18
Chrysene-d12
Concen: 4.00 ug/mL
RT: 16.547 min Scan# 1565
Delta R.T. -0.007 min
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

Tgt Ion:	240	Resp:	270777
Ion	Ratio	Lower	Upper
240	100		
120	21.2	10.4	50.4
236	25.1	5.8	45.8

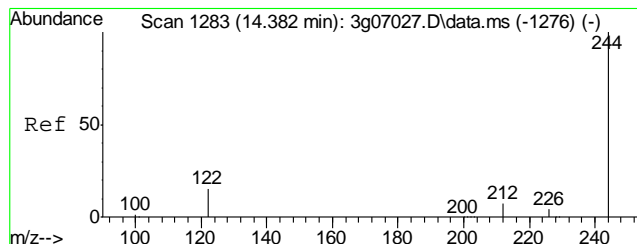
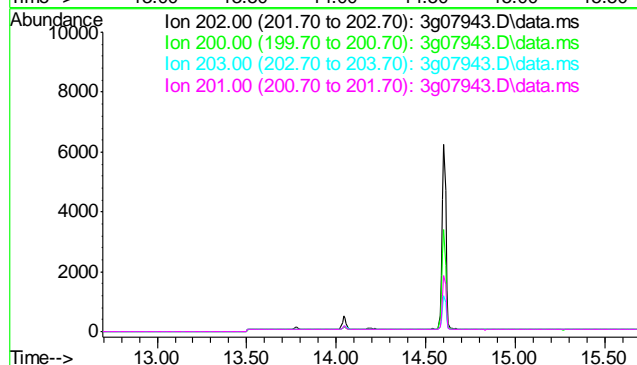




#19
Pyrene
Concen: N.D. ug/mL
Expected RT: 14.20 min

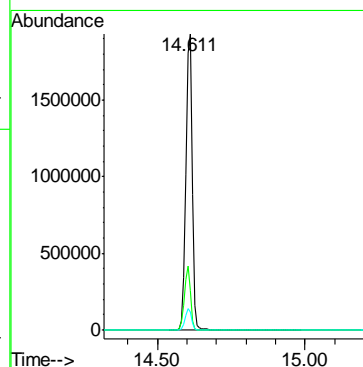
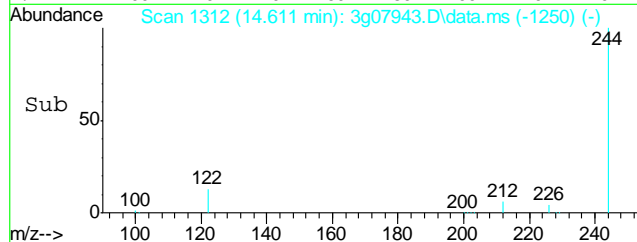
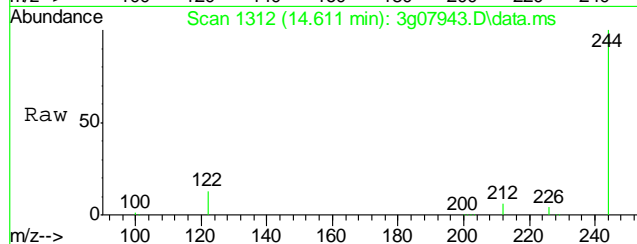
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

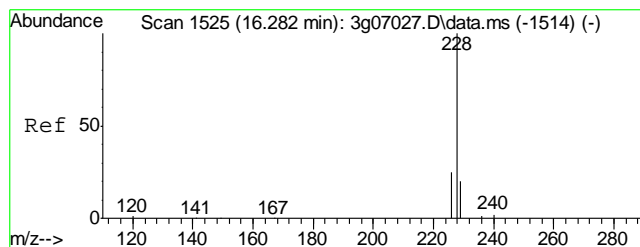
Tgt Ion:	202
Sig	Exp Ratio
202	100
200	20.1
203	17.8
201	16.5



#20
Terphenyl-d14
Concen: 53.48 ug/mL
RT: 14.611 min Scan# 1312
Delta R.T. -0.008 min
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

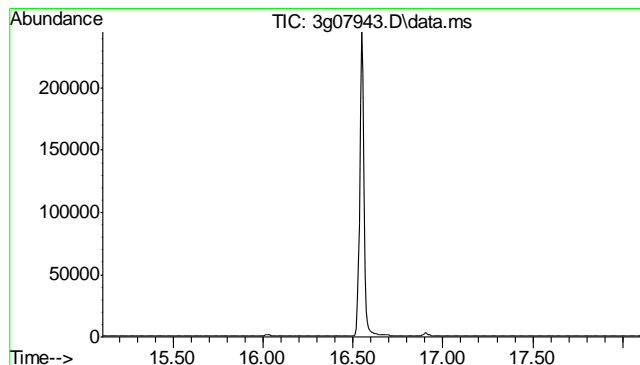
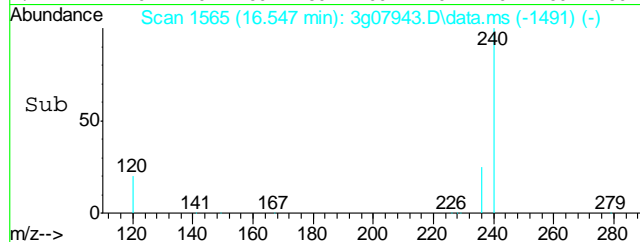
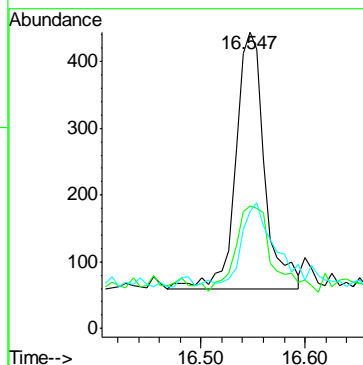
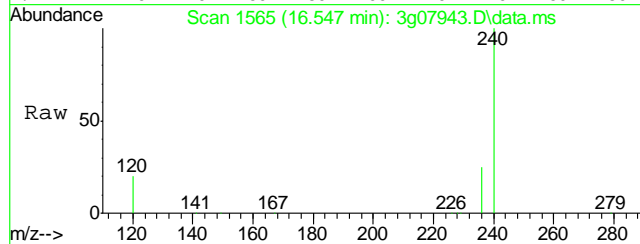
Tgt Ion:	244	Resp:	3001980
Ion	Ratio	Lower	Upper
244	100		
122	20.8	9.9	49.9
212	7.2	0.0	27.9





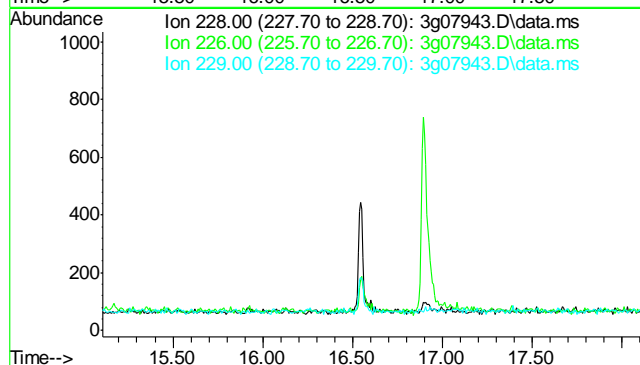
#21
Benzo(a)anthracene
Concen: 0.01 ug/mL
RT: 16.547 min Scan# 1565
Delta R.T. 0.020 min
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

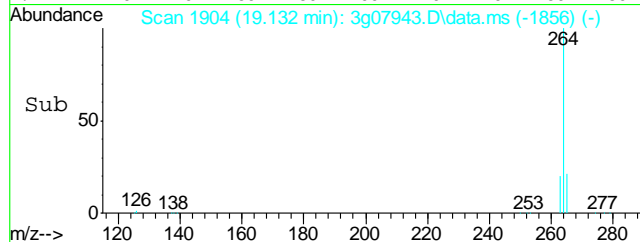
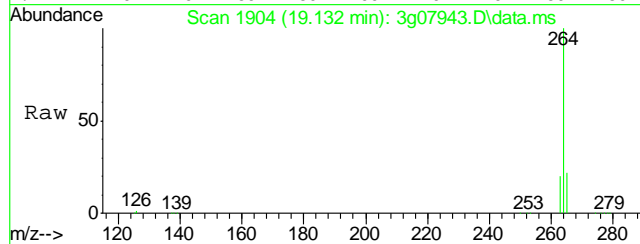
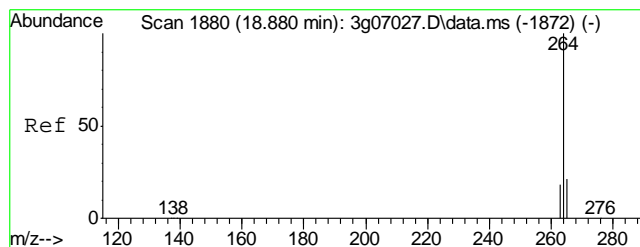
Tgt Ion	Ratio	Lower	Upper
228	100		
229	42.4	0.0	39.6
226	34.6	6.2	46.2



#22
Chrysene
Concen: N.D. ug/mL
Expected RT: 16.61 min
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

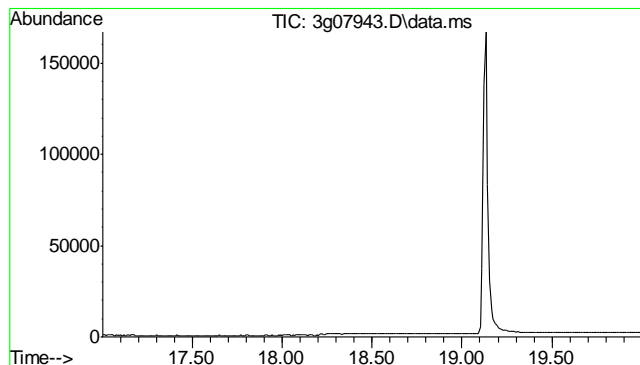
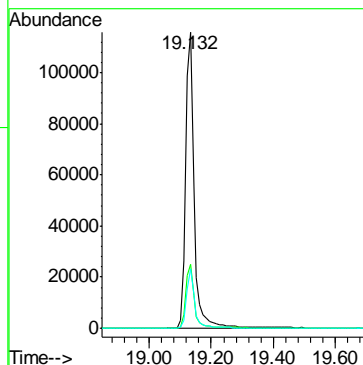
Tgt Ion	Sig	Exp Ratio
228	100	
226	28.7	
229	19.3	





#23
Perylene-d12
Concen: 4.00 ug/mL
RT: 19.132 min Scan# 1904
Delta R.T. 0.000 min
Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

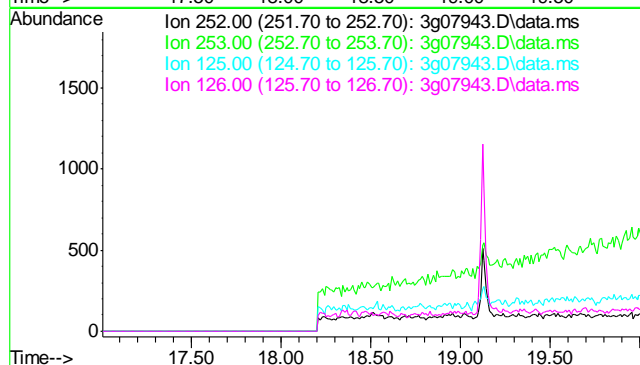
Tgt Ion:	264	Resp:	224462
Ion Ratio	Lower	Upper	
264	100		
265	21.3	1.1	41.1
263	19.2	0.0	39.2

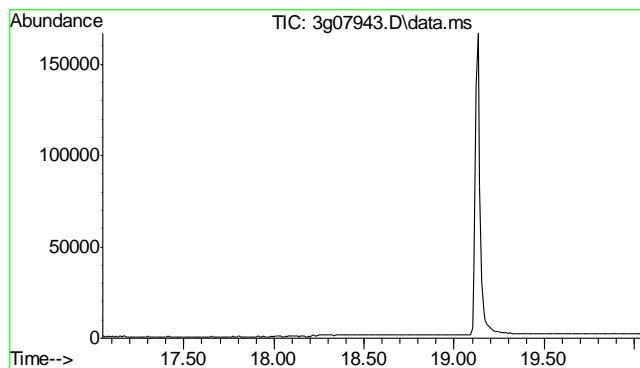


#24
Benzo(b)fluoranthene
Concen: N.D. ug/mL
Expected RT: 18.50 min

Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

Tgt Ion:	252
Sig	Exp Ratio
252	100
253	21.4
125	18.7
126	26.3

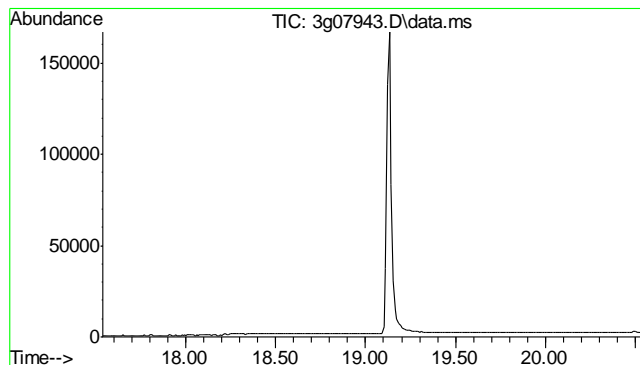
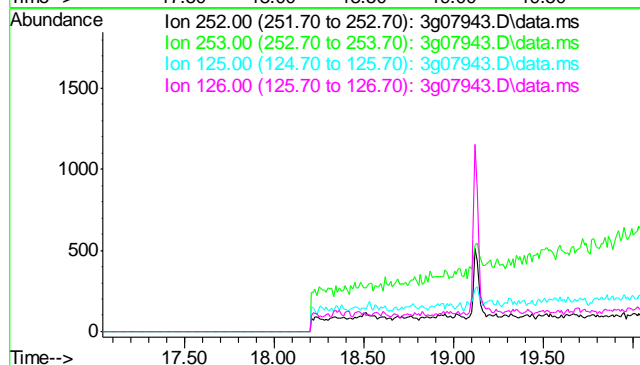




#25
Benzo(k)fluoranthene
Concen: N.D. ug/mL
Expected RT: 18.54 min

Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

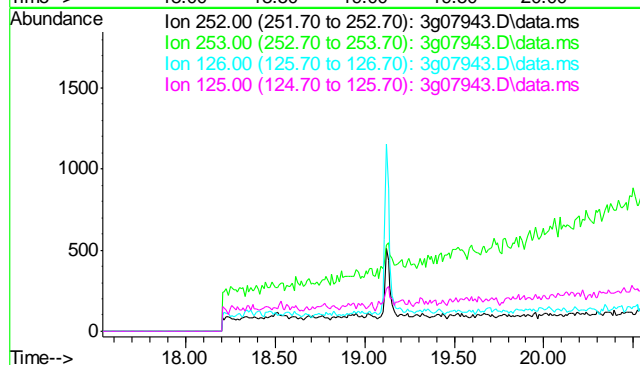
Tgt Ion:	252
Sig	Exp Ratio
252	100
253	21.6
125	22.6
126	35.2

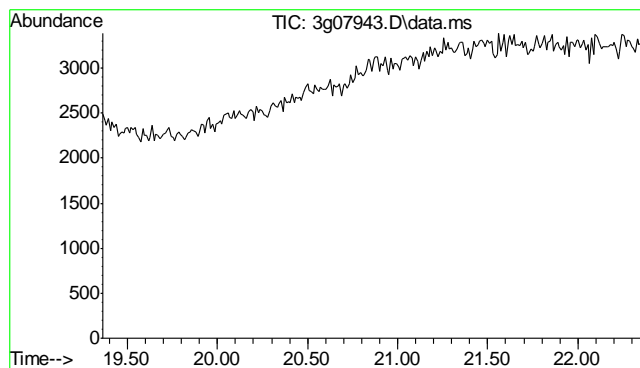


#26
Benzo(a)pyrene
Concen: N.D. ug/mL
Expected RT: 19.04 min

Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

Tgt Ion:	252
Sig	Exp Ratio
252	100
253	20.5
126	30.6
125	23.4

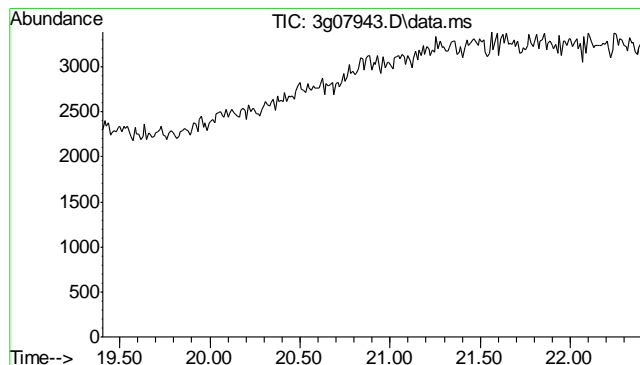
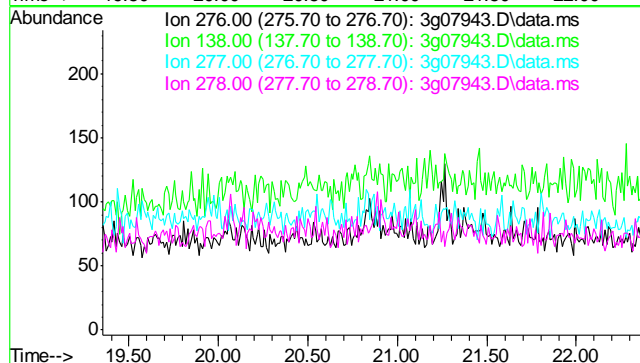




#27
Indeno(1,2,3-cd)pyrene
Concen: N.D. ug/mL
Expected RT: 20.86 min

Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

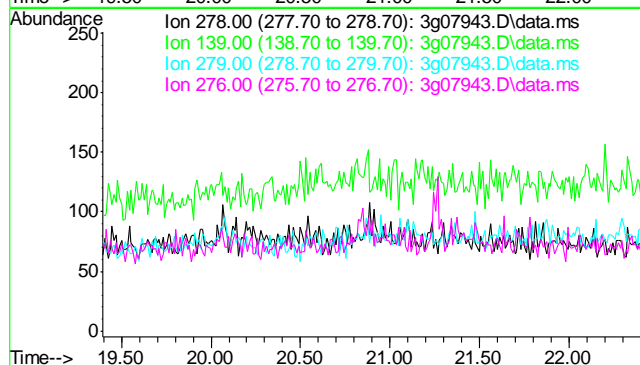
Tgt Ion:	276
Sig	Exp Ratio
276	100
138	20.3
277	25.0
278	79.9

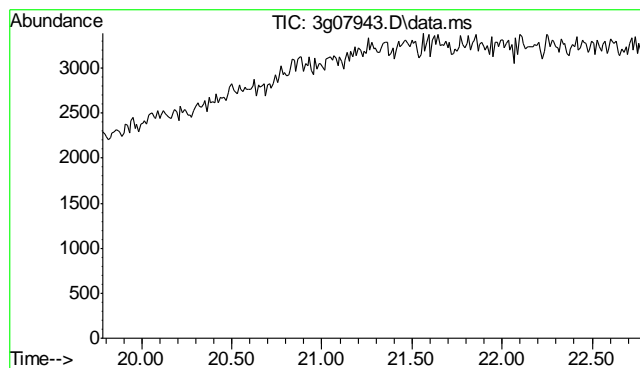


#28
Dibenz(a,h)anthracene
Concen: N.D. ug/mL
Expected RT: 20.90 min

Lab File: 3g07943.D
Acq: 14 Feb 12 11:12 am

Tgt Ion:	278
Sig	Exp Ratio
278	100
139	26.9
279	23.2
276	125.2





#29

Benzo(g,h,i)perylene

Concen: N.D. ug/mL

Expected RT: 21.28 min

Lab File: 3g07943.D

Acq: 14 Feb 12 11:12 am

Tgt Ion: 276

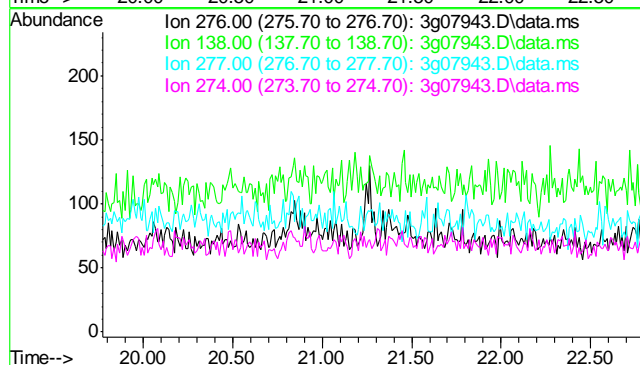
Sig Exp Ratio

276 100

138 32.8

277 23.5

274 20.8



8.2.1

8

GC Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D31778
Account: XTOKRWR XTO Energy
Project: PCU 296-7A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB838-MB	GB14834.D	1	02/13/12	SK	n/a	n/a	GGB838

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

D31778-1

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	116% 60-140%

9.1.1
9

Blank Spike Summary

Job Number: D31778
Account: XTOKRWR XTO Energy
Project: PCU 296-7A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB838-BS	GB14835.D	1	02/13/12	SK	n/a	n/a	GGB838

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

D31778-1

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

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	124%	60-140%

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D31778
Account: XTOKRWR XTO Energy
Project: PCU 296-7A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D31777-2MS	GB14837.D	1	02/13/12	SK	n/a	n/a	GGB838
D31777-2MSD	GB14838.D	1	02/13/12	SK	n/a	n/a	GGB838
D31777-2	GB14836.D	1	02/13/12	SK	n/a	n/a	GGB838

The QC reported here applies to the following samples:

Method: SW846 8015B

D31778-1

CAS No.	Compound	D31777-2 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	14.1	J	163	172	97	173	98	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D31777-2	Limits
120-82-1	1,2,4-Trichlorobenzene	106%	112%	110%	60-140%

9.3.1

9

GC Volatiles

Raw Data

Judy Melson
02/14/12 12:56

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\021312\GB14842.D\FID1A.CH Vial: 18
 Signal #2 : Y:\1\DATA\021312\GB14842.D\FID2B.CH
 Acq On : 13 Feb 2012 8:34 pm Operator: StephK
 Sample : D31778-1, 50X Inst : GC/MS Ins
 Misc : GC2601,GGB838,5.058,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Feb 14 08:53:28 2012 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Tue Feb 14 08:52:56 2012
 Response via : Initial Calibration
 DataAcq Meth : TVB4.M

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

	Compound	R.T.	Response	Conc	Units	

System Monitoring Compounds						
2) S	1,2,4-Trichlorobenzene	14.35	2985513	102.051 %	m	
10) S	1,2,4-Trichlorobenzene (P)	14.34	43213825	188.017 %		
Target Compounds						
1) H	TVH-Gasoline	7.32	21283541	0.299 mg/L		
4) T	Methyl-t-butyl-ether	0.00	0	N.D. ug/L	d	
5) T	Benzene	4.12	130277	0.228 ug/L		
6) T	Toluene	7.62	399820	0.706 ug/L		
7) T	Ethylbenzene	10.25	354114	0.727 ug/L		
8) T	m,p-Xylene	10.44	2414663	3.899 ug/L		
9) T	o-Xylene	10.94	755562	1.339 ug/L		
11) T	Naphthalene	14.54	27319681	106.139 ug/L		

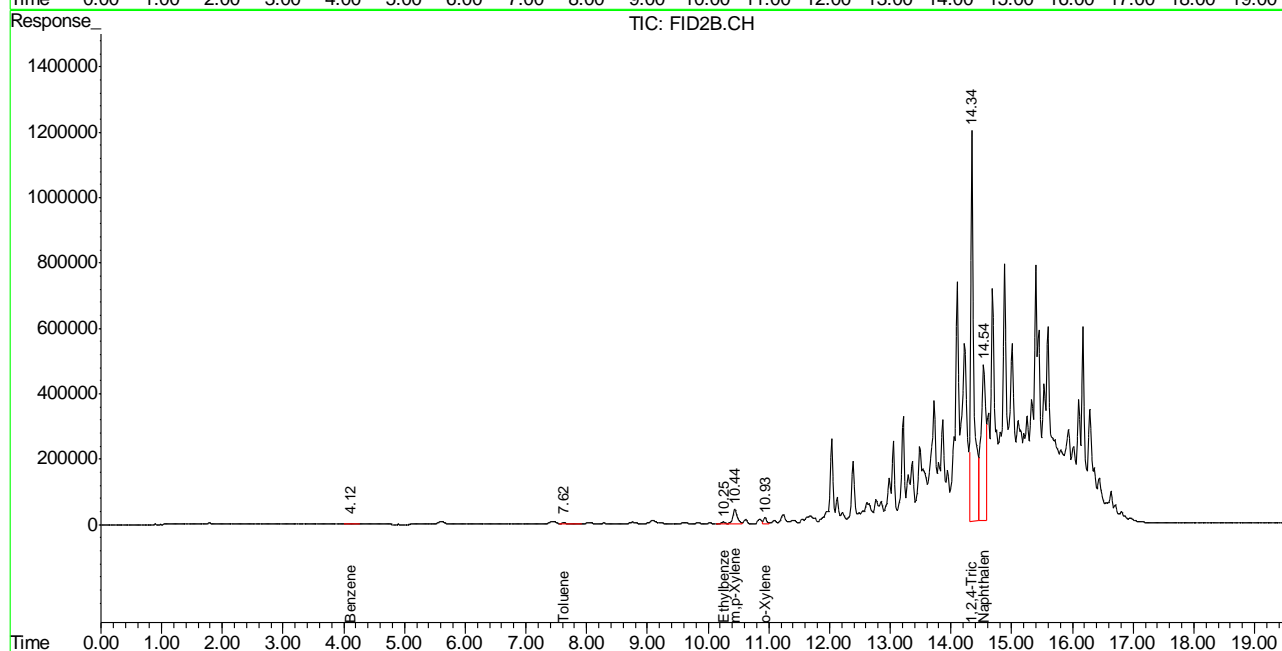
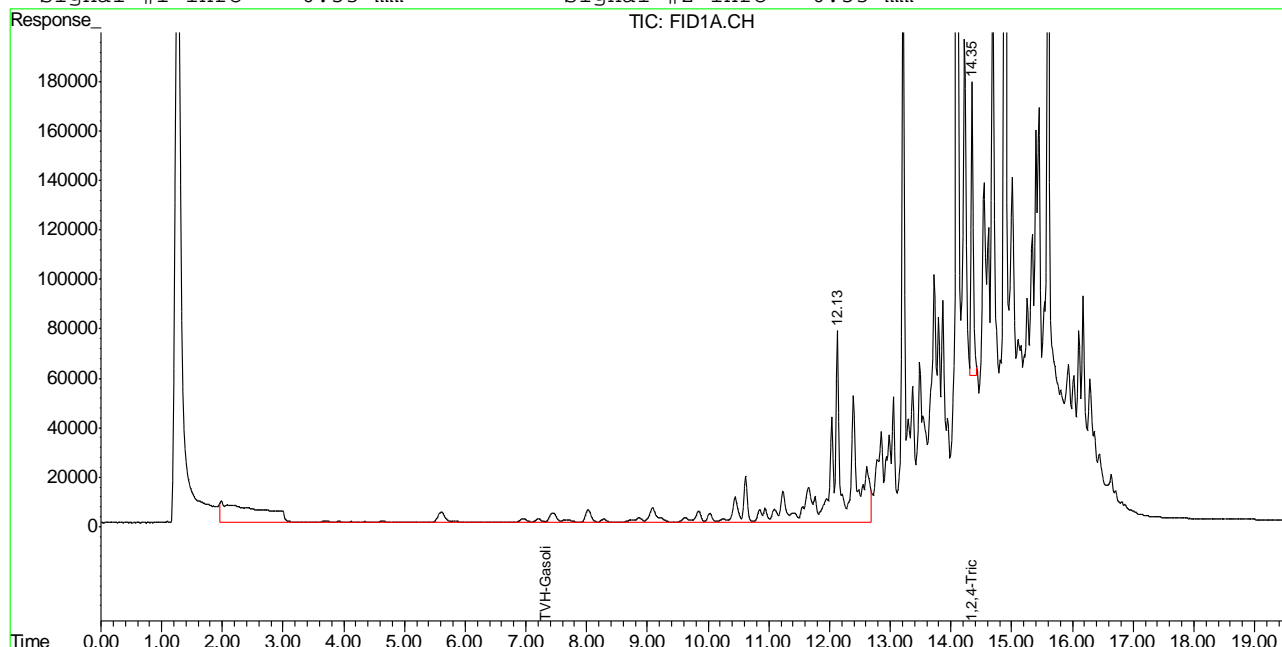
(f)=RT Delta > 1/2 Window (m)=manual int.
 GB14842.D TB791GB791SOIL.M Tue Feb 14 09:29:02 2012 GC

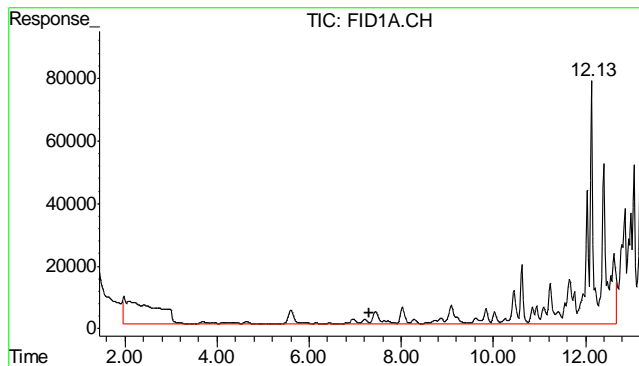
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\021312\GB14842.D\FID1A.CH Vial: 18
 Signal #2 : Y:\1\DATA\021312\GB14842.D\FID2B.CH
 Acq On : 13 Feb 2012 8:34 pm Operator: StephK
 Sample : D31778-1, 50X Inst : GC/MS Ins
 Misc : GC2601,GGB838,5.058,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Feb 14 8:21 2012 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Tue Feb 14 08:52:56 2012
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

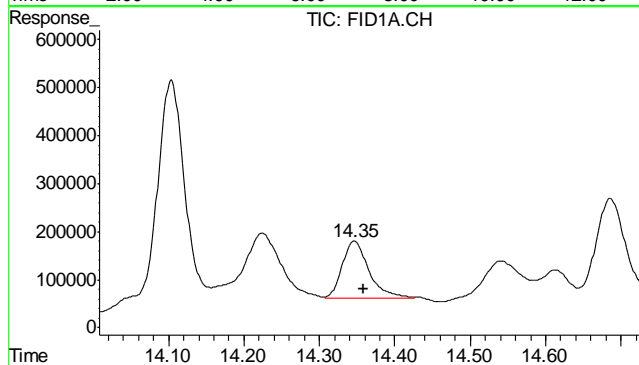
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





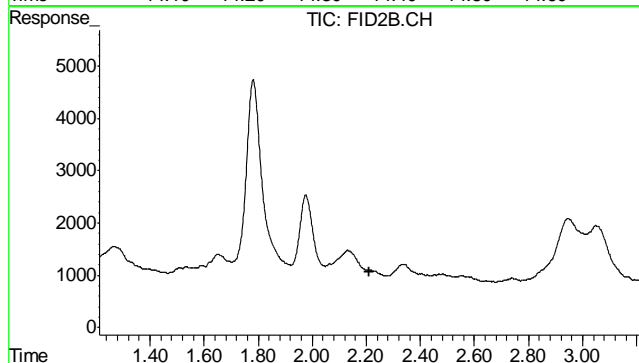
#1 TVH-Gasoline

R.T.: 7.315 min
Delta R.T.: 0.000 min
Response: 21283541
Conc: 0.30 mg/L m



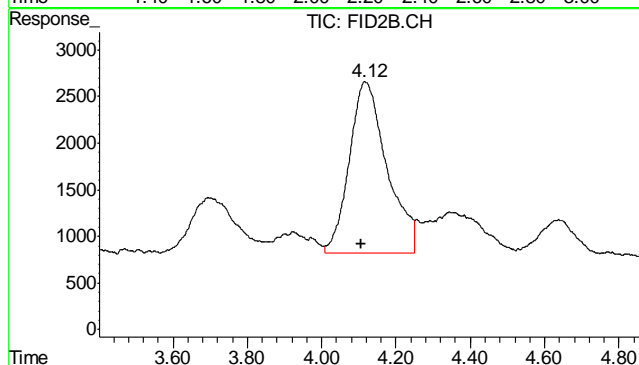
#2 1,2,4-Trichlorobenzene

R.T.: 14.345 min
Delta R.T.: -0.014 min
Response: 2985513
Conc: 102.05 % m



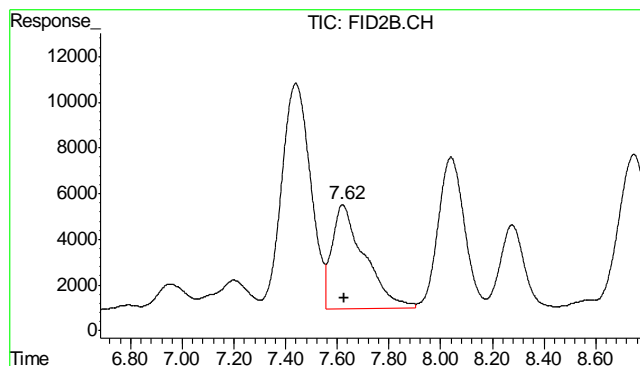
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T.: 2.212 min
Response: 0
Conc: N.D.



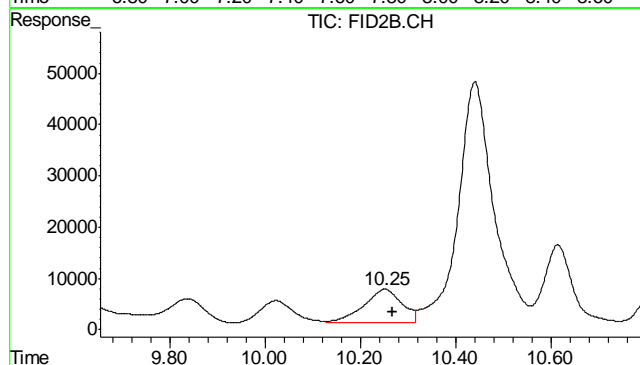
#5 Benzene

R.T.: 4.116 min
Delta R.T.: 0.011 min
Response: 130277
Conc: 0.23 ug/L



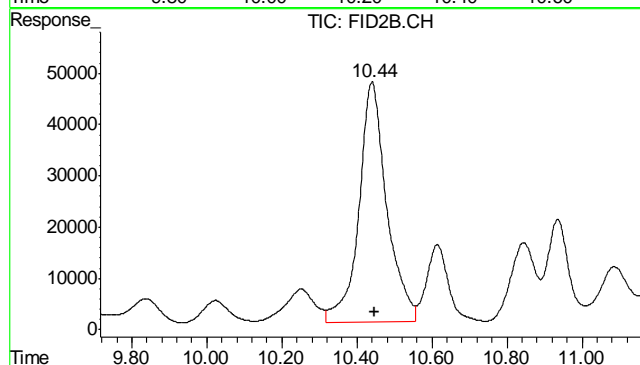
#6 Toluene

R.T.: 7.620 min
Delta R.T.: -0.008 min
Response: 399820
Conc: 0.71 ug/L



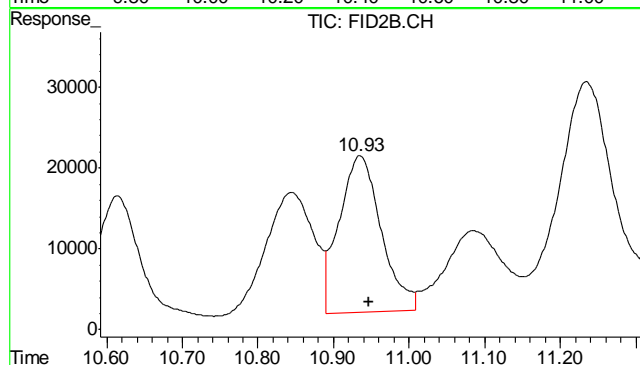
#7 Ethylbenzene

R.T.: 10.251 min
Delta R.T.: -0.015 min
Response: 354114
Conc: 0.73 ug/L



#8 m,p-Xylene

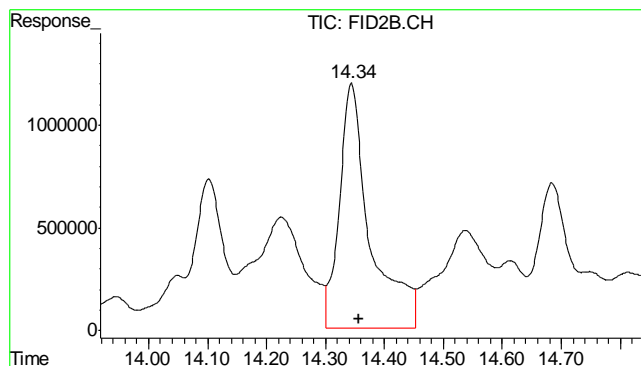
R.T.: 10.440 min
Delta R.T.: -0.008 min
Response: 2414663
Conc: 3.90 ug/L



#9 o-Xylene

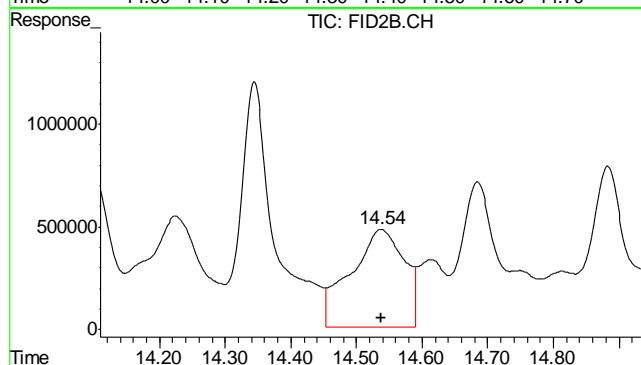
R.T.: 10.935 min
Delta R.T.: -0.012 min
Response: 755562
Conc: 1.34 ug/L

10.1.1
10



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

R.T.: 14.344 min
Delta R.T.: -0.012 min
Response: 43213825
Conc: 188.02 %



#11 Naphthalene

R.T.: 14.538 min
Delta R.T.: 0.000 min
Response: 27319681
Conc: 106.14 ug/L

10.1.1
10

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\021312\GB14834.D\FID1A.CH Vial: 10
 Signal #2 : Y:\1\DATA\021312\GB14834.D\FID2B.CH
 Acq On : 13 Feb 2012 3:45 pm Operator: StephK
 Sample : MB, S Inst : GC/MS Ins
 Misc : GC2601,GGB838,5.000,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Feb 14 08:52:02 2012 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Wed Feb 08 09:52:31 2012
 Response via : Initial Calibration
 DataAcq Meth : TVB4.M

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

	Compound	R.T.	Response	Conc	Units

System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.34	3407418	116.472	%
10) S	1,2,4-Trichlorobenzene (P)	14.34	27215414	118.410	%
Target Compounds					
1) H	TVH-Gasoline	7.32	4653492	<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	7.60	149844	0.264	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	14.51	307004	1.193	ug/L

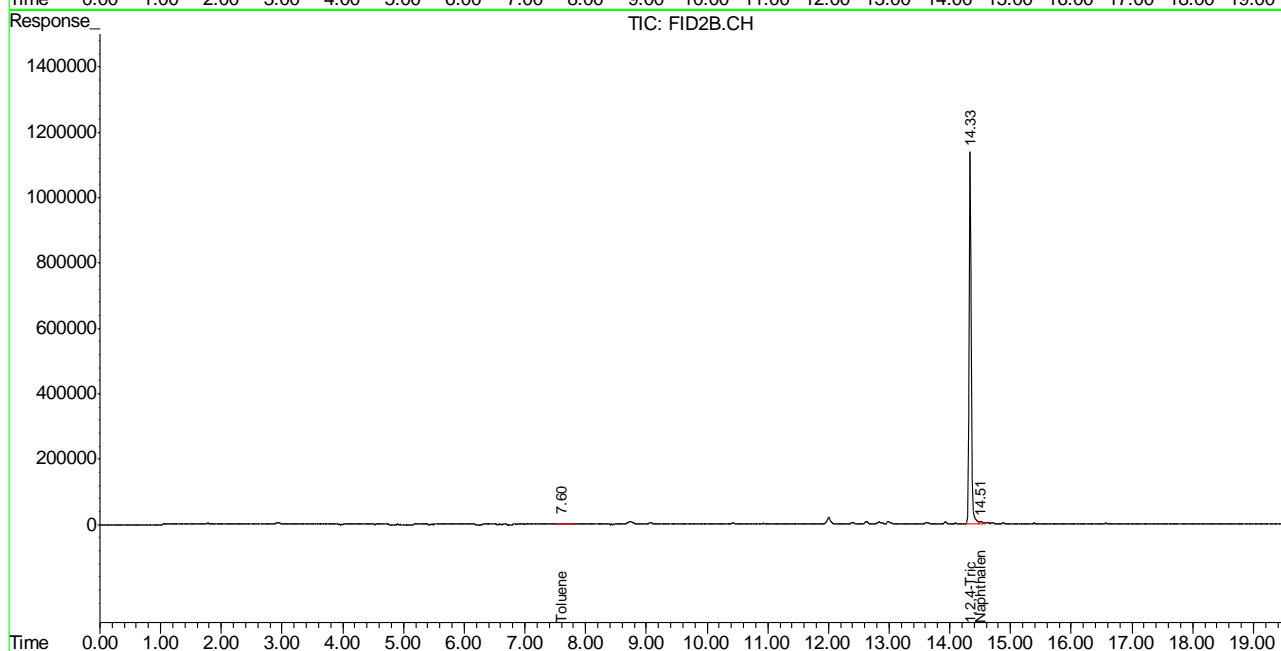
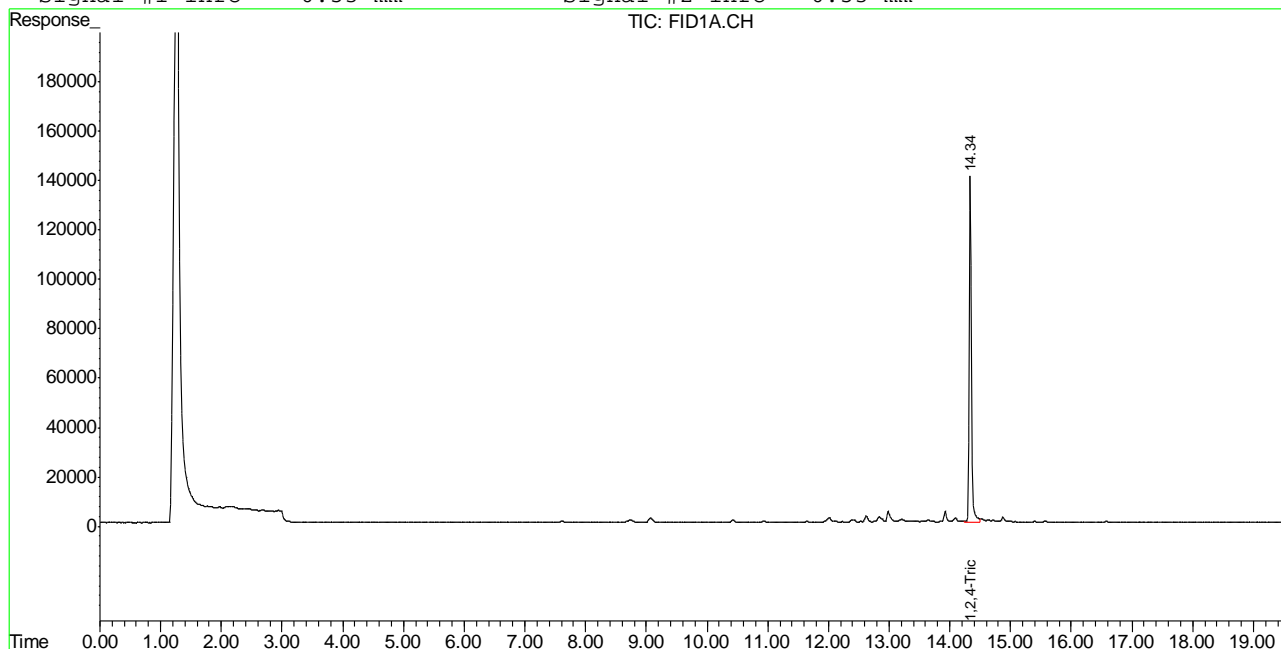
 (f)=RT Delta > 1/2 Window (m)=manual int.
 GB14834.D TB791GB791SOIL.M Tue Feb 14 09:28:38 2012 GC

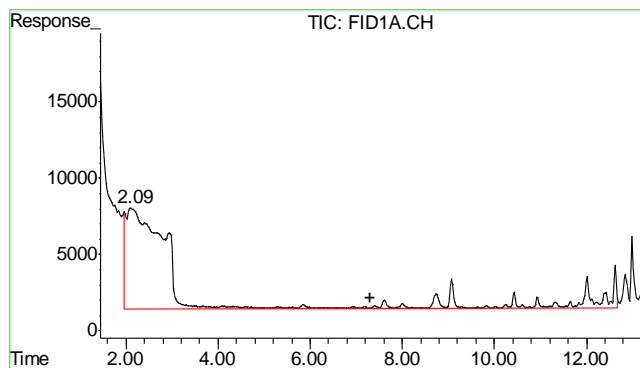
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\021312\GB14834.D\FID1A.CH Vial: 10
Signal #2 : Y:\1\DATA\021312\GB14834.D\FID2B.CH
Acq On : 13 Feb 2012 3:45 pm Operator: StephK
Sample : MB, S Inst : GC/MS Ins
Misc : GC2601,GGB838,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Feb 14 8:19 2012 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Wed Feb 08 09:52:31 2012
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

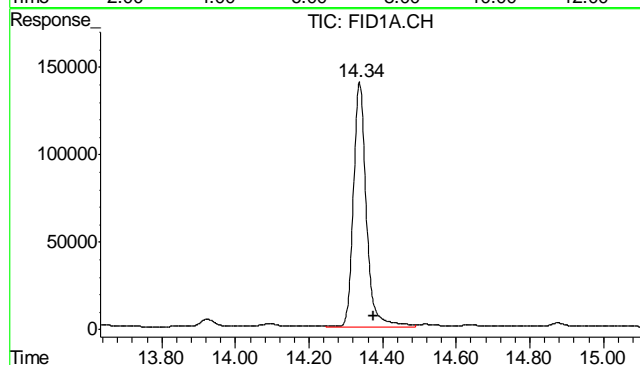
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





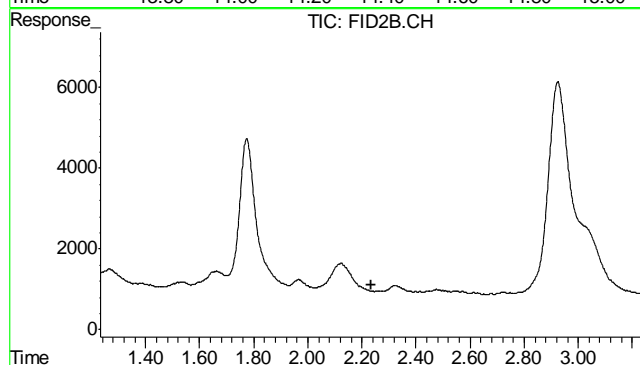
#1 TVH-Gasoline

R.T.: 7.315 min
Delta R.T.: 0.000 min
Response: 4653492
Conc: N.D.



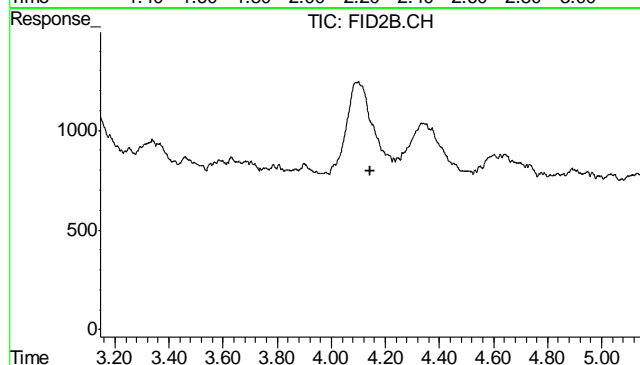
#2 1,2,4-Trichlorobenzene

R.T.: 14.337 min
Delta R.T.: -0.038 min
Response: 3407418
Conc: 116.47 %



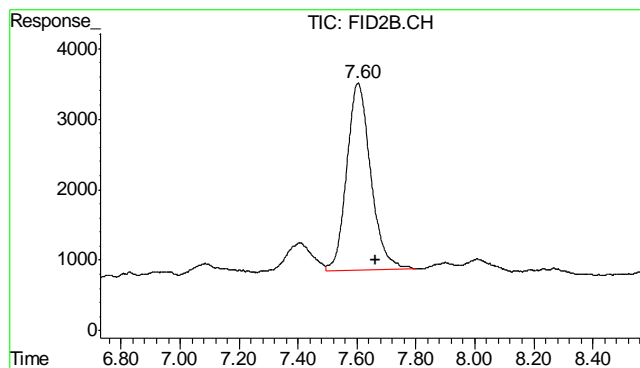
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T.: 2.233 min
Response: 0
Conc: N.D.



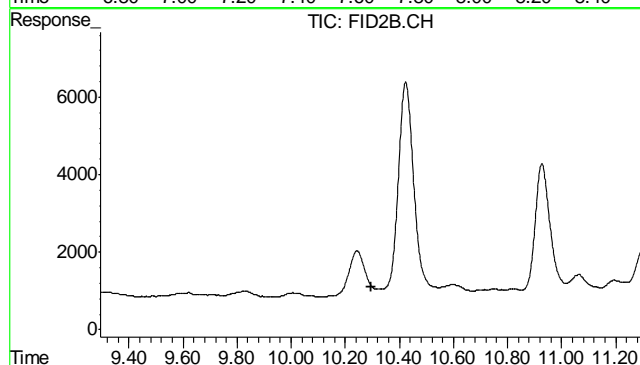
#5 Benzene

R.T.: 0.000 min
Exp R.T.: 4.145 min
Response: 0
Conc: N.D.



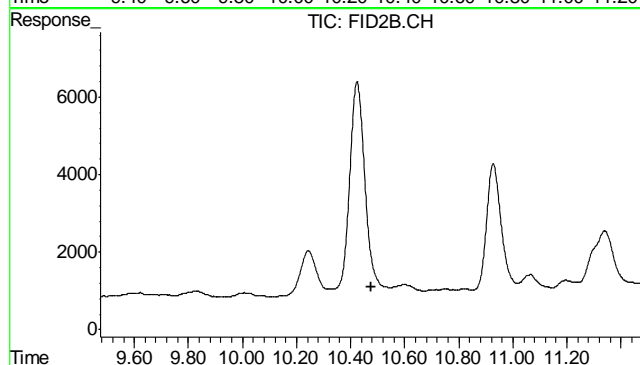
#6 Toluene

R.T.: 7.605 min
Delta R.T.: -0.061 min
Response: 149844
Conc: 0.26 ug/L



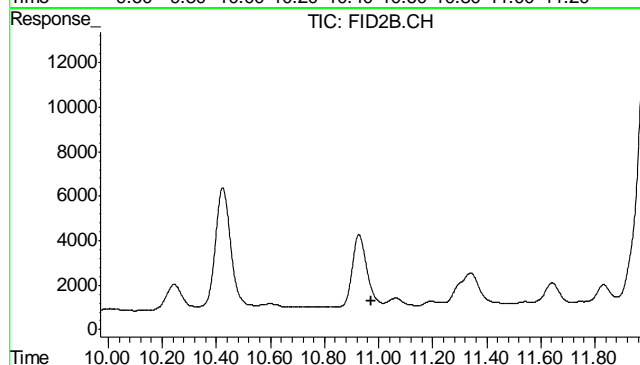
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T. : 10.295 min
Response: 0
Conc: N.D.



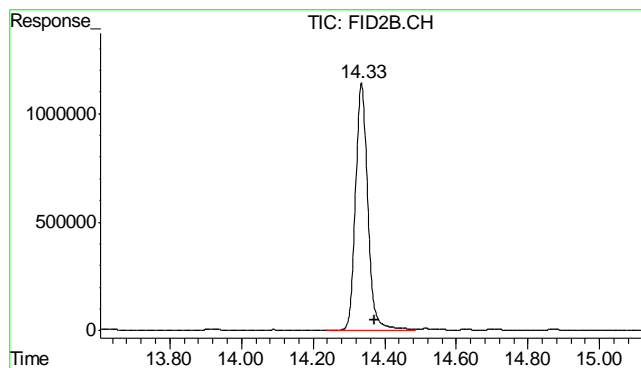
#8 m,p-Xylene

R.T.: 0.000 min
Exp R.T. : 10.475 min
Response: 0
Conc: N.D.



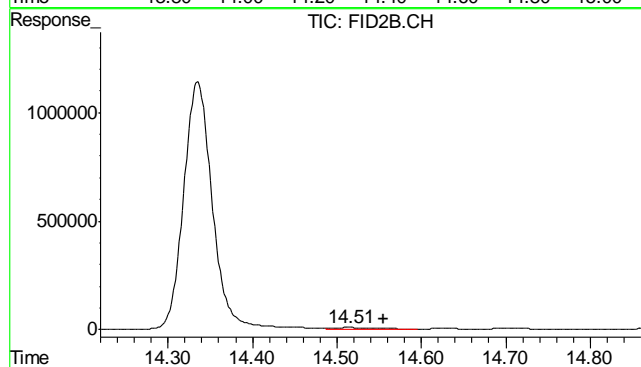
#9 o-Xylene

R.T.: 0.000 min
Exp R.T. : 10.971 min
Response: 0
Conc: N.D.



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

R.T.: 14.335 min
Delta R.T.: -0.037 min
Response: 27215414
Conc: 118.41 %



#11 Naphthalene

R.T.: 14.514 min
Delta R.T.: -0.041 min
Response: 307004
Conc: 1.19 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: D31778
Account: XTOKRWR XTO Energy
Project: PCU 296-7A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5344-MB	FH001239.D	1	02/13/12	TR	02/10/12	OP5344	GFH54

The QC reported here applies to the following samples:

Method: SW846-8015B

D31778-1

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	91% 43-136%

Blank Spike Summary

Page 1 of 1

Job Number: D31778
Account: XTOKRWR XTO Energy
Project: PCU 296-7A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5344-BS	FH001241.D	1	02/13/12	TR	02/10/12	OP5344	GFH54

The QC reported here applies to the following samples:

Method: SW846-8015B

D31778-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	562	84	58-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	89%	43-136%

11.2.1
11

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D31778
Account: XTOKRWR XTO Energy
Project: PCU 296-7A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5344-MS	FH001243.D	1	02/13/12	TR	02/10/12	OP5344	GFH54
OP5344-MSD	FH001296.D	1	02/14/12	TR	02/10/12	OP5344	GFH59
D31777-1	FH001247.D	1	02/13/12	TR	02/10/12	OP5344	GFH54

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

D31778-1

CAS No.	Compound	D31777-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	167		704	672	72	599	61	11	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D31777-1	Limits
84-15-1	o-Terphenyl	73%	75%	76%	43-136%

11.3.1
11

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH021212\
Data File : FH001255.D
Signal(s) : FID1A.ch
Acq On : 13 Feb 2012 7:15 am
Operator : tedr
Sample : D31778-1
Misc : OP5344,GFH54,30.03,,,2,1
ALS Vial : 81 Sample Multiplier: 1

Integration File: events.e
Quant Time: Feb 14 10:29:42 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH34F.M
Quant Title : DRO-ORO FRONT
QLast Update : Tue Jan 31 13:20:35 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
2) s o-Terphenyl	12.482	1232592942	838.453 ug/mlm
Target Compounds			
1) H TPH-DRO (C10-C28)	10.011	23868223257	19579.587 ug/ml

(f)=RT Delta > 1/2 Window

(m)=manual int.

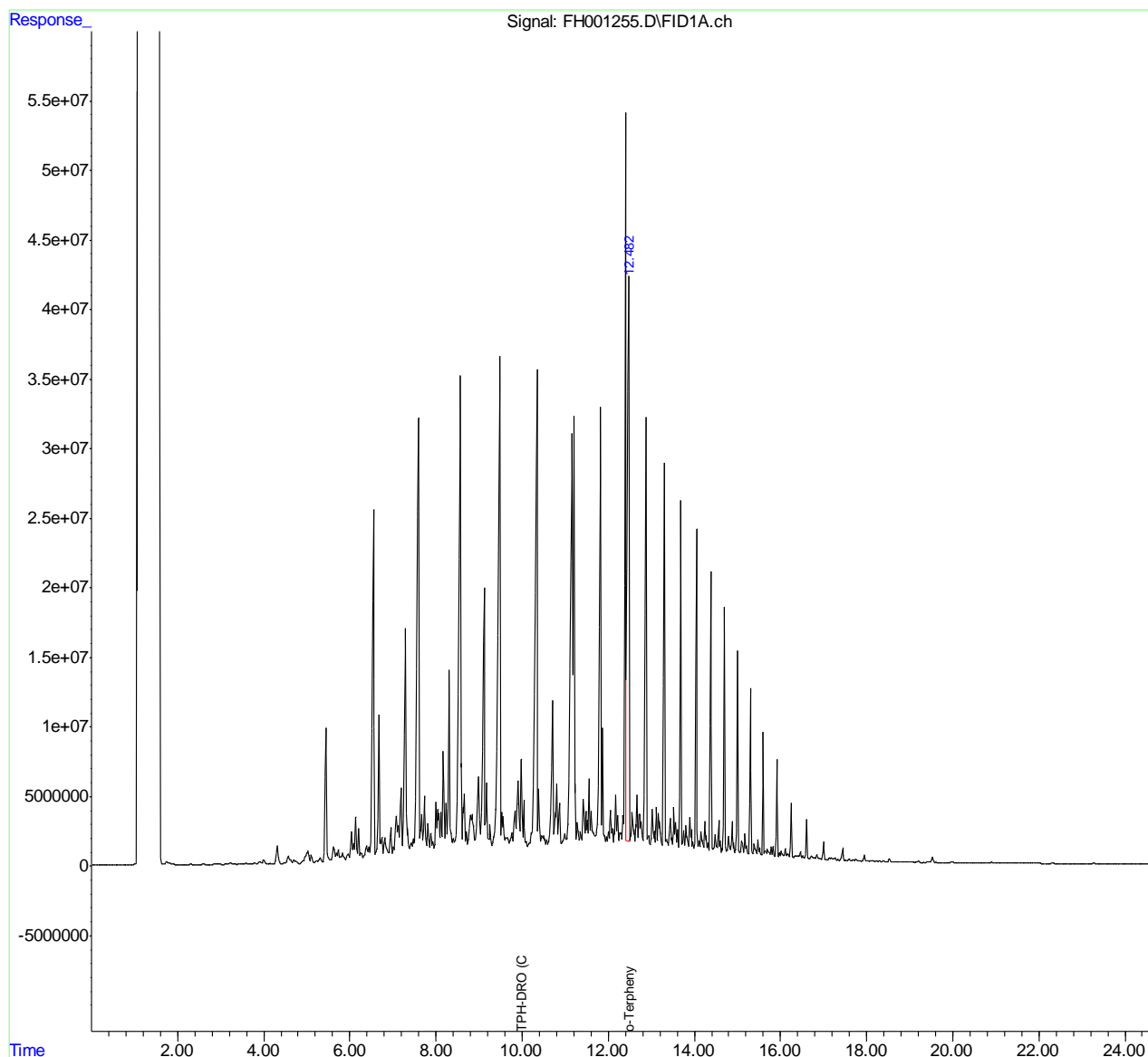
12.1.1
12

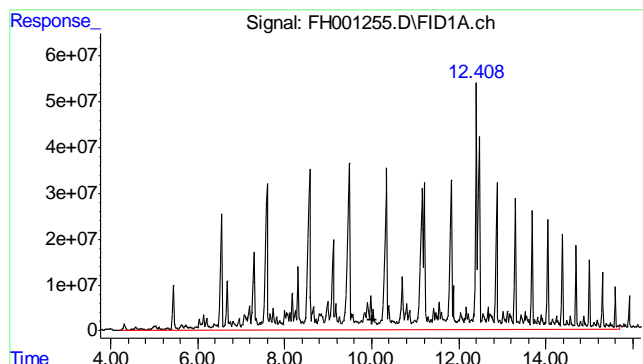
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH021212\
Data File : FH001255.D
Signal(s) : FID1A.ch
Acq On : 13 Feb 2012 7:15 am
Operator : tedr
Sample : D31778-1
Misc : OP5344,GFH54,30.03,,,2,1
ALS Vial : 81 Sample Multiplier: 1

Integration File: events.e
Quant Time: Feb 14 10:29:42 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH34F.M
Quant Title : DRO-ORO FRONT
QLast Update : Tue Jan 31 13:20:35 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :





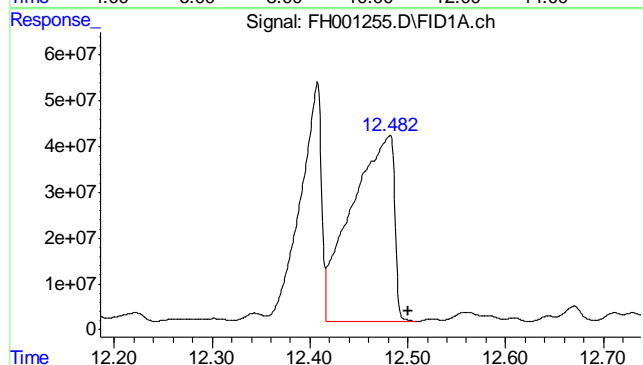
#1 TPH-DRO (C10-C28)

R.T.: 10.011 min

Delta R.T.: 0.000 min

Response: 23868223257

Conc: 19579.59 ug/ml m



#2 o-Terphenyl

R.T.: 12.482 min

Delta R.T.: -0.018 min

Response: 1232592942

Conc: 838.45 ug/ml m

12.1.1
12

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH021212\
Data File : FH001239.D
Signal(s) : FID1A.ch
Acq On : 13 Feb 2012 2:29 am
Operator : tedr
Sample : OP5344-MB
Misc : OP5344,GFH54,30.00,,,2,1
ALS Vial : 73 Sample Multiplier: 1

Integration File: events.e
Quant Time: Feb 14 10:22:32 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH34F.M
Quant Title : DRO-ORO FRONT
QLast Update : Tue Jan 31 13:20:35 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
2) s o-Terphenyl	12.469	1332745846	906.580 ug/ml
Target Compounds			
1) H TPH-DRO (C10-C28)	10.011	67854606	55.663 ug/ml

(f)=RT Delta > 1/2 Window

(m)=manual int.

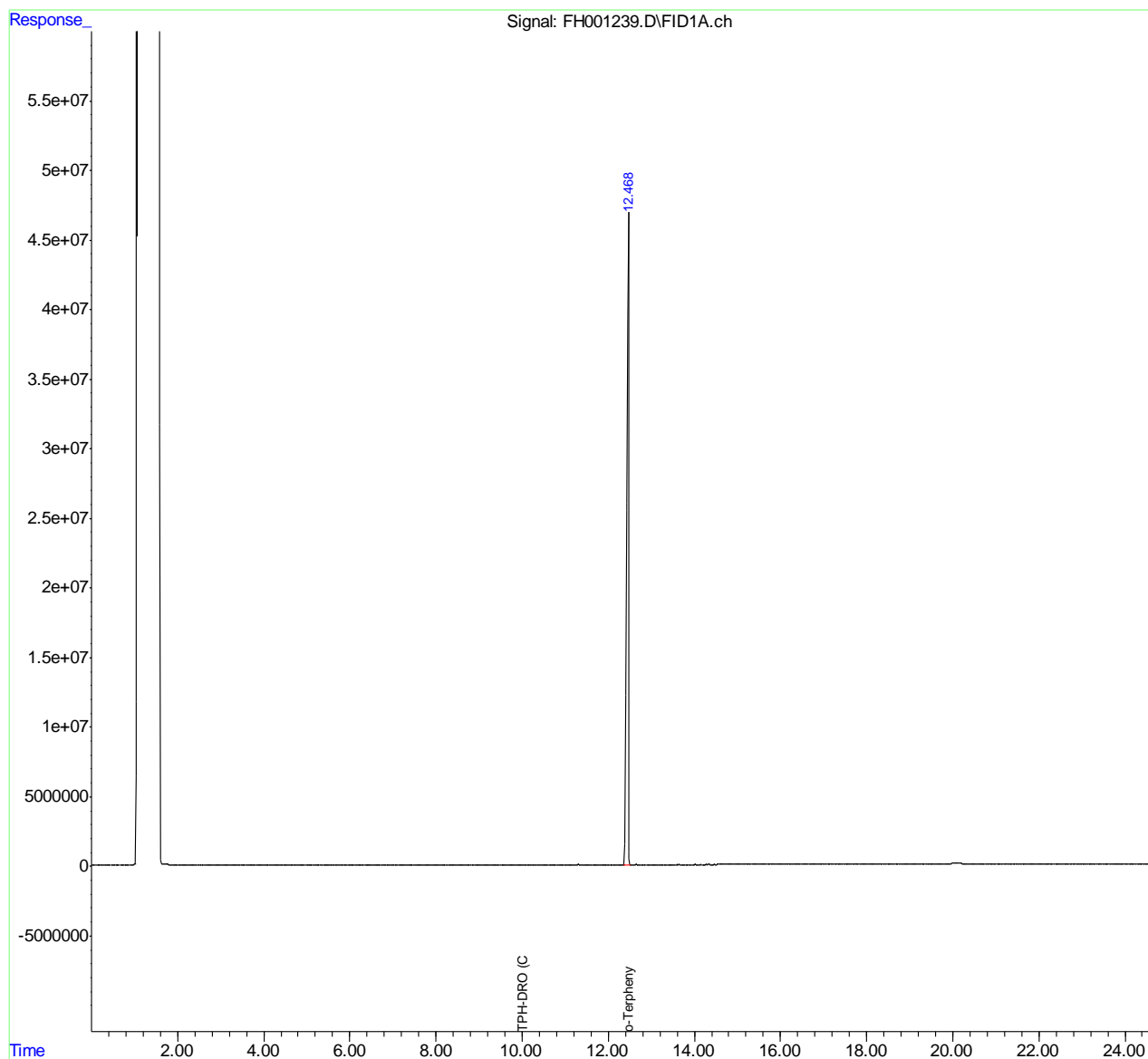
12.2.1
12

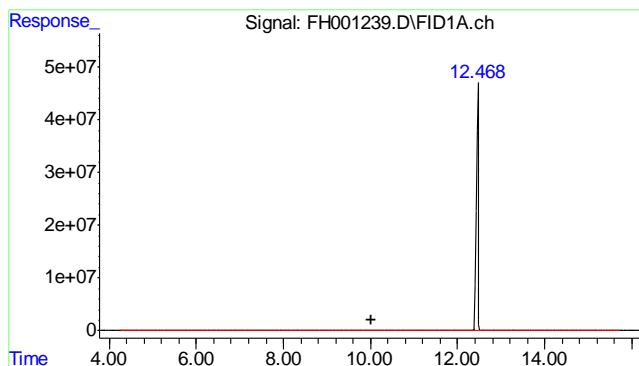
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH021212\
Data File : FH001239.D
Signal(s) : FID1A.ch
Acq On : 13 Feb 2012 2:29 am
Operator : tedr
Sample : OP5344-MB
Misc : OP5344,GFH54,30.00,,,2,1
ALS Vial : 73 Sample Multiplier: 1

Integration File: events.e
Quant Time: Feb 14 10:22:32 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH34F.M
Quant Title : DRO-ORO FRONT
QLast Update : Tue Jan 31 13:20:35 2012
Response via : Initial Calibration
Integrator: ChemStation

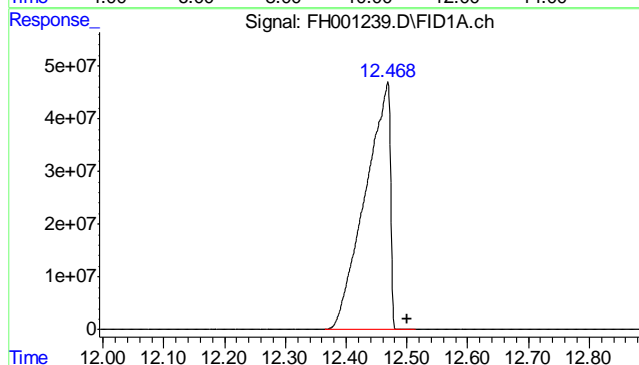
Volume Inj. :
Signal Phase :
Signal Info :





#1 TPH-DRO (C10-C28)

R.T.: 10.011 min
Delta R.T.: 0.000 min
Response: 67854606
Conc: 55.66 ug/ml m



#2 o-Terphenyl

R.T.: 12.469 min
Delta R.T.: -0.031 min
Response: 1332745846
Conc: 906.58 ug/ml

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: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6836
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 02/13/12

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.013	0.00067	<0.10

Associated samples MP6836: D31778-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31778
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-7A

QC Batch ID: MP6836
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 02/13/12

Metal	D31747-1		Spikelot		QC	
	Original	MS	HGWSR1	% Rec	Limits	
Mercury	0.0064	0.40	0.459	85.7	75-125	

Associated samples MP6836: D31778-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31778
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-7A

QC Batch ID: MP6836
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 02/13/12

Metal	D31747-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.0064	0.38	0.433	86.4	5.1	

Associated samples MP6836: D31778-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31778
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-7A

QC Batch ID: MP6836
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 02/13/12

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.36	0.4	90.0	80-120

Associated samples MP6836: D31778-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6839
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 02/13/12

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	0.40	<1.0
Beryllium	1.0	.044	.1		
Boron	5.0	.48	.48		
Cadmium	1.0	.027	.27	0.030	<1.0
Calcium	40	.96	1.1		
Chromium	1.0	.018	.031	0.050	<1.0
Cobalt	0.50	.035	.035		
Copper	1.0	.085	.16	0.50	* (a)
Iron	7.0	.34	2		
Lead	5.0	.16	.21	0.080	<5.0
Lithium	0.20	.028	.031		
Magnesium	20	.58	1.4		
Manganese	0.50	.0053	.012		
Molybdenum	1.0	.045	.054		
Nickel	3.0	.043	.099	0.090	<3.0
Phosphorus	10	1.1	1.2		
Potassium	200	5.5	9.2		
Selenium	5.0	.38	.5	1.2	<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	0.22	<3.0

Associated samples MP6839: D31778-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6839
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

(a) All sample results < RL or > 10x MB concentration.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6839
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 02/13/12

Metal	D31778-1 Original MS		Spikelot MPICPALL	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	3460	4230	253	304.1(a)	75-125
Beryllium					
Boron					
Cadmium	0.096	52.6	63.3	82.9	75-125
Calcium					
Chromium	45.2	101	63.3	88.2	75-125
Cobalt					
Copper	11.4	70.1	63.3	92.7	75-125
Iron					
Lead	9.8	114	127	82.0	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	19.1	69.0	63.3	78.8	75-125
Phosphorus					
Potassium					
Selenium	1.2	108	127	84.0	75-125
Silicon					
Silver	0.20	23.7	25.3	92.9	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	42.9	92.7	63.3	78.6N(b)	75-125

Associated samples MP6839: D31778-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6839
Matrix Type: SOLID

Methods: SW846 6010C
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.
(b) Spike recovery indicates possible matrix interference.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6839
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 02/13/12

Metal	D31778-1 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	3460	3500	251	16.0 (a)	18.9	20
Beryllium						
Boron						
Cadmium	0.096	52.7	62.7	83.9	0.2	20
Calcium						
Chromium	45.2	95.5	62.7	80.2	5.6	20
Cobalt						
Copper	11.4	70.4	62.7	94.1	0.4	20
Iron						
Lead	9.8	113	125	82.6	0.9	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	19.1	66.6	62.7	75.8	3.4	20
Phosphorus						
Potassium						
Selenium	1.2	107	125	84.6	0.9	20
Silicon						
Silver	0.20	23.7	25.1	93.6	0.0	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	42.9	93.1	62.7	80.0	0.4	20

Associated samples MP6839: D31778-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6839
Matrix Type: SOLID

Methods: SW846 6010C
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.

13.2.2
13

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6839
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 02/13/12

Metal	BSP Result	Spikelot MPICPAL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	210	200	105.0	80-120
Beryllium				
Boron				
Cadmium	45.1	50	90.2	80-120
Calcium				
Chromium	48.3	50	96.6	80-120
Cobalt				
Copper	49.1	50	98.2	80-120
Iron				
Lead	92.6	100	92.6	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	45.7	50	91.4	80-120
Phosphorus				
Potassium				
Selenium	93.4	100	93.4	80-120
Silicon				
Silver	20.2	20	101.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	44.7	50	89.4	80-120

Associated samples MP6839: D31778-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6839
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6839
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 02/13/12

Metal	D31778-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	26900	30000	4.4	0-10
Beryllium				
Boron				
Cadmium	0.800	0.00		0-10
Calcium				
Chromium	375	413	3.5	0-10
Cobalt				
Copper	94.7	95.5	6.1	0-10
Iron				
Lead	81.5	76.5	10.1 (a)	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	158	180	2.0	0-10
Phosphorus				
Potassium				
Selenium	10.2	0.00		0-10
Silicon				
Silver	1.70	6.00	9.1	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	356	418	1.2	0-10

Associated samples MP6839: D31778-1

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

13.2.4
13

SERIAL DILUTION RESULTS SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6839
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

13.2.4
13

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6840
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 02/13/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.14	1.3		
Antimony	0.20	.001	.012		
Arsenic	0.40	.049	.1	-0.028	<0.40
Barium	1.0	.0035	.025		
Beryllium	0.10	.0075	.055		
Boron	20	.97	.6		
Cadmium	0.050	.023	.034		
Calcium	200	1.8	9.5		
Chromium	1.0	.021	.041		
Cobalt	0.10	.0033	.0085		
Copper	1.0	.011	.055		
Iron	20	.81	18		
Lead	0.25	.0012	.023		
Magnesium	50	.067	.6		
Manganese	0.50	.007	.039		
Molybdenum	0.50	.0044	.025		
Nickel	1.0	.0029	.031		
Phosphorus	30	1.8	3.5		
Potassium	100	2	6		
Selenium	0.20	.075	.19		
Silver	0.050	.0008	.022		
Sodium	250	.8	3		
Strontium	10	.004	.024		
Thallium	0.10	.015	.013		
Tin	5.0	.006	.15		
Titanium	1.0	.035	.12		
Uranium	0.25	.00038	.008		
Vanadium	2.0	.052	.19		
Zinc	5.0	.039	.23		

Associated samples MP6840: D31778-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6840
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 02/13/12

Metal	D31778-1 Original MS		Spikelot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic	2.6	97.9	127	75.3	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6840: D31778-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

13.3.2
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6840
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 02/13/12

Metal	D31778-1 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	2.6	97.2	125	75.5	0.7	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 MP6840: D31778-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6840
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 02/13/12

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	102	100	102.0	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 MP6840: D31778-1

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

13.3.3
13

SERIAL DILUTION RESULTS SUMMARY

Login Number: D31778
 Account: XTOKRWR - XTO Energy
 Project: PCU 296-7A

QC Batch ID: MP6840
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: ug/l

Prep Date: 02/13/12

Metal	D31778-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	21.6	29.9	38.7 (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 MP6840: D31778-1

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6851
Matrix Type: AQUEOUS

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

Prep Date: 02/14/12

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	10.0	<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	-11	<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	-300	<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 MP6851: D31778-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6851
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6851
Matrix Type: AQUEOUS

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

Prep Date: 02/14/12

Metal	D31737-5A Original MS		SpikeLot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	700000	828000	125000	102.4	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	57900	186000	125000	102.5	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	291000	423000	125000	105.6	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6851: D31778-1A

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

13.4.2
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6851
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

13.4.2
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6851
Matrix Type: AQUEOUS

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

Prep Date: 02/14/12

Metal	D31737-5A Original MSD	Spikelot MPICPALL % Rec	MSD RPD	QC Limit
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	700000	881000	125000	144.8(a) 6.2 20
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	57900	191000	125000	106.5 2.7 20
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	291000	441000	125000	120.0 4.2 20
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6851: D31778-1A

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

13.4.2
13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6851
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6851
Matrix Type: AQUEOUS

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

Prep Date: 02/14/12

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	135000	125000	108.0	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	129000	125000	103.2	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	131000	125000	104.8	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6851: D31778-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

QC Batch ID: MP6851
Matrix Type: AQUEOUS

Methods: SW846 6010C, 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: D31778
Account: XTOKRWR - XTO Energy
Project: PCU 296-7A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Specific Conductivity	GP6515/GN13692			umhos/cm	9967	9950	99.8	90-110%
pH	GN13645			su	8.00	7.95	99.4	99.3-100.7%

Associated Samples:
Batch GN13645: D31778-1
Batch GP6515: D31778-1
(*) Outside of QC limits

14.1
14

Misc. Forms

Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D31778

Client: AMS

Immediate Client Services Action Required: No

Date / Time Received: 2/11/2012

Delivery Method:

Client Service Action Required at Login: No

Project: XCRA

No. Coolers: 1

Airbill #'s:

Cooler Security

Y or N

Y or N

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

Cooler Temperature

Y or N

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

Quality Control Preservation

Y or N

N/A

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

Sample Integrity - Documentation

Y or N

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

Sample Integrity - Condition

Y or N

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

Sample Integrity - Instructions

Y or N N/A

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

Comments

General Chemistry

QC Data Summaries

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D31778
Account: ALMS - Accutest Mountain States
Project: XTOKRWR: XTO PCU 296-7A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP14155/GN37859	0.40	0.0	mg/kg	40	39.7	99.3	80-120%
Chromium, Hexavalent	GP14155/GN37859			mg/kg	902	968	107.3	80-120%

Associated Samples:
Batch GP14155: D31778-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D31778
Account: ALMS - Accutest Mountain States
Project: XTOKRWR: XTO PCU 296-7A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP14155/GN37859	D31778-1	mg/kg	0.56	0.53	5.5	0-20%

Associated Samples:
Batch GP14155: D31778-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D31778
Account: ALMS - Accutest Mountain States
Project: XTOKRWR: XTO PCU 296-7A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP14155/GN37859	D31778-1	mg/kg	0.56	49.4	50.7	101.4	75-125%
Chromium, Hexavalent	GP14155/GN37859	D31778-1	mg/kg	0.56	955	1070	111.9	75-125%

Associated Samples:

Batch GP14155: D31778-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits