

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



FOR OGCC USE ONLY

RECEIVED
3/11/2014

SPILL/RELEASE REPORT

This form is to be submitted by the party responsible for the oil and gas spill or release. Any spill or release which may impact waters of the State must be reported as soon as practicable; any spill over 20 bbls must be reported within 24 hours and all spills over five bbls must be reported within ten days. Submit a Site Investigation and Remediation Workplan (Form 27) when requested by the Director.

Spill report taken by:

FACILITY ID:

OPERATOR INFORMATION

Name of Operator: _____ OGCC Operator No: _____	Phone Numbers
Address: _____	No: _____
City: _____ State: _____ Zip: _____	Fax: _____
Contact Person: _____	E-Mail: _____

DESCRIPTION OF SPILL OR RELEASE

Date of Incident: _____ Facility Name & No.: _____	County: _____
Type of Facility (well, tank battery, flow line, pit): _____	QtrQtr: _____ Section: _____
Well Name and Number: _____	Township: _____ Range: _____
API Number: _____	Meridian: _____
Specify volume spilled and recovered (in bbls) for the following materials:	
Oil spilled: _____ Oil recov'd: _____ Water spilled: _____ Water recov'd: _____ Other spilled: _____ Other recov'd: _____	
Ground Water impacted? Yes No	Surface Water impacted? Yes No
Contained within berm? Yes No	Area and vertical extent of spill: _____ x _____
Current land use: _____	Weather conditions: _____
Soil/geology description: _____	
IF LESS THAN A MILE , report distance IN FEET to nearest.... Surface water: _____ wetlands: _____ buildings: _____	
Livestock: _____ water wells: _____ Depth to shallowest ground water: _____	
Cause of spill (e.g., equipment failure, human error, etc.): _____ Detailed description of the spill/release incident: _____	

CORRECTIVE ACTION

Describe immediate response (how stopped, contained and recovered):

Describe any emergency pits constructed:

How was the extent of contamination determined:

Further remediation activities proposed (attach separate sheet if needed):

Describe measures taken to prevent problem from reoccurring:

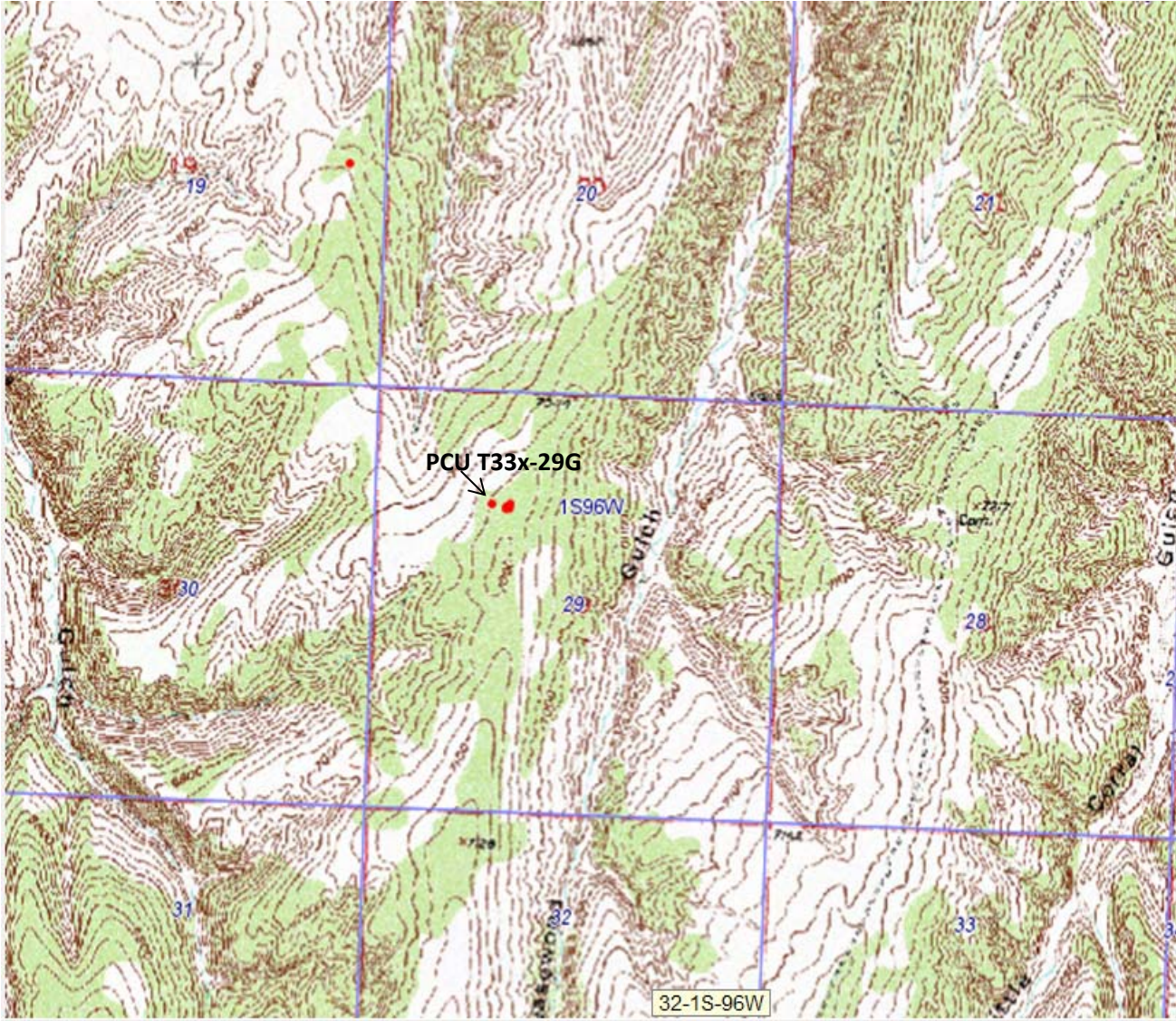
OTHER NOTIFICATIONS

List the parties and agencies notified (County, BLM, EPA, DOT, Local Emergency Planning Coordinator or other).

Date	Agency	Contact	Phone	Response

Spill/Release Tracking No: **2147714 FOLLOW-UP**

PCU T33x-29G



ATTACHMENT I

PCU T33x-29G, Form 19 Update

Background Arsenic:

XTO Energy herein requests consideration of site-specific background Arsenic levels as an alternative to the Table 910-1 value for the PWDD location. COGCC Table 910-1 Concentration Levels list the allowable concentration level for Arsenic in soil at 0.39 mg/kg. Footnote 1 of Table 910-1 states "Consideration shall be given to background levels in native soils and ground water". At other locations COGCC has allowed the determination of allowable levels based upon a 10% variability factor applied to background soil concentration values where the maximum allowable level is computed by multiplying the highest detected background concentration by 1.1.

1. Six representative background samples were collected from undisturbed areas adjacent to the subject location. Arsenic concentrations in those samples ranged from 2.9 mg/kg to 5.9 mg/kg. Applying the 10% variability factor to the highest concentration detected results in an allowable Arsenic concentration level of 6.5 mg/kg.
2. The Arsenic sample collected from the impacted area, 4.6 mg/kg is within the allowable background Arsenic concentration of 6.5 mg/kg.

Please find the Lab Data Summary Table and the Site Map indicating Arsenic sampling locations attached.

ATTACHMENT II

PCU T33x-29G, Form 19 Update

Describe initial action taken:

1. Upon discovery of the release, the following remediation activities were undertaken.
 - Free liquid was transported to the XTO Salt Water Disposal (SWD) facility and was injected in permitted XTO injection wells.
 - Impacted soils were removed and transported to a permitted disposal/recycling facility.
 - A composite soil sample was collected from the impacted area for Table 910-1 compliance. Results were below Table 910-1 concentration levels with the exception of Arsenic (4.6 mg/kg).
- Refer to Table 1 for a summary of the laboratory results and the Site Plan for the release and sample locations.
- Elevated Arsenic levels above Table 910-1 concentration were detected in the bottom, sidewall and lateral samples. Please refer to Attachment I requesting consideration of background Arsenic levels (See Table 1).
- Reclamation activities were completed on 7/1/2013 in accordance with applicable COGCC 900, 1000 Series rules and as specified in the Surface Use Plan and BLM Conditions of Approval.

PCU T33X-29G

Site Plan

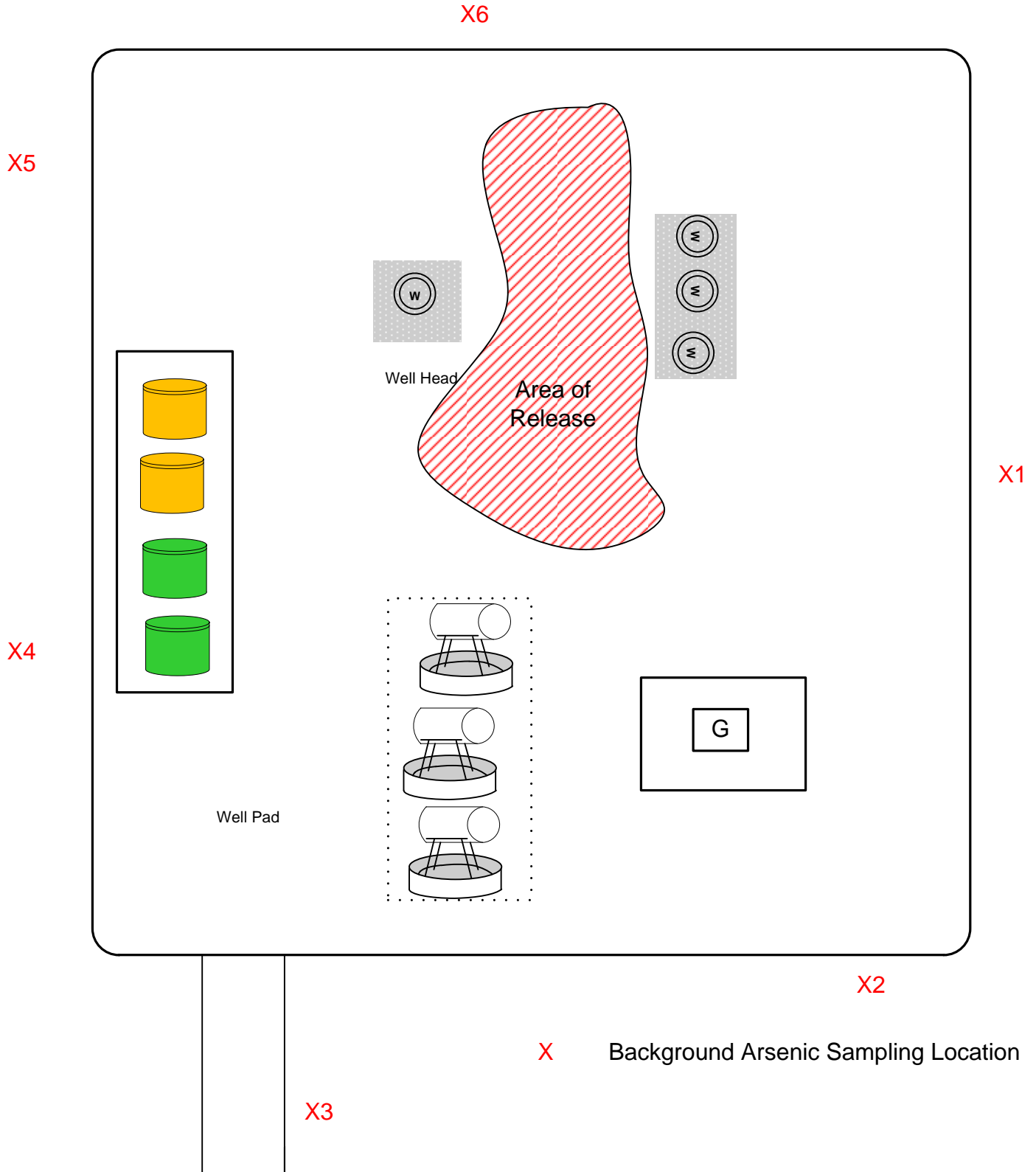
API# 05-103-10604

Location ID# 335877

Spill/Release Tracking # 2147714

S29,T1S,R96W

Lat.39°94343, Long 108.19424



*Drawing not to scale

Table 1
Location: PCU T33X-29G
Lab Summary

Last update 2/25/2014

Analytical Parameter (with units)	PCU T33X-29G	Background						COGCC	Maximum based on Background
	PDCD H2O Release	BG #1	BG #2	BG #3	BG #4	BG #5	BG #6	Table 910-1 Concentration Levels	
Accutest Job #	D54856 (2/4/14)	D55198 (2/17/14)						-	-
Sample type (Composite/Discrete)	C	D	D	D	D	D	D	-	-
TPH (GRO) (mg/Kg)	ND	-	-	-	-	-	-	-	-
TPH (DRO) (mg/Kg)	65.0	-	-	-	-	-	-	-	-
TPH (GRO + DRO) (mg/Kg)	65.0	-	-	-	-	-	-	500	-
Benzene (mg/Kg)	ND	-	-	-	-	-	-	0.170	-
Toluene (mg/Kg)	ND	-	-	-	-	-	-	85	-
Ethylbenzene (mg/Kg)	ND	-	-	-	-	-	-	100	-
Xylenes (total) (mg/Kg)	ND	-	-	-	-	-	-	175	-
Acenaphthene (mg/Kg)	ND	-	-	-	-	-	-	1000	-
Anthracene (mg/Kg)	ND	-	-	-	-	-	-	1000	-
Benzo(A)anthracene (mg/Kg)	0.0170	-	-	-	-	-	-	0.22	-
Benzo(A)pyrene (mg/Kg)	0.0208	-	-	-	-	-	-	0.022	-
Benzo(B)fluoranthene (mg/Kg)	0.0823	-	-	-	-	-	-	0.22	-
Benzo(K)fluoranthene (mg/Kg)	ND	-	-	-	-	-	-	2.2	-
Chrysene (mg/Kg)	0.0314	-	-	-	-	-	-	22	-
Dibenzo(A,H)anthracene (mg/Kg)	0.0126	-	-	-	-	-	-	0.022	-
Fluoranthene (mg/Kg)	0.0198	-	-	-	-	-	-	1000	-
Fluorene (mg/Kg)	ND	-	-	-	-	-	-	1000	-
Indeno(1,2,3,C,D)pyrene (mg/Kg)	0.0352	-	-	-	-	-	-	0.22	-
Naphthalene (mg/Kg)	ND	-	-	-	-	-	-	23	-
Pyrene (mg/Kg)	0.0221	-	-	-	-	-	-	1000	-
Electrical Conductivity (mmhos/cm)	2.100	-	-	-	-	-	-	4	-
Sodium Adsorption Ratio (SAR)	3.62	-	-	-	-	-	-	12	-
pH	8.63	-	-	-	-	-	-	6-9	-
Arsenic (mg/kg)	4.6	2.9	4.4	5.9	3.7	3.7	3.9	0.39	6.5
Barium (mg/kg)	3300	-	-	-	-	-	-	15000	-
Cadmium (mg/kg)	<1.1	-	-	-	-	-	-	70	-
Chromium (III) (mg/Kg)	15.9	-	-	-	-	-	-	120000	-
Chromium (VI) (mg/Kg)	<1.0	-	-	-	-	-	-	23	-
Copper (mg/kg)	15.0	-	-	-	-	-	-	3100	-
Lead (inorganic) (mg/kg)	10.9	-	-	-	-	-	-	400	-
Mercury (mg/kg)	<0.091	-	-	-	-	-	-	23	-
Nickel (mg/kg)	11.6	-	-	-	-	-	-	1600	-
Selenium (mg/kg)	<5.5	-	-	-	-	-	-	390	-
Silver (mg/kg)	<3.3	-	-	-	-	-	-	390	-
Zinc (mg/kg)	33.5	-	-	-	-	-	-	23000	-
% Solids	87.3	73.0	55.2	70.0	68.8	73.2	72.2	-	-

Notes:

- 1) ND = not detectible to the laboratory detection limit.
- 2) Results highlighted in Gray exceed Table 910-1 concentration levels, but are below background levels.
- 3) "-" indicates no analysis.

Technical Report for

XTO Energy

PCU T33X-29G PDCD H2O Release

Accutest Job Number: D54856

Sampling Date: 02/04/14


Report to:

KRW Consulting, Inc.
8000 West 14th Avenue
Lakewood, CO 80214
dknudson@krwconsulting.com; jhess@krwconsulting.com;
crachak@krwconsulting.com; rrasnic@krwconsulting.com;
ATTN: Dwayne Knudson

Total number of pages in report: 142



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



Scott Heideman
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
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: Summary of Hits	8
Section 4: Sample Results	9
4.1: D54856-1: PCUT33X-29G	10
4.2: D54856-1A: PCUT33X-29G	16
Section 5: Misc. Forms	18
5.1: Chain of Custody	19
Section 6: GC/MS Volatiles - QC Data Summaries	21
6.1: Method Blank Summary	22
6.2: Blank Spike Summary	23
6.3: Matrix Spike Summary	25
6.4: Duplicate Summary	27
Section 7: GC/MS Volatiles - Raw Data	28
7.1: Samples	29
7.2: Method Blanks	36
Section 8: GC/MS Semi-volatiles - QC Data Summaries	43
8.1: Method Blank Summary	44
8.2: Blank Spike Summary	45
8.3: Matrix Spike/Matrix Spike Duplicate Summary	46
Section 9: GC/MS Semi-volatiles - Raw Data	47
9.1: Samples	48
9.2: Method Blanks	65
Section 10: GC Volatiles - QC Data Summaries	82
10.1: Method Blank Summary	83
10.2: Blank Spike Summary	84
10.3: Matrix Spike/Matrix Spike Duplicate Summary	85
Section 11: GC Volatiles - Raw Data	86
11.1: Samples	87
11.2: Method Blanks	92
Section 12: GC Semi-volatiles - QC Data Summaries	97
12.1: Method Blank Summary	98
12.2: Blank Spike Summary	99
12.3: Matrix Spike/Matrix Spike Duplicate Summary	100
Section 13: GC Semi-volatiles - Raw Data	101
13.1: Samples	102
13.2: Method Blanks	105
Section 14: Metals Analysis - QC Data Summaries	108
14.1: Prep QC MP12280: Ca,Mg,Na,Sodium Adsorption Ratio	109
14.2: Prep QC MP12294: Ba,Cd,Cr,Cu,Pb,Ni,Se,Ag,Zn	119
14.3: Prep QC MP12295: As	129
14.4: Prep QC MP12297: Hg	134

Table of Contents

-2-

Section 15: General Chemistry - QC Data Summaries	138
15.1: Method Blank and Spike Results Summary	139
15.2: Duplicate Results Summary	140
15.3: Matrix Spike Results Summary	141
15.4: Matrix Spike Duplicate Results Summary	142

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15



Sample Summary

XTO Energy

Job No: D54856

PCU T33X-29G PDCD H2O Release

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D54856-1	02/04/14	14:35	CD	02/06/14	SO Soil	PCUT33X-29G
D54856-1A	02/04/14	14:35	CD	02/06/14	SO Soil	PCUT33X-29G

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: XTO Energy

Job No D54856

Site: PCU T33X-29G PDCD H2O Release

Report Date 2/13/2014 4:46:50 PM

On 02/06/2014, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2.1 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D54856 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: V5V1838

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D54773-1MS, D54798-1DUP were used as the QC samples indicated.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix: SO

Batch ID: OP9352

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D54699-1MS, D54699-1MSD were used as the QC samples indicated.

Volatiles by GC By Method SW846 8015B

Matrix: SO

Batch ID: GGB1305

- All samples were analyzed within the recommended method holding time.
- Sample(s) D54798-1MS, D54798-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GC By Method SW846-8015B

Matrix: SO

Batch ID: OP9351

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D54766-1MS, D54766-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP12280

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D54766-8AMS, D54766-8AMSD, D54766-8ASDL were used as the QC samples for the metals analysis.

Matrix: SO **Batch ID:** MP12294

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D54856-1MS, D54856-1MSD, D54856-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Zinc are outside control limits. Spike recovery indicates possible matrix interference.
- 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, Selenium are outside control limits for sample MP12294-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP12294-SD1 for Barium, Chromium, Nickel, Zinc: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix: SO **Batch ID:** MP12295

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D54856-1MS, D54856-1MSD, D54856-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix: SO **Batch ID:** MP12297

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D54851-1MS, D54851-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix: SO **Batch ID:** GN23590

- Sample(s) D54825-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM2540G-2011 M

Matrix: SO **Batch ID:** GN23569

- The data for SM2540G-2011 M meets quality control requirements.

Wet Chemistry By Method SW846 3060A/7196A

Matrix: SO **Batch ID:** GP11956

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D54766-9DUP, D54766-9MS, D54766-9MSD were used as the QC samples for the Chromium, Hexavalent analysis.

Wet Chemistry By Method SW846 3060A/7196A M

Matrix: SO	Batch ID: R20333
-------------------	-------------------------

- The data for SW846 3060A/7196A M meets quality control requirements.
- D54856-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 9045D

Matrix: SO	Batch ID: GN23591
-------------------	--------------------------

- The following samples were run outside of holding time for method SW846 9045D: D54856-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix: SO	Batch ID: MP12280
-------------------	--------------------------

- D54856-1A 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.

Summary of Hits

Job Number: D54856
Account: XTO Energy
Project: PCU T33X-29G PDCD H2O Release
Collected: 02/04/14



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

D54856-1 PCUT33X-29G

Benzo(a)anthracene	0.0170	0.0095	0.0050	mg/kg	SW846 8270C BY SIM
Benzo(b)fluoranthene	0.0823	0.0095	0.0050	mg/kg	SW846 8270C BY SIM
Benzo(a)pyrene	0.0208	0.0095	0.0050	mg/kg	SW846 8270C BY SIM
Chrysene	0.0314	0.0095	0.0050	mg/kg	SW846 8270C BY SIM
Dibenzo(a,h)anthracene	0.0126	0.0095	0.0050	mg/kg	SW846 8270C BY SIM
Fluoranthene	0.0198	0.0095	0.0050	mg/kg	SW846 8270C BY SIM
Indeno(1,2,3-cd)pyrene	0.0352	0.0095	0.0050	mg/kg	SW846 8270C BY SIM
Pyrene	0.0221	0.0095	0.0050	mg/kg	SW846 8270C BY SIM
TPH-DRO (C10-C28)	65.0	7.6	5.7	mg/kg	SW846-8015B
Arsenic	4.6	0.11		mg/kg	SW846 6020A
Barium	3300	2.2		mg/kg	SW846 6010C
Chromium	16.4	1.1		mg/kg	SW846 6010C
Copper	15.0	1.1		mg/kg	SW846 6010C
Lead	10.9	5.5		mg/kg	SW846 6010C
Nickel	11.6	3.3		mg/kg	SW846 6010C
Zinc	33.5	3.3		mg/kg	SW846 6010C
Specific Conductivity	2100	1.0		umhos/cm	SM 2510B-2011 MOD
Chromium, Trivalent ^a	15.9	2.1		mg/kg	SW846 3060A/7196A M
Redox Potential Vs H2	473			mv	ASTM D1498-76M
pH	8.63			su	SW846 9045D

D54856-1A PCUT33X-29G

Calcium	150	2.0		mg/l	SW846 6010C
Magnesium	32.9	1.0		mg/l	SW846 6010C
Sodium	188	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio ^b	3.62			ratio	USDA HANDBOOK 60

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

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

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID: PCUT33X-29G	Date Sampled: 02/04/14
Lab Sample ID: D54856-1	Date Received: 02/06/14
Matrix: SO - Soil	Percent Solids: 87.3
Method: SW846 8260B	
Project: PCU T33X-29G PDCD H2O Release	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V30569.D	1	02/06/14	JL	n/a	n/a	V5V1838
Run #2							

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

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	64	24	ug/kg	
108-88-3	Toluene	ND	130	64	ug/kg	
100-41-4	Ethylbenzene	ND	130	24	ug/kg	
1330-20-7	Xylene (total)	ND	260	130	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	93%		64-130%
460-00-4	4-Bromofluorobenzene	100%		62-131%
17060-07-0	1,2-Dichloroethane-D4	125%		70-130%

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: PCUT33X-29G		Date Sampled: 02/04/14
Lab Sample ID: D54856-1		Date Received: 02/06/14
Matrix: SO - Soil		Percent Solids: 87.3
Method: SW846 8270C BY SIM SW846 3546		
Project: PCU T33X-29G PDCD H2O Release		

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G17964.D	1	02/07/14	DC	02/06/14	OP9352	E3G893
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0095	0.0050	mg/kg	
120-12-7	Anthracene	ND	0.0095	0.0050	mg/kg	
56-55-3	Benzo(a)anthracene	0.0170	0.0095	0.0050	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.0823	0.0095	0.0050	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0095	0.0050	mg/kg	
50-32-8	Benzo(a)pyrene	0.0208	0.0095	0.0050	mg/kg	
218-01-9	Chrysene	0.0314	0.0095	0.0050	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	0.0126	0.0095	0.0050	mg/kg	
206-44-0	Fluoranthene	0.0198	0.0095	0.0050	mg/kg	
86-73-7	Fluorene	ND	0.0095	0.0057	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	0.0352	0.0095	0.0050	mg/kg	
91-20-3	Naphthalene	ND	0.013	0.012	mg/kg	
129-00-0	Pyrene	0.0221	0.0095	0.0050	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	47%		10-175%
321-60-8	2-Fluorobiphenyl	45%		25-130%
1718-51-0	Terphenyl-d14	73%		41-133%

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: PCUT33X-29G	Date Sampled: 02/04/14
Lab Sample ID: D54856-1	Date Received: 02/06/14
Matrix: SO - Soil	Percent Solids: 87.3
Method: SW846 8015B	
Project: PCU T33X-29G PDCD H2O Release	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB23720.D	1	02/11/14	EV	n/a	n/a	GGB1305
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	13	6.4	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	83%		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: PCUT33X-29G	Date Sampled: 02/04/14
Lab Sample ID: D54856-1	Date Received: 02/06/14
Matrix: SO - Soil	Percent Solids: 87.3
Method: SW846-8015B SW846 3546	
Project: PCU T33X-29G PDCD H2O Release	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH017929.D	1	02/06/14	JS	02/06/14	OP9351	GFH886
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	65.0	7.6	5.7	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	50%		20-130%		

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

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

Report of Analysis

Client Sample ID: PCUT33X-29G	Date Sampled: 02/04/14
Lab Sample ID: D54856-1	Date Received: 02/06/14
Matrix: SO - Soil	Percent Solids: 87.3
Project: PCU T33X-29G PDCD H2O Release	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.6	0.11	mg/kg	5	02/11/14	02/13/14 JB	SW846 6020A ⁴	SW846 3050B ⁶
Barium	3300	2.2	mg/kg	2	02/11/14	02/13/14 KV	SW846 6010C ³	SW846 3050B ⁵
Cadmium	< 1.1	1.1	mg/kg	1	02/11/14	02/11/14 KV	SW846 6010C ¹	SW846 3050B ⁵
Chromium	16.4	1.1	mg/kg	1	02/11/14	02/11/14 KV	SW846 6010C ¹	SW846 3050B ⁵
Copper	15.0	1.1	mg/kg	1	02/11/14	02/11/14 KV	SW846 6010C ¹	SW846 3050B ⁵
Lead	10.9	5.5	mg/kg	1	02/11/14	02/11/14 KV	SW846 6010C ¹	SW846 3050B ⁵
Mercury	< 0.091	0.091	mg/kg	1	02/12/14	02/12/14 SM	SW846 7471B ²	SW846 7471B ⁷
Nickel	11.6	3.3	mg/kg	1	02/11/14	02/11/14 KV	SW846 6010C ¹	SW846 3050B ⁵
Selenium	< 5.5	5.5	mg/kg	1	02/11/14	02/11/14 KV	SW846 6010C ¹	SW846 3050B ⁵
Silver	< 3.3	3.3	mg/kg	1	02/11/14	02/11/14 KV	SW846 6010C ¹	SW846 3050B ⁵
Zinc	33.5	3.3	mg/kg	1	02/11/14	02/11/14 KV	SW846 6010C ¹	SW846 3050B ⁵

- (1) Instrument QC Batch: MA4453
- (2) Instrument QC Batch: MA4456
- (3) Instrument QC Batch: MA4460
- (4) Instrument QC Batch: MA4461
- (5) Prep QC Batch: MP12294
- (6) Prep QC Batch: MP12295
- (7) Prep QC Batch: MP12297

RL = Reporting Limit

4.1
 4

Report of Analysis

Client Sample ID: PCUT33X-29G	Date Sampled: 02/04/14
Lab Sample ID: D54856-1	Date Received: 02/06/14
Matrix: SO - Soil	Percent Solids: 87.3
Project: PCU T33X-29G PDCD H2O Release	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
%solids							
Solids, Percent	87.3		%	1	02/06/14	SWT	SM2540G-2011 M
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	2100	1.0	umhos/cm	1	02/10/14	RW	SM 2510B-2011 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	02/12/14	AK	SW846 3060A/7196A
Chromium, Trivalent ^a	15.9	2.1	mg/kg	1	02/12/14	AK	SW846 3060A/7196A M
Redox Potential Vs H2	473		mv	1	02/07/14	AK	ASTM D1498-76M
pH	8.63		su	1	02/07/14 14:30	RW	SW846 9045D

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

RL = Reporting Limit

4.1
 4

Report of Analysis

Client Sample ID: PCUT33X-29G	Date Sampled: 02/04/14
Lab Sample ID: D54856-1A	Date Received: 02/06/14
Matrix: SO - Soil	Percent Solids: 87.3
Project: PCU T33X-29G PDCD H2O Release	

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	150	2.0	mg/l	1	02/10/14	02/10/14 KV	SW846 6010C ¹	SW846 3010A/M ²
Magnesium	32.9	1.0	mg/l	1	02/10/14	02/10/14 KV	SW846 6010C ¹	SW846 3010A/M ²
Sodium	188	2.0	mg/l	1	02/10/14	02/10/14 KV	SW846 6010C ¹	SW846 3010A/M ²

(1) Instrument QC Batch: MA4448

(2) Prep QC Batch: MP12280

RL = Reporting Limit

4.2
 4

Report of Analysis

Client Sample ID: PCUT33X-29G	Date Sampled: 02/04/14
Lab Sample ID: D54856-1A	Date Received: 02/06/14
Matrix: SO - Soil	Percent Solids: 87.3
Project: PCU T33X-29G PDCD H2O Release	

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	3.62		ratio	1	02/10/14 13:41	KV	USDA HANDBOOK 60

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

RL = Reporting Limit

4.2
 4

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

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

FED-EX Tracking #
Accutest Quote #
Bottle Order Control #
Accutest Job # **D54856**

Client / Reporting Information		Project Information				Requested Analysis (see TEST CODE sheet)												Matrix Codes		
Company Name XTO Energy		Project Name PCWT33x-296 pcd H₂O release				<div style="writing-mode: vertical-rl; transform: rotate(180deg);"> 5 Table 910 soil </div>												DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank		
Street Address 2145A CR 3		Street:																		
City State Zip Rifle CO 81650		Billing Information (If different from Report to)																		
Project Contact Jessica Dooling jessica.dooling@xtoenergy.com		Company Name																		
Phone # 97-675-4102		Street Address																		
Sample(s) Name(s) Chance Decker		Project Manager				Matrix Codes LAB USE ONLY														
Field ID / Point of Collection PCWT33x-296		MECH/DI Vial #	Collection		Sampled by	Matrix	# of bottles	Number of preserved bottles												LAB USE ONLY
			Date	Time				PC	NH ₄	NH ₃	HPO ₄	HNO ₃	HCO ₃	NONE	DI WATER	METH	ENCORE	Bioslides		
			2/4/14	2:35P	CD	SO	5													01

Turnaround Time (Business days)		Approved By (Accutest P#): / Date:		Data Deliverable Information				Comments / Special Instructions							
<input type="checkbox"/> Std. 10 Business Days <input checked="" type="checkbox"/> Std. 5 Business Days (By Contract only) <input type="checkbox"/> 5 Day SH <input type="checkbox"/> 3 Day EMERGENC <input type="checkbox"/> 2 Day EMERGENC <input type="checkbox"/> 1 Day EMERGENC				<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 type="checkbox"/> PDF				PLEASE EMAIL RESULTS TO KRW PICEANCE TEAM			
Emergency & Rush T/A data available VIA Loblink				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:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Decker	2/5/14 1:30A	1 Justin Hani	2 Justin Hani	2/5/14 1:30P	Title Service Center
3		3 2-6-14 12:24	4		
5		5	Custody Seal # HU/CO	<input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Preserved where applicable <input type="checkbox"/> On Ice Cooler Temp. 2-1

D54856: Chain of Custody

Page 1 of 2

5.1
5

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D54856

Client: XTO ENERGY

Immediate Client Services Action Required: No

Date / Time Received: 2/6/2014 12:24:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: PCUT33X-29G PDCD H2O RELEASE

Airbill #'s: HD/CO

<u>Cooler Security</u>	<u>Y or N</u>		<u>Y or N</u>	
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. Smp'l Dates/Time OK	<input checked="" type="checkbox"/> <input type="checkbox"/>

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

<u>Quality Control Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
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"/>

<u>Sample Integrity - Documentation</u>	<u>Y or N</u>	
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"/>

<u>Sample Integrity - Condition</u>	<u>Y or N</u>	
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	

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
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

5.1
5

GC/MS 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: D54856
Account: XTOKRWR XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1838-MB	5V30555.D	1	02/06/14	JL	n/a	n/a	V5V1838

The QC reported here applies to the following samples:

Method: SW846 8260B

D54856-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	49	19	ug/kg	
100-41-4	Ethylbenzene	ND	99	19	ug/kg	
108-88-3	Toluene	ND	99	49	ug/kg	
1330-20-7	Xylene (total)	ND	200	99	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
2037-26-5	Toluene-D8	97%	64-130%
460-00-4	4-Bromofluorobenzene	90%	62-131%
17060-07-0	1,2-Dichloroethane-D4	114%	70-130%

Blank Spike Summary

Job Number: D54856
Account: XTOKRWR XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1838-BS	5V30556.D	1	02/06/14	JL	n/a	n/a	V5V1838

The QC reported here applies to the following samples:

Method: SW846 8260B

D54856-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2460	2370	96	70-130
100-41-4	Ethylbenzene	2460	2600	106	70-130
108-88-3	Toluene	2460	2410	98	70-130
1330-20-7	Xylene (total)	7390	7990	108	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	101%	64-130%
460-00-4	4-Bromofluorobenzene	105%	62-131%
17060-07-0	1,2-Dichloroethane-D4	103%	70-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: D54856
Account: XTOKRWR XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1838-BS	5V30557.D	1	02/06/14	JL	n/a	n/a	V5V1838

The QC reported here applies to the following samples:

Method: SW846 8260B

D54856-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
---------	----------	----------------	--------------	----------	--------

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	98%	64-130%
460-00-4	4-Bromofluorobenzene	97%	62-131%
17060-07-0	1,2-Dichloroethane-D4	103%	70-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: D54856
Account: XTOKRWR XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D54773-1MS	5V30558.D	1	02/06/14	JL	n/a	n/a	V5V1838
D54773-1	5V30560.D	1	02/06/14	JL	n/a	n/a	V5V1838

The QC reported here applies to the following samples:

Method: SW846 8260B

D54856-1

CAS No.	Compound	D54773-1 ug/kg	Spike Q	MS ug/kg	MS %	Limits
71-43-2	Benzene	ND	3280	2880	88	64-139
100-41-4	Ethylbenzene	ND	3280	3010	92	68-136
108-88-3	Toluene	ND	3280	2730	83	60-130
1330-20-7	Xylene (total)	ND	9830	9500	97	58-142

CAS No.	Surrogate Recoveries	MS	D54773-1	Limits
2037-26-5	Toluene-D8	93%	95%	64-130%
460-00-4	4-Bromofluorobenzene	112%	102%	62-131%
17060-07-0	1,2-Dichloroethane-D4	106%	108%	70-130%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: D54856
Account: XTOKRWR XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D54773-1MS	5V30559.D	1	02/06/14	JL	n/a	n/a	V5V1838
D54773-1	5V30560.D	1	02/06/14	JL	n/a	n/a	V5V1838

The QC reported here applies to the following samples:

Method: SW846 8260B

D54856-1

CAS No.	Compound	D54773-1 ug/kg	Spike Q	MS ug/kg	MS %	Limits
---------	----------	-------------------	------------	-------------	---------	--------

CAS No.	Surrogate Recoveries	MS	D54773-1	Limits
2037-26-5	Toluene-D8	93%	95%	64-130%
460-00-4	4-Bromofluorobenzene	107%	102%	62-131%
17060-07-0	1,2-Dichloroethane-D4	103%	108%	70-130%

* = Outside of Control Limits.

Duplicate Summary

Job Number: D54856
Account: XTOKRWR XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D54798-1DUP	5V30562.D	1	02/06/14	JL	n/a	n/a	V5V1838
D54798-1	5V30561.D	1	02/06/14	JL	n/a	n/a	V5V1838

The QC reported here applies to the following samples:

Method: SW846 8260B

D54856-1

CAS No.	Compound	D54798-1 ug/kg	DUP Q	RPD	Limits
71-43-2	Benzene	ND	ND	nc	30
100-41-4	Ethylbenzene	ND	ND	nc	30
108-88-3	Toluene	ND	ND	nc	30
1330-20-7	Xylene (total)	ND	ND	nc	30

CAS No.	Surrogate Recoveries	DUP	D54798-1	Limits
2037-26-5	Toluene-D8	94%	93%	64-130%
460-00-4	4-Bromofluorobenzene	101%	100%	62-131%
17060-07-0	1,2-Dichloroethane-D4	109%	112%	70-130%

* = Outside of Control Limits.



GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5020614.S\
 Data File : 5V30569.D
 Acq On : 6 Feb 2014 6:53 pm
 Operator : Jessical
 Sample : D54856-1
 Misc : MS7028,V5V1838,5.040,,100,5,1
 ALS Vial : 19 Sample Multiplier: 1

Quant Time: Feb 07 08:07:53 2014
 Quant Method : C:\msdchem\1\METHODS\V5AP1794TVH1794.M
 Quant Title : 8260
 QLast Update : Fri Nov 15 11:18:49 2013
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.613	168	94664	50.00	ug/l	0.00
37) 1,4-Difluorobenzene	12.412	114	141402	50.00	ug/l	0.00
56) Chlorobenzene-d5	15.061	117	135543	50.00	ug/l	0.00
77) 1,4-Dichlorobenzene-d4	17.024	152	105758	50.00	ug/l	0.00

System Monitoring Compounds

35) 1,2-Dichloroethane-d4	12.012	102	10585	62.64	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	125.28%
64) Toluene-d8	13.816	98	154335	46.48	ug/l	0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	92.96%
72) 4-Bromofluorobenzene	16.008	95	68503	49.91	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	99.82%

Target Compounds

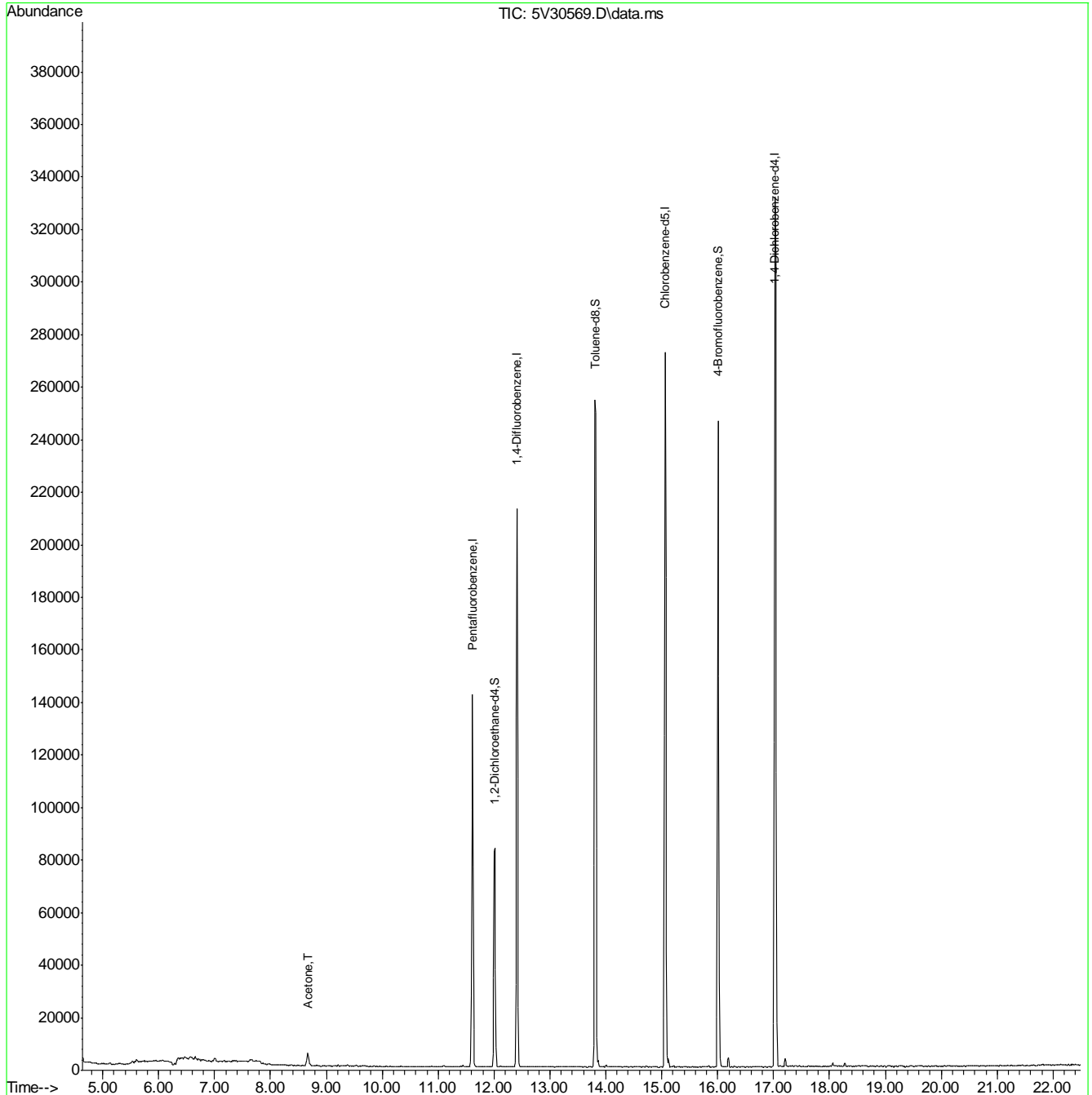
					Qvalue
1) TVH-Gasoline	13.006	TIC	-2329m	69.30	ug/l
15) Acetone	8.667	58	2226	16.02	ug/l # 90

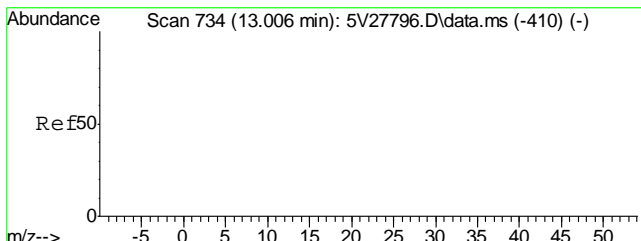
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

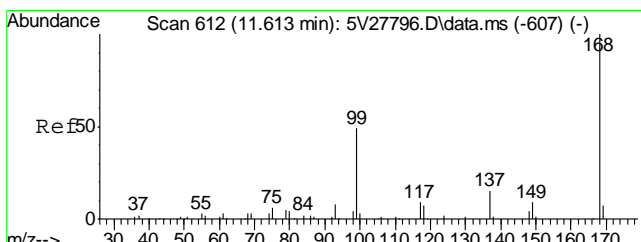
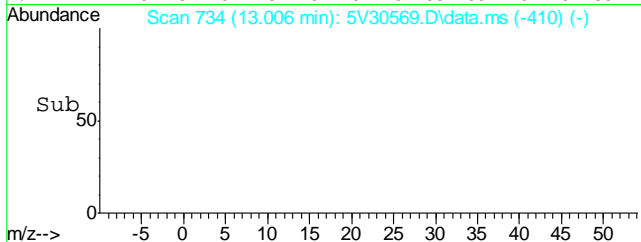
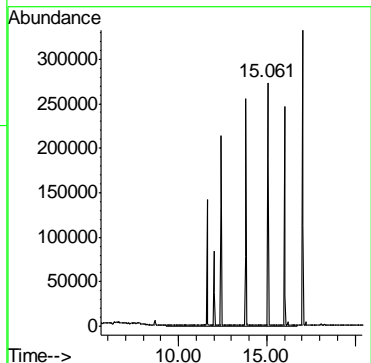
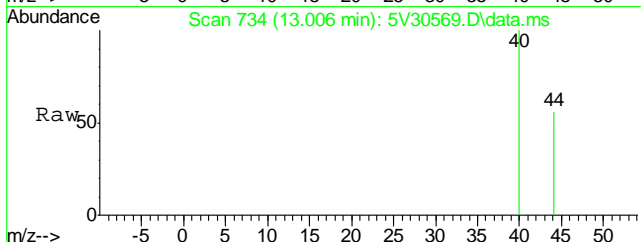
Data Path : C:\msdchem\1\DATA\V5020614.S\
Data File : 5V30569.D
Acq On : 6 Feb 2014 6:53 pm
Operator : Jessical
Sample : D54856-1
Misc : MS7028,V5V1838,5.040,,100,5,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Feb 07 08:07:53 2014
Quant Method : C:\msdchem\1\METHODS\V5AP1794TVH1794.M
Quant Title : 8260
QLast Update : Fri Nov 15 11:18:49 2013
Response via : Initial Calibration

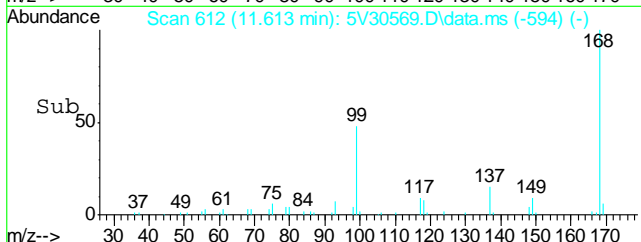
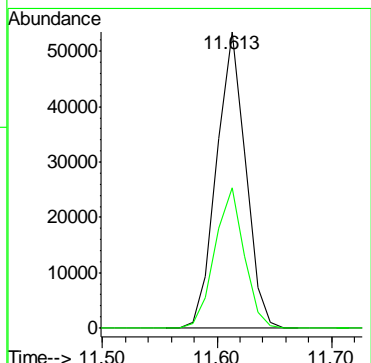
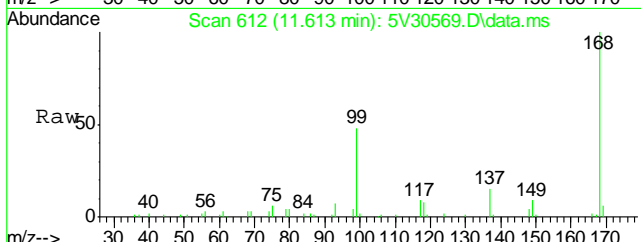




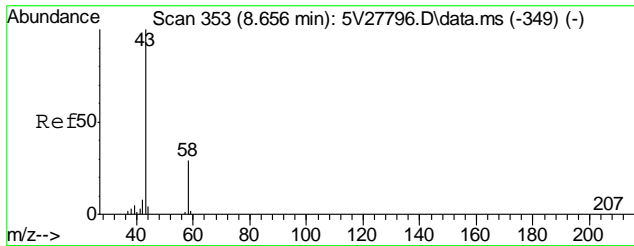
#1
 TVH-Gasoline
 Concen: 69.30 ug/l m
 RT: 13.006 min Scan# 734
 Delta R.T. 0.000 min
 Lab File: 5V30569.D
 Acq: 6 Feb 2014 6:53 pm
 Tgt Ion:TIC Resp: -2329



#2
 Pentafluorobenzene
 Concen: 50.00 ug/l
 RT: 11.613 min Scan# 612
 Delta R.T. -0.000 min
 Lab File: 5V30569.D
 Acq: 6 Feb 2014 6:53 pm
 Tgt Ion:168 Resp: 94664
 Ion Ratio Lower Upper
 168 100
 99 47.7 41.4 62.2

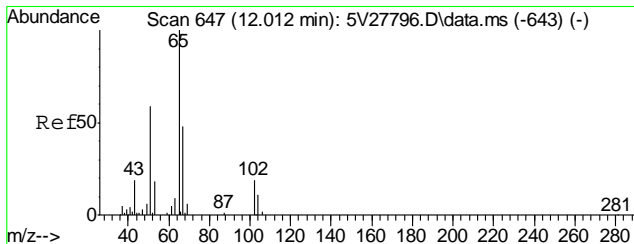
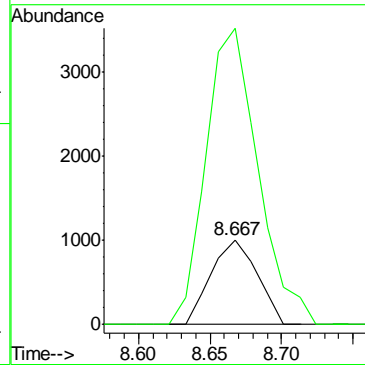
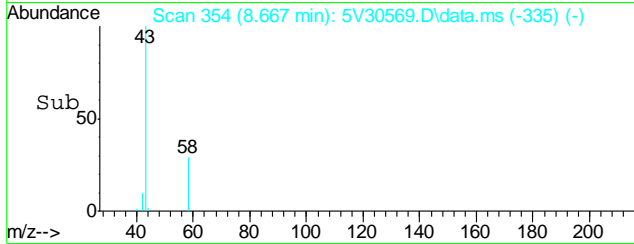
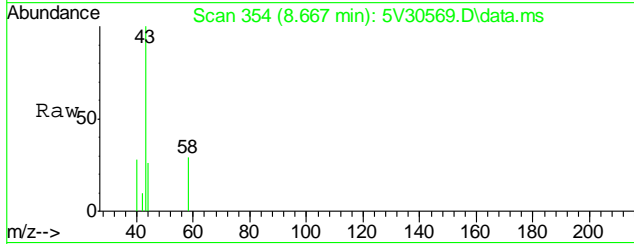


7.1.1
 7



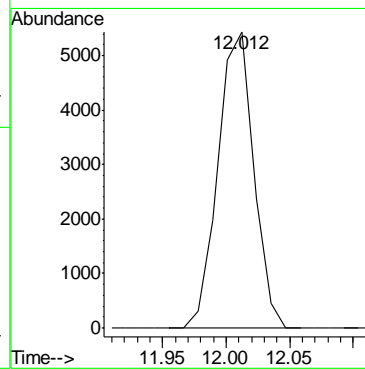
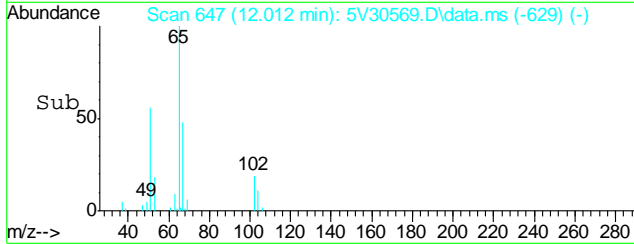
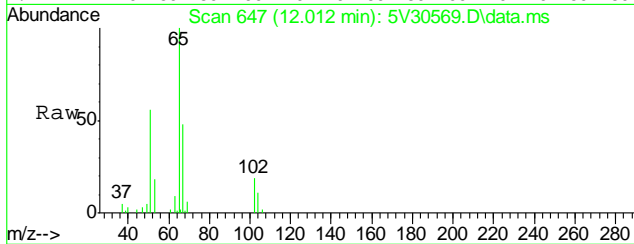
#15
 Acetone
 Concen: 16.02 ug/l
 RT: 8.667 min Scan# 354
 Delta R.T. 0.012 min
 Lab File: 5V30569.D
 Acq: 6 Feb 2014 6:53 pm

Tgt Ion: 58 Resp: 2226
 Ion Ratio Lower Upper
 58 100
 43 398.2 355.9 395.9#

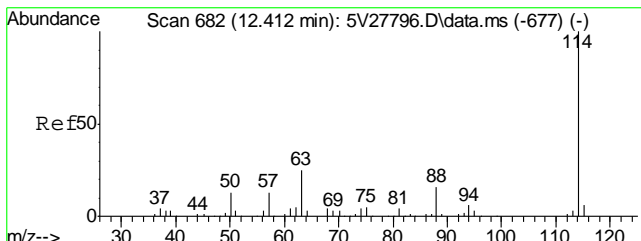


#35
 1,2-Dichloroethane-d4
 Concen: 62.64 ug/l
 RT: 12.012 min Scan# 647
 Delta R.T. -0.000 min
 Lab File: 5V30569.D
 Acq: 6 Feb 2014 6:53 pm

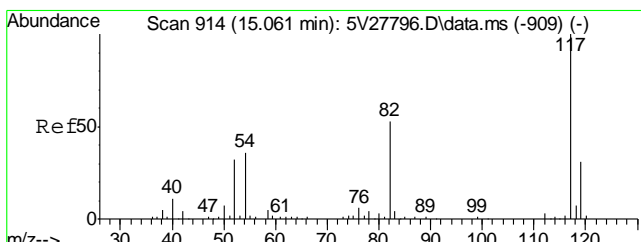
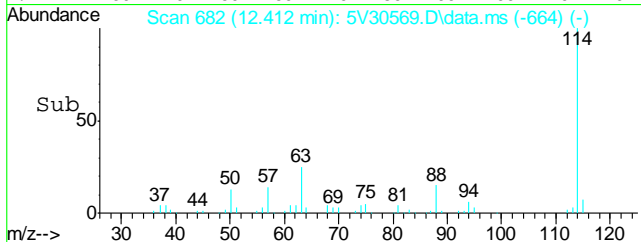
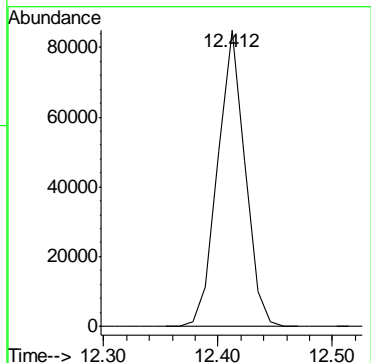
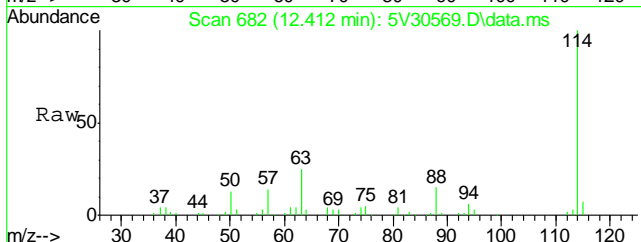
Tgt Ion: 102 Resp: 10585



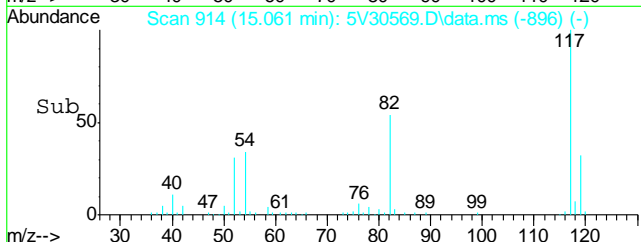
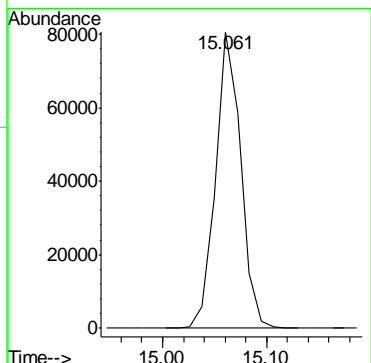
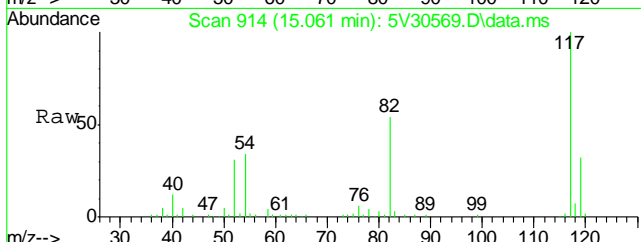
7.1.1
 7



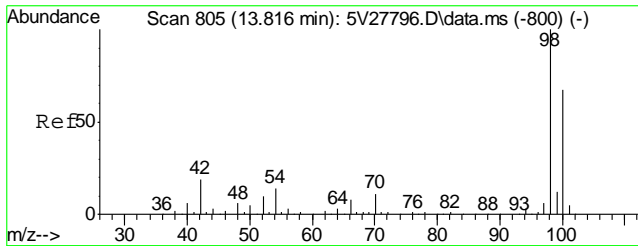
#37
 1,4-Difluorobenzene
 Concen: 50.00 ug/l
 RT: 12.412 min Scan# 682
 Delta R.T. -0.000 min
 Lab File: 5V30569.D
 Acq: 6 Feb 2014 6:53 pm
 Tgt Ion:114 Resp: 141402



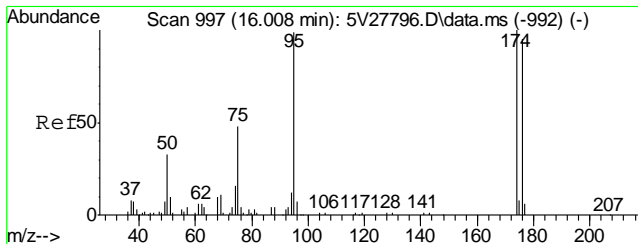
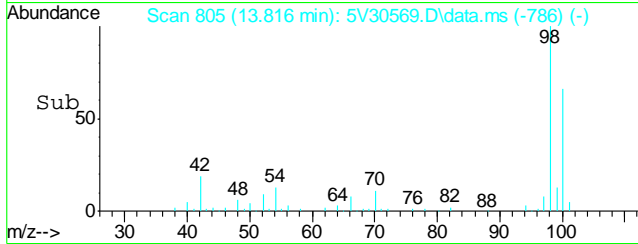
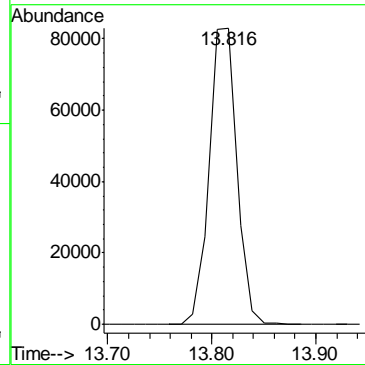
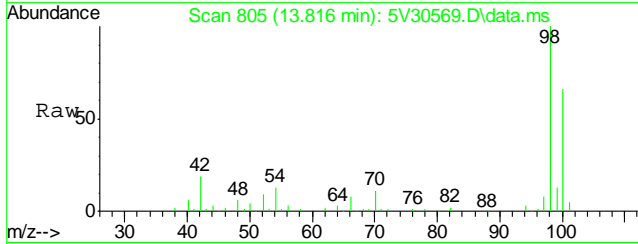
#56
 Chlorobenzene-d5
 Concen: 50.00 ug/l
 RT: 15.061 min Scan# 914
 Delta R.T. -0.000 min
 Lab File: 5V30569.D
 Acq: 6 Feb 2014 6:53 pm
 Tgt Ion:117 Resp: 135543



7.1.1
 7



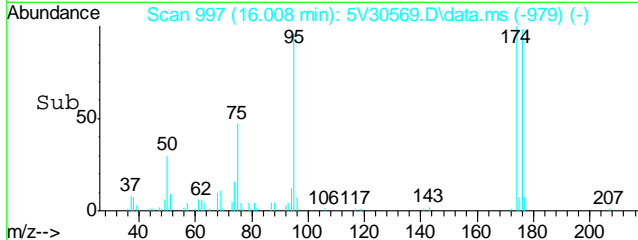
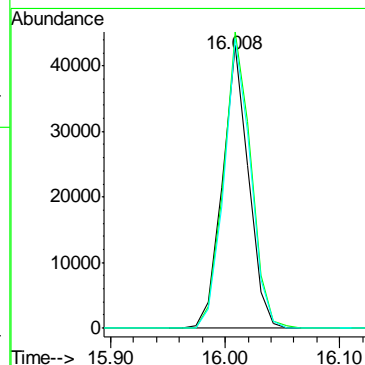
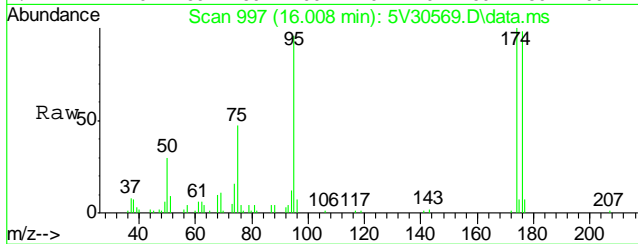
#64
 Toluene-d8
 Concen: 46.48 ug/l
 RT: 13.816 min Scan# 805
 Delta R.T. 0.011 min
 Lab File: 5V30569.D
 Acq: 6 Feb 2014 6:53 pm
 Tgt Ion: 98 Resp: 154335



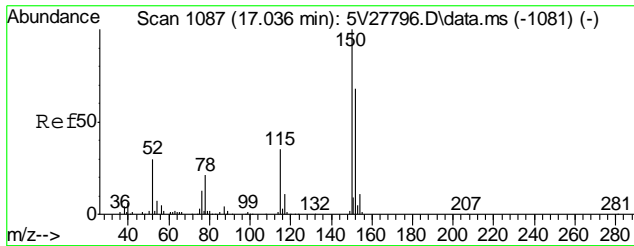
#72
 4-Bromofluorobenzene
 Concen: 49.91 ug/l
 RT: 16.008 min Scan# 997
 Delta R.T. -0.000 min
 Lab File: 5V30569.D
 Acq: 6 Feb 2014 6:53 pm

Tgt Ion: 95 Resp: 68503

Ion	Ratio	Lower	Upper
95	100		
174	109.1	85.4	125.4
176	103.9	80.6	120.6

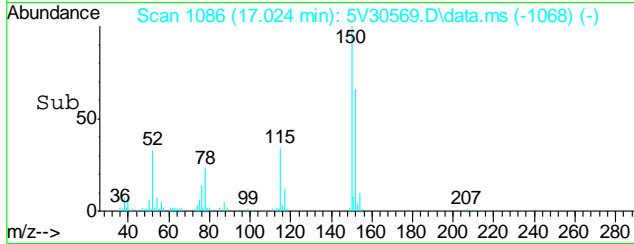
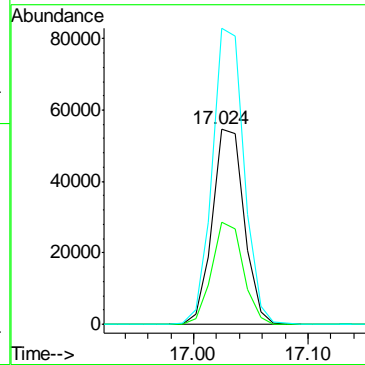
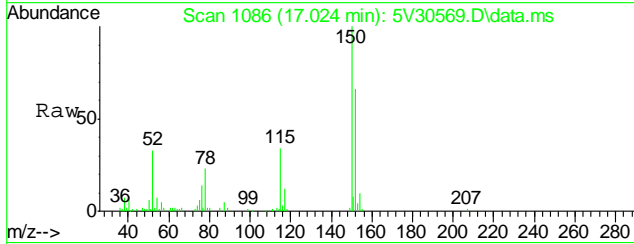


7.1.1
 7



#77
 1,4-Dichlorobenzene-d4
 Concen: 50.00 ug/l
 RT: 17.024 min Scan# 1086
 Delta R.T. -0.000 min
 Lab File: 5V30569.D
 Acq: 6 Feb 2014 6:53 pm

Tgt Ion	Resp	Lower	Upper
152	105758		
152	100		
115	51.4	43.4	65.2
150	151.2	142.9	214.3



7.1.1
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5020614.S\
 Data File : 5V30555.D
 Acq On : 6 Feb 2014 11:22 am
 Operator : Jessical
 Sample : MB
 Misc : MS7028,V5V1838,5.075,,100,5,1
 ALS Vial : 5 Sample Multiplier: 1

Quant Time: Feb 06 12:45:58 2014
 Quant Method : C:\msdchem\1\METHODS\V5AP1794TVH1794.M
 Quant Title : 8260
 QLast Update : Fri Nov 15 11:18:49 2013
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.613	168	115002	50.00	ug/l	0.00
37) 1,4-Difluorobenzene	12.412	114	170121	50.00	ug/l	0.00
56) Chlorobenzene-d5	15.061	117	158537	50.00	ug/l	0.00
77) 1,4-Dichlorobenzene-d4	17.024	152	112539	50.00	ug/l	0.00

System Monitoring Compounds

35) 1,2-Dichloroethane-d4	12.012	102	11728	57.13	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	114.26%
64) Toluene-d8	13.816	98	187926	48.39	ug/l	0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	96.78%
72) 4-Bromofluorobenzene	16.008	95	72301	45.04	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	90.08%

Target Compounds

					Qvalue
1) TVH-Gasoline	13.006	TIC	-13938m	68.11	ug/l
15) Acetone	8.656	58	1067	6.32	ug/l # 61

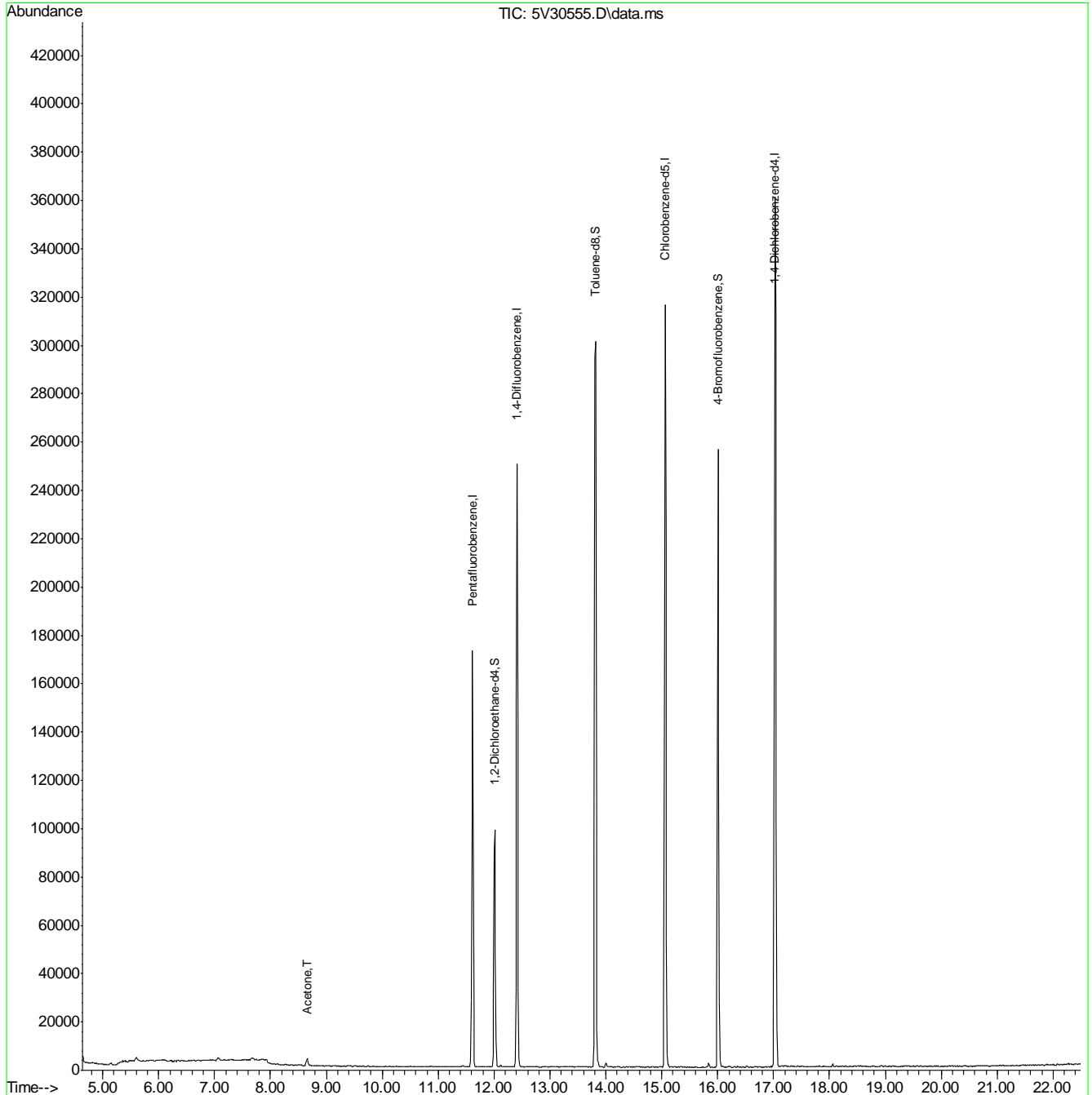
(#) = qualifier out of range (m) = manual integration (+) = signals summed

7.2.1
7

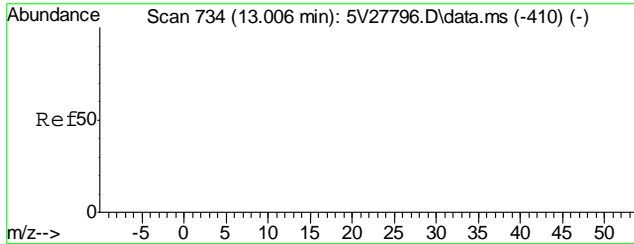
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5020614.S\
 Data File : 5V30555.D
 Acq On : 6 Feb 2014 11:22 am
 Operator : Jessical
 Sample : MB
 Misc : MS7028,V5V1838,5.075,,100,5,1
 ALS Vial : 5 Sample Multiplier: 1

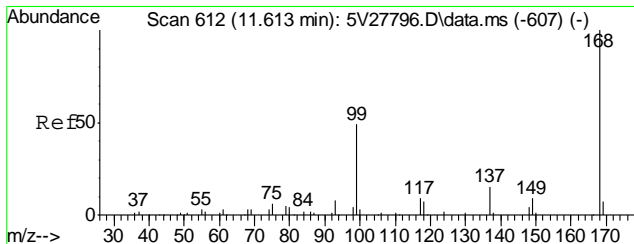
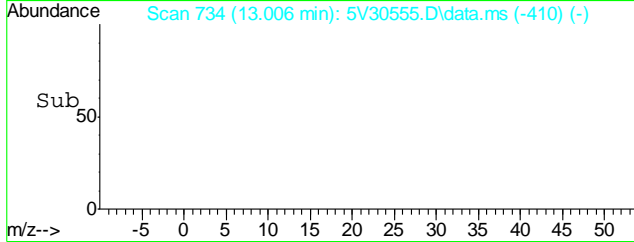
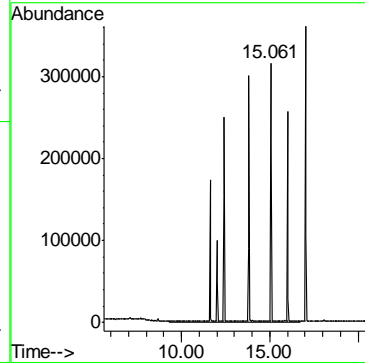
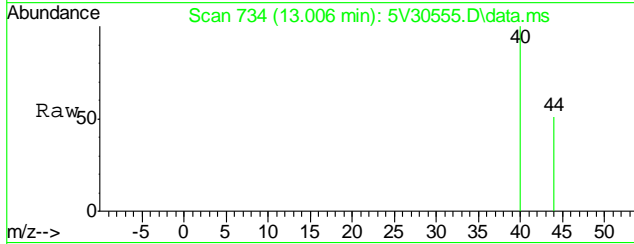
Quant Time: Feb 06 12:45:58 2014
 Quant Method : C:\msdchem\1\METHODS\V5AP1794TVH1794.M
 Quant Title : 8260
 QLast Update : Fri Nov 15 11:18:49 2013
 Response via : Initial Calibration



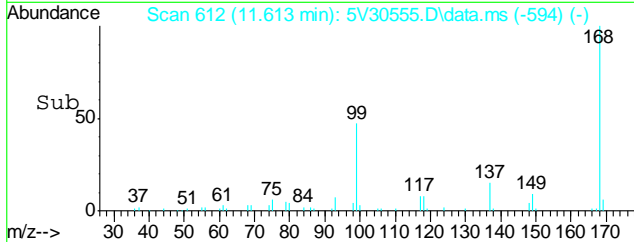
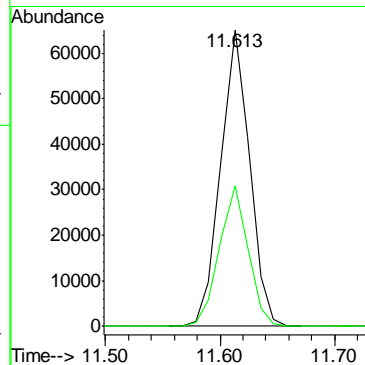
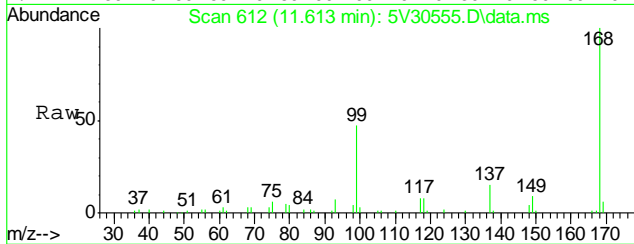
7.2.1
7

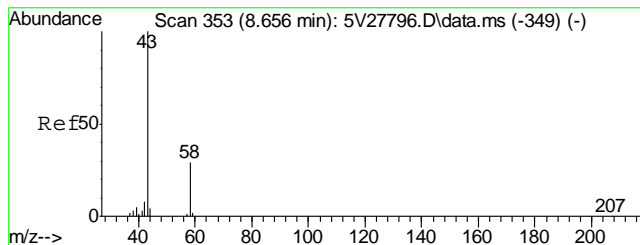


#1
 TVH-Gasoline
 Concen: 68.11 ug/l m
 RT: 13.006 min Scan# 734
 Delta R.T. 0.000 min
 Lab File: 5V30555.D
 Acq: 6 Feb 2014 11:22 am
 Tgt Ion:TIC Resp: -13938



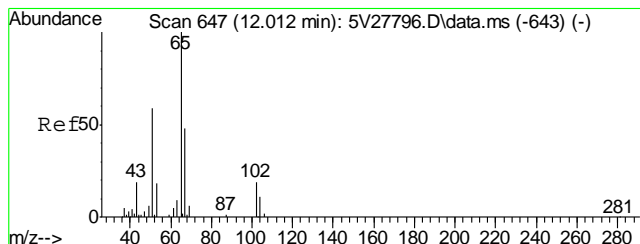
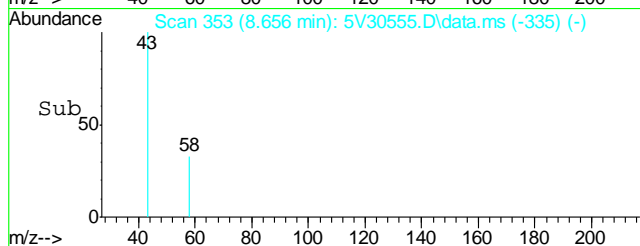
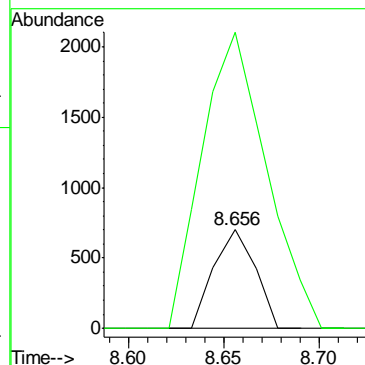
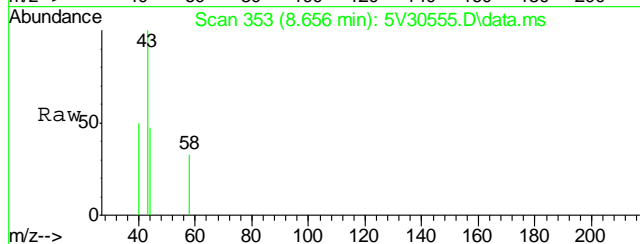
#2
 Pentafluorobenzene
 Concen: 50.00 ug/l
 RT: 11.613 min Scan# 612
 Delta R.T. -0.000 min
 Lab File: 5V30555.D
 Acq: 6 Feb 2014 11:22 am
 Tgt Ion:168 Resp: 115002
 Ion Ratio Lower Upper
 168 100
 99 47.1 41.4 62.2





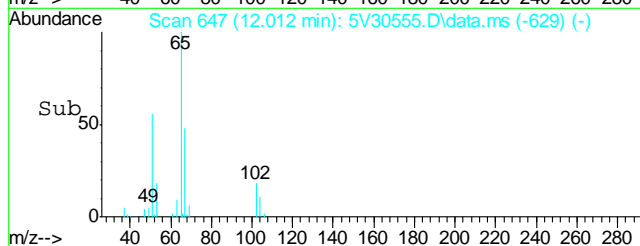
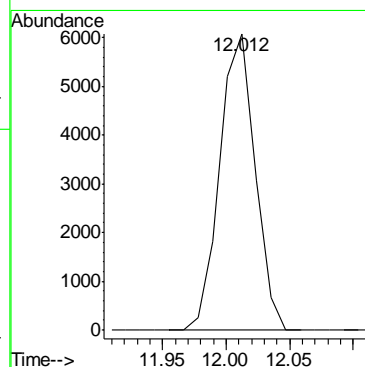
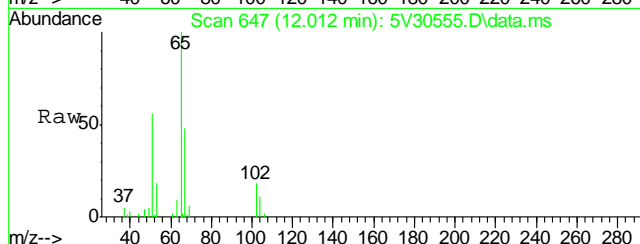
#15
 Acetone
 Concen: 6.32 ug/l
 RT: 8.656 min Scan# 353
 Delta R.T. 0.001 min
 Lab File: 5V30555.D
 Acq: 6 Feb 2014 11:22 am

Tgt Ion: 58 Resp: 1067
 Ion Ratio Lower Upper
 58 100
 43 464.4 355.9 395.9#

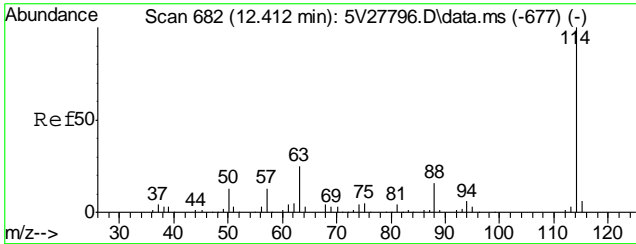


#35
 1,2-Dichloroethane-d4
 Concen: 57.13 ug/l
 RT: 12.012 min Scan# 647
 Delta R.T. -0.000 min
 Lab File: 5V30555.D
 Acq: 6 Feb 2014 11:22 am

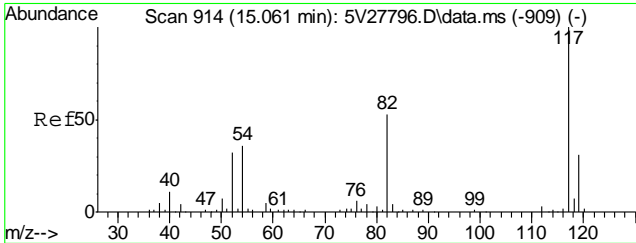
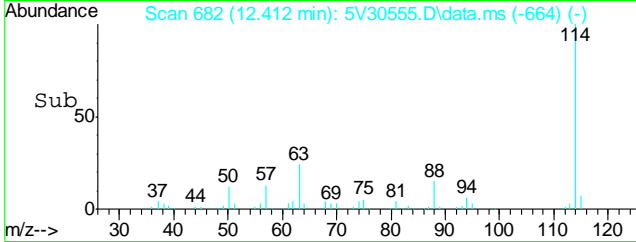
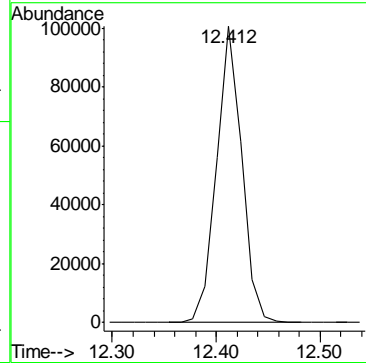
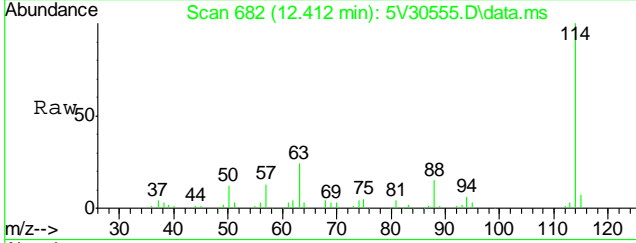
Tgt Ion: 102 Resp: 11728



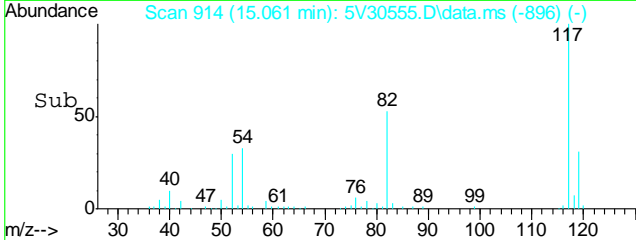
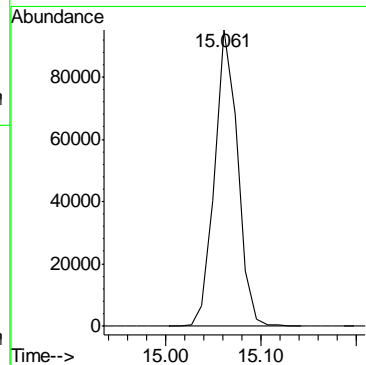
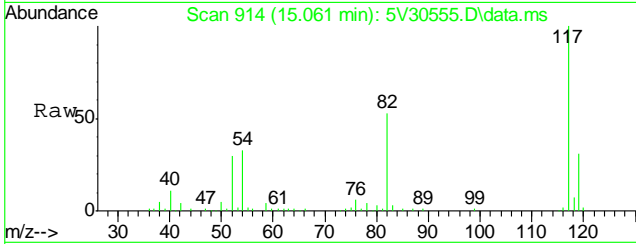
7.2.1
 7



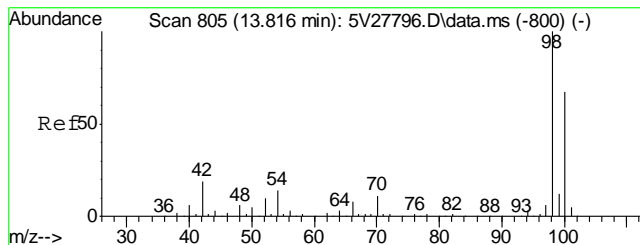
#37
 1,4-Difluorobenzene
 Concen: 50.00 ug/l
 RT: 12.412 min Scan# 682
 Delta R.T. -0.000 min
 Lab File: 5V30555.D
 Acq: 6 Feb 2014 11:22 am
 Tgt Ion:114 Resp: 170121



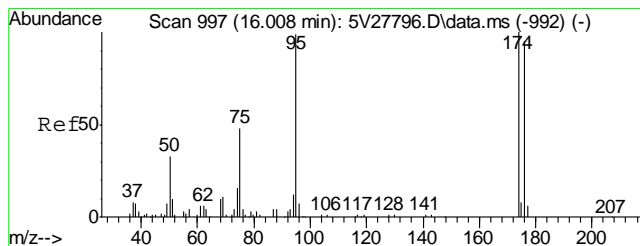
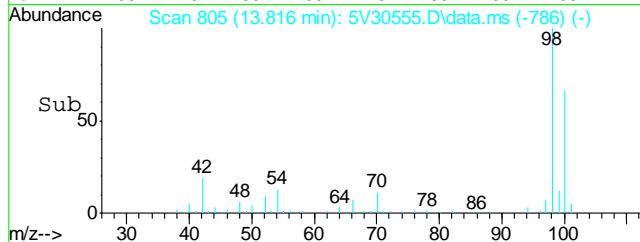
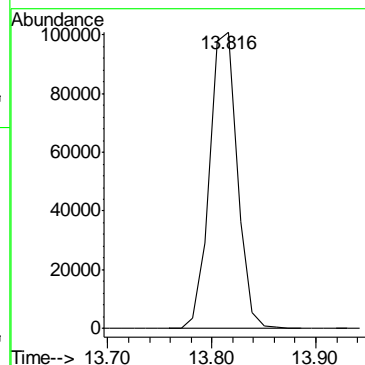
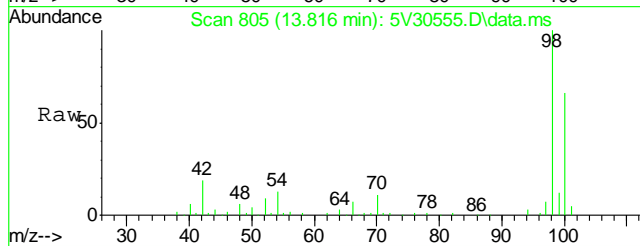
#56
 Chlorobenzene-d5
 Concen: 50.00 ug/l
 RT: 15.061 min Scan# 914
 Delta R.T. -0.000 min
 Lab File: 5V30555.D
 Acq: 6 Feb 2014 11:22 am
 Tgt Ion:117 Resp: 158537



7.2.1
7



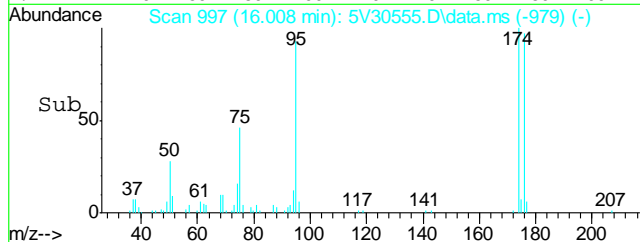
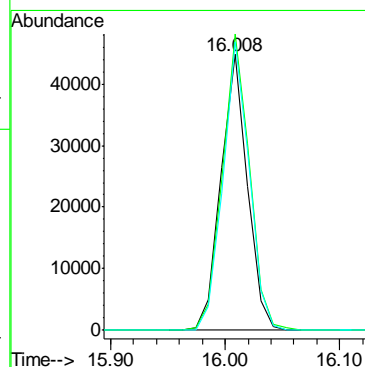
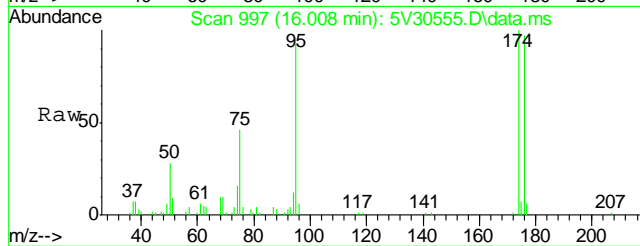
#64
 Toluene-d8
 Concen: 48.39 ug/l
 RT: 13.816 min Scan# 805
 Delta R.T. 0.011 min
 Lab File: 5V30555.D
 Acq: 6 Feb 2014 11:22 am
 Tgt Ion: 98 Resp: 187926



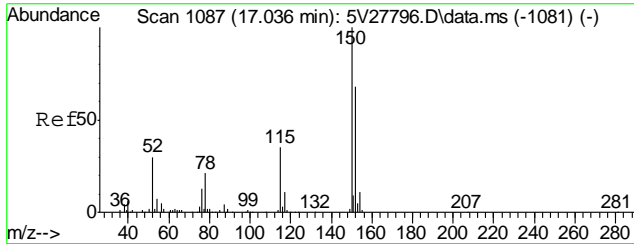
#72
 4-Bromofluorobenzene
 Concen: 45.04 ug/l
 RT: 16.008 min Scan# 997
 Delta R.T. -0.000 min
 Lab File: 5V30555.D
 Acq: 6 Feb 2014 11:22 am

Tgt Ion: 95 Resp: 72301

Ion	Ratio	Lower	Upper
95	100		
174	109.2	85.4	125.4
176	103.7	80.6	120.6

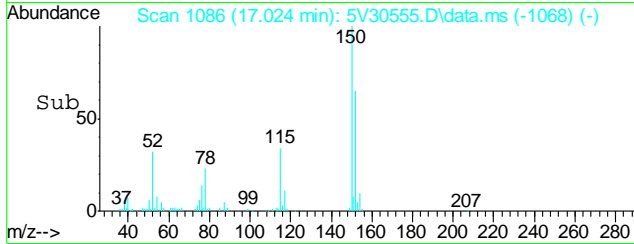
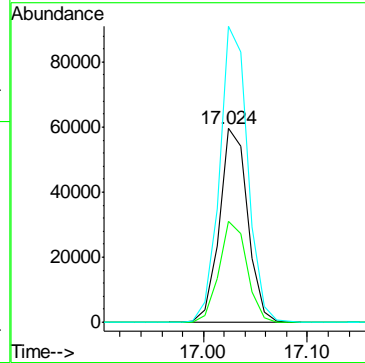
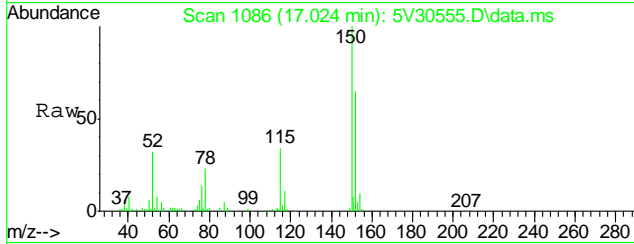


7.2.1
 7



#77
 1,4-Dichlorobenzene-d4
 Concen: 50.00 ug/l
 RT: 17.024 min Scan# 1086
 Delta R.T. -0.000 min
 Lab File: 5V30555.D
 Acq: 6 Feb 2014 11:22 am

Tgt Ion	Resp	Lower	Upper
152	112539		
152	100		
115	51.3	43.4	65.2
150	152.6	142.9	214.3



7.2.1

7

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

Job Number: D54856
Account: XTOKRWR XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9352-MB	3G17951.D	1	02/07/14	DC	02/06/14	OP9352	E3G893

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D54856-1

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	8.3	4.3	ug/kg	
120-12-7	Anthracene	ND	8.3	4.3	ug/kg	
56-55-3	Benzo(a)anthracene	ND	8.3	4.3	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	8.3	4.3	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	8.3	4.3	ug/kg	
50-32-8	Benzo(a)pyrene	ND	8.3	4.3	ug/kg	
218-01-9	Chrysene	ND	8.3	4.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	8.3	4.3	ug/kg	
206-44-0	Fluoranthene	ND	8.3	4.3	ug/kg	
86-73-7	Fluorene	ND	8.3	5.0	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	8.3	4.3	ug/kg	
91-20-3	Naphthalene	ND	12	10	ug/kg	
129-00-0	Pyrene	ND	8.3	4.3	ug/kg	

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	77% 10-175%
321-60-8	2-Fluorobiphenyl	59% 25-130%
1718-51-0	Terphenyl-d14	74% 41-133%

Blank Spike Summary

Job Number: D54856
Account: XTOKRWR XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9352-BS	3G17952.D	1	02/07/14	DC	02/06/14	OP9352	E3G893

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D54856-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	70.9	85	55-130
120-12-7	Anthracene	83.3	74.5	89	60-130
56-55-3	Benzo(a)anthracene	83.3	57.3	69	62-130
205-99-2	Benzo(b)fluoranthene	83.3	60.2	72	55-130
207-08-9	Benzo(k)fluoranthene	83.3	78.4	94	59-130
50-32-8	Benzo(a)pyrene	83.3	65.1	78	64-130
218-01-9	Chrysene	83.3	79.4	95	70-130
53-70-3	Dibenzo(a,h)anthracene	83.3	73.8	89	56-130
206-44-0	Fluoranthene	83.3	67.8	81	59-130
86-73-7	Fluorene	83.3	64.6	78	58-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	72.0	86	60-130
91-20-3	Naphthalene	83.3	69.4	83	56-130
129-00-0	Pyrene	83.3	70.0	84	65-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	89%	10-175%
321-60-8	2-Fluorobiphenyl	78%	25-130%
1718-51-0	Terphenyl-d14	86%	41-133%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D54856
Account: XTOKRWR XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9352-MS	3G17954.D	1	02/07/14	DC	02/06/14	OP9352	E3G893
OP9352-MSD	3G17955.D	1	02/07/14	DC	02/06/14	OP9352	E3G893
D54699-1	3G17953.D	1	02/07/14	DC	02/06/14	OP9352	E3G893

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D54856-1

CAS No.	Compound	D54699-1 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND	88	73.9	84	59.9	68	21	29-139/30
120-12-7	Anthracene	ND	88	69.5	79	59.1	67	16	10-182/30
56-55-3	Benzo(a)anthracene	ND	88	60.3	69	56.3	64	7	35-149/30
205-99-2	Benzo(b)fluoranthene	ND	88	62.8	71	53.8	61	15	22-174/30
207-08-9	Benzo(k)fluoranthene	ND	88	83.1	94	74.1	84	11	10-185/30
50-32-8	Benzo(a)pyrene	ND	88	67.6	77	64.3	73	5	10-168/30
218-01-9	Chrysene	ND	88	83.4	95	74.4	85	11	10-168/30
53-70-3	Dibenzo(a,h)anthracene	ND	88	73.7	84	70.9	81	4	12-160/30
206-44-0	Fluoranthene	ND	88	73.1	83	66.2	75	10	20-156/30
86-73-7	Fluorene	ND	88	66.0	75	56.1	64	16	10-164/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND	88	72.5	82	70.0	80	4	29-136/30
91-20-3	Naphthalene	ND	88	72.4	82	61.1	69	17	10-258/30
129-00-0	Pyrene	ND	88	73.1	83	66.0	75	10	10-196/30

CAS No.	Surrogate Recoveries	MS	MSD	D54699-1	Limits
4165-60-0	Nitrobenzene-d5	85%	81%	86%	10-175%
321-60-8	2-Fluorobiphenyl	75%	69%	81%	25-130%
1718-51-0	Terphenyl-d14	79%	81%	94%	41-133%

* = Outside of Control Limits.

GC/MS Semi-volatiles

Raw Data

6

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\020714\
 Data File : 3g17964.D
 Acq On : 7 Feb 2014 2:42 pm
 Operator : DONC
 Sample : D54856-1
 Misc : OP9352,E3G893,30.00,,,1,1
 ALS Vial : 17 Sample Multiplier: 1

Quant Time: Feb 11 13:09:14 2014
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G889.M
 Quant Title : PAHSIM BASE
 QLast Update : Fri Feb 07 09:27:31 2014
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.523	136	539177	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.230	164	335451	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.699	188	513762	4.0000	ug/mL	0.00
19) Chrysene-d12	11.327	240	524552	4.0000	ug/mL	0.00
24) Perylene-d12	12.672	264	436761	4.0000	ug/mL	0.01

System Monitoring Compounds

2) Nitrobenzene-d5	4.837	82	1796307	23.3533	ug/mL	0.00
Spiked Amount	50.000	Range 25 - 135	Recovery	=	46.70%	
7) 2-Fluorobiphenyl	6.568	172	3234730	22.5584	ug/mL	0.00
Spiked Amount	50.000	Range 25 - 135	Recovery	=	45.12%	
21) Terphenyl-d14	10.290	244	4025942	36.4413	ug/mL	0.00
Spiked Amount	50.000	Range 25 - 135	Recovery	=	72.88%	

Target Compounds

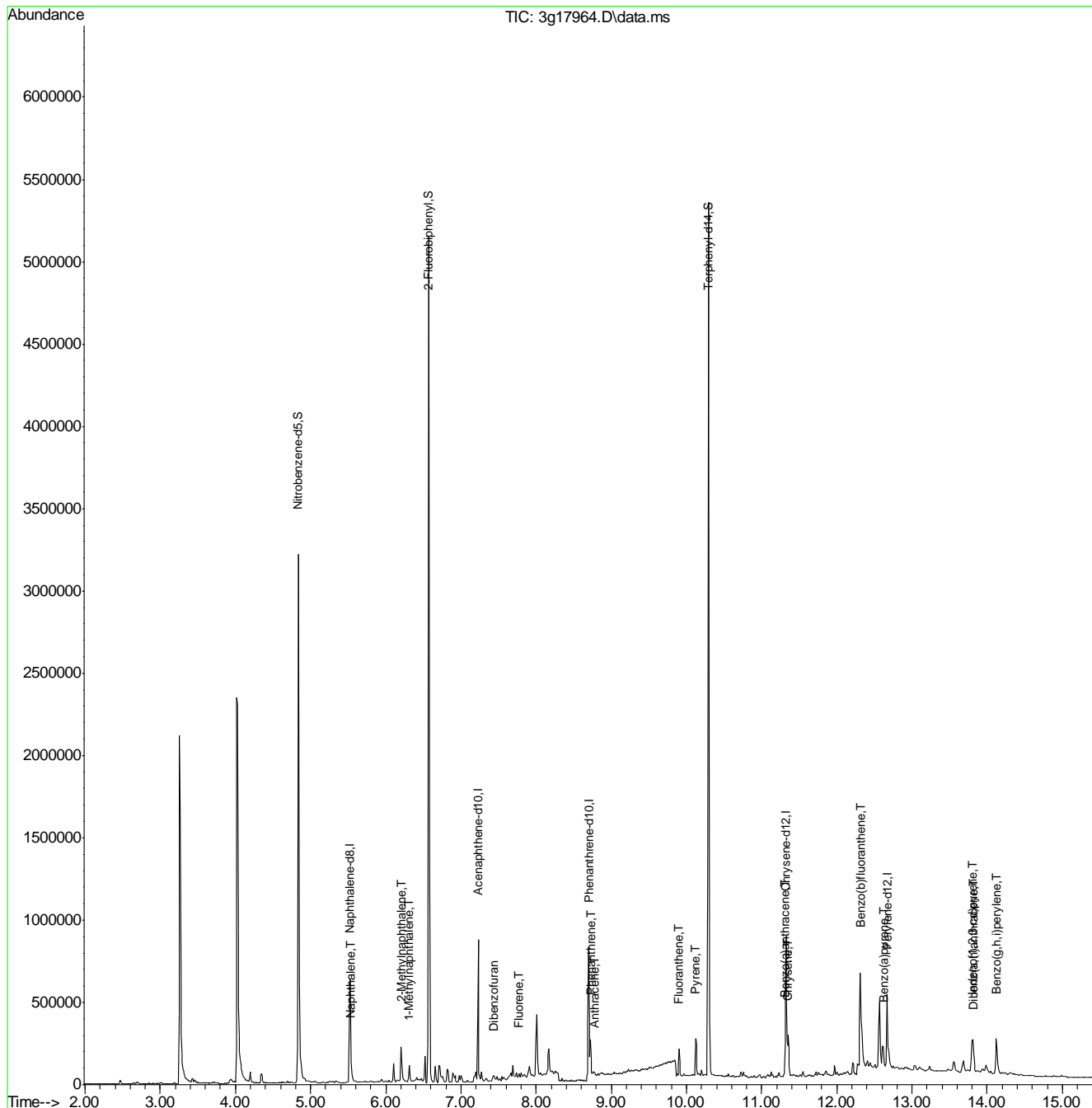
					Qvalue
3) N-Nitrosodimethylamine	0.000	74	0	N.D.	d
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.535	128	59148	0.3122	ug/mL 89
8) 2-Methylnaphthalene	6.208	142	113201	0.9211	ug/mL 91
9) 1-Methylnaphthalene	6.308	142	40078	0.3803	ug/mL 96
10) Acenaphthylene	7.088	152	2125	N.D.	
11) Acenaphthene	0.000	154	0	N.D.	d
12) Dibenzofuran	7.442	168	16584	0.1067	ug/mL 85
13) Fluorene	7.773	166	12872m	0.0893	ug/mL
14) Diphenylamine	0.000	169	0	N.D.	d
16) Phenanthrene	8.723	178	142911	0.7567	ug/mL# 75
17) Anthracene	8.778	178	10629	0.0555	ug/mL 85
18) Fluoranthene	9.902	202	111389	0.5194	ug/mL# 38
20) Pyrene	10.124	202	131248	0.5786	ug/mL 97
22) Benzo(a)anthracene	11.313	228	90883	0.4454	ug/mL 80
23) Chrysene	11.347	228	160788	0.8225	ug/mL 97
25) Benzo(b)fluoranthene	12.314	252	504083	2.1562	ug/mL# 73
26) Benzo(k)fluoranthene	0.000	252	0	N.D.	d
27) Benzo(a)pyrene	12.619	252	105916	0.5453	ug/mL# 72
28) Indeno(1,2,3-cd)pyrene	13.808	276	187653	0.9229	ug/mL# 60
29) Dibenz(a,h)anthracene	13.818	278	56336	0.3307	ug/mL# 1
30) Benzo(g,h,i)perylene	14.123	276	209701	1.2337	ug/mL 96

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

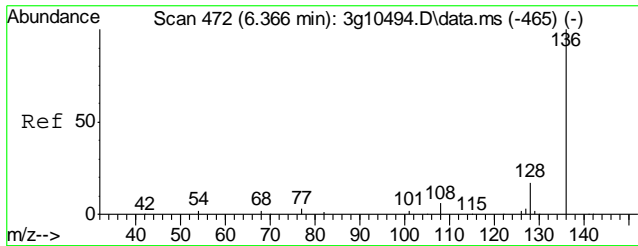
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\020714\
 Data File : 3g17964.D
 Acq On : 7 Feb 2014 2:42 pm
 Operator : DONC
 Sample : D54856-1
 Misc : OP9352,E3G893,30.00,,,1,1
 ALS Vial : 17 Sample Multiplier: 1

Quant Time: Feb 11 13:09:14 2014
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G889.M
 Quant Title : PAHSIM BASE
 QLast Update : Fri Feb 07 09:27:31 2014
 Response via : Initial Calibration

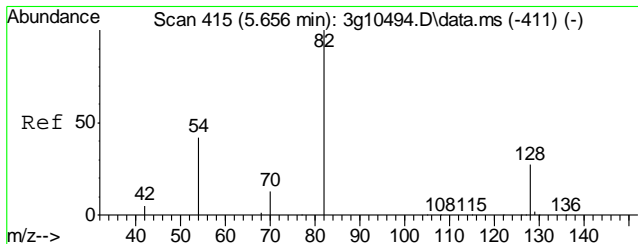
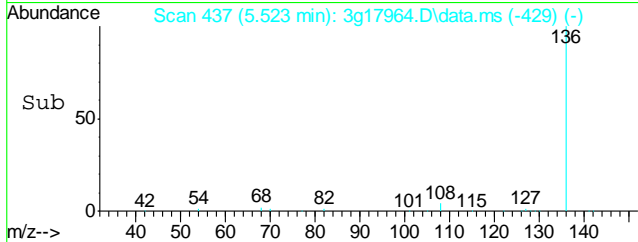
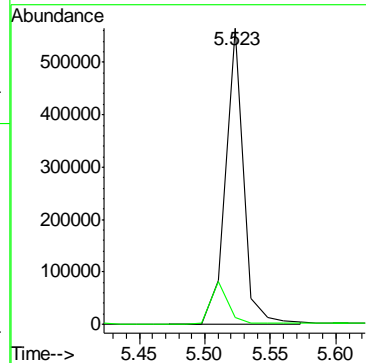
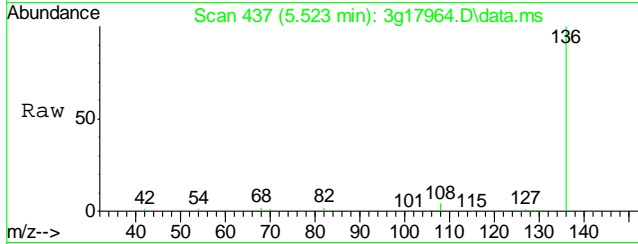


9.1.1
9



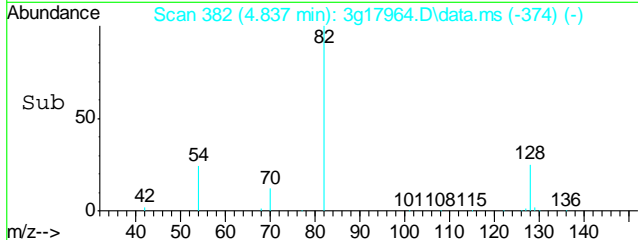
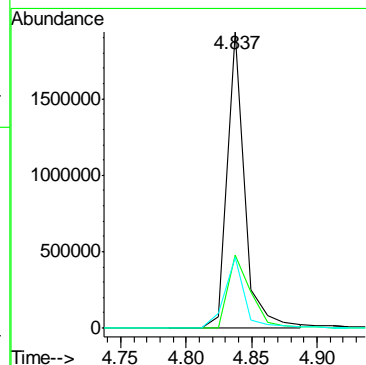
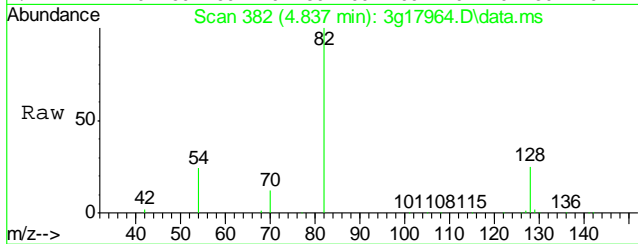
#1
 Naphthalene-d8
 Concen: 4.0000 ug/mL
 RT: 5.523 min Scan# 437
 Delta R.T. -0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

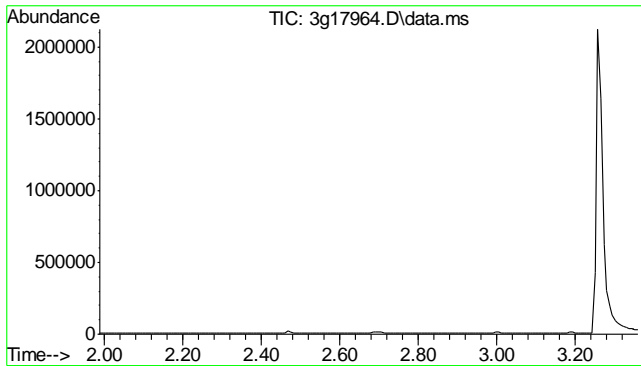
Tgt Ion:	136	Resp:	539177
Ion Ratio	100	Lower	Upper
68	14.4	0.0	28.4



#2
 Nitrobenzene-d5
 Concen: 23.3533 ug/mL
 RT: 4.837 min Scan# 382
 Delta R.T. 0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

Tgt Ion:	82	Resp:	1796307
Ion Ratio	100	Lower	Upper
128	32.3	6.9	46.9
54	27.1	11.0	51.0

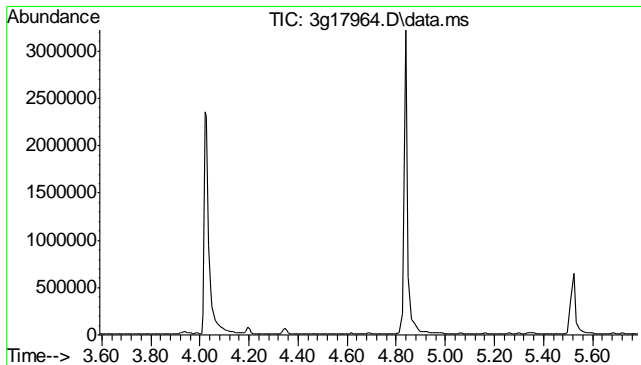
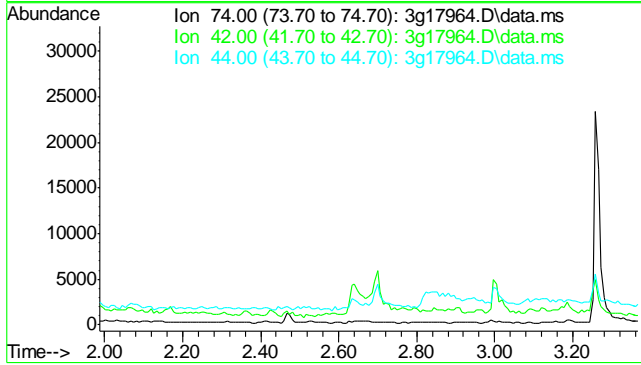




#3
 N-Nitrosodimethylamine
 Concen: N.D. ug/mL
 Expected RT: 2.26 min

Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

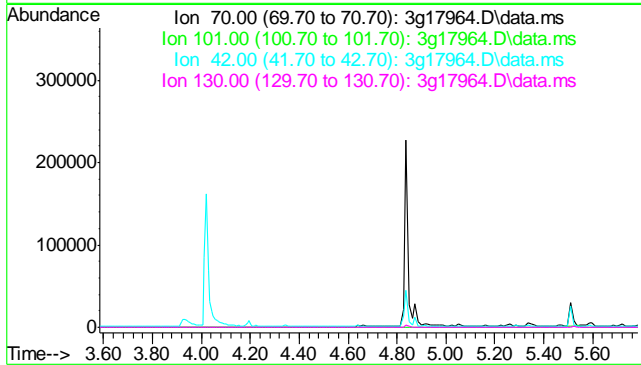
Tgt Ion:	74
Sig	Exp Ratio
74	100
42	36.2
44	1.5

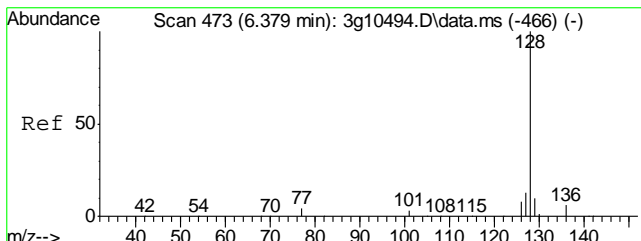


#4
 N-Nitrosodi-propylamine
 Concen: N.D. ug/mL
 Expected RT: 4.69 min

Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

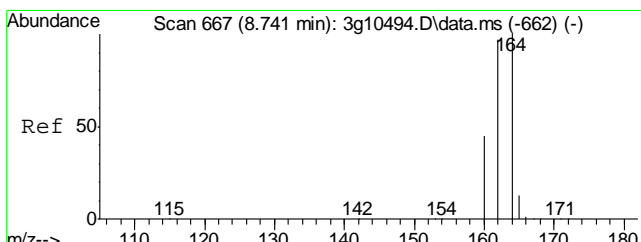
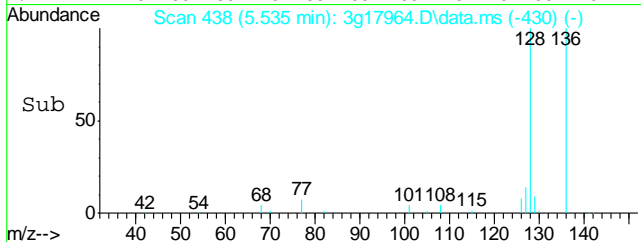
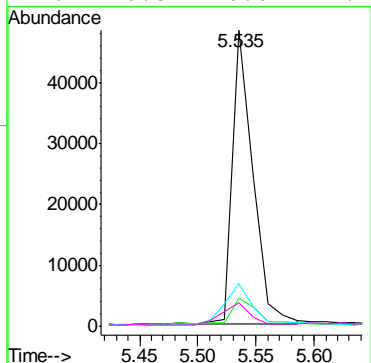
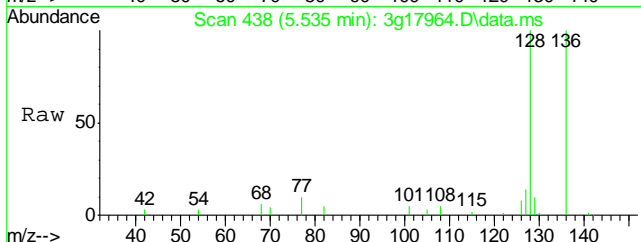
Tgt Ion:	70
Sig	Exp Ratio
70	100
101	11.6
42	22.8
130	17.5





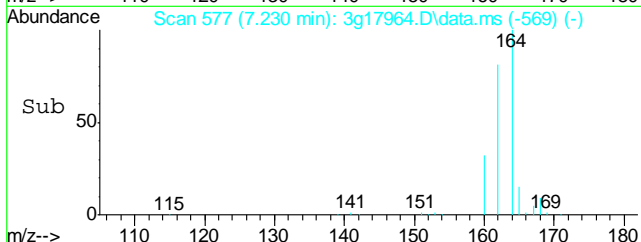
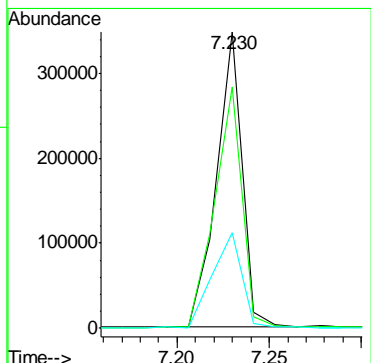
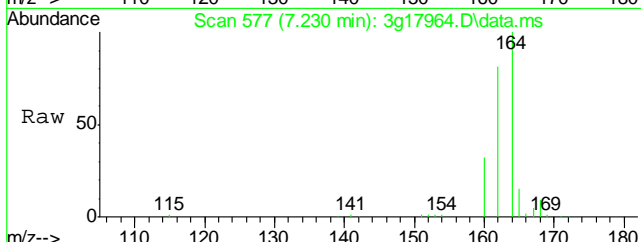
#5
 Naphthalene
 Concen: 0.3122 ug/mL
 RT: 5.535 min Scan# 438
 Delta R.T. -0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

Tgt Ion	Resp	Lower	Upper
128	59148	100	
129	12.7	0.0	31.0
127	20.7	0.0	33.5
126	10.8	0.0	27.4

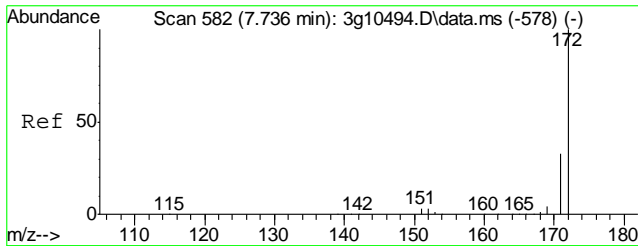


#6
 Acenaphthene-d10
 Concen: 4.0000 ug/mL
 RT: 7.230 min Scan# 577
 Delta R.T. 0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

Tgt Ion	Resp	Lower	Upper
164	335451	100	
162	87.1	70.6	110.6
160	36.9	21.3	61.3

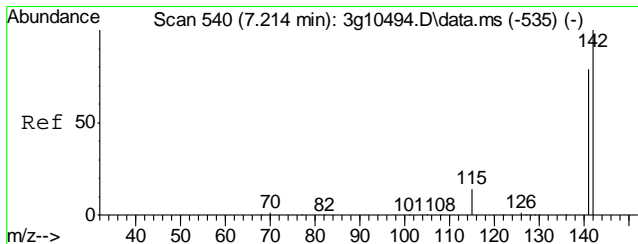
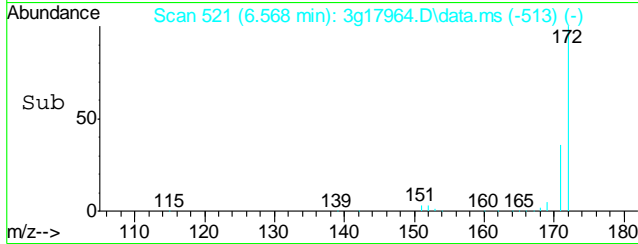
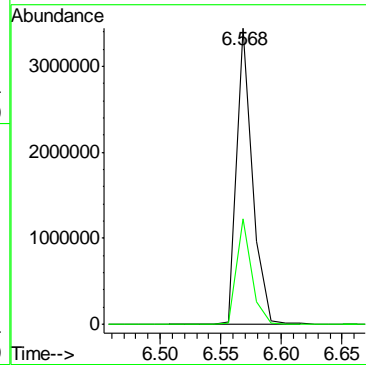
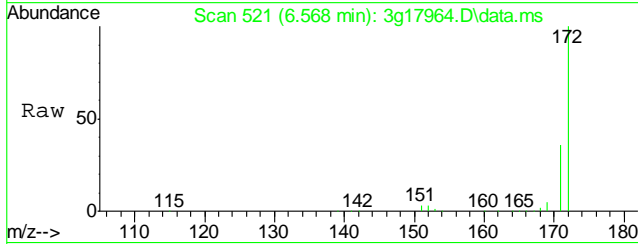


9.1.1
9



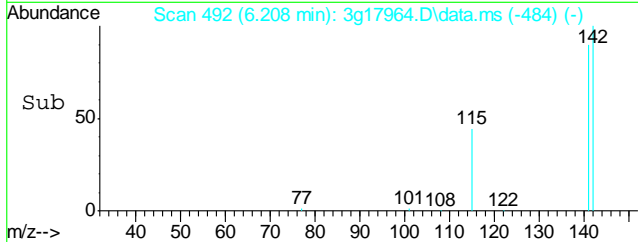
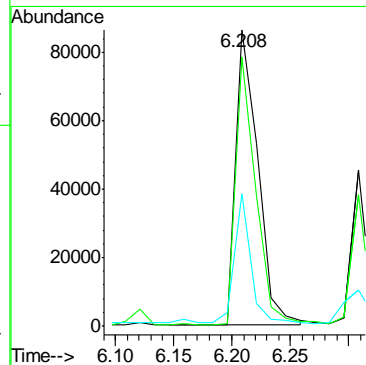
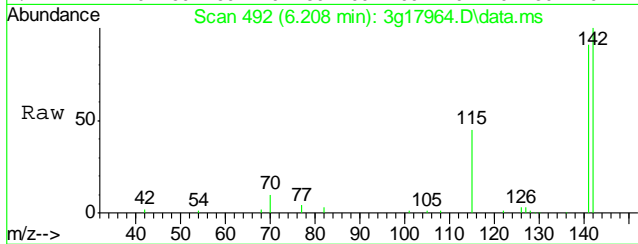
#7
 2-Fluorobiphenyl
 Concen: 22.5584 ug/mL
 RT: 6.568 min Scan# 521
 Delta R.T. -0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

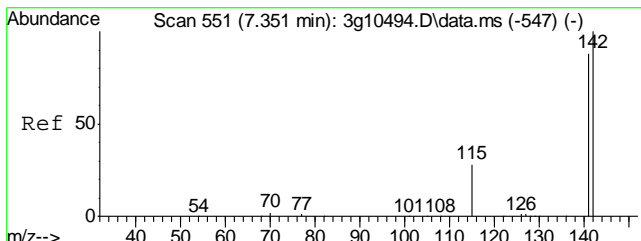
Tgt Ion:172 Resp: 3234730
 Ion Ratio Lower Upper
 172 100
 171 33.7 14.1 54.1



#8
 2-Methylnaphthalene
 Concen: 0.9211 ug/mL
 RT: 6.208 min Scan# 492
 Delta R.T. -0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

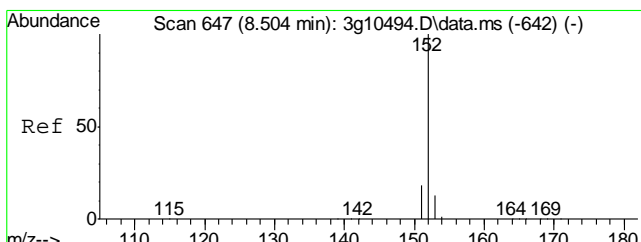
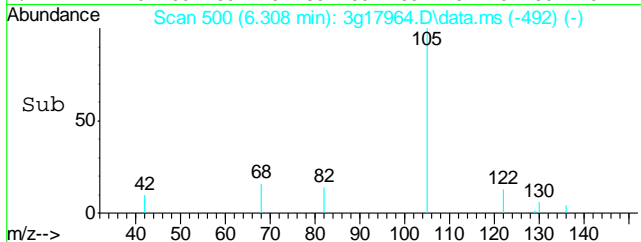
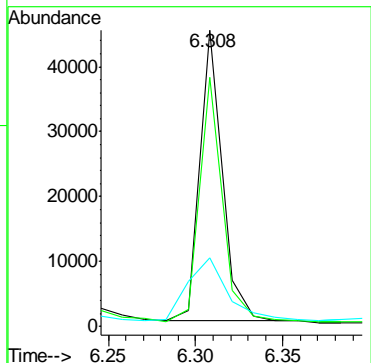
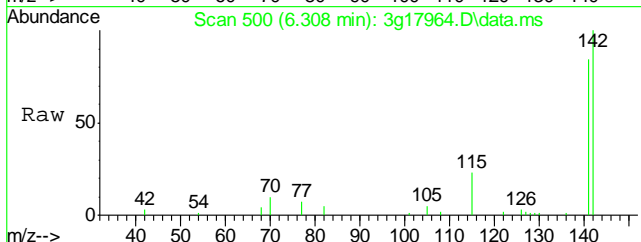
Tgt Ion:142 Resp: 113201
 Ion Ratio Lower Upper
 142 100
 141 82.7 61.4 101.4
 115 32.1 26.9 66.9





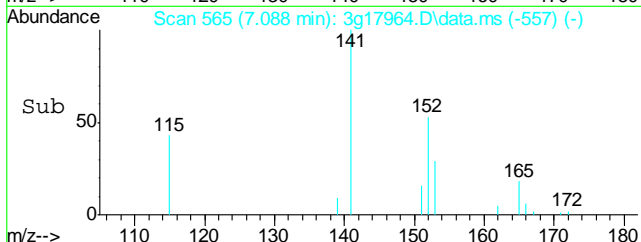
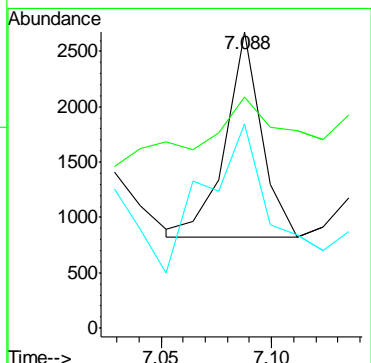
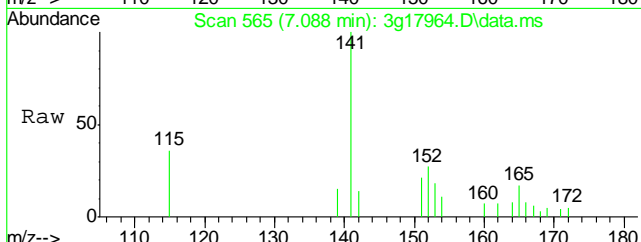
#9
 1-Methylnaphthalene
 Concen: 0.3803 ug/mL
 RT: 6.308 min Scan# 500
 Delta R.T. -0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

Tgt Ion	Resp	Lower	Upper
142	40078	100	
141	84.6	67.1	107.1
115	39.5	24.0	64.0

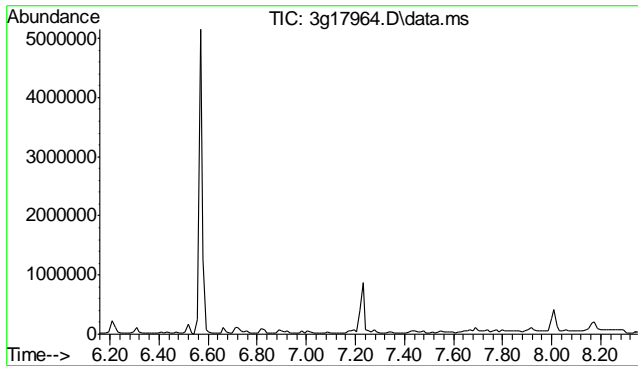


#10
 Acenaphthylene
 Concen: Below ug/mL
 RT: 7.088 min Scan# 565
 Delta R.T. -0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

Tgt Ion	Resp	Lower	Upper
152	2125	100	
151	37.3	0.9	40.9
153	130.0	0.0	33.8#

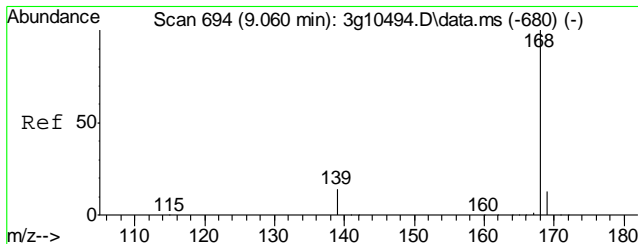
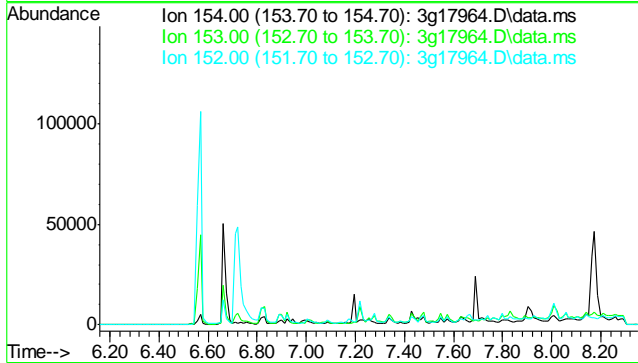


9.1.1
 9



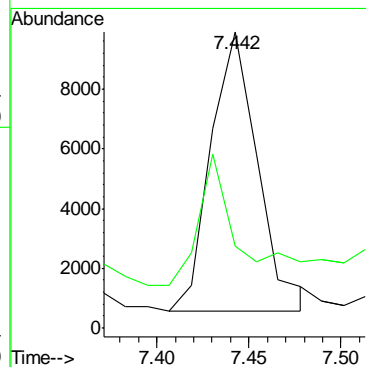
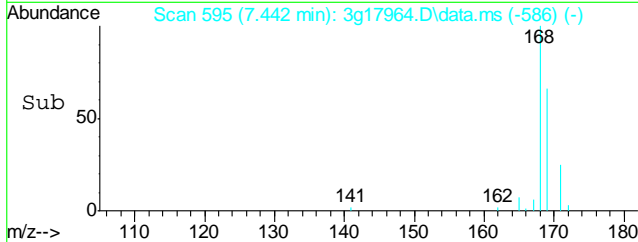
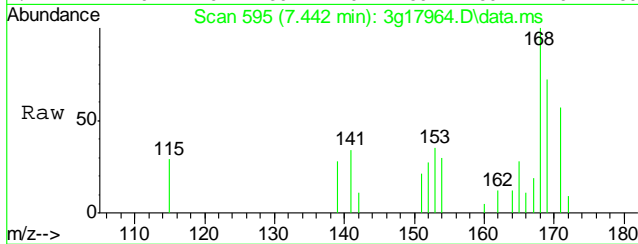
#11
 Acenaphthene
 Concen: N.D. ug/mL
 Expected RT: 7.25 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

Tgt Ion	Exp Ratio
154	100
153	102.9
152	43.8

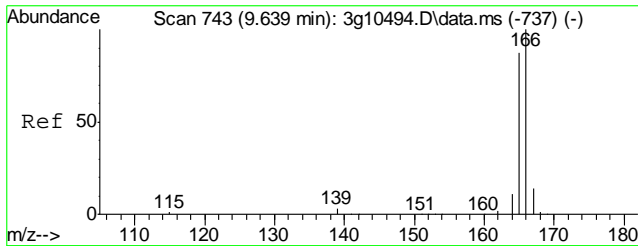


#12
 Dibenzofuran
 Concen: 0.1067 ug/mL
 RT: 7.442 min Scan# 595
 Delta R.T. 0.012 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

Tgt Ion	Resp	Lower	Upper
168	16584	100	100
139	40.3	11.7	51.7

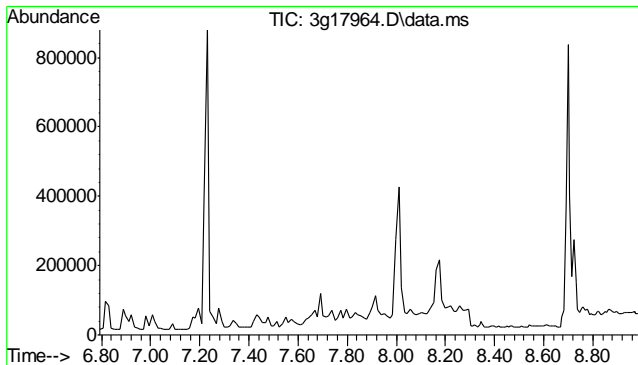
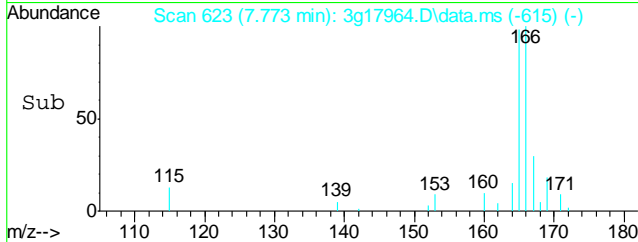
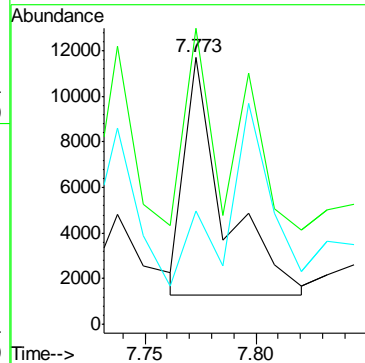
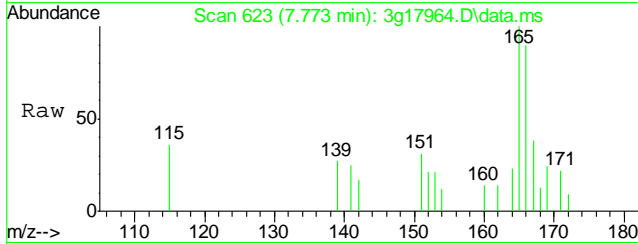


9.1.1
 9



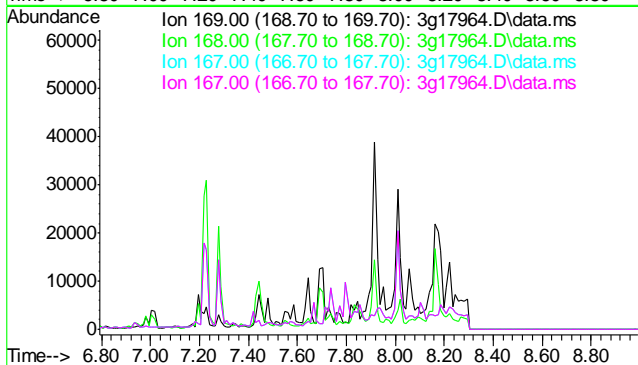
#13
 Fluorene
 Concen: 0.0893 ug/mL m
 RT: 7.773 min Scan# 623
 Delta R.T. 0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

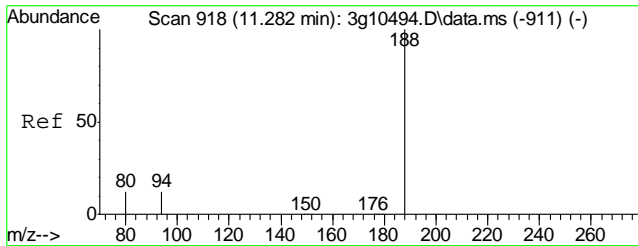
Tgt Ion	Resp	Lower	Upper
166	100		
165	106.8	71.7	111.7
167	88.8	0.0	33.0



#14
 Diphenylamine
 Concen: N.D. ug/mL
 Expected RT: 7.89 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

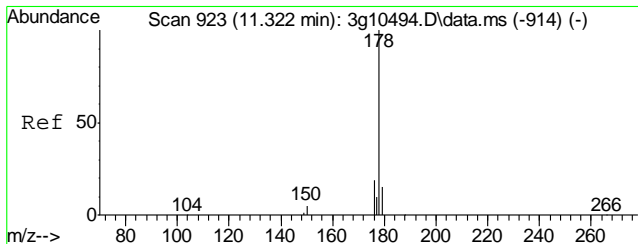
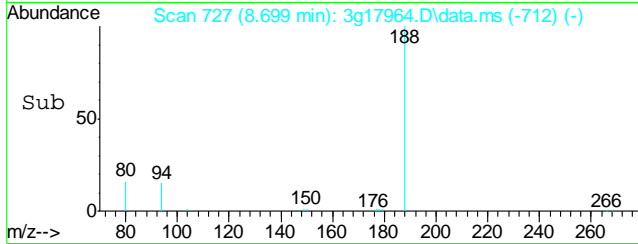
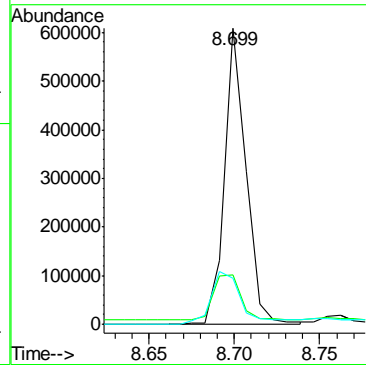
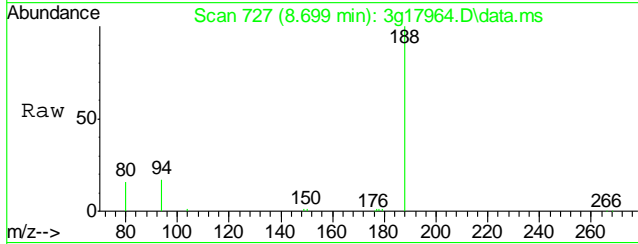
Tgt Ion	Sig	Exp Ratio
169	100	
168	60.6	
167	31.8	
167	31.8	





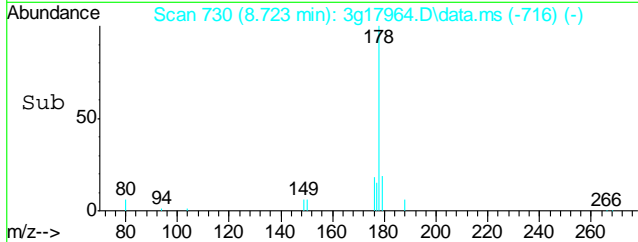
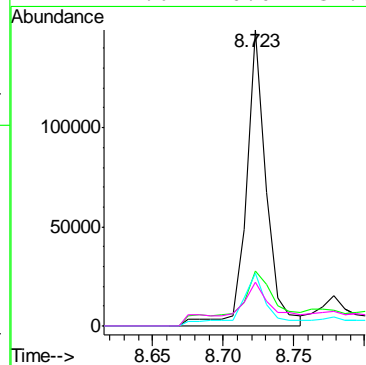
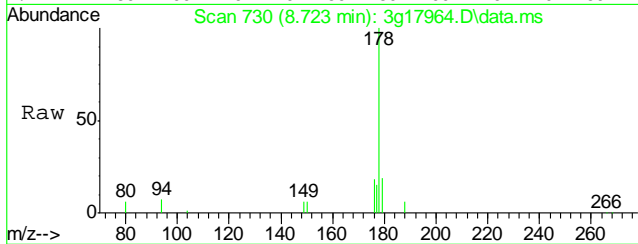
#15
 Phenanthrene-d10
 Concen: 4.0000 ug/mL
 RT: 8.699 min Scan# 727
 Delta R.T. 0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

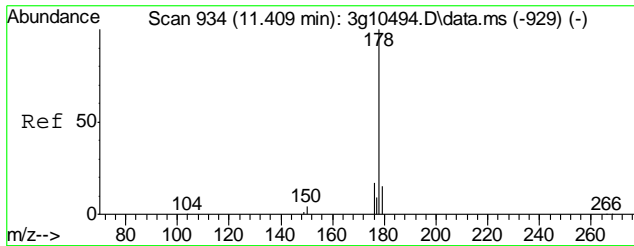
Tgt Ion	Resp	Lower	Upper
188	513762	100	
94	19.5	0.0	36.3
80	26.0	0.0	36.9



#16
 Phenanthrene
 Concen: 0.7567 ug/mL
 RT: 8.723 min Scan# 730
 Delta R.T. -0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

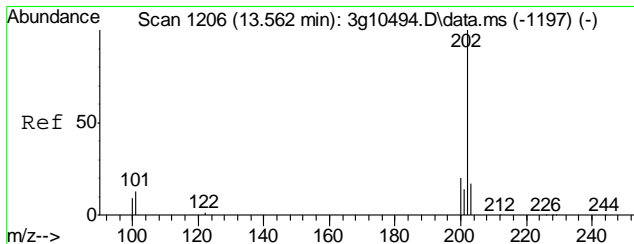
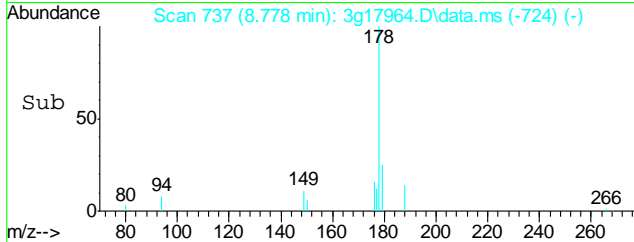
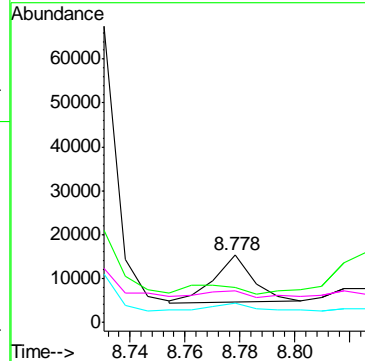
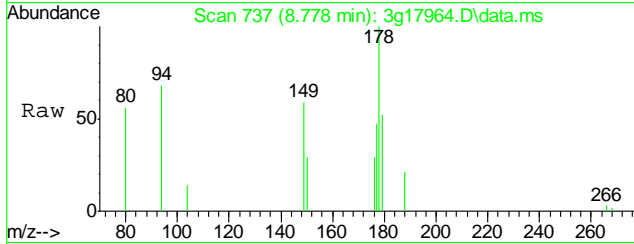
Tgt Ion	Resp	Lower	Upper
178	142911	100	
179	36.6	0.0	34.9#
176	24.0	0.0	38.2
177	14.6	0.0	31.8





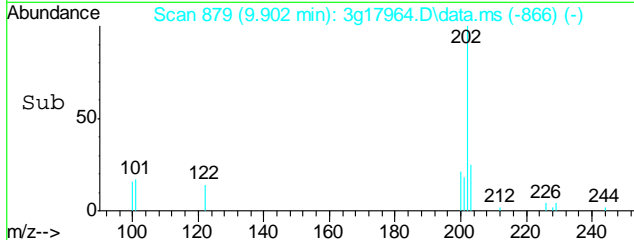
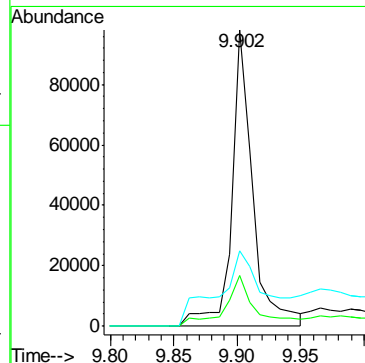
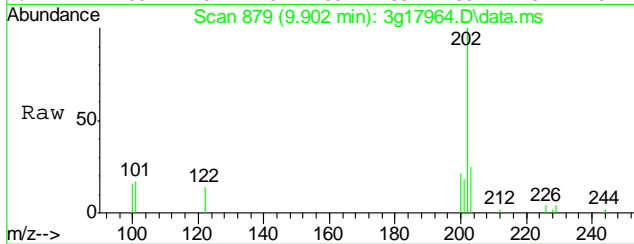
#17
 Anthracene
 Concen: 0.0555 ug/mL
 RT: 8.778 min Scan# 737
 Delta R.T. -0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

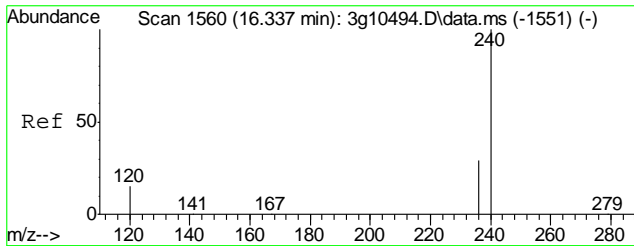
Tgt Ion	Resp	Lower	Upper
178	10629		
179	23.5	0.0	34.9
176	16.8	0.0	38.0
177	20.3	0.0	30.5



#18
 Fluoranthene
 Concen: 0.5194 ug/mL
 RT: 9.902 min Scan# 879
 Delta R.T. -0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

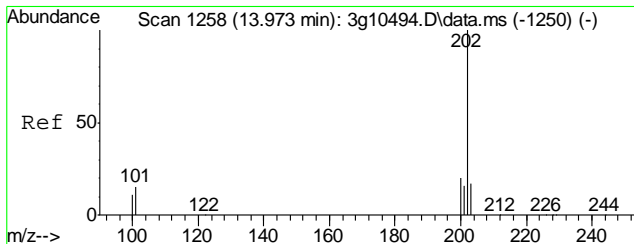
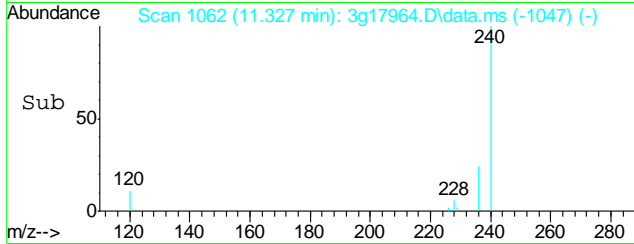
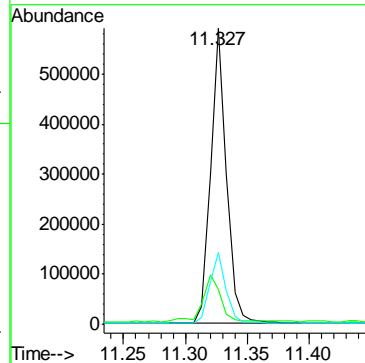
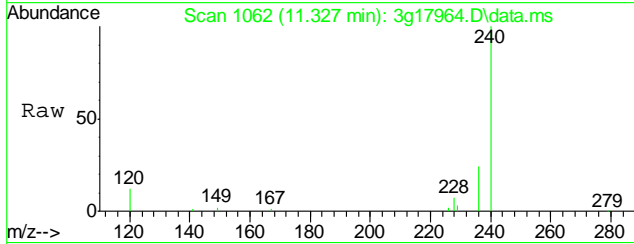
Tgt Ion	Resp	Lower	Upper
202	111389		
101	24.6	0.0	34.2
203	57.8	0.0	37.3#





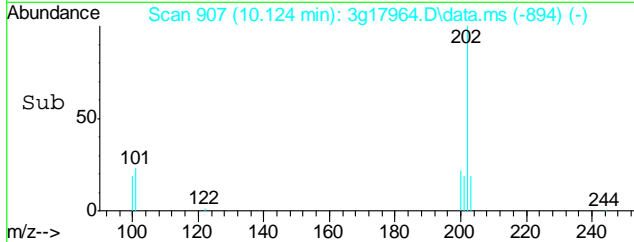
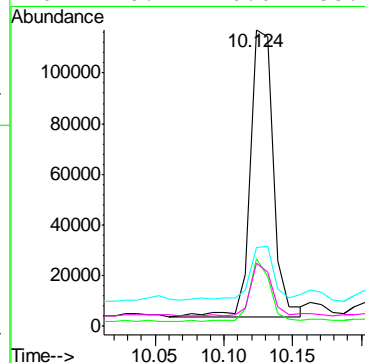
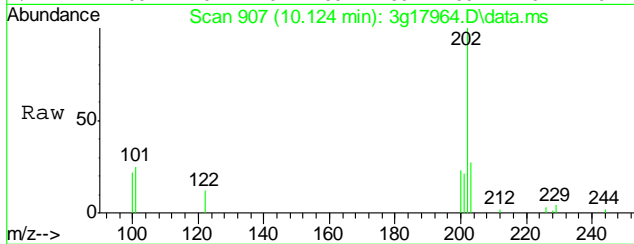
#19
 Chrysene-d12
 Concen: 4.0000 ug/mL
 RT: 11.327 min Scan# 1062
 Delta R.T. 0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

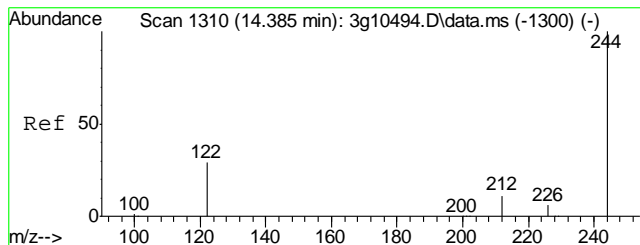
Tgt Ion	Ratio	Lower	Upper
240	100		
120	17.6	0.0	32.8
236	24.5	4.6	44.6



#20
 Pyrene
 Concen: 0.5786 ug/mL
 RT: 10.124 min Scan# 907
 Delta R.T. -0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

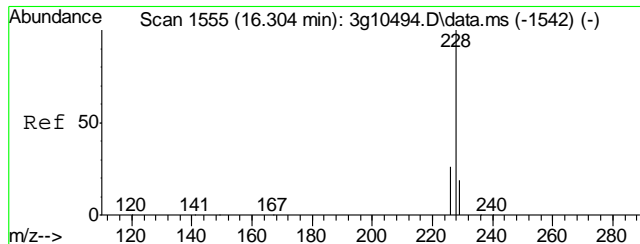
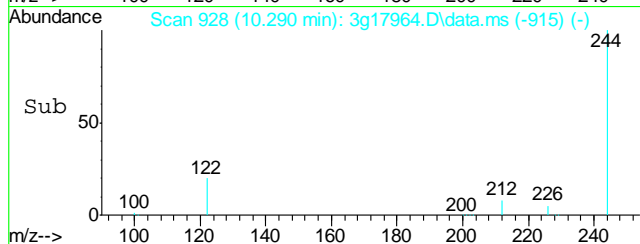
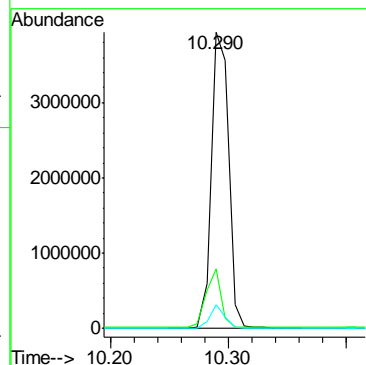
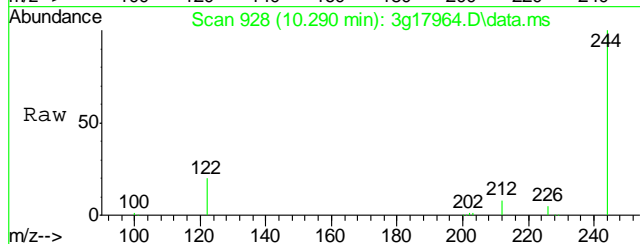
Tgt Ion	Ratio	Lower	Upper
202	100		
200	19.1	0.1	40.1
203	19.9	0.0	37.6
201	18.4	0.0	38.0





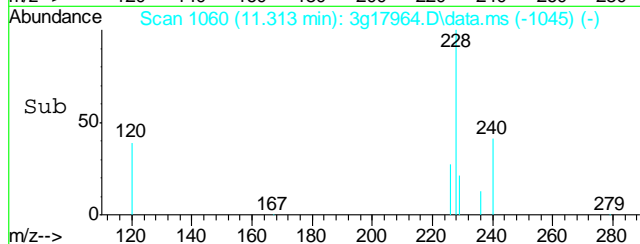
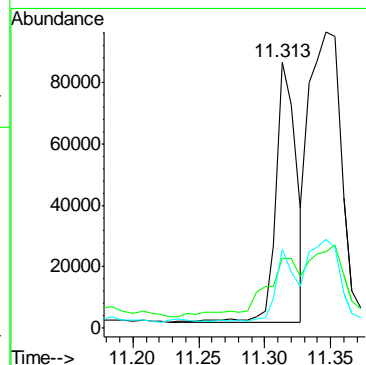
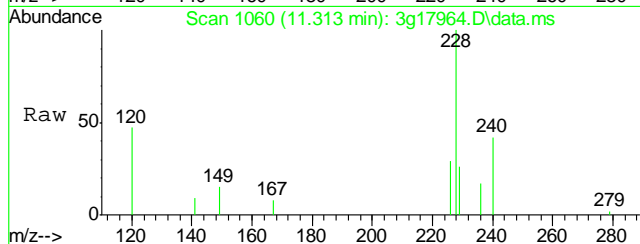
#21
 Terphenyl-d14
 Concen: 36.4413 ug/mL
 RT: 10.290 min Scan# 928
 Delta R.T. -0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

Tgt Ion	Ratio	Lower	Upper
244	100		
122	17.3	0.0	34.7
212	6.7	0.0	27.2

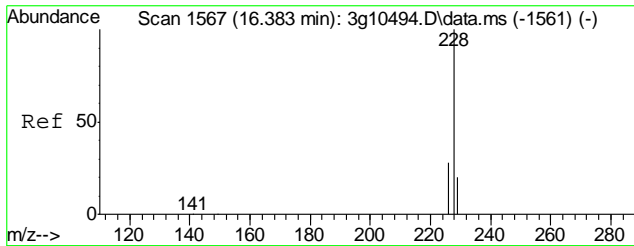


#22
 Benzo(a)anthracene
 Concen: 0.4454 ug/mL
 RT: 11.313 min Scan# 1060
 Delta R.T. -0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

Tgt Ion	Ratio	Lower	Upper
228	100		
229	39.0	0.0	39.5
226	27.4	5.9	45.9

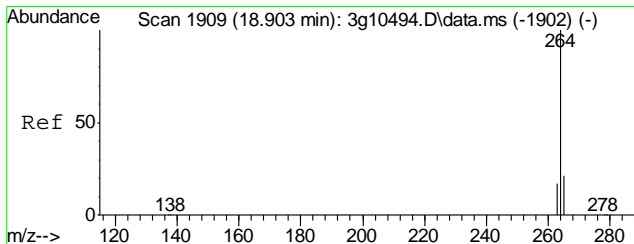
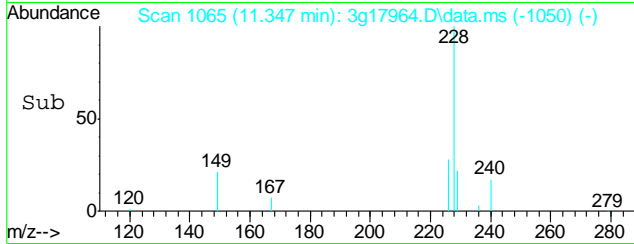
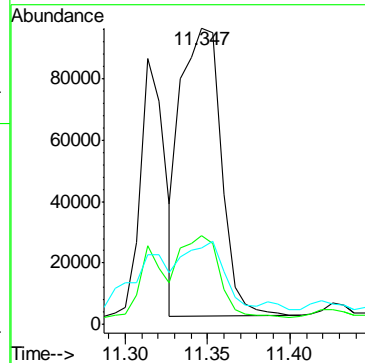
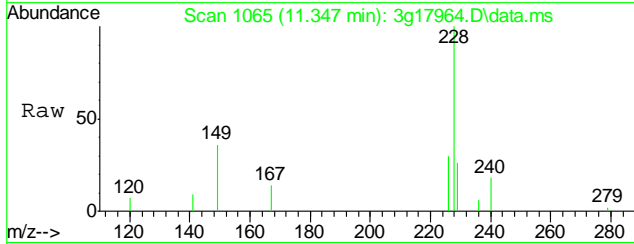


9.1.1
 9



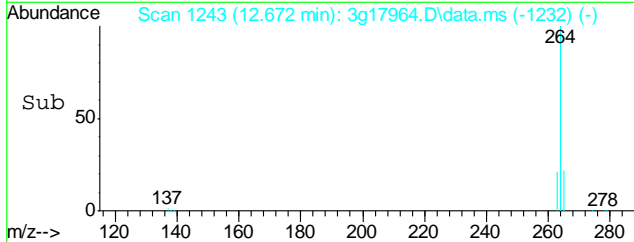
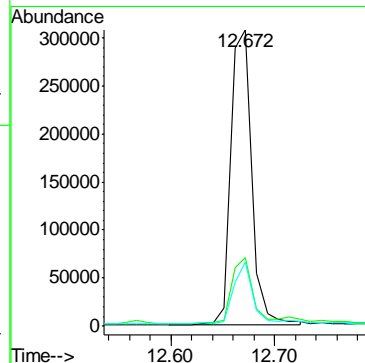
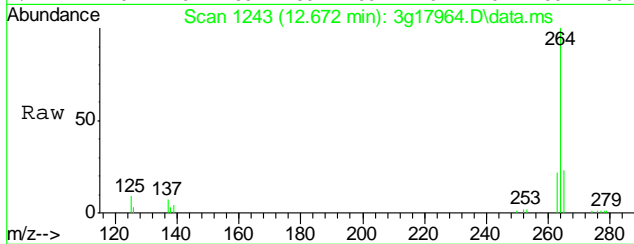
#23
 Chrysene
 Concen: 0.8225 ug/mL
 RT: 11.347 min Scan# 1065
 Delta R.T. 0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

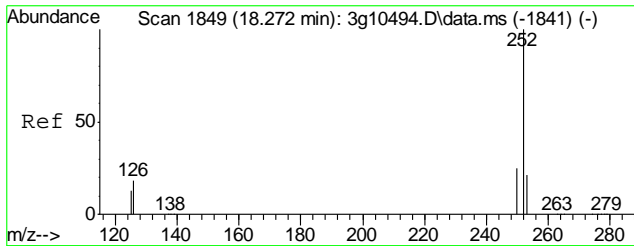
Tgt Ion	Resp	Lower	Upper
228	160788	100	
226	27.5	8.0	48.0
229	22.2	0.0	39.4



#24
 Perylene-d12
 Concen: 4.0000 ug/mL
 RT: 12.672 min Scan# 1243
 Delta R.T. 0.011 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

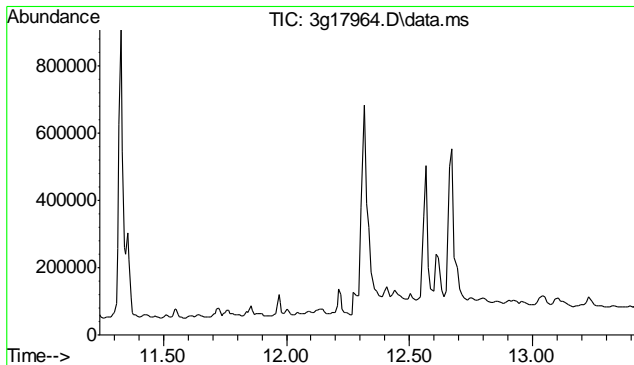
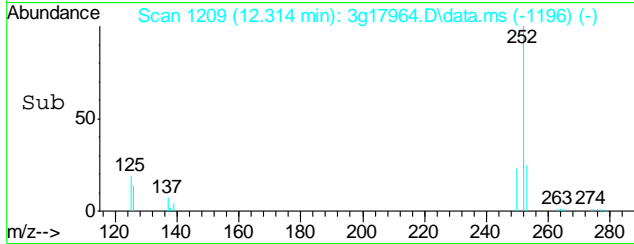
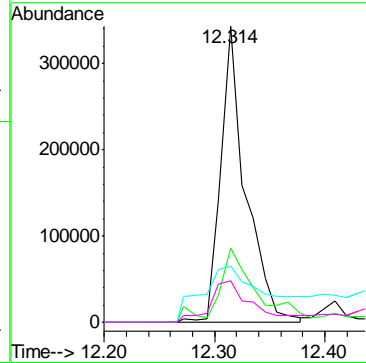
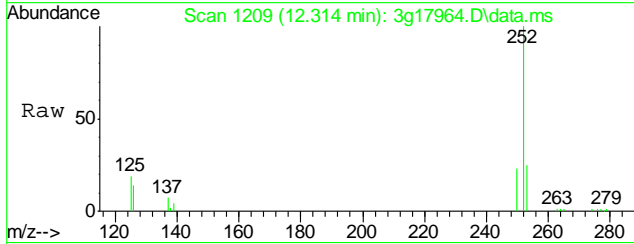
Tgt Ion	Resp	Lower	Upper
264	436761	100	
265	22.7	1.3	41.3
263	20.2	0.0	38.5





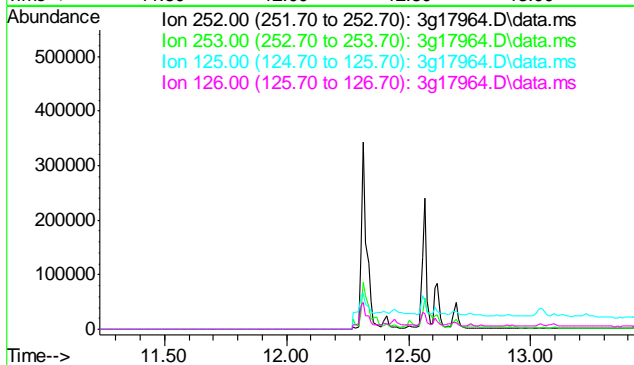
#25
 Benzo(b)fluoranthene
 Concen: 2.1562 ug/mL
 RT: 12.314 min Scan# 1209
 Delta R.T. -0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

Tgt Ion	Resp	Lower	Upper
252	100		
253	38.0	25.6	65.6
125	46.6	0.0	38.9#
126	24.0	0.0	30.9

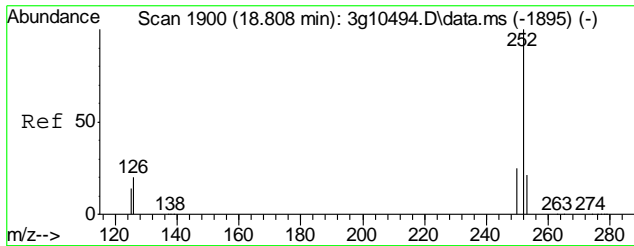


#26
 Benzo(k)fluoranthene
 Concen: N.D. ug/mL
 Expected RT: 12.34 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

Tgt Ion	Exp Ratio
252	100
253	41.1
125	17.0
126	9.8

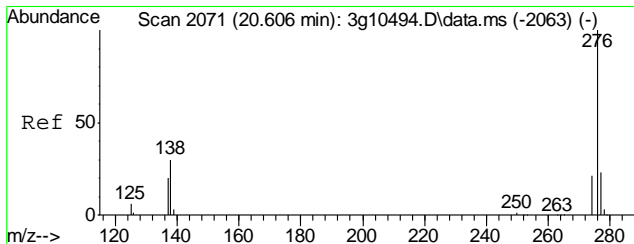
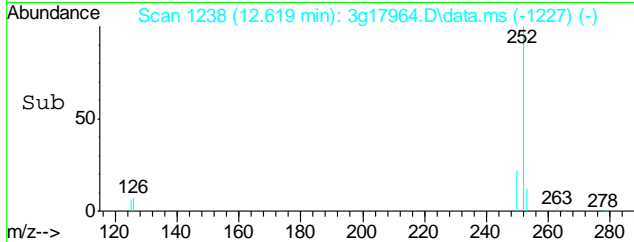
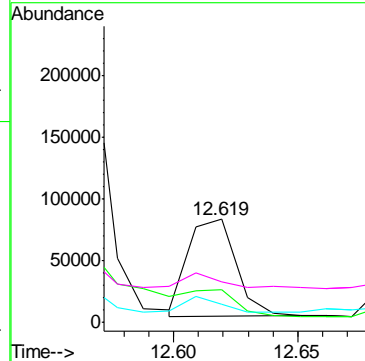
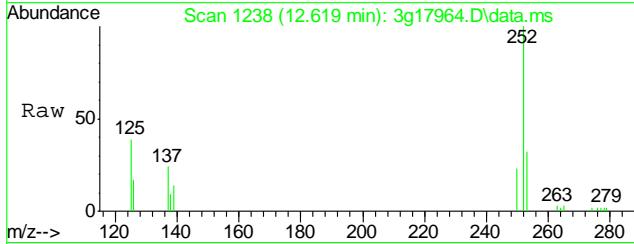


9.1.1
 9



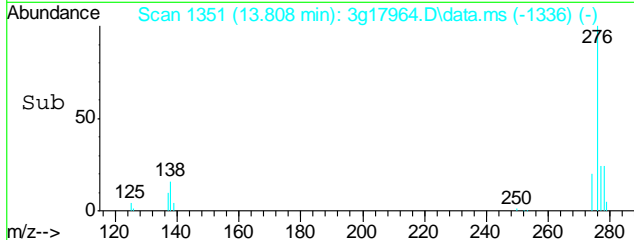
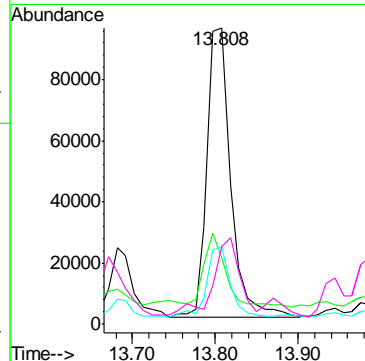
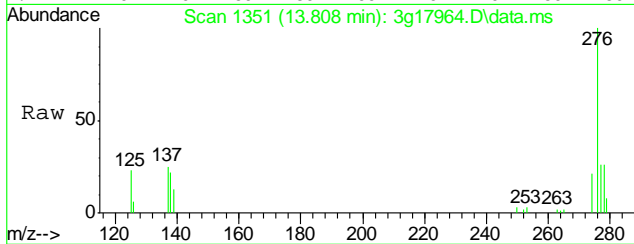
#27
 Benzo(a)pyrene
 Concen: 0.5453 ug/mL
 RT: 12.619 min Scan# 1238
 Delta R.T. 0.011 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

Tgt Ion	Resp	Lower	Upper
252	105916	100	
253	0.0	1.6	41.6#
126	13.0	0.0	30.6
125	13.6	0.0	29.4

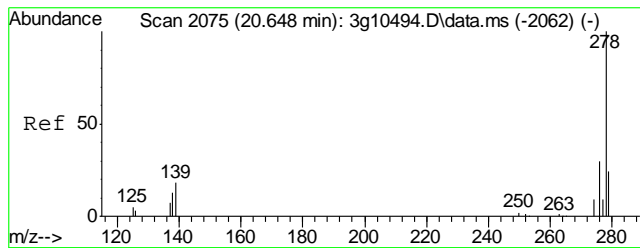


#28
 Indeno(1,2,3-cd)pyrene
 Concen: 0.9229 ug/mL
 RT: 13.808 min Scan# 1351
 Delta R.T. 0.011 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

Tgt Ion	Resp	Lower	Upper
276	187653	100	
138	23.5	0.0	39.6
277	23.4	5.4	45.4
278	30.0	62.8	102.8#

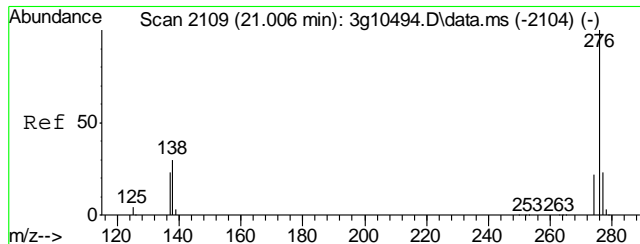
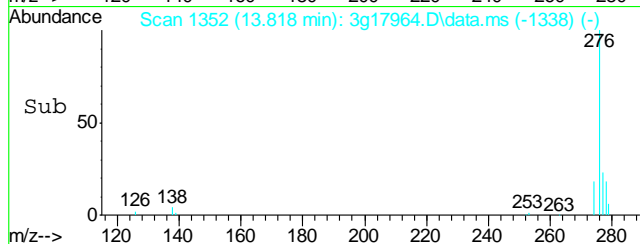
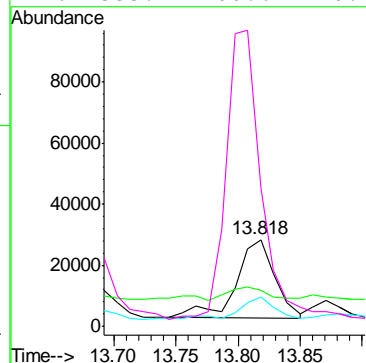
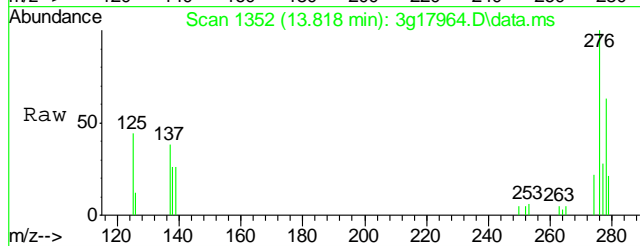


9.1.1
 9



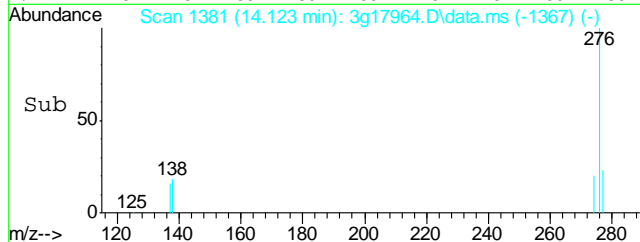
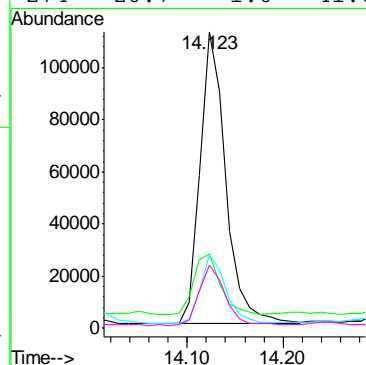
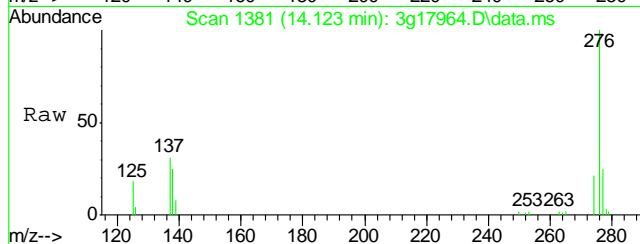
#29
 Dibenz(a,h)anthracene
 Concen: 0.3307 ug/mL
 RT: 13.818 min Scan# 1352
 Delta R.T. 0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

Tgt Ion	Resp	Lower	Upper
278	100		
139	18.2	0.0	32.8
279	27.4	3.4	43.4
276	333.1	100.6	140.6#



#30
 Benzo(g,h,i)perylene
 Concen: 1.2337 ug/mL
 RT: 14.123 min Scan# 1381
 Delta R.T. 0.000 min
 Lab File: 3g17964.D
 Acq: 7 Feb 14 2:42 pm

Tgt Ion	Resp	Lower	Upper
276	100		
138	20.9	0.0	35.9
277	22.6	3.6	43.6
274	20.7	1.0	41.0



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\020714\
 Data File : 3g17951.D
 Acq On : 7 Feb 2014 9:31 am
 Operator : DONC
 Sample : OP9352-MB
 Misc : OP9352,E3G893,30.00,,,1,1
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Feb 10 15:19:14 2014
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G889.M
 Quant Title : PAHSIM BASE
 QLast Update : Fri Feb 07 09:27:31 2014
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.523	136	390973	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.229	164	244689	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.707	188	386601	4.0000	ug/mL	0.00
19) Chrysene-d12	11.327	240	379835	4.0000	ug/mL	0.00
24) Perylene-d12	12.672	264	288937	4.0000	ug/mL	0.01

System Monitoring Compounds						
2) Nitrobenzene-d5	4.837	82	2146221	38.4792	ug/mL	0.00
Spiked Amount	50.000	Range 25 - 135	Recovery	=	76.96%	
7) 2-Fluorobiphenyl	6.568	172	2996572	29.5403	ug/mL	0.00
Spiked Amount	50.000	Range 25 - 135	Recovery	=	59.08%	
21) Terphenyl-d14	10.290	244	2951403	36.8934	ug/mL	0.00
Spiked Amount	50.000	Range 25 - 135	Recovery	=	73.78%	

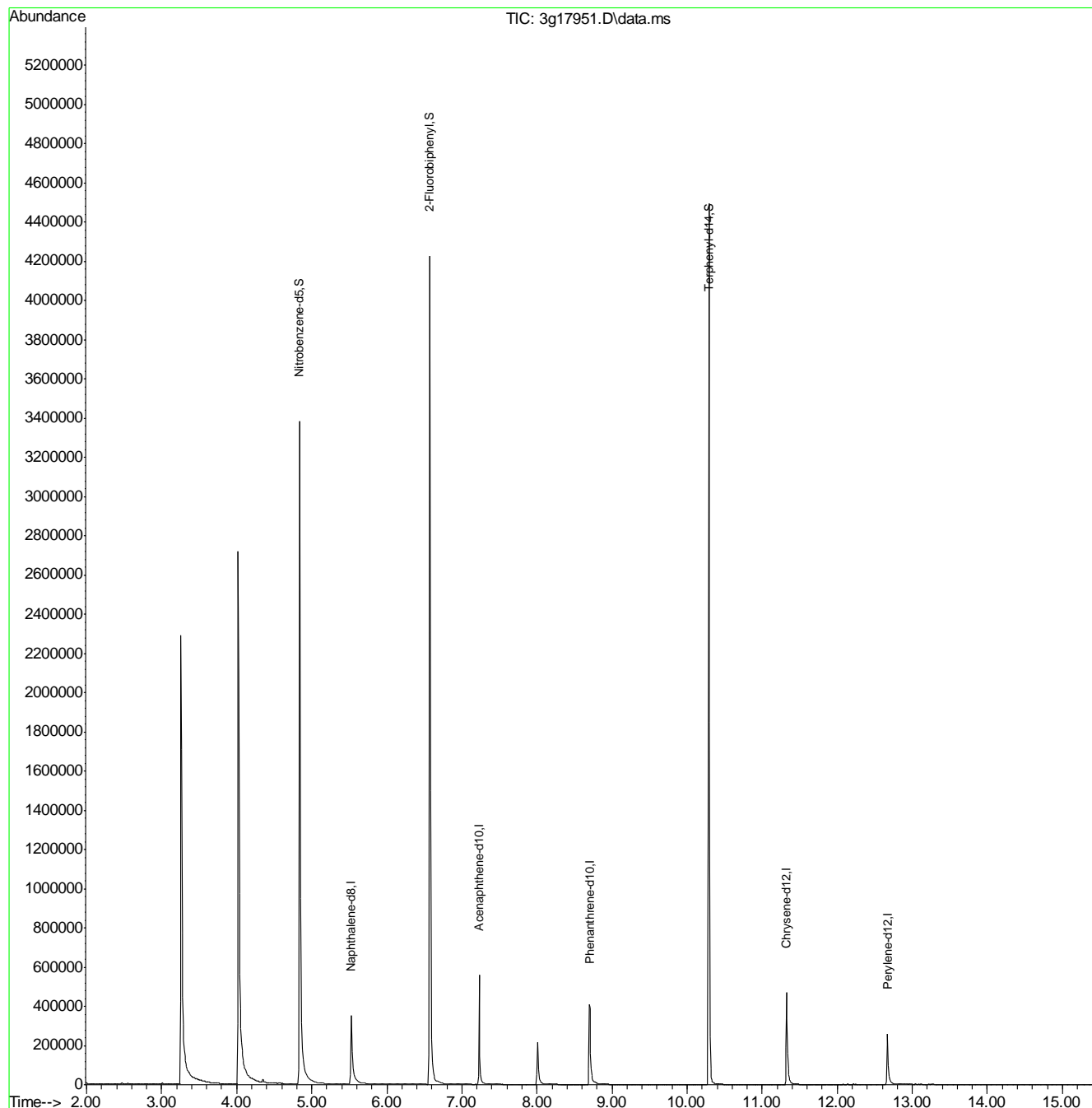
Target Compounds					Qvalue
3) N-Nitrosodimethylamine	0.000	74	0	N.D.	d
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.547	128	553	N.D.	
8) 2-Methylnaphthalene	0.000	142	0	N.D.	d
9) 1-Methylnaphthalene	6.295	142	278	N.D.	
10) Acenaphthylene	7.111	152	111	N.D.	
11) Acenaphthene	7.229	154	868	N.D.	
12) Dibenzofuran	7.454	168	61	N.D.	
13) Fluorene	7.797	166	40	N.D.	
14) Diphenylamine	7.915	169	147	N.D.	
16) Phenanthrene	8.707	178	412	N.D.	
17) Anthracene	8.802	178	87	N.D.	
18) Fluoranthene	9.918	202	63	N.D.	
20) Pyrene	10.123	202	75	N.D.	
22) Benzo(a)anthracene	11.327	228	1301	N.D.	
23) Chrysene	11.327	228	1301	N.D.	
25) Benzo(b)fluoranthene	0.000	252	0	N.D.	d
26) Benzo(k)fluoranthene	12.377	252	301	N.D.	
27) Benzo(a)pyrene	12.588	252	89	N.D.	
28) Indeno(1,2,3-cd)pyrene	13.881	276	192	N.D.	
29) Dibenz(a,h)anthracene	13.850	278	131	N.D.	
30) Benzo(g,h,i)perylene	14.144	276	62	N.D.	

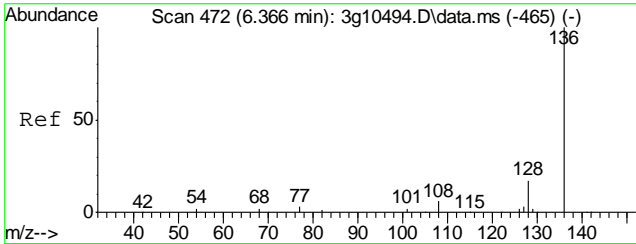
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\020714\
Data File : 3g17951.D
Acq On : 7 Feb 2014 9:31 am
Operator : DONC
Sample : OP9352-MB
Misc : OP9352,E3G893,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

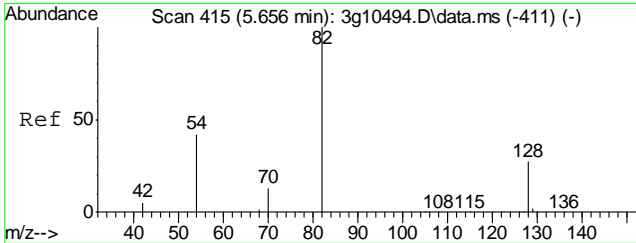
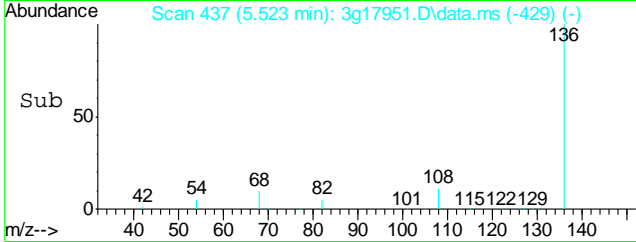
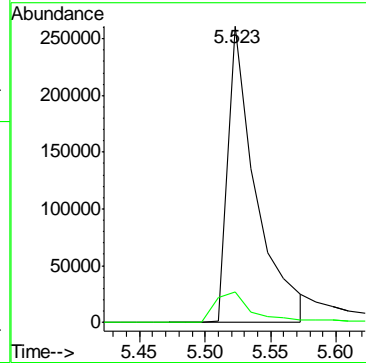
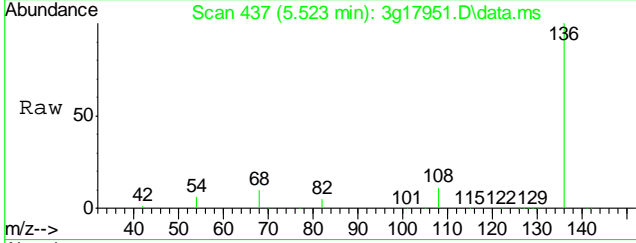
Quant Time: Feb 10 15:19:14 2014
Quant Method : C:\msdchem\1\METHODS\SIMPE3G889.M
Quant Title : PAHSIM BASE
QLast Update : Fri Feb 07 09:27:31 2014
Response via : Initial Calibration





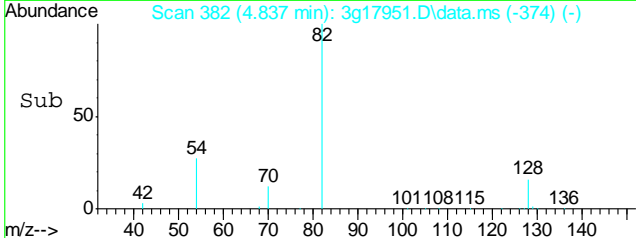
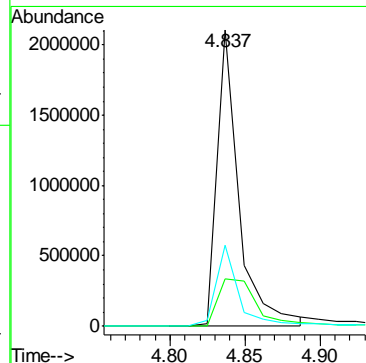
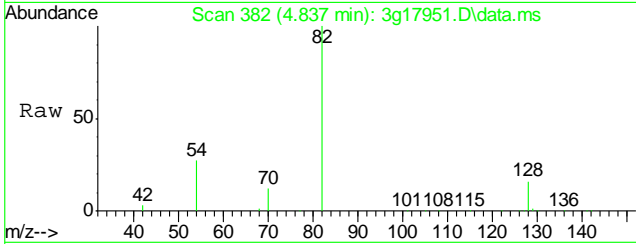
#1
 Naphthalene-d8
 Concen: 4.0000 ug/mL
 RT: 5.523 min Scan# 437
 Delta R.T. -0.000 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

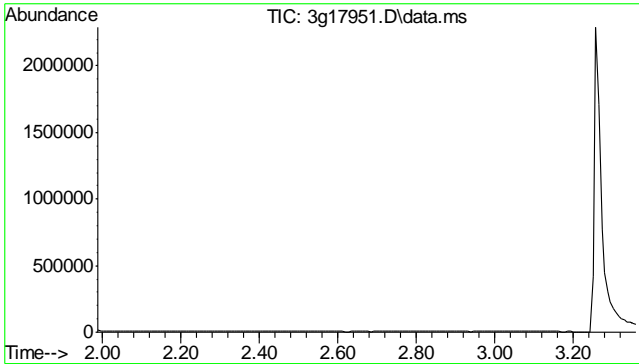
Tgt Ion	Resp	Lower	Upper
136	390973	100	
68	13.1	0.0	28.4



#2
 Nitrobenzene-d5
 Concen: 38.4792 ug/mL
 RT: 4.837 min Scan# 382
 Delta R.T. -0.000 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

Tgt Ion	Resp	Lower	Upper
82	2146221	100	
128	27.6	6.9	46.9
54	28.0	11.0	51.0

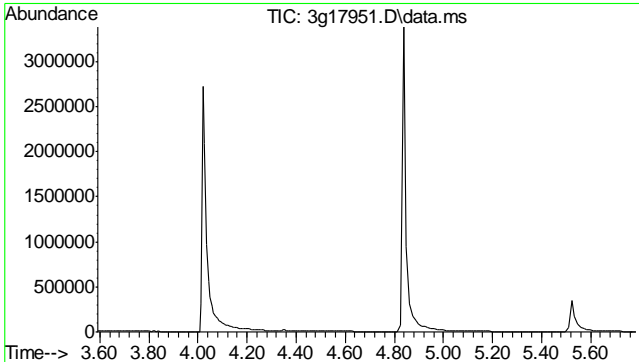
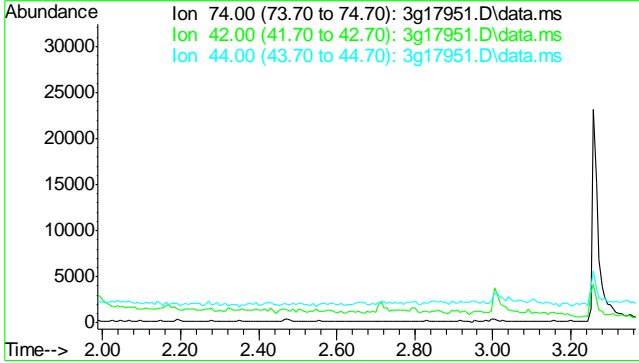




#3
 N-Nitrosodimethylamine
 Concen: N.D. ug/mL
 Expected RT: 2.26 min

Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

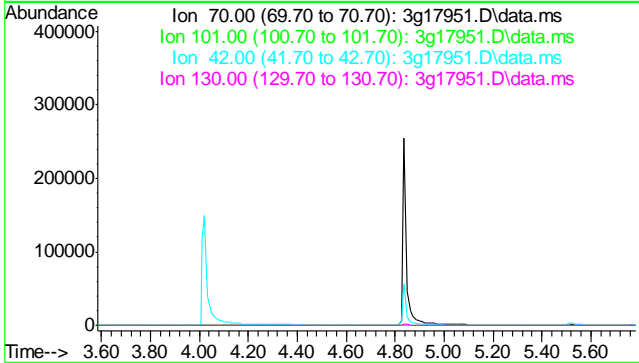
Tgt Ion:	74
Sig	Exp Ratio
74	100
42	36.2
44	1.5

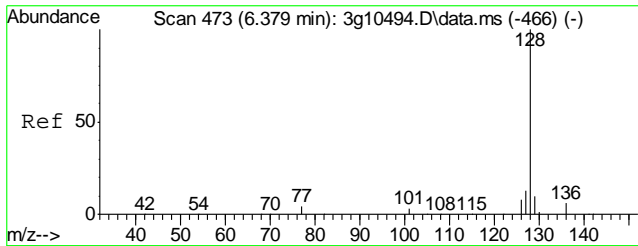


#4
 N-Nitrosodi-propylamine
 Concen: N.D. ug/mL
 Expected RT: 4.69 min

Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

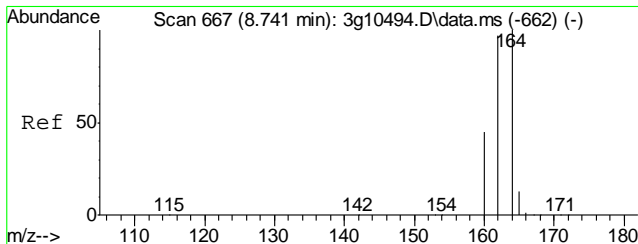
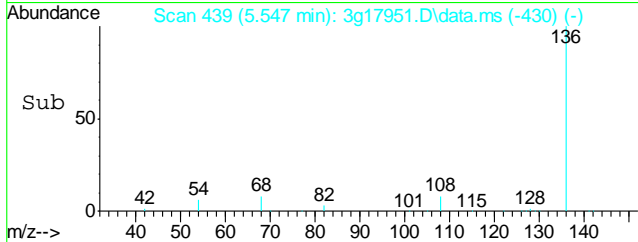
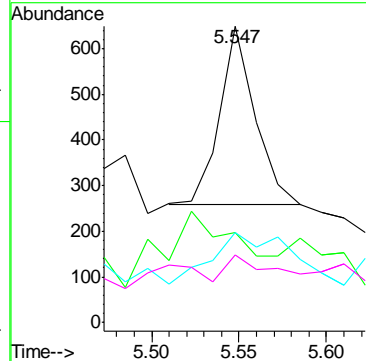
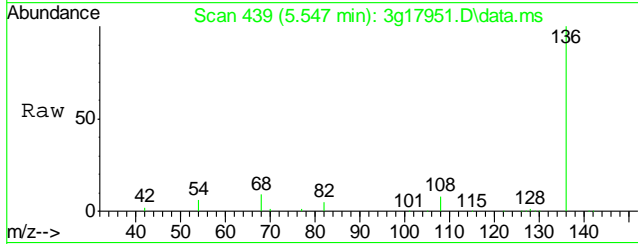
Tgt Ion:	70
Sig	Exp Ratio
70	100
101	11.6
42	22.8
130	17.5





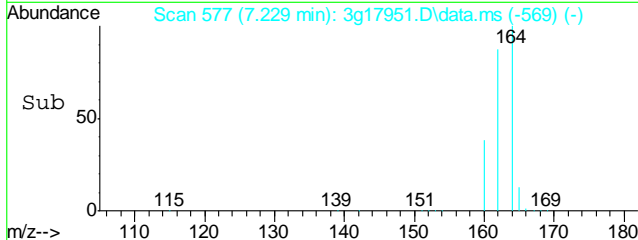
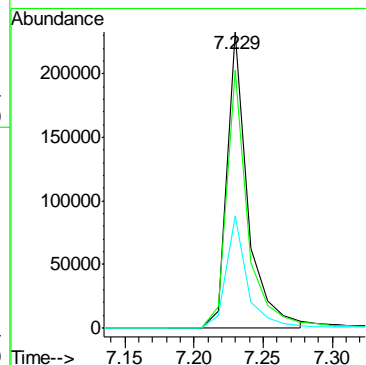
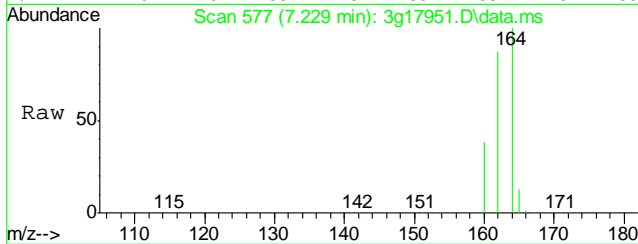
#5
 Naphthalene
 Concen: Below ug/mL
 RT: 5.547 min Scan# 439
 Delta R.T. 0.012 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

Tgt Ion	Resp	Lower	Upper
128	100		
129	0.0	0.0	31.0
127	59.0	0.0	33.5#
126	17.4	0.0	27.4

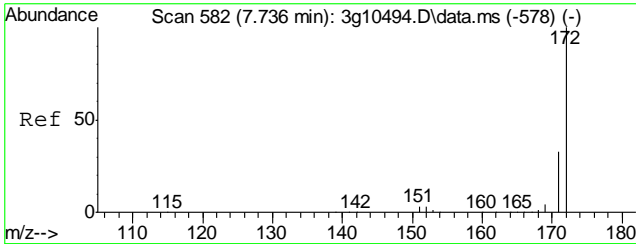


#6
 Acenaphthene-d10
 Concen: 4.0000 ug/mL
 RT: 7.229 min Scan# 577
 Delta R.T. -0.000 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

Tgt Ion	Resp	Lower	Upper
164	100		
162	87.9	70.6	110.6
160	38.0	21.3	61.3

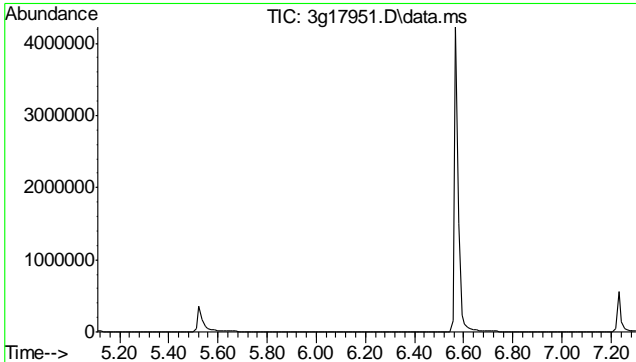
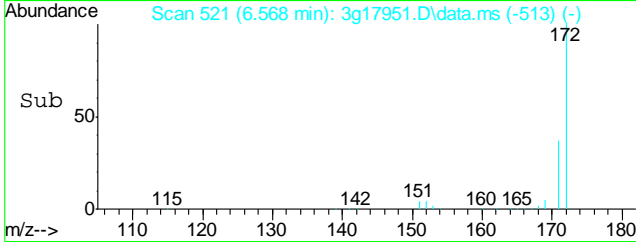
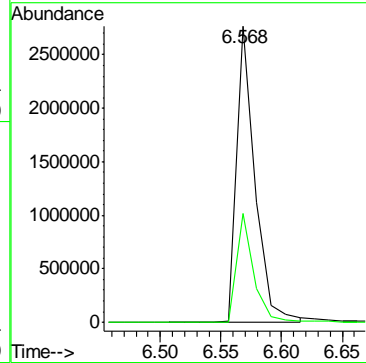
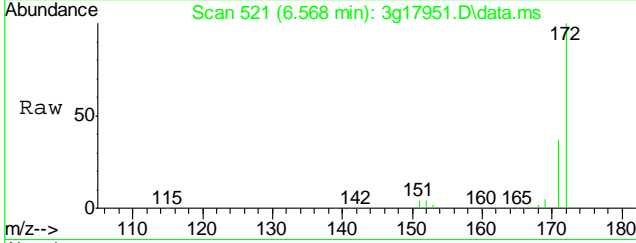


9.2.1
 9



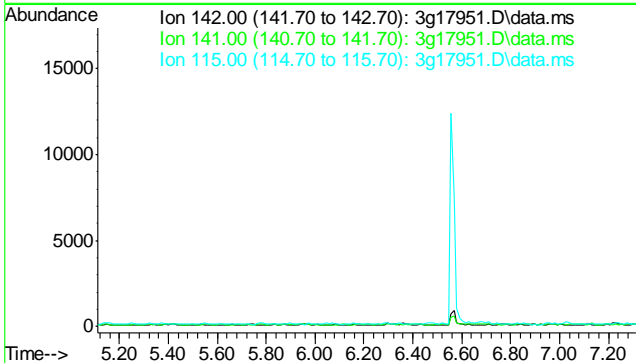
#7
 2-Fluorobiphenyl
 Concen: 29.5403 ug/mL
 RT: 6.568 min Scan# 521
 Delta R.T. -0.000 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

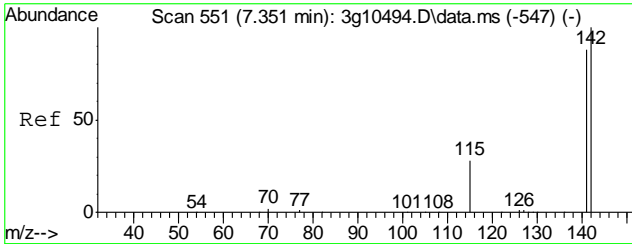
Tgt Ion: 172 Resp: 2996572
 Ion Ratio Lower Upper
 172 100
 171 34.0 14.1 54.1



#8
 2-Methylnaphthalene
 Concen: N.D. ug/mL
 Expected RT: 6.21 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

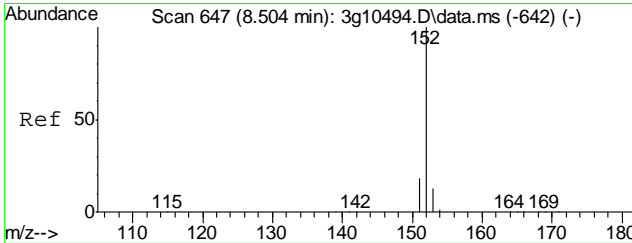
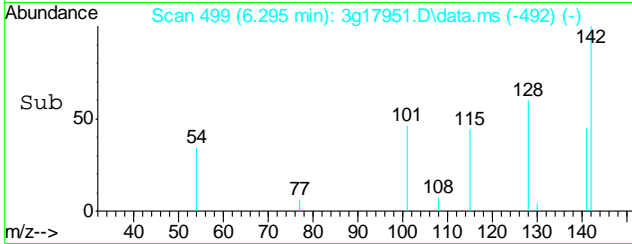
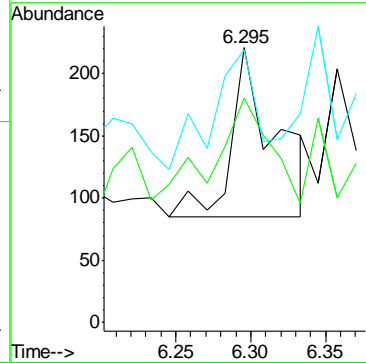
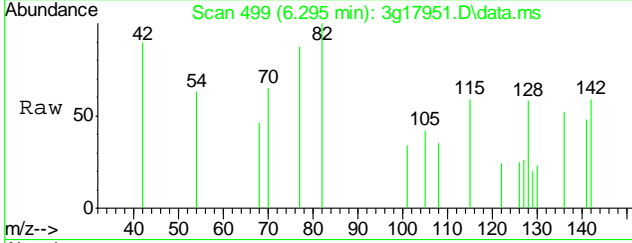
Tgt Ion: 142
 Sig Exp Ratio
 142 100
 141 81.4
 115 46.9





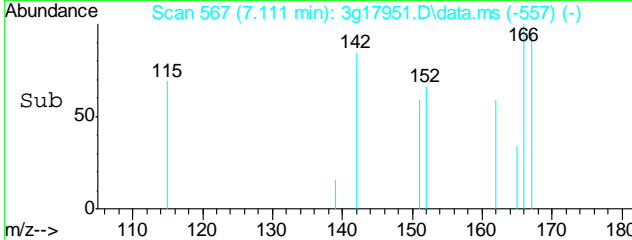
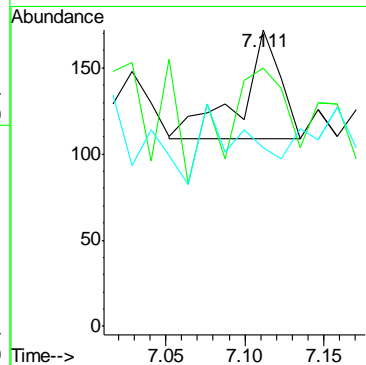
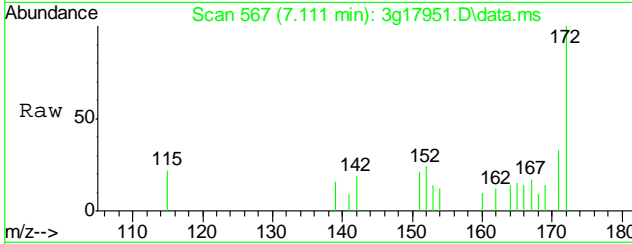
#9
 1-Methylnaphthalene
 Concen: Below ug/mL
 RT: 6.295 min Scan# 499
 Delta R.T. -0.013 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

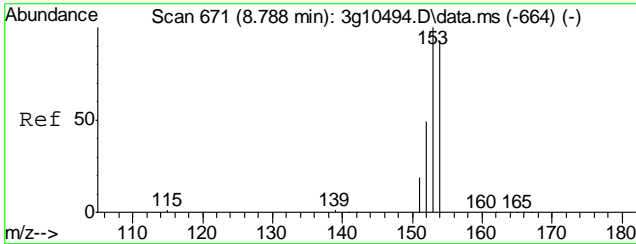
Tgt Ion	Resp	Lower	Upper
142	100		
141	73.7	67.1	107.1
115	68.7	24.0	64.0#



#10
 Acenaphthylene
 Concen: Below ug/mL
 RT: 7.111 min Scan# 567
 Delta R.T. 0.023 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

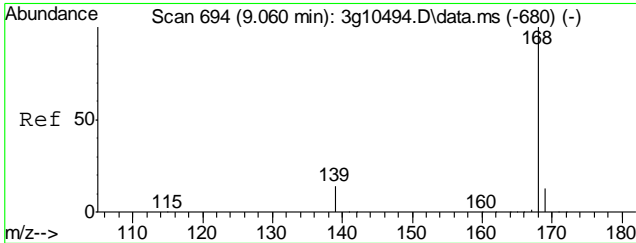
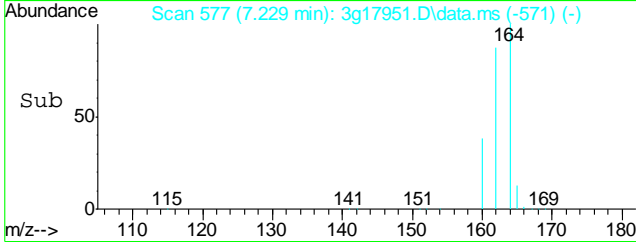
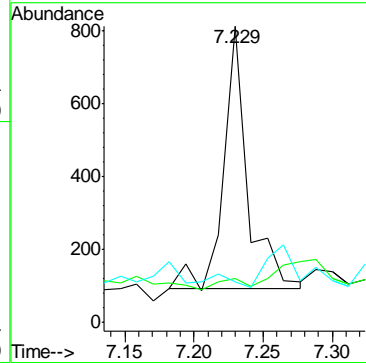
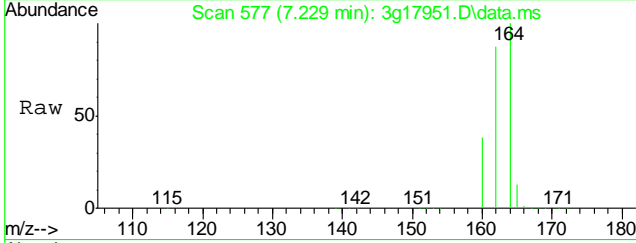
Tgt Ion	Resp	Lower	Upper
152	100		
151	93.7	0.9	40.9#
153	86.5	0.0	33.8#





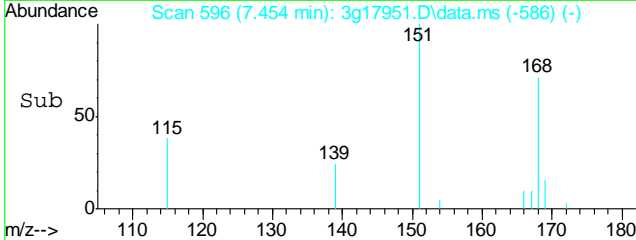
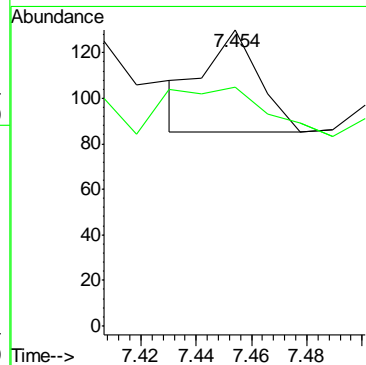
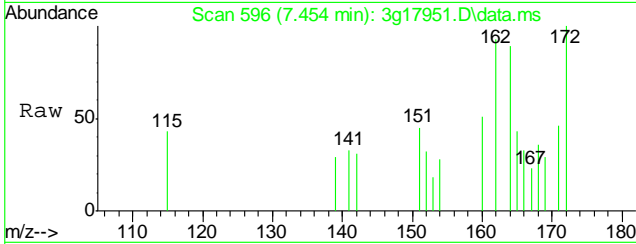
#11
 Acenaphthene
 Concen: Below ug/mL
 RT: 7.229 min Scan# 577
 Delta R.T. -0.024 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

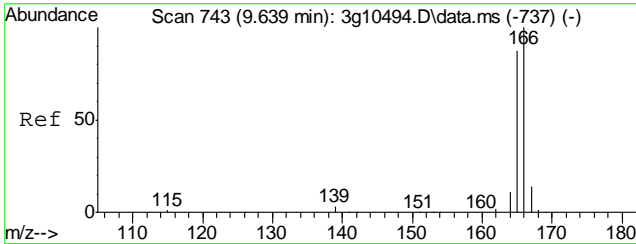
Tgt Ion	Resp	Lower	Upper
154	868		
154	100		
153	0.0	82.9	122.9#
152	0.0	23.8	63.8#



#12
 Dibenzofuran
 Concen: Below ug/mL
 RT: 7.454 min Scan# 596
 Delta R.T. 0.023 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

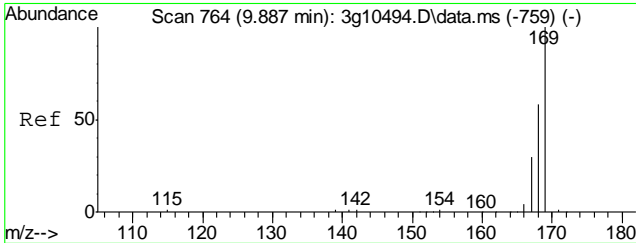
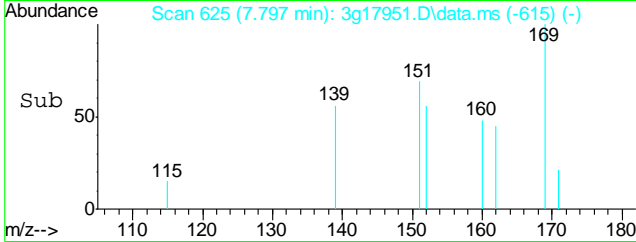
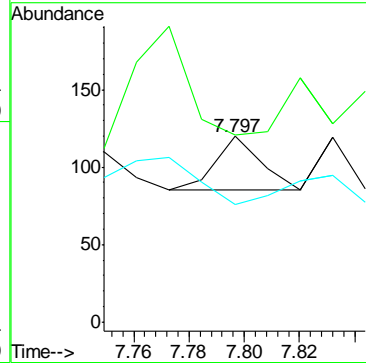
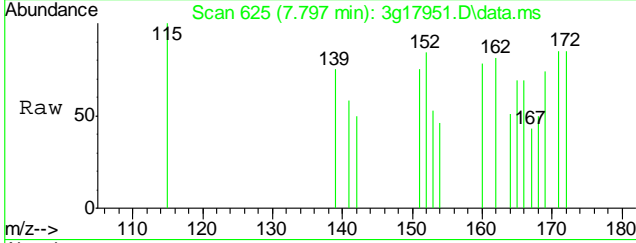
Tgt Ion	Resp	Lower	Upper
168	61		
168	100		
139	96.7	11.7	51.7#





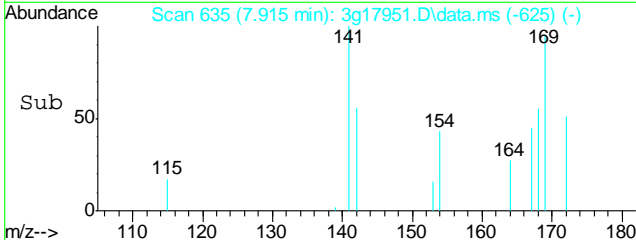
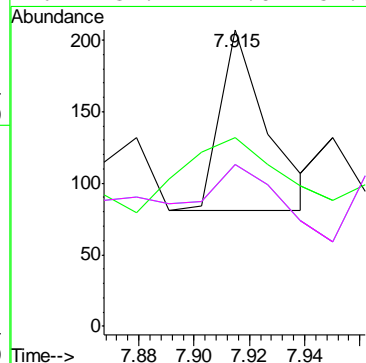
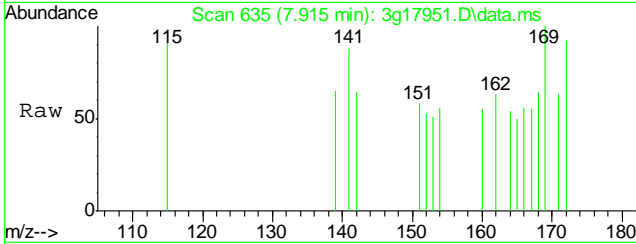
#13
 Fluorene
 Concen: Below ug/mL
 RT: 7.797 min Scan# 625
 Delta R.T. 0.023 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

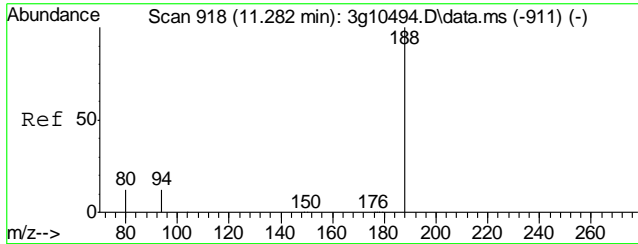
Tgt Ion	Resp	Lower	Upper
166	100		
165	350.0	71.7	111.7#
167	127.5	0.0	33.0#



#14
 Diphenylamine
 Concen: Below ug/mL
 RT: 7.915 min Scan# 635
 Delta R.T. 0.023 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

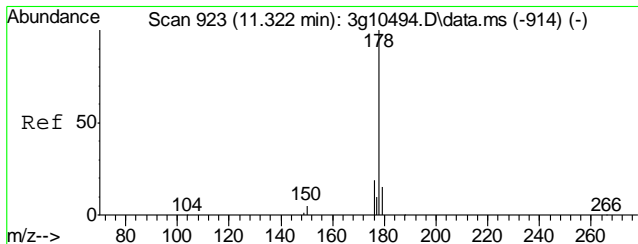
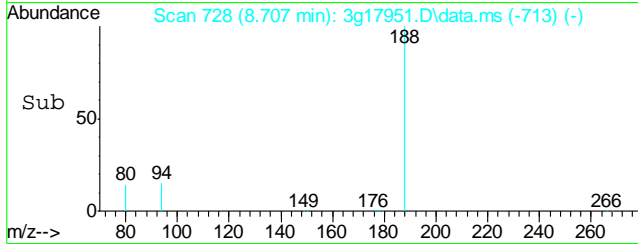
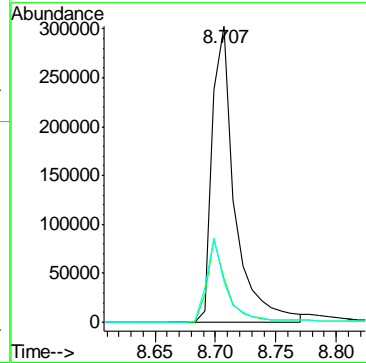
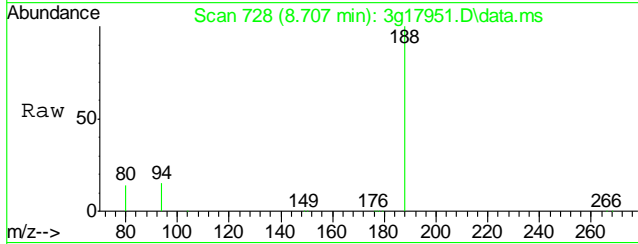
Tgt Ion	Resp	Lower	Upper
169	100		
168	133.3	40.6	80.6#
167	37.4	11.8	51.8
167	37.4	11.8	51.8





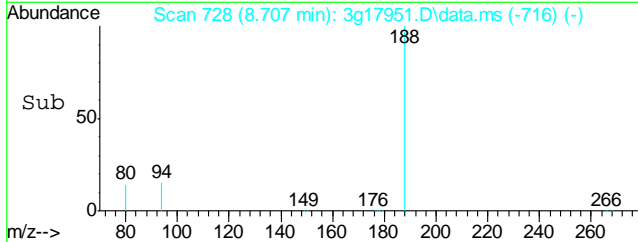
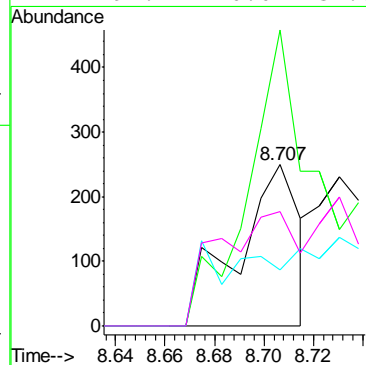
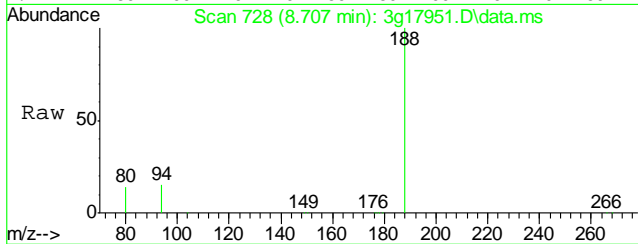
#15
 Phenanthrene-d10
 Concen: 4.0000 ug/mL
 RT: 8.707 min Scan# 728
 Delta R.T. 0.008 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

Tgt Ion	Ratio	Lower	Upper
188	100		
94	23.8	0.0	36.3
80	25.4	0.0	36.9

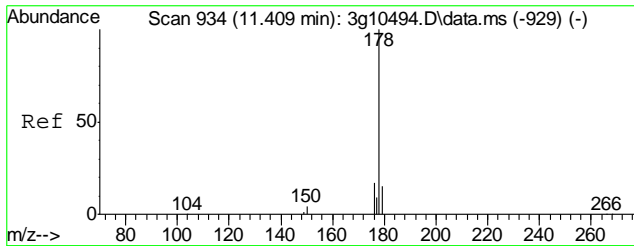


#16
 Phenanthrene
 Concen: Below ug/mL
 RT: 8.707 min Scan# 728
 Delta R.T. -0.016 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

Tgt Ion	Ratio	Lower	Upper
178	100		
179	266.5	0.0	34.9#
176	53.9	0.0	38.2#
177	91.7	0.0	31.8#

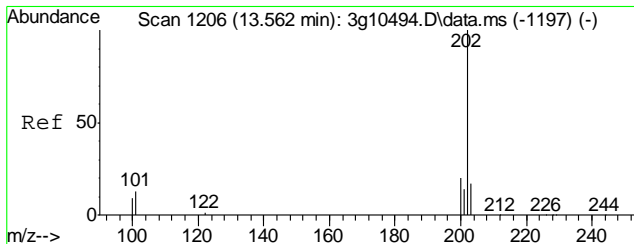
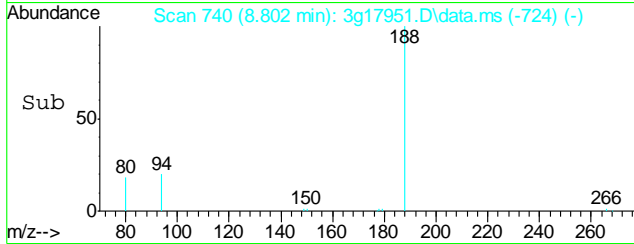
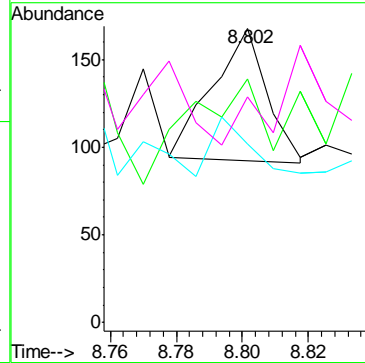
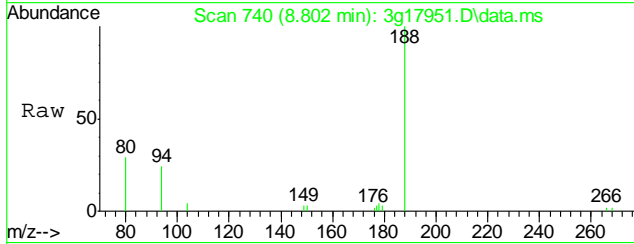


9.2.1
 9



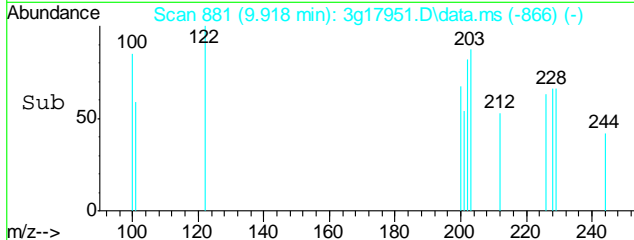
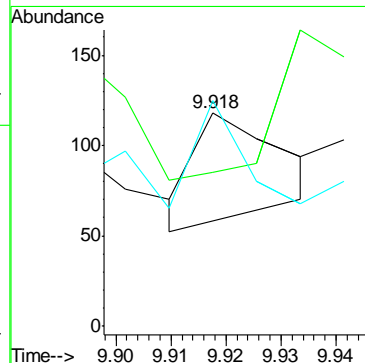
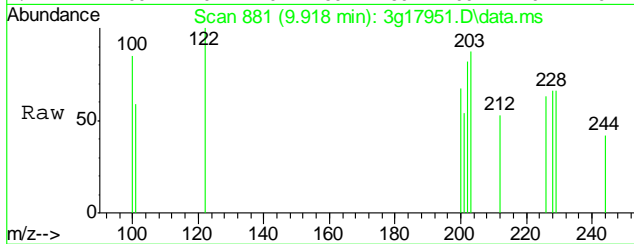
#17
 Anthracene
 Concen: Below ug/mL
 RT: 8.802 min Scan# 740
 Delta R.T. 0.024 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

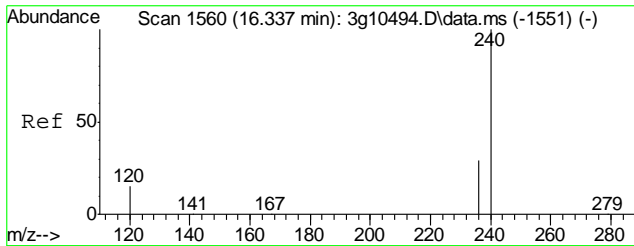
Tgt Ion	Resp	Lower	Upper
178	100		
179	106.9	0.0	34.9#
176	95.4	0.0	38.0#
177	71.3	0.0	30.5#



#18
 Fluoranthene
 Concen: Below ug/mL
 RT: 9.918 min Scan# 881
 Delta R.T. 0.016 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

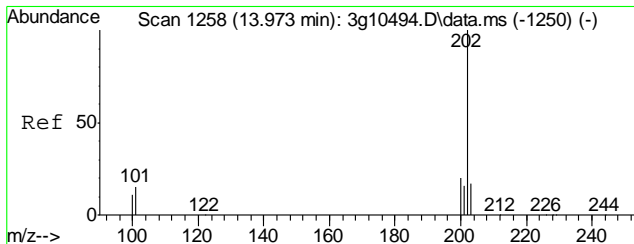
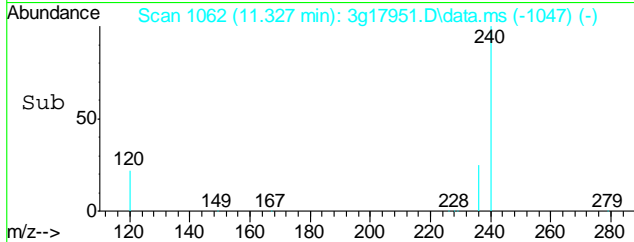
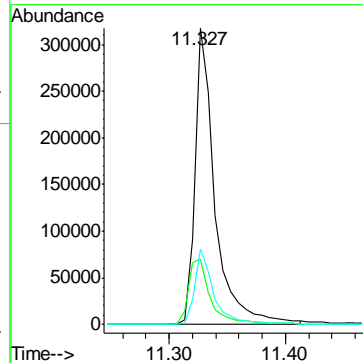
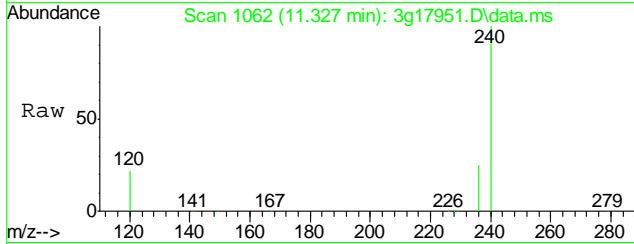
Tgt Ion	Resp	Lower	Upper
202	100		
101	334.9	0.0	34.2#
203	0.0	0.0	37.3





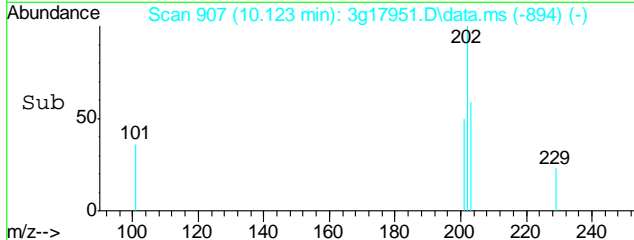
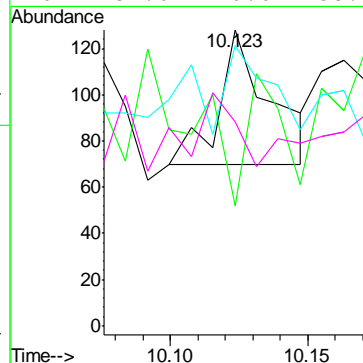
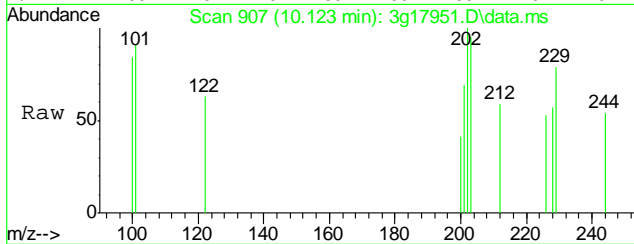
#19
 Chrysene-d12
 Concen: 4.0000 ug/mL
 RT: 11.327 min Scan# 1062
 Delta R.T. -0.000 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

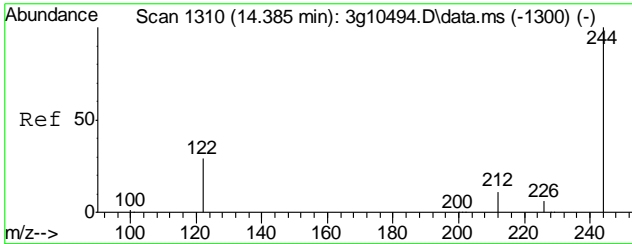
Tgt Ion	Ratio	Lower	Upper
240	100		
120	24.3	0.0	32.8
236	24.4	4.6	44.6



#20
 Pyrene
 Concen: Below ug/mL
 RT: 10.123 min Scan# 907
 Delta R.T. -0.000 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

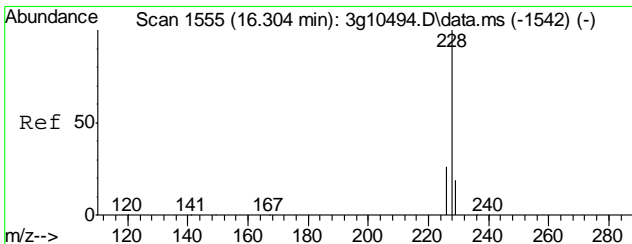
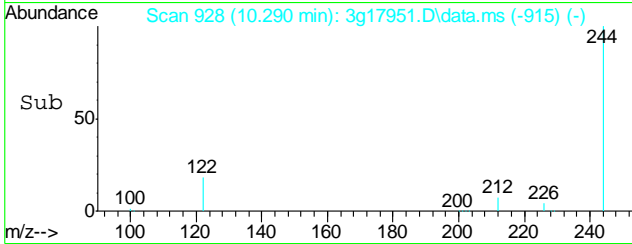
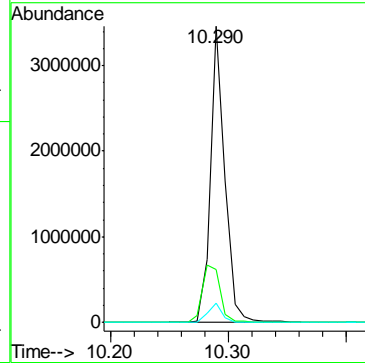
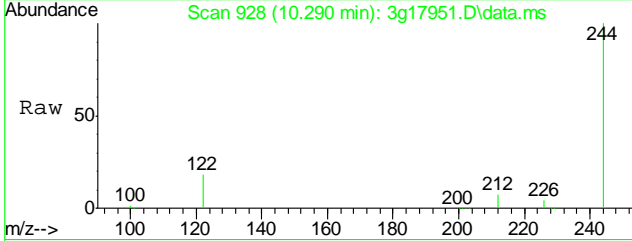
Tgt Ion	Ratio	Lower	Upper
202	100		
200	68.0	0.1	40.1#
203	56.0	0.0	37.6#
201	52.0	0.0	38.0#





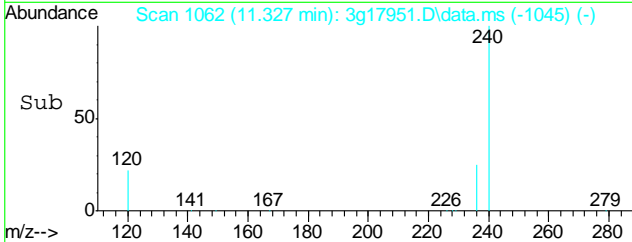
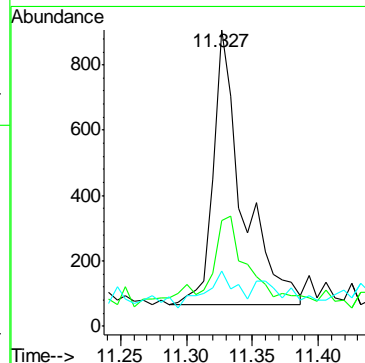
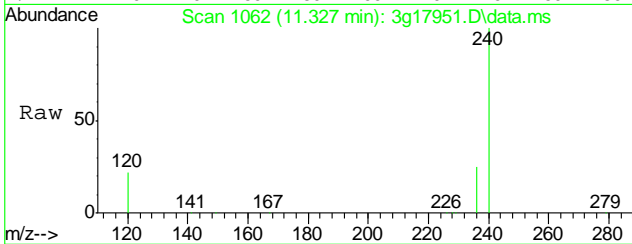
#21
 Terphenyl-d14
 Concen: 36.8934 ug/mL
 RT: 10.290 min Scan# 928
 Delta R.T. -0.000 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

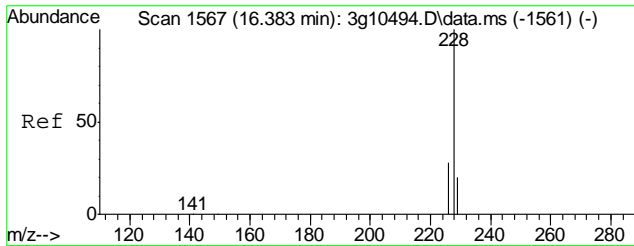
Tgt Ion	Ratio	Lower	Upper
244	100		
122	24.0	0.0	34.7
212	6.6	0.0	27.2



#22
 Benzo(a)anthracene
 Concen: Below ug/mL
 RT: 11.327 min Scan# 1062
 Delta R.T. 0.013 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

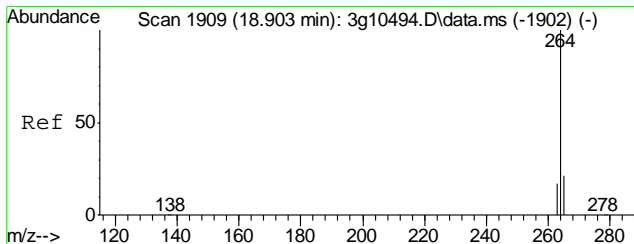
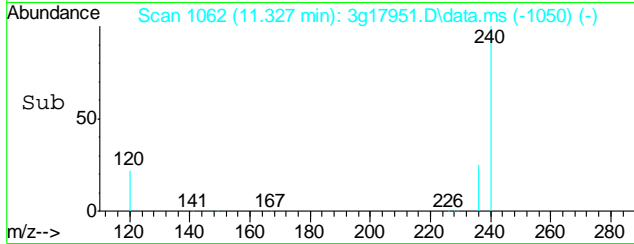
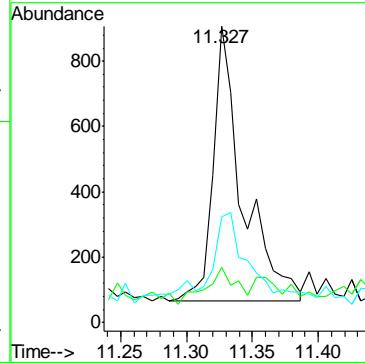
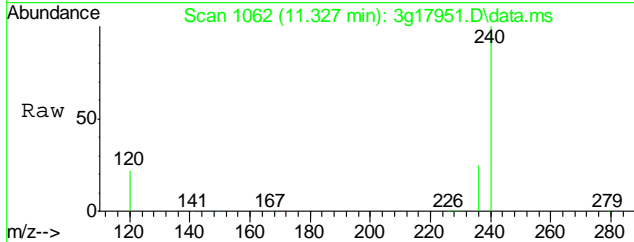
Tgt Ion	Ratio	Lower	Upper
228	100		
229	35.0	0.0	39.5
226	13.8	5.9	45.9





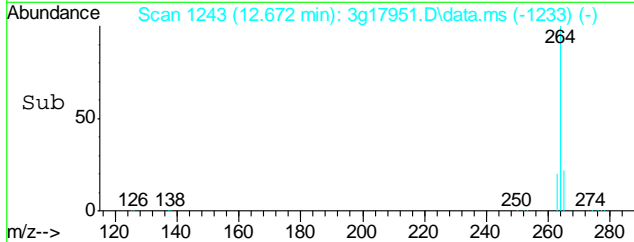
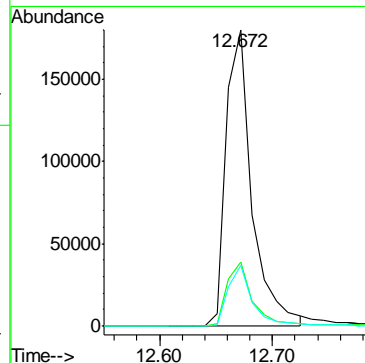
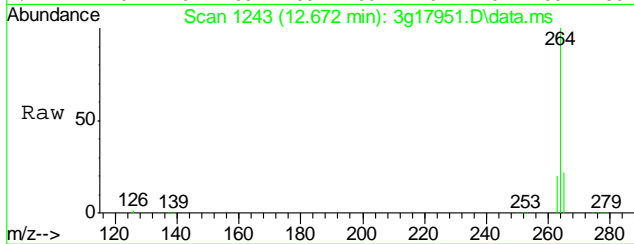
#23
 Chrysene
 Concen: Below ug/mL
 RT: 11.327 min Scan# 1062
 Delta R.T. -0.020 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

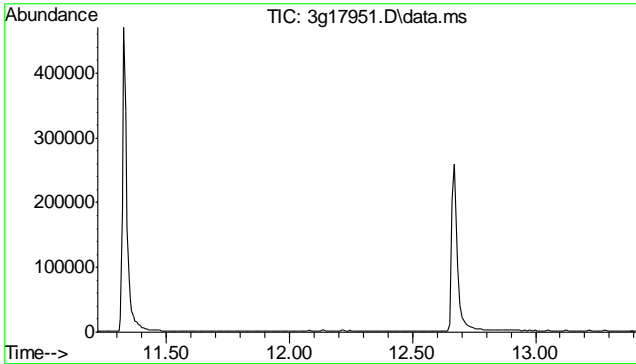
Tgt Ion	Resp	Lower	Upper
228	1301		
226	13.8	8.0	48.0
229	36.1	0.0	39.4



#24
 Perylene-d12
 Concen: 4.0000 ug/mL
 RT: 12.672 min Scan# 1243
 Delta R.T. 0.010 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

Tgt Ion	Resp	Lower	Upper
264	288937		
265	20.9	1.3	41.3
263	19.0	0.0	38.5



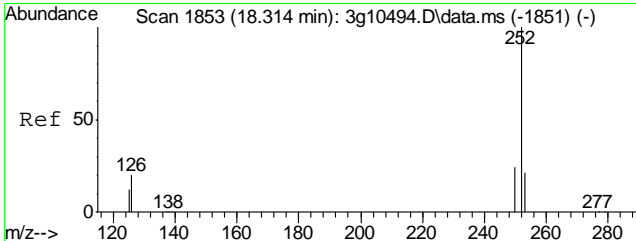
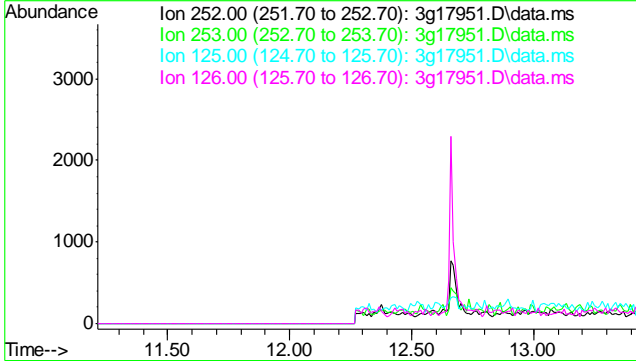


#25
 Benzo(b)fluoranthene
 Concen: N.D. ug/mL
 Expected RT: 12.31 min

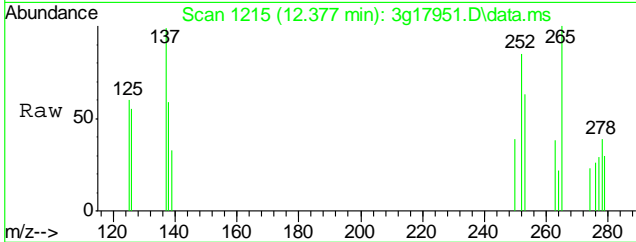
Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

Tgt Ion: 252

Sig	Exp Ratio
252	100
253	45.6
125	18.9
126	10.9

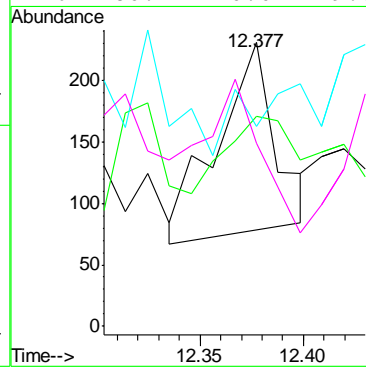
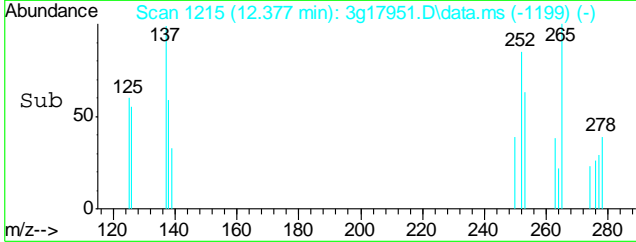


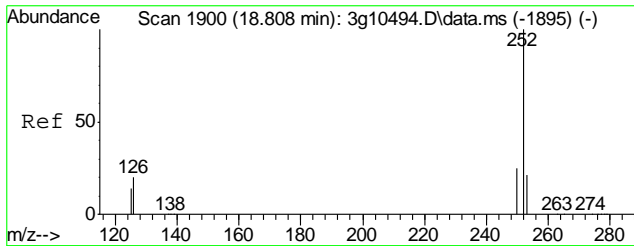
#26
 Benzo(k)fluoranthene
 Concen: Below ug/mL
 RT: 12.377 min Scan# 1215
 Delta R.T. 0.042 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am



Tgt Ion: 252 Resp: 301

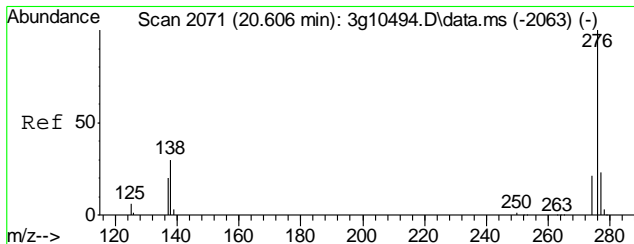
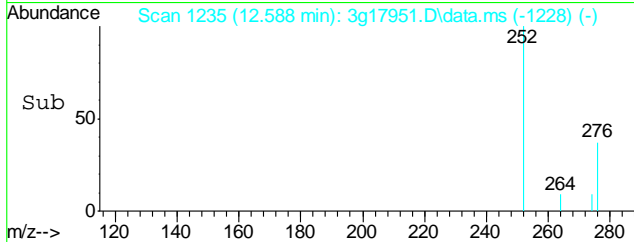
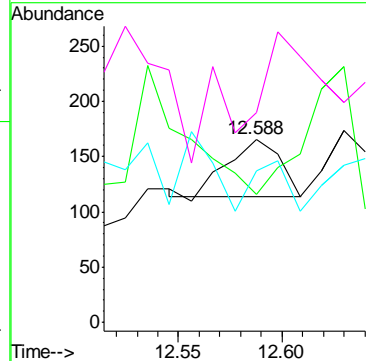
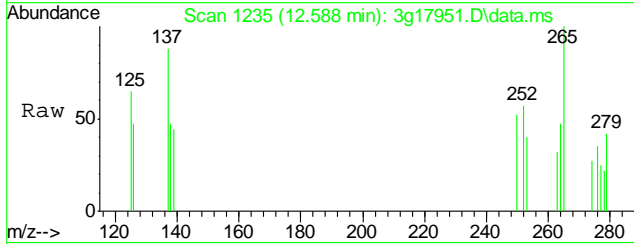
Ion	Ratio	Lower	Upper
252	100		
253	58.8	21.1	61.1
125	0.0	0.0	37.0
126	80.7	0.0	29.8#





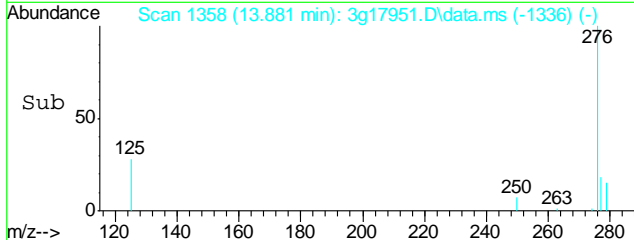
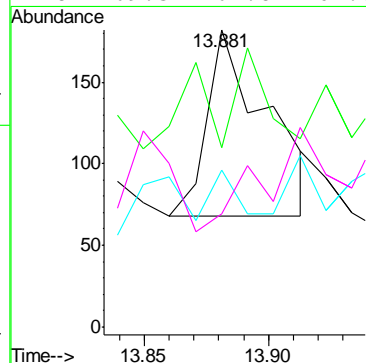
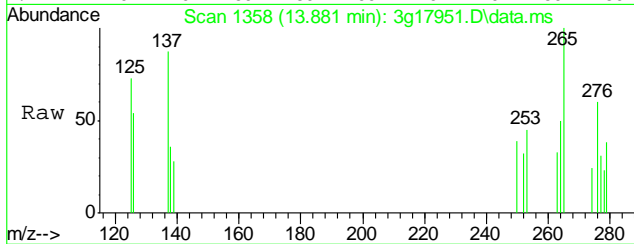
#27
 Benzo(a)pyrene
 Concen: Below ug/mL
 RT: 12.588 min Scan# 1235
 Delta R.T. -0.021 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

Tgt Ion	Resp	Lower	Upper
252	100		
253	228.1	1.6	41.6#
126	0.0	0.0	30.6
125	360.7	0.0	29.4#

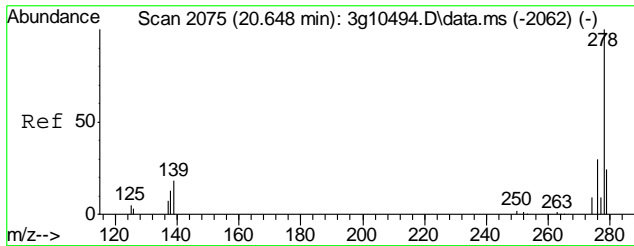


#28
 Indeno(1,2,3-cd)pyrene
 Concen: Below ug/mL
 RT: 13.881 min Scan# 1358
 Delta R.T. 0.084 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

Tgt Ion	Resp	Lower	Upper
276	100		
138	22.4	0.0	39.6
277	25.0	5.4	45.4
278	69.3	62.8	102.8

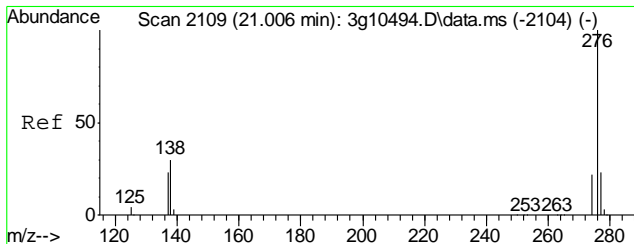
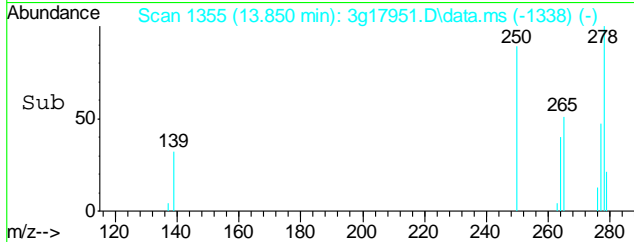
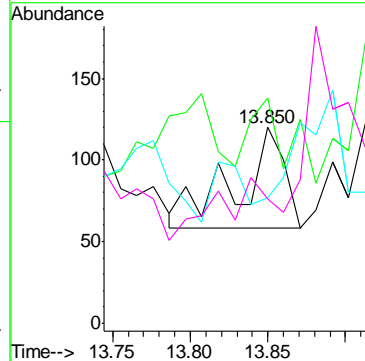
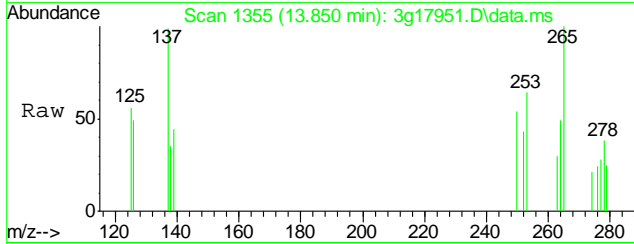


9.2.1
 9



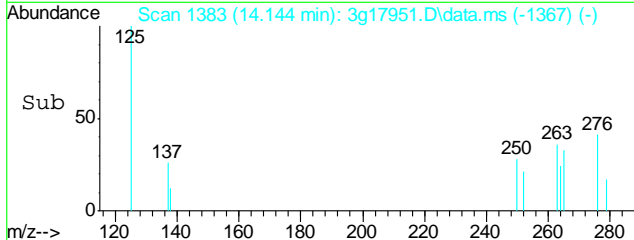
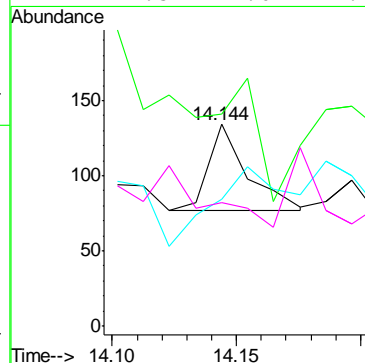
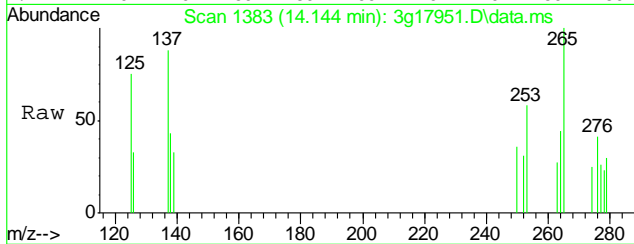
#29
 Dibenz(a,h)anthracene
 Concen: Below ug/mL
 RT: 13.850 min Scan# 1355
 Delta R.T. 0.031 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

Tgt Ion	Resp	Lower	Upper
278	100		
139	67.2	0.0	32.8#
279	0.0	3.4	43.4#
276	72.5	100.6	140.6#



#30
 Benzo(g,h,i)perylene
 Concen: Below ug/mL
 RT: 14.144 min Scan# 1383
 Delta R.T. 0.021 min
 Lab File: 3g17951.D
 Acq: 7 Feb 14 9:31 am

Tgt Ion	Resp	Lower	Upper
276	100		
138	0.0	0.0	35.9
277	180.6	3.6	43.6#
274	114.5	1.0	41.0#



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: D54856
Account: XTOKRWR XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1305-MB	GB23713.D	1	02/11/14	EV	n/a	n/a	GGB1305

The QC reported here applies to the following samples:

Method: SW846 8015B

D54856-1

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	85% 60-140%

Blank Spike Summary

Job Number: D54856
Account: XTOKRWR XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1305-BS	GB23714.D	1	02/11/14	EV	n/a	n/a	GGB1305

The QC reported here applies to the following samples:

Method: SW846 8015B

D54856-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	108	98	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	90%	60-140%

10.2.1
10

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D54856
Account: XTOKRWR XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D54798-1MS	GB23716.D	1	02/11/14	EV	n/a	n/a	GGB1305
D54798-1MSD	GB23717.D	1	02/11/14	EV	n/a	n/a	GGB1305
D54798-1	GB23715.D	1	02/11/14	EV	n/a	n/a	GGB1305

The QC reported here applies to the following samples:

Method: SW846 8015B

D54856-1

CAS No.	Compound	D54798-1 mg/kg	Spike Q	mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND	146	143	98	141	97	1	70-130/30	

CAS No.	Surrogate Recoveries	MS	MSD	D54798-1	Limits
120-82-1	1,2,4-Trichlorobenzene	94%	88%	83%	60-140%

10.3.1
10

* = Outside of Control Limits.

GC Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\021114\GB23720.D\FID1A.CH Vial: 10
 Signal #2 : Y:\1\DATA\021114\GB23720.D\FID2B.CH
 Acq On : 11 Feb 2014 9:31 pm Operator: ELISEV
 Sample : D54856-1 Inst : GC/MS Ins
 Misc : GC4199,GGB1305,5.040,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Feb 12 08:21:15 2014 Quant Results File: TB1292GB1292SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1292GB1292SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Wed Feb 12 08:20:43 2014
 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	14.43	2646734	82.513 %	m
10) S 1,2,4-Trichlorobenzene (P)	14.43	7700028	86.733 %	m
Target Compounds				
1) H TVH-Gasoline	7.36	2907576	0.038 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	7.76	191664	0.802 ug/L	
7) T Ethylbenzene	0.00	0	N.D. ug/L	d
8) T m,p-Xylene	10.54	247385	1.008 ug/L	
9) T o-Xylene	0.00	0	N.D. ug/L	d
11) T Naphthalene	14.61	46456	0.353 ug/L	m

(f)=RT Delta > 1/2 Window (m)=manual int.
 GB23720.D TB1292GB1292SOIL.M Wed Feb 12 08:29:11 2014 GC

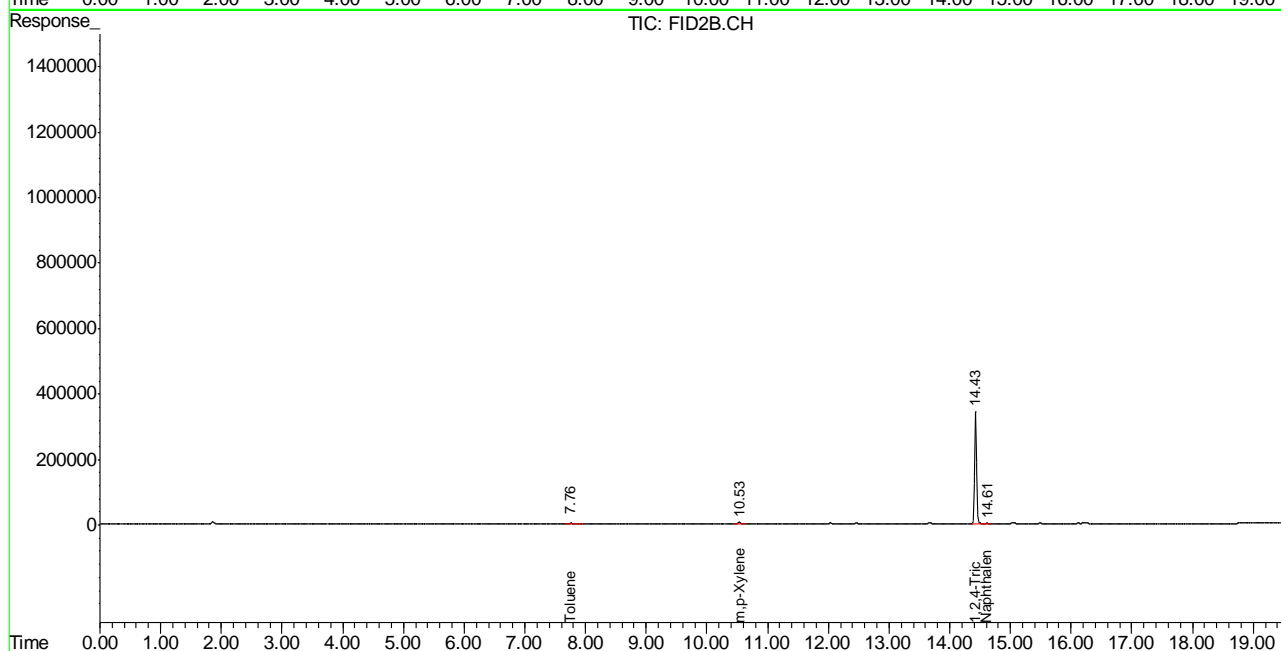
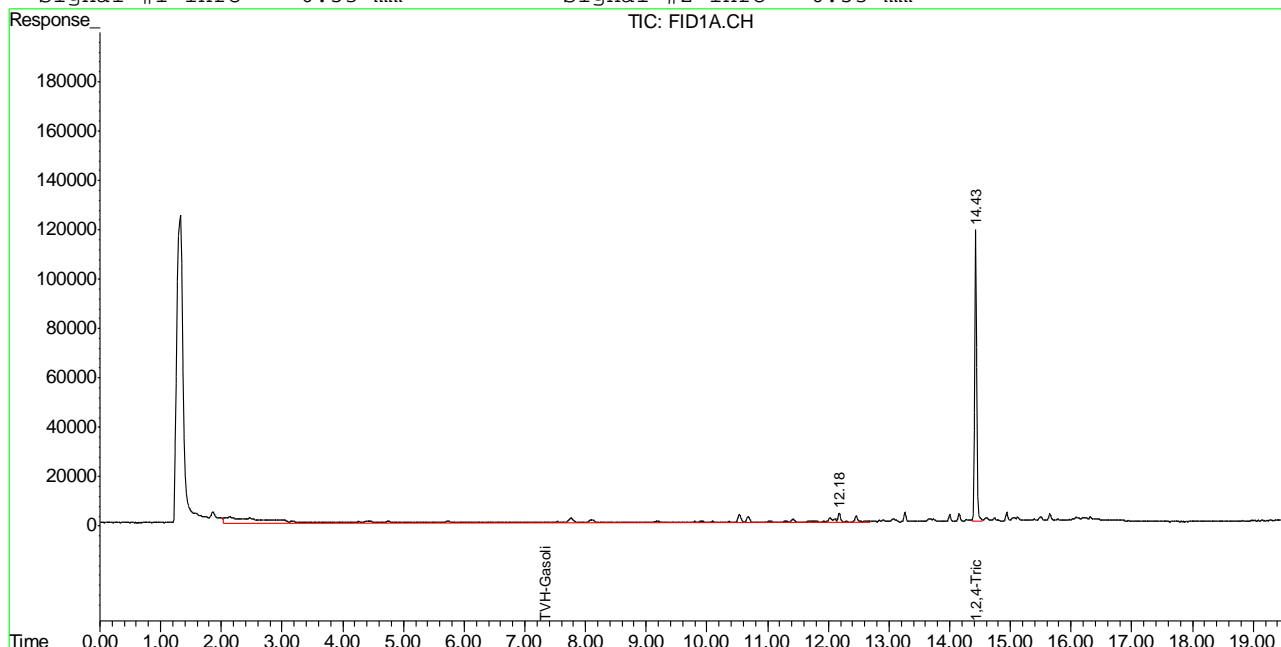
11.11
 11

Quantitation Report (QT Reviewed)

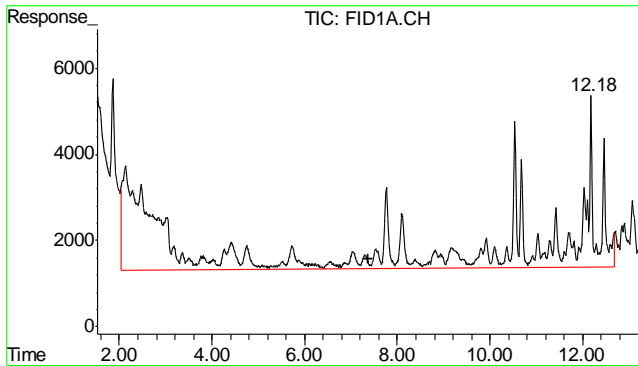
Signal #1 : Y:\1\DATA\021114\GB23720.D\FID1A.CH Vial: 10
 Signal #2 : Y:\1\DATA\021114\GB23720.D\FID2B.CH
 Acq On : 11 Feb 2014 9:31 pm Operator: ELISEV
 Sample : D54856-1 Inst : GC/MS Ins
 Misc : GC4199,GGB1305,5.040,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Feb 12 8:29 2014 Quant Results File: TB1292GB1292SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1292GB1292SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Wed Feb 12 08:20:43 2014
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

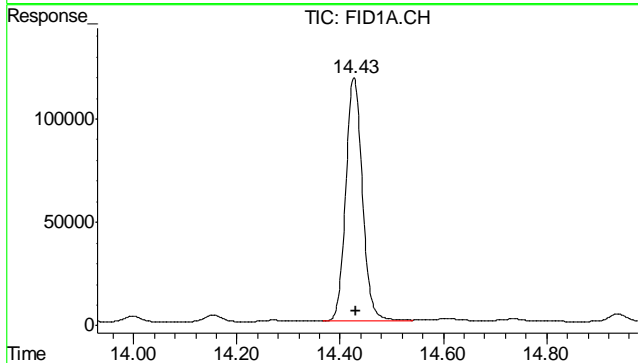
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm



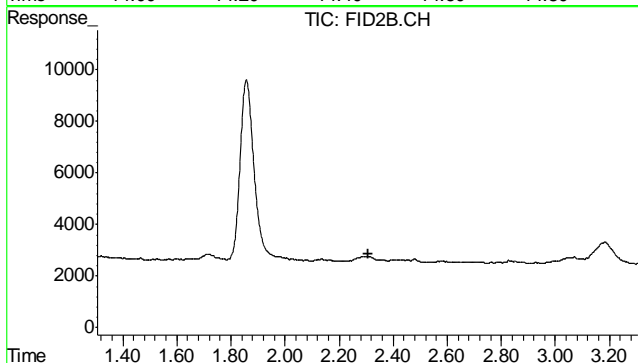
11.11
 11



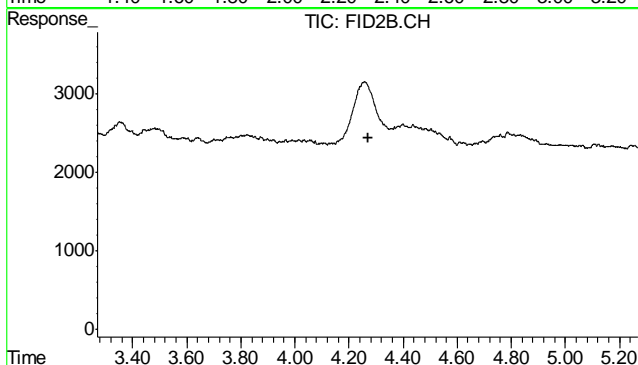
#1 TVH-Gasoline
 R.T.: 7.360 min
 Delta R.T.: 0.000 min
 Response: 2907576
 Conc: 0.04 mg/L m



#2 1,2,4-Trichlorobenzene
 R.T.: 14.426 min
 Delta R.T.: -0.005 min
 Response: 2646734
 Conc: 82.51 % m

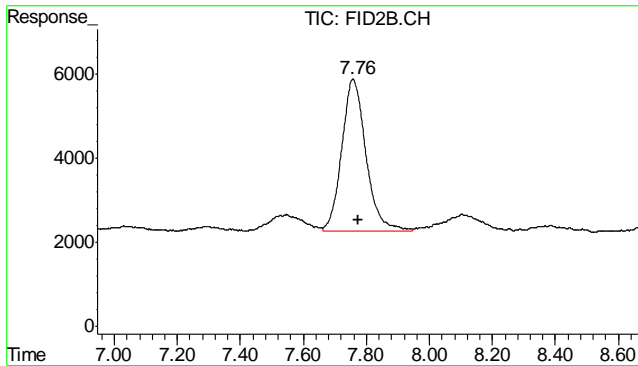


#4 Methyl-t-butyl-ether
 R.T.: 0.000 min
 Exp R.T.: 2.306 min
 Response: 0
 Conc: N.D.

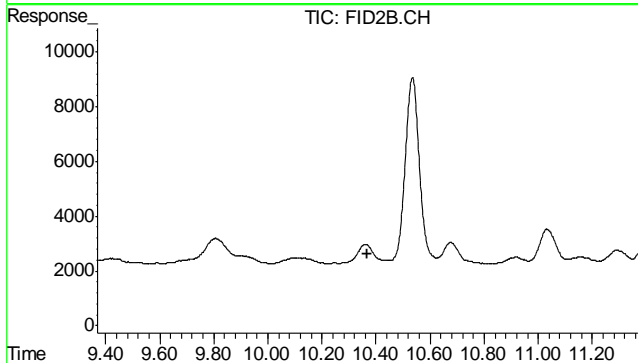


#5 Benzene
 R.T.: 0.000 min
 Exp R.T.: 4.270 min
 Response: 0
 Conc: N.D.

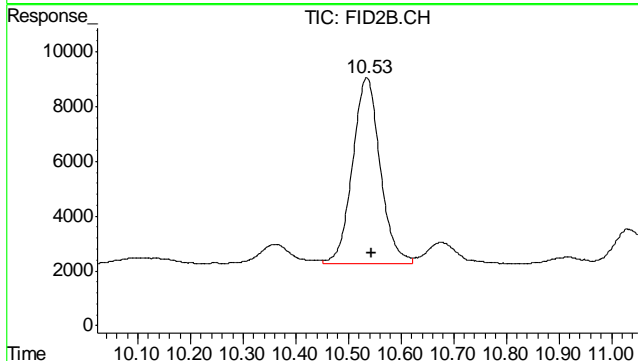
11.11
 11



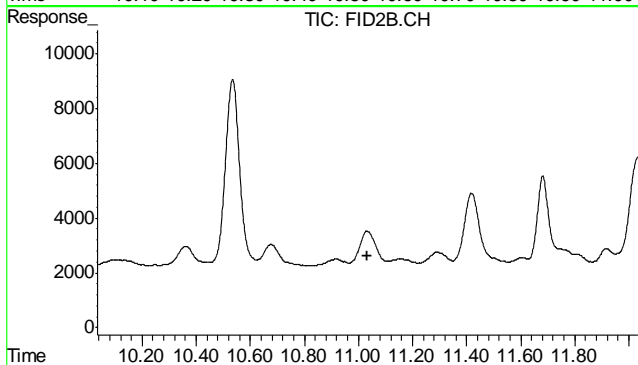
#6 Toluene
 R.T.: 7.757 min
 Delta R.T.: -0.016 min
 Response: 191664
 Conc: 0.80 ug/L



#7 Ethylbenzene
 R.T.: 0.000 min
 Exp R.T. : 10.369 min
 Response: 0
 Conc: N.D.

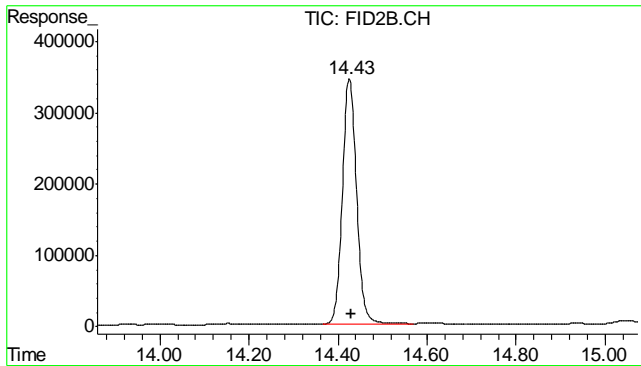


#8 m,p-Xylene
 R.T.: 10.535 min
 Delta R.T.: -0.008 min
 Response: 247385
 Conc: 1.01 ug/L



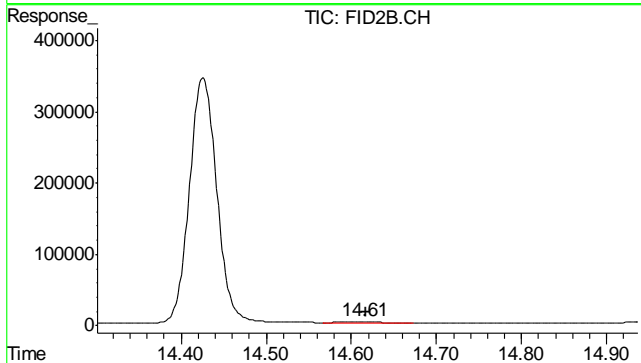
#9 o-Xylene
 R.T.: 0.000 min
 Exp R.T. : 11.034 min
 Response: 0
 Conc: N.D.

11.11
 11



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

R.T.: 14.425 min
Delta R.T.: -0.004 min
Response: 7700028
Conc: 86.73 % m



#11 Naphthalene

R.T.: 14.613 min
Delta R.T.: -0.004 min
Response: 46456
Conc: 0.35 ug/L m

11.11
11

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\021114\GB23713.D\FID1A.CH Vial: 3
 Signal #2 : Y:\1\DATA\021114\GB23713.D\FID2B.CH
 Acq On : 11 Feb 2014 5:23 pm Operator: ELISEV
 Sample : MB, S Inst : GC/MS Ins
 Misc : GC4199,GGB1305,5.000,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Feb 12 08:14:06 2014 Quant Results File: TB1292GB1292SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1292GB1292SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Wed Feb 12 08:13:46 2014
 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	14.43	2718969	84.765 %	m
10) S 1,2,4-Trichlorobenzene (P)	14.43	7985711	89.950 %	m
Target Compounds				
1) H TVH-Gasoline	7.36	2095062	0.028 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	7.77	100373	0.420 ug/L	
7) T Ethylbenzene	0.00	0	N.D. ug/L	d
8) T m,p-Xylene	10.54	81119	0.331 ug/L	
9) T o-Xylene	0.00	0	N.D. ug/L	d
11) T Naphthalene	0.00	0	N.D. ug/L	d

11.21
 11

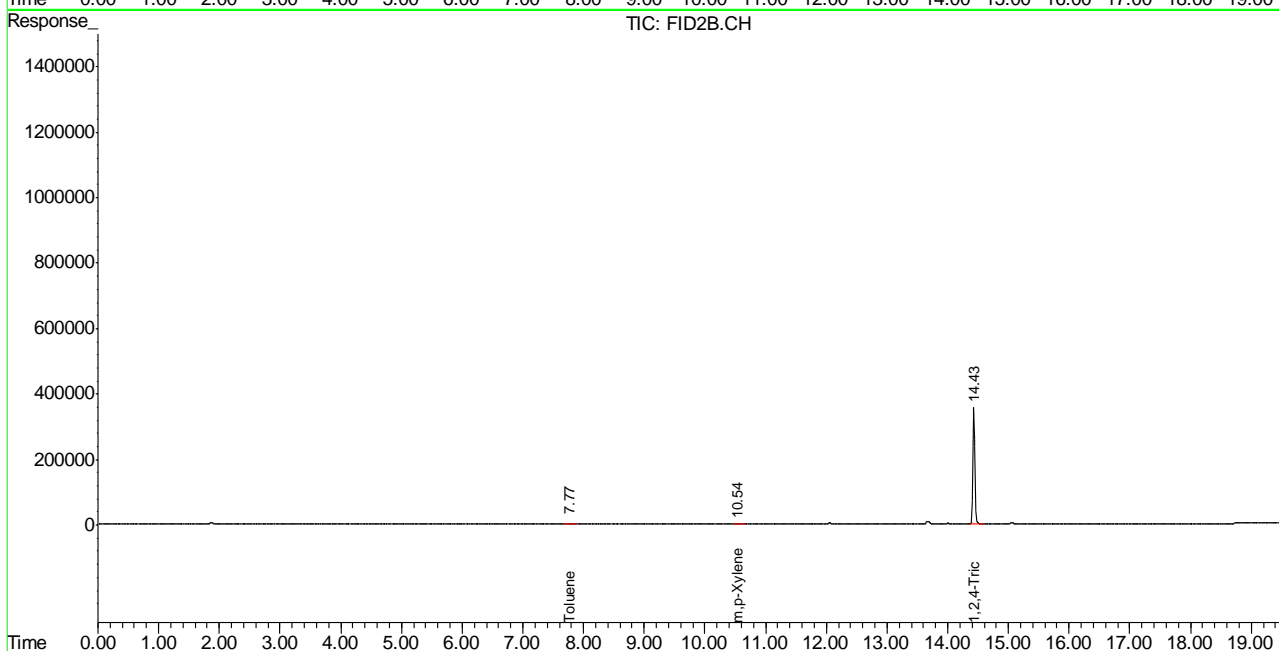
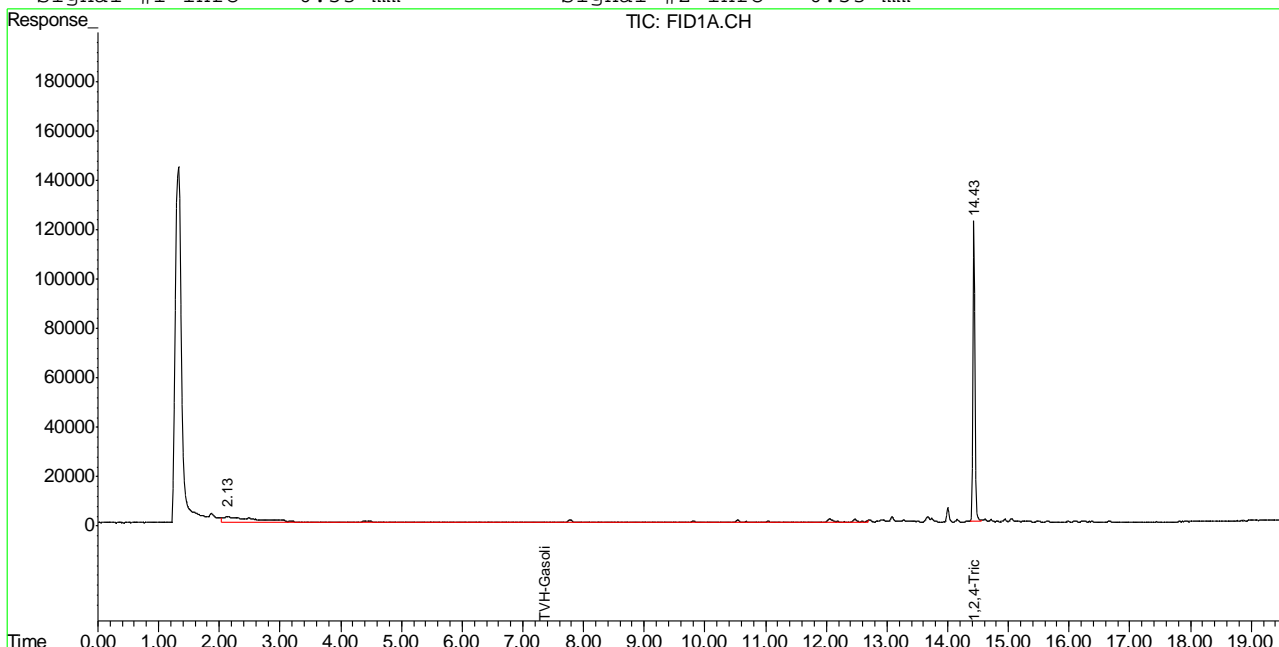
(f)=RT Delta > 1/2 Window (m)=manual int.
 GB23713.D TB1292GB1292SOIL.M Wed Feb 12 08:28:50 2014 GC

Quantitation Report (QT Reviewed)

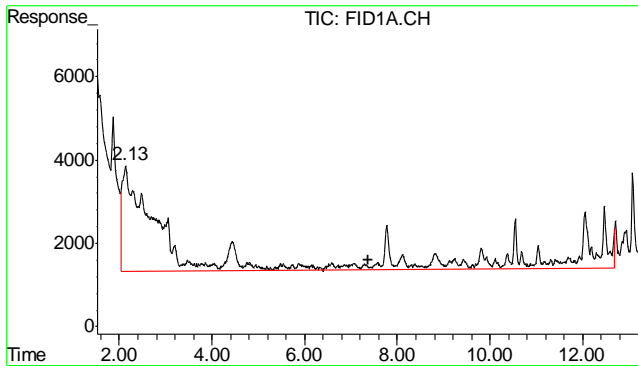
Signal #1 : Y:\1\DATA\021114\GB23713.D\FID1A.CH Vial: 3
 Signal #2 : Y:\1\DATA\021114\GB23713.D\FID2B.CH
 Acq On : 11 Feb 2014 5:23 pm Operator: ELISEV
 Sample : MB, S Inst : GC/MS Ins
 Misc : GC4199,GGB1305,5.000,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Feb 12 8:20 2014 Quant Results File: TB1292GB1292SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB1292GB1292SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Wed Feb 12 08:13:46 2014
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

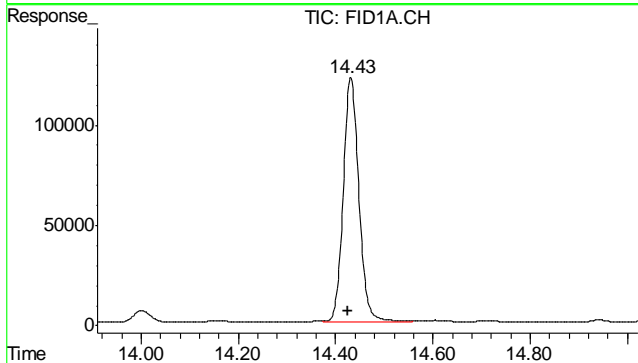
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm



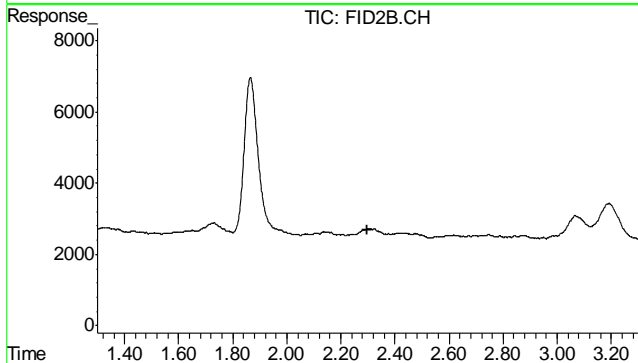
11.21
11



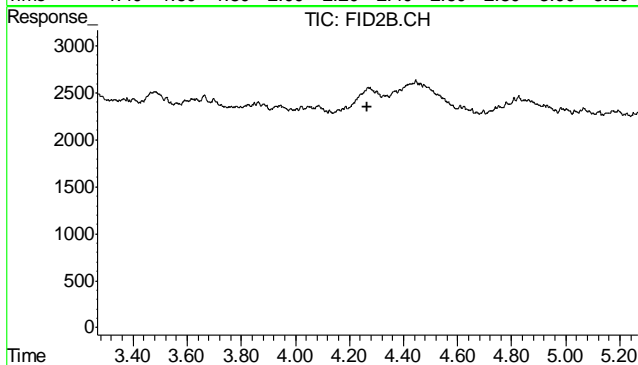
#1 TVH-Gasoline
 R.T.: 7.360 min
 Delta R.T.: 0.000 min
 Response: 2095062
 Conc: 0.03 mg/L m



#2 1,2,4-Trichlorobenzene
 R.T.: 14.431 min
 Delta R.T.: 0.006 min
 Response: 2718969
 Conc: 84.76 % m

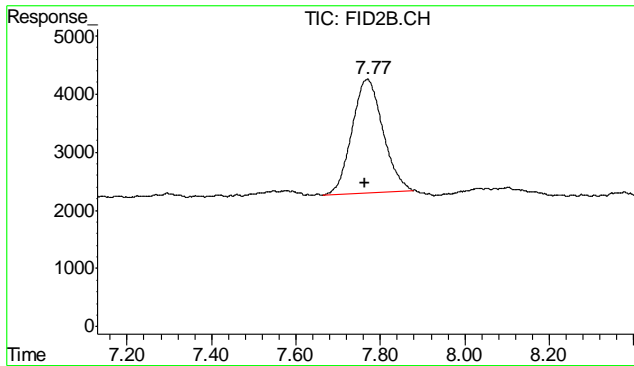


#4 Methyl-t-butyl-ether
 R.T.: 0.000 min
 Exp R.T.: 2.299 min
 Response: 0
 Conc: N.D.

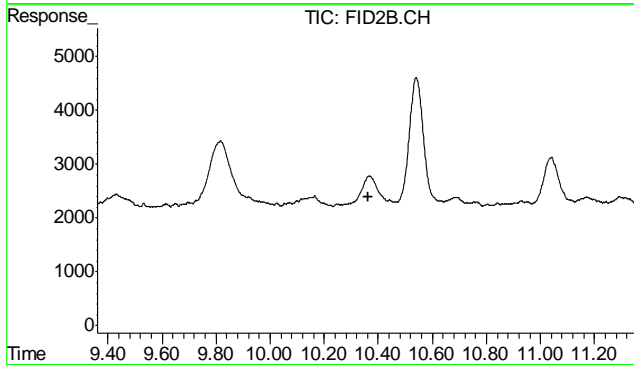


#5 Benzene
 R.T.: 0.000 min
 Exp R.T.: 4.267 min
 Response: 0
 Conc: N.D.

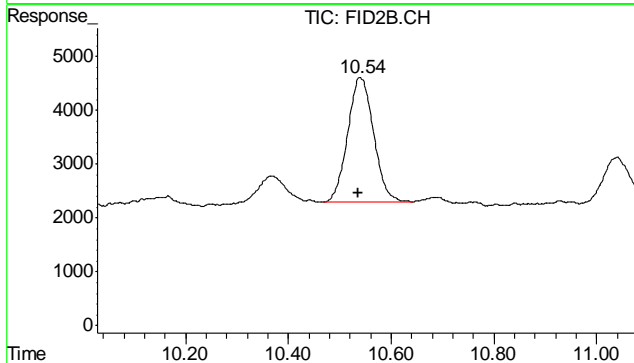
11.21
 11



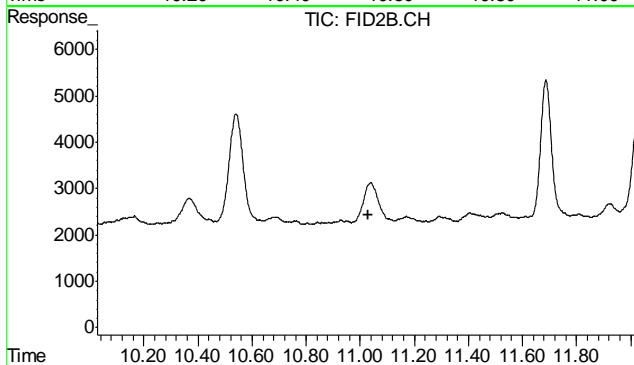
#6 Toluene
 R.T.: 7.771 min
 Delta R.T.: 0.006 min
 Response: 100373
 Conc: 0.42 ug/L



#7 Ethylbenzene
 R.T.: 0.000 min
 Exp R.T. : 10.361 min
 Response: 0
 Conc: N.D.

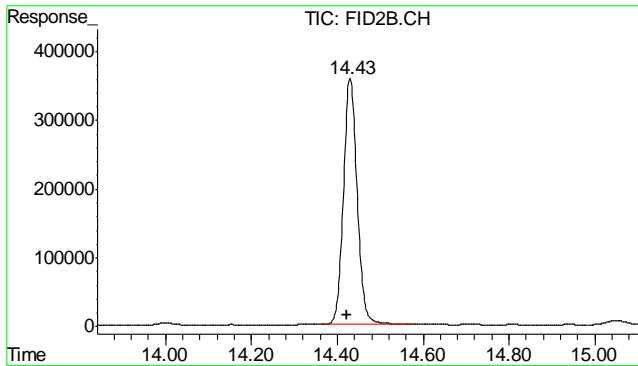


#8 m,p-Xylene
 R.T.: 10.539 min
 Delta R.T.: 0.004 min
 Response: 81119
 Conc: 0.33 ug/L



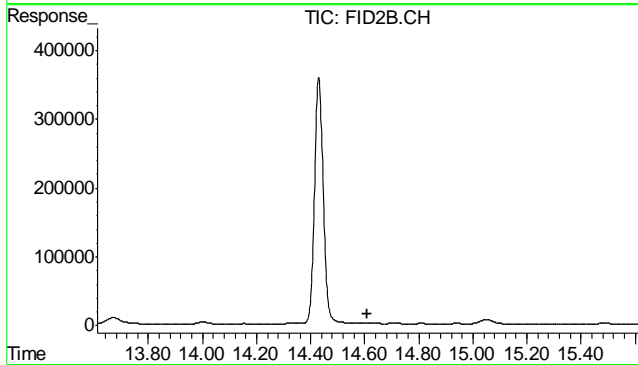
#9 o-Xylene
 R.T.: 0.000 min
 Exp R.T. : 11.028 min
 Response: 0
 Conc: N.D.

11.21
 11



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

R.T.: 14.429 min
 Delta R.T.: 0.006 min
 Response: 7985711
 Conc: 89.95 % m



#11 Naphthalene

R.T.: 0.000 min
 Exp R.T. : 14.610 min
 Response: 0
 Conc: N.D.

11.21
11

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D54856
Account: XTOKRWR XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9351-MB	FH017921.D	1	02/06/14	JS	02/06/14	OP9351	GFH886

The QC reported here applies to the following samples:

Method: SW846-8015B

D54856-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	6.7	5.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	65% 20-130%

Blank Spike Summary

Job Number: D54856
Account: XTOKRWR XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9351-BS	FH017923.D	1	02/06/14	JS	02/06/14	OP9351	GFH886

The QC reported here applies to the following samples:

Method: SW846-8015B

D54856-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	444	67	42-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	67%	20-130%

12.2.1
12

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D54856
Account: XTOKRWR XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP9351-MS	FH018061.D	1	02/10/14	JS	02/06/14	OP9351	GFH892
OP9351-MSD	FH018063.D	1	02/10/14	JS	02/06/14	OP9351	GFH892
D54766-1	FH018059.D	1	02/10/14	JS	02/06/14	OP9351	GFH892

The QC reported here applies to the following samples:

Method: SW846-8015B

D54856-1

CAS No.	Compound	D54766-1 mg/kg	Spike Q	mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	70.5	802	624	69	660	73	6	20-150/30	

CAS No.	Surrogate Recoveries	MS	MSD	D54766-1	Limits
84-15-1	o-Terphenyl	59%	76%	75%	20-130%

12.3.1
12

* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH020614\
 Data File : FH017929.D
 Signal(s) : FID1A.ch
 Acq On : 6 Feb 2014 7:38 pm
 Operator : JOHNS
 Sample : D54856-1
 Misc : OP9351,GFH886,30.0,,,1,1
 ALS Vial : 8 Sample Multiplier: 1

Integration File: autoint1.e
 Quant Time: Feb 07 08:05:19 2014
 Quant Method : C:\msdchem\1\METHODS\DRO-GFH864F.M
 Quant Title : DRO-ORO FRONT
 QLast Update : Mon Jan 20 09:31:28 2014
 Response via : Initial Calibration
 Integrator: ChemStation

Volume Inj. :
 Signal Phase :
 Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
3) s o-Terphenyl	13.635	1439819408	990.777 ug/ml
Target Compounds			
1) H TPH-DRO (C10-C28)	11.293	2049217135	1702.673 ug/ml
2) H TPH-DRO (C10-C32)	12.594	2453310067	1982.413 ug/ml

(f)=RT Delta > 1/2 Window

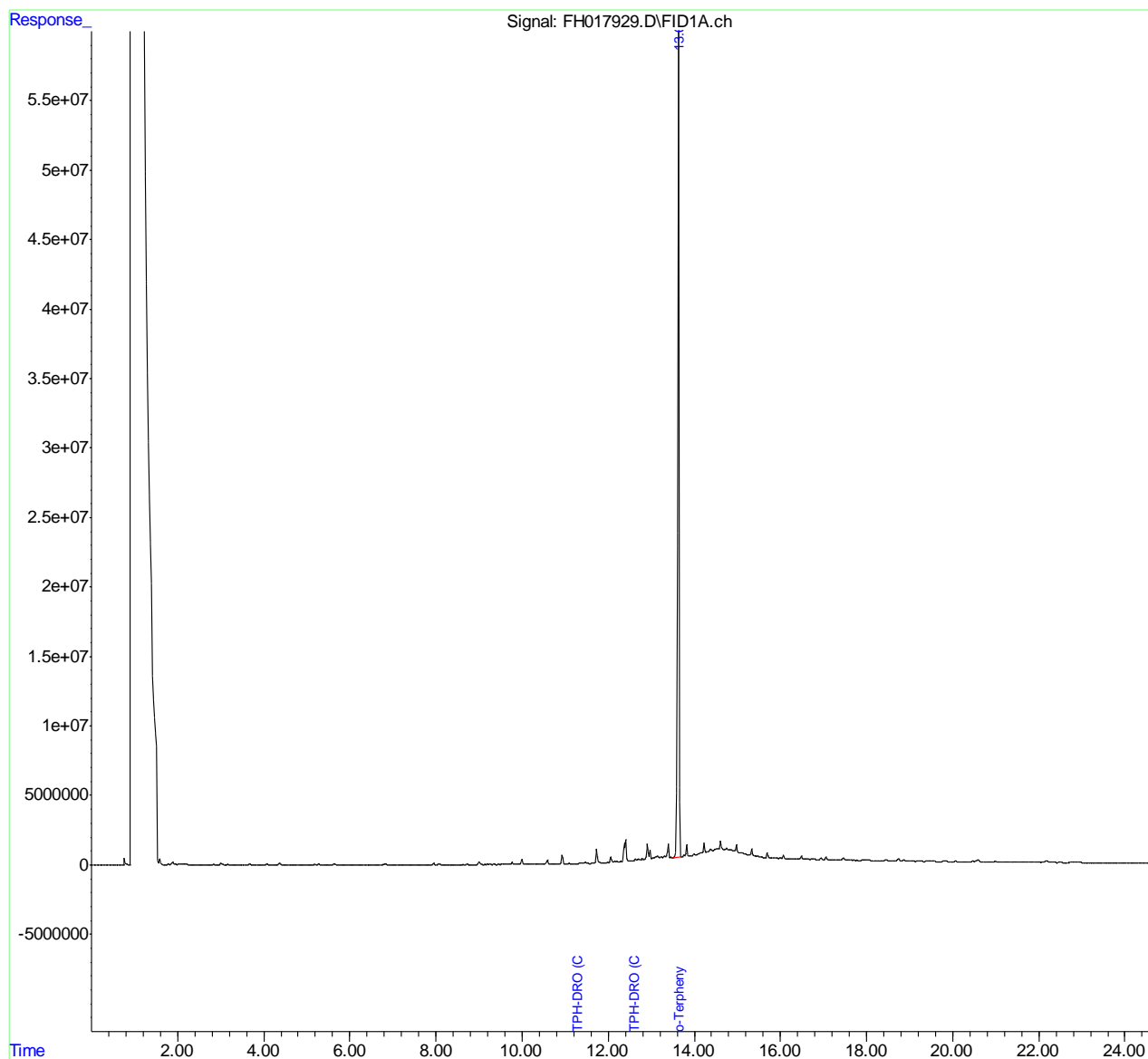
(m)=manual int.

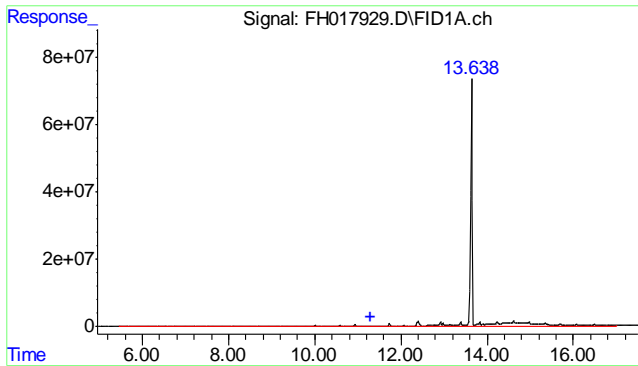
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH020614\
Data File : FH017929.D
Signal(s) : FID1A.ch
Acq On : 6 Feb 2014 7:38 pm
Operator : JOHNS
Sample : D54856-1
Misc : OP9351,GFH886,30.0,,,1,1
ALS Vial : 8 Sample Multiplier: 1

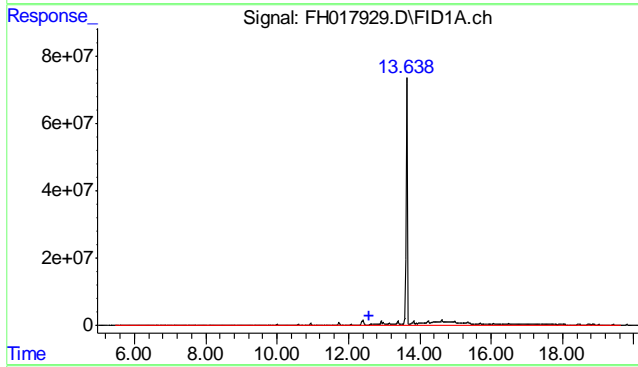
Integration File: autoint1.e
Quant Time: Feb 07 08:05:19 2014
Quant Method : C:\msdchem\1\METHODS\DRO-GFH864F.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Jan 20 09:31:28 2014
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

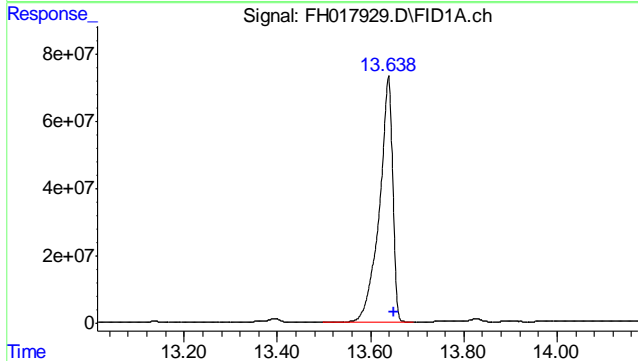




#1 TPH-DRO (C10-C28)
 R.T.: 11.293 min
 Delta R.T.: 0.000 min
 Response: 2049217135
 Conc: 1702.67 ug/ml m



#2 TPH-DRO (C10-C32)
 R.T.: 12.594 min
 Delta R.T.: 0.000 min
 Response: 2453310067
 Conc: 1982.41 ug/ml m



#3 o-Terphenyl
 R.T.: 13.635 min
 Delta R.T.: -0.015 min
 Response: 1439819408
 Conc: 990.78 ug/ml

13.11
13

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH020614\
 Data File : FH017921.D
 Signal(s) : FID1A.ch
 Acq On : 6 Feb 2014 5:19 pm
 Operator : JOHNS
 Sample : OP9351-MB
 Misc : OP9351,GFH886,30.0,,,1,1
 ALS Vial : 5 Sample Multiplier: 1

Integration File: autoint1.e
 Quant Time: Feb 07 08:01:23 2014
 Quant Method : C:\msdchem\1\METHODS\DRO-GFH864F.M
 Quant Title : DRO-ORO FRONT
 QLast Update : Mon Jan 20 09:31:28 2014
 Response via : Initial Calibration
 Integrator: ChemStation

Volume Inj. :
 Signal Phase :
 Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
3) s o-Terphenyl	13.690	1900205311	1307.581 ug/ml
Target Compounds			
1) H TPH-DRO (C10-C28)	11.293	85101442	70.710 ug/ml
2) H TPH-DRO (C10-C32)	12.594	102886256	83.138 ug/ml

(f)=RT Delta > 1/2 Window

(m)=manual int.

13.21

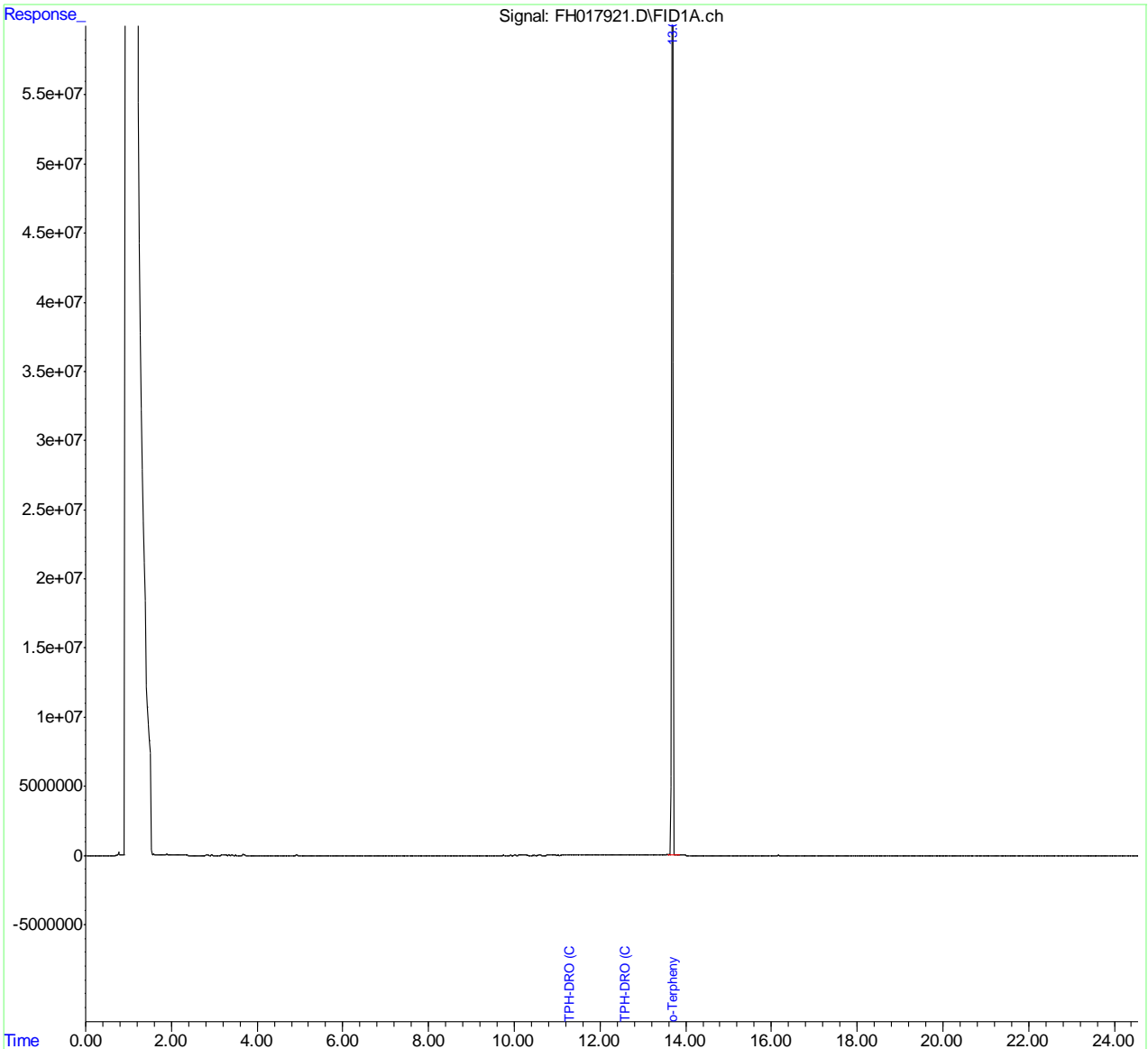
13

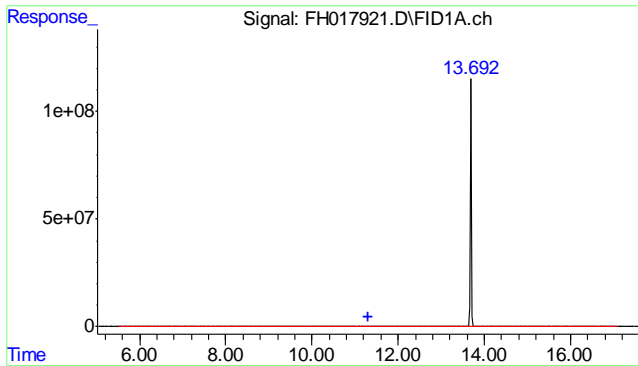
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH020614\
Data File : FH017921.D
Signal(s) : FID1A.ch
Acq On : 6 Feb 2014 5:19 pm
Operator : JOHNS
Sample : OP9351-MB
Misc : OP9351,GFH886,30.0,,,1,1
ALS Vial : 5 Sample Multiplier: 1

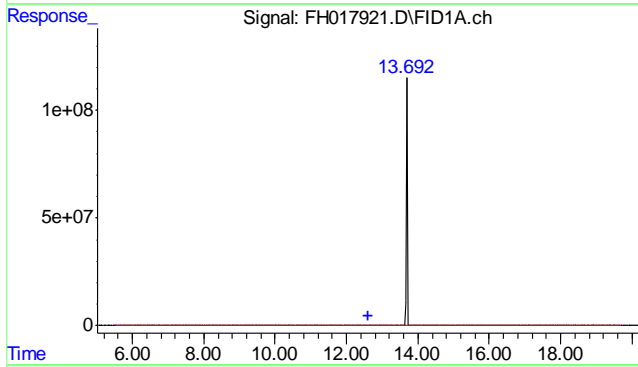
Integration File: autoint1.e
Quant Time: Feb 07 08:01:23 2014
Quant Method : C:\msdchem\1\METHODS\DRO-GFH864F.M
Quant Title : DRO-ORO FRONT
QLast Update : Mon Jan 20 09:31:28 2014
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

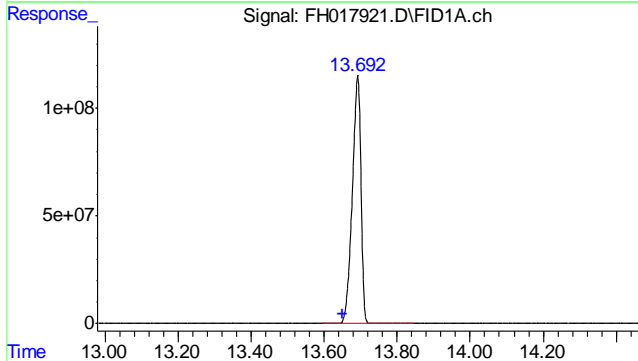




#1 TPH-DRO (C10-C28)
 R.T.: 11.293 min
 Delta R.T.: 0.000 min
 Response: 85101442
 Conc: 70.71 ug/ml m



#2 TPH-DRO (C10-C32)
 R.T.: 12.594 min
 Delta R.T.: 0.000 min
 Response: 102886256
 Conc: 83.14 ug/ml m



#3 o-Terphenyl
 R.T.: 13.690 min
 Delta R.T.: 0.040 min
 Response: 1900205311
 Conc: 1307.58 ug/ml

13.21
 13

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: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12280
Matrix Type: AQUEOUS

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

Prep Date: 02/10/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	55	210		
Antimony	150	11	95		
Arsenic	130	19	28		
Barium	50	1	7		
Beryllium	50	4.5	6		
Boron	250	4	33		
Cadmium	50	1	1.8		
Calcium	2000	12	210	39.0	<2000
Chromium	50	1.5	2		
Cobalt	25	2.5	2.9		
Copper	50	4	9.5		
Iron	350	7.5	48		
Lead	250	11	110		
Lithium	25	2	14		
Magnesium	1000	34	95	7.5	<1000
Manganese	25	2.5	2.3		
Molybdenum	50	2	4.2		
Nickel	150	2.5	4.4		
Phosphorus	500	75	100		
Potassium	5000	500	1400		
Selenium	250	36	55		
Silicon	250	24	26		
Silver	150	1.5	3		
Sodium	2000	37	850	-48	<2000
Strontium	25	.05	.6		
Thallium	50	9	20		
Tin	250	60	80		
Titanium	50	.5	11		
Uranium	250	15	28		
Vanadium	50	2	2		
Zinc	150	2	16		

Associated samples MP12280: D54856-1A

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

14.1.1
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12280
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

14.1.1
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D54856
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12280
 Matrix Type: AQUEOUS

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

Prep Date: 02/10/14

Metal	D54766-8A Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	7910	142000	125000	107.3 75-125
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	1480	125000	125000	98.8 75-125
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	58700	183000	125000	99.4 75-125
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP12280: D54856-1A

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

14.1.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12280
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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D54856
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12280
 Matrix Type: AQUEOUS

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

Prep Date: 02/10/14

Metal	D54766-8A Original MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit	
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	7910	143000	125000	108.1	0.7	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	1480	127000	125000	100.4	1.6	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	58700	185000	125000	101.0	1.1	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP12280: D54856-1A

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

14.1.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12280
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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D54856
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12280
 Matrix Type: AQUEOUS

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

Prep Date: 02/10/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	134000	125000	107.2	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	123000	125000	98.4	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	116000	125000	92.8	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP12280: D54856-1A

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

14.1.3
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12280
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

14.1.3
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D54856
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12280
 Matrix Type: AQUEOUS

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

Prep Date: 02/10/14

Metal	D54766-8A Original SDL 1:5		%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	1580	1600	1.0	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	296	305	3.0	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	11700	11800	0.9	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP12280: D54856-1A

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

14.1.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12280
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

14.1.4

14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12294
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 02/11/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	1.1	1.8		
Antimony	3.0	.21	.5		
Arsenic	2.5	.38	.63		
Barium	1.0	.02	.36	0.040	<1.0
Beryllium	1.0	.09	.06		
Boron	5.0	.08	.16		
Cadmium	1.0	.02	.28	0.020	<1.0
Calcium	40	.24	6.8		
Chromium	1.0	.03	.03	0.040	<1.0
Cobalt	0.50	.05	.039		
Copper	1.0	.08	.13	-0.080	<1.0
Iron	7.0	.15	1.8		
Lead	5.0	.21	.25	-0.21	<5.0
Lithium	0.50	.04	.13		
Magnesium	20	.68	1.8		
Manganese	0.50	.05	.038		
Molybdenum	1.0	.04	.13		
Nickel	3.0	.05	.07	-0.010	<3.0
Phosphorus	10	1.5	1.2		
Potassium	200	9.9	12		
Selenium	5.0	.71	1.1	-0.13	<5.0
Silicon	5.0	.47	1.1		
Silver	3.0	.03	.05	0.030	<3.0
Sodium	40	.73	3.7		
Strontium	5.0	.001	.022		
Thallium	1.0	.18	.46		
Tin	5.0	1.2	2.3		
Titanium	1.0	.01	.46		
Uranium	5.0	.29	.31		
Vanadium	1.0	.04	.043		
Zinc	3.0	.04	.16	0.24	<3.0

Associated samples MP12294: D54856-1

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

14.2.1
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12294
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D54856
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12294
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 02/11/14

Metal	D54856-1 Original MS		SpikeLot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	3300	4200	229	392.9(a)	75-125
Beryllium					
Boron					
Cadmium	0.0	50.0	57.3	87.3	75-125
Calcium	anr				
Chromium	17.7	64.8	57.3	84.5	75-125
Cobalt					
Copper	15.0	66.6	57.3	90.1	75-125
Iron	anr				
Lead	14.8	102	115	79.5	75-125
Lithium					
Magnesium	anr				
Manganese					
Molybdenum	anr				
Nickel	11.6	56.5	57.3	78.4	75-125
Potassium	anr				
Selenium	3.9	102	115	88.3	75-125
Silicon					
Silver	0.0	17.4	22.9	76.0	75-125
Sodium	anr				
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	40.3	75.4	57.3	73.2N(b)	75-125

Associated samples MP12294: D54856-1

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

14.2.2
 14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12294
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

- (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: D54856
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12294
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 02/11/14

Metal	D54856-1 Original MSD		SpikeLot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	3300	4320	218	467.5(a)	2.8	20
Beryllium						
Boron						
Cadmium	0.0	47.2	54.5	86.5	5.8	20
Calcium	anr					
Chromium	17.7	63.5	54.5	86.3	2.0	20
Cobalt						
Copper	15.0	63.1	54.5	88.2	5.4	20
Iron	anr					
Lead	14.8	97.0	109	78.9	5.0	20
Lithium						
Magnesium	anr					
Manganese						
Molybdenum	anr					
Nickel	11.6	54.1	54.5	77.9	4.3	20
Potassium	anr					
Selenium	3.9	96.3	109	87.5	5.7	20
Silicon						
Silver	0.0	16.4	21.8	75.2	5.9	20
Sodium	anr					
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	40.3	76.4	54.5	78.6	1.3	20

Associated samples MP12294: D54856-1

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

14.2.2
 14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12294
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(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: D54856
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12294
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 02/11/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	186	200	93.0	80-120
Beryllium				
Boron				
Cadmium	48.4	50	96.8	80-120
Calcium	anr			
Chromium	49.1	50	98.2	80-120
Cobalt				
Copper	47.6	50	95.2	80-120
Iron	anr			
Lead	95.5	100	95.5	80-120
Lithium				
Magnesium	anr			
Manganese				
Molybdenum	anr			
Nickel	46.3	50	92.6	80-120
Phosphorus	anr			
Potassium	anr			
Selenium	96.9	100	96.9	80-120
Silicon				
Silver	18.3	20	91.5	80-120
Sodium	anr			
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	45.3	50	90.6	80-120

Associated samples MP12294: D54856-1

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

14.2.3
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12294
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

14.2.3
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D54856
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12294
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: ug/l

Prep Date: 02/11/14

Metal	D54856-1 Original SDL 1:5		%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	30000	35600	18.5*(a)	0-10
Beryllium				
Boron				
Cadmium	0.00	0.00	NC	0-10
Calcium	anr			
Chromium	149	165	10.2*(a)	0-10
Cobalt				
Copper	136	131	4.0	0-10
Iron	anr			
Lead	98.9	118	19.3 (b)	0-10
Lithium				
Magnesium	anr			
Manganese				
Molybdenum	anr			
Nickel	122	120	13.1*(a)	0-10
Potassium	anr			
Selenium	35.0	0.00	100.0(b)	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium	anr			
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	304	357	17.3*(a)	0-10

Associated samples MP12294: D54856-1

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

14.2.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12294
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12295
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 02/11/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.55	.75		
Antimony	0.20	.0011	.029		
Arsenic	0.10	.0085	.024	0.011	<0.10
Barium	1.0	.008	.16		
Beryllium	0.10	.008	.049		
Boron	20	.25	.07		
Cadmium	0.050	.018	.038		
Calcium	200	2.8	13		
Chromium	1.0	.027	.11		
Cobalt	0.10	.0025	.0085		
Copper	1.0	.03	.1		
Iron	5.0	1.8	1.8		
Lead	0.25	.004	.0075		
Magnesium	50	.65	.65		
Manganese	0.50	.06	.07		
Molybdenum	0.50	.025	.046		
Nickel	1.0	.0044	.17		
Phosphorus	30	1.3	4.9		
Potassium	100	1.5	2.5		
Selenium	0.20	.03	.13		
Silver	0.050	.00095	.01		
Sodium	250	2.5	5.5		
Strontium	10	.005	.027		
Thallium	0.10	.0012	.0075		
Tin	5.0	.032	2.3		
Titanium	1.0	.03	.085		
Uranium	0.25	.00085	.0015		
Vanadium	2.0	.019	.11		
Zinc	5.0	.11	1.4		

Associated samples MP12295: D54856-1

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

14.3.1
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D54856
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12295
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 02/11/14

Metal	D54856-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony	anr			
Arsenic	4.6	118	115	99.0 75-125
Barium				
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron				
Lead	anr			
Magnesium				
Manganese				
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP12295: D54856-1

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

14.3.2
 14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D54856
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12295
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 02/11/14

Metal	D54856-1 Original MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit	
Aluminum						
Antimony	anr					
Arsenic	4.6	113	109	99.4	4.3	20
Barium						
Beryllium	anr					
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper	anr					
Iron						
Lead	anr					
Magnesium						
Manganese						
Molybdenum	anr					
Nickel	anr					
Phosphorus						
Potassium						
Selenium	anr					
Silver	anr					
Sodium						
Strontium						
Thallium	anr					
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	anr					

Associated samples MP12295: D54856-1

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

14.3.2
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D54856
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12295
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 02/11/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony	anr			
Arsenic	99.0	100	99.0	80-120
Barium				
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron				
Lead	anr			
Magnesium				
Manganese				
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP12295: D54856-1

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

14.3.3
 14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D54856
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12295
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: ug/l

Prep Date: 02/11/14

Metal	D54856-1 Original	SDL 5:25	%DIF	QC Limits
Aluminum				
Antimony	anr			
Arsenic	42.0	39.4	6.0	0-10
Barium				
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron				
Lead	anr			
Magnesium				
Manganese				
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium				
Selenium	anr			
Silver	anr			
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP12295: D54856-1

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

14.3.4
 14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12297
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 02/12/14

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.083	.00088	.0067	0.000092	<0.083

Associated samples MP12297: D54856-1

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: D54856
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12297
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 02/12/14

Metal	D54851-1 Original MS	Spike HGWSR1	lot % Rec	QC Limits
-------	-------------------------	-----------------	--------------	--------------

Mercury 0.015 0.42 0.365 110.9 75-125

Associated samples MP12297: D54856-1

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

14.4.2
 14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D54856
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12297
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 02/12/14

Metal	D54851-1 Original MSD	SpikeLot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.015	0.41	0.365	108.2	2.4

Associated samples MP12297: D54856-1

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

14.4.2
 14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

QC Batch ID: MP12297
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 02/12/14

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.35	0.333	105.0	80-120

Associated samples MP12297: D54856-1

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

14.4.3
14

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: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP11956/GN23637	1.0	0.00	mg/kg	141	136	96.7	80-120%
Specific Conductivity	GP11937/GN23598			umhos/cm	9995	9830	98.3	90-110%
pH	GN23591			su	8.00	8.02	100.3	99.3-100.7%

Associated Samples:
Batch GN23591: D54856-1
Batch GP11937: D54856-1
Batch GP11956: D54856-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP11956/GN23637	D54766-9	mg/kg	0.00	0.00	0.0	0-20%
Redox Potential Vs H2	GN23590	D54825-1	mv	520	522	0.4	0-20%

Associated Samples:
Batch GN23590: D54856-1
Batch GP11956: D54856-1
(*) Outside of QC limits

15.2
15

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP11956/GN23637	D54766-9	mg/kg	0.00	40.0	31.2	77.9	75-125%

Associated Samples:

Batch GP11956: D54856-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D54856
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G PDCD H2O Release

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP11956/GN23637	D54766-9	mg/kg	0.00	40.0	31.2	0.1	20%

Associated Samples:

Batch GP11956: D54856-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

Technical Report for

XTO Energy

PCU T33X-29G

Accutest Job Number: D55189

Sampling Date: 02/17/14

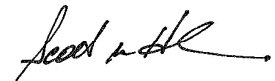
Report to:

A&W Water
8000 West 14th Avenue
Lakewood, CO 80214
dknudson@krwconsulting.com; jhess@krwconsulting.com;
crachak@krwconsulting.com; rrasnic@krwconsulting.com;
ATTN: Dwayne Knudson

Total number of pages in report: **20**



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



Scott Heideman
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO (CO00049), ID, NE (CO00049), ND (R-027), NJ (CO 0007), OK (D9942), UT (NELAP CO00049), TX (T104704511)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.

Table of Contents

-1-

Section 1: Sample Summary	3
Section 2: Case Narrative/Conformance Summary	4
Section 3: Summary of Hits	5
Section 4: Sample Results	6
4.1: D55189-1: BACKGROUND AS #1	7
4.2: D55189-2: BACKGROUND AS #2	8
4.3: D55189-3: BACKGROUND AS #3	9
4.4: D55189-4: BACKGROUND AS #4	10
4.5: D55189-5: BACKGROUND AS #5	11
4.6: D55189-6: BACKGROUND AS #6	12
Section 5: Misc. Forms	13
5.1: Chain of Custody	14
Section 6: Metals Analysis - QC Data Summaries	15
6.1: Prep QC MP12366: As	16

1

2

3

4

5

6



Sample Summary

XTO Energy

Job No: D55189

PCU T33X-29G

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
D55189-1	02/17/14	10:40 CD	02/19/14	SO	Soil	BACKGROUND AS #1
D55189-2	02/17/14	10:50 CD	02/19/14	SO	Soil	BACKGROUND AS #2
D55189-3	02/17/14	10:55 CD	02/19/14	SO	Soil	BACKGROUND AS #3
D55189-4	02/17/14	11:35 CD	02/19/14	SO	Soil	BACKGROUND AS #4
D55189-5	02/17/14	11:40 CD	02/19/14	SO	Soil	BACKGROUND AS #5
D55189-6	02/17/14	11:55 CD	02/19/14	SO	Soil	BACKGROUND AS #6

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



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: XTO Energy

Job No D55189

Site: 19,3433X-29G

Report Date 2/25/2014 3:17:07 PM

On 02/19/2014, 6 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2.9 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D55189 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.

Metals By Method SW846 6020A

Matrix SO	Batch ID: MP12366
------------------	--------------------------

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D55311-1MS, D55311-1MSD, D55311-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Arsenic are outside control limits for sample MP12366-SD1. Probable cause due to sample homogeneity.
- MP12366-SD1 for Arsenic: Serial dilution indicates possible matrix interference.

Wet Chemistry By Method SM2540G-2011 M

Matrix SO	Batch ID: GN23714
------------------	--------------------------

- The data for SM2540G-2011 M meets quality control requirements.

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.

Summary of Hits

Job Number: D55189
Account: XTO Energy
Project: PCU T33X-29G
Collected: 02/17/14



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
D55189-1	BACKGROUND AS #1					
Arsenic		2.9	0.14		mg/kg	SW846 6020A
D55189-2	BACKGROUND AS #2					
Arsenic		4.4	0.18		mg/kg	SW846 6020A
D55189-3	BACKGROUND AS #3					
Arsenic		5.9	0.13		mg/kg	SW846 6020A
D55189-4	BACKGROUND AS #4					
Arsenic		3.7	0.14		mg/kg	SW846 6020A
D55189-5	BACKGROUND AS #5					
Arsenic		3.7	0.13		mg/kg	SW846 6020A
D55189-6	BACKGROUND AS #6					
Arsenic		3.9	0.13		mg/kg	SW846 6020A

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: BACKGROUND AS #1	
Lab Sample ID: D55189-1	Date Sampled: 02/17/14
Matrix: SO - Soil	Date Received: 02/19/14
	Percent Solids: 73.0
Project: PCU T33X-29G	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	2.9	0.14	mg/kg	5	02/24/14	02/25/14 JB	SW846 6020A ¹	SW846 3050B ²

(1) Instrument QC Batch: MA4490

(2) Prep QC Batch: MP12366

RL = Reporting Limit

4.1
4

Report of Analysis

Client Sample ID: BACKGROUND AS #2	
Lab Sample ID: D55189-2	Date Sampled: 02/17/14
Matrix: SO - Soil	Date Received: 02/19/14
	Percent Solids: 55.2
Project: PCU T33X-29G	

4.2
4

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.4	0.18	mg/kg	5	02/24/14	02/25/14 JB	SW846 6020A ¹	SW846 3050B ²

(1) Instrument QC Batch: MA4490

(2) Prep QC Batch: MP12366

RL = Reporting Limit

Report of Analysis

Client Sample ID: BACKGROUND AS #3	Date Sampled: 02/17/14
Lab Sample ID: D55189-3	Date Received: 02/19/14
Matrix: SO - Soil	Percent Solids: 70.0
Project: PCU T33X-29G	

4.3
4

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	5.9	0.13	mg/kg	5	02/24/14	02/25/14 JB	SW846 6020A ¹	SW846 3050B ²

(1) Instrument QC Batch: MA4490

(2) Prep QC Batch: MP12366

RL = Reporting Limit

Report of Analysis

Client Sample ID: BACKGROUND AS #4	Date Sampled: 02/17/14
Lab Sample ID: D55189-4	Date Received: 02/19/14
Matrix: SO - Soil	Percent Solids: 68.8
Project: PCU T33X-29G	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	3.7	0.14	mg/kg	5	02/24/14	02/25/14 JB	SW846 6020A ¹	SW846 3050B ²

(1) Instrument QC Batch: MA4490

(2) Prep QC Batch: MP12366

RL = Reporting Limit

4.4
4

Report of Analysis

Client Sample ID: BACKGROUND AS #5	Date Sampled: 02/17/14
Lab Sample ID: D55189-5	Date Received: 02/19/14
Matrix: SO - Soil	Percent Solids: 73.2
Project: PCU T33X-29G	

4.5
4

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	3.7	0.13	mg/kg	5	02/24/14	02/25/14 JB	SW846 6020A ¹	SW846 3050B ²

(1) Instrument QC Batch: MA4490

(2) Prep QC Batch: MP12366

RL = Reporting Limit

Report of Analysis

Client Sample ID: BACKGROUND AS #6	Date Sampled: 02/17/14
Lab Sample ID: D55189-6	Date Received: 02/19/14
Matrix: SO - Soil	Percent Solids: 72.2
Project: PCU T33X-29G	

4.6
4

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	3.9	0.13	mg/kg	5	02/24/14	02/25/14 JB	SW846 6020A ¹	SW846 3050B ²

(1) Instrument QC Batch: MA4490

(2) Prep QC Batch: MP12366

RL = Reporting Limit

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

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: D55189
Account: XTOKRWR - XTO Energy
Project: PCU T33X-29G

QC Batch ID: MP12366
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 02/24/14

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.55	.75		
Antimony	0.20	.0011	.029		
Arsenic	0.10	.0085	.024	0.012	<0.10
Barium	1.0	.008	.16		
Beryllium	0.10	.008	.049		
Boron	20	.25	.07		
Cadmium	0.050	.018	.038		
Calcium	200	2.8	13		
Chromium	1.0	.027	.11		
Cobalt	0.10	.0025	.0085		
Copper	1.0	.03	.1		
Iron	5.0	1.8	1.8		
Lead	0.25	.004	.0075		
Magnesium	50	.65	.65		
Manganese	0.50	.06	.07		
Molybdenum	0.50	.025	.046		
Nickel	1.0	.0044	.17		
Phosphorus	30	1.3	4.9		
Potassium	100	1.5	2.5		
Selenium	0.20	.03	.13		
Silver	0.050	.00095	.01		
Sodium	250	2.5	5.5		
Strontium	10	.005	.027		
Thallium	0.10	.0012	.0075		
Tin	5.0	.032	2.3		
Titanium	1.0	.03	.085		
Uranium	0.25	.00085	.0015		
Vanadium	2.0	.019	.11		
Zinc	5.0	.11	1.4		

Associated samples MP12366: D55189-1, D55189-2, D55189-3, D55189-4, D55189-5, D55189-6

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: D55189
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G

QC Batch ID: MP12366
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 02/24/14

Metal	D55311-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits	
Aluminum					
Antimony					
Arsenic	3.8	132	130	98.7	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium	anr				
Vanadium					
Zinc					

Associated samples MP12366: D55189-1, D55189-2, D55189-3, D55189-4, D55189-5, D55189-6

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: D55189
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G

QC Batch ID: MP12366
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 02/24/14

Metal	D55311-1 Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	3.8	124	124	97.2	6.3	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	anr					
Vanadium						
Zinc						

Associated samples MP12366: D55189-1, D55189-2, D55189-3, D55189-4, D55189-5, D55189-6

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: D55189
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G

QC Batch ID: MP12366
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 02/24/14

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	95.7	100	95.7	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	anr			
Vanadium				
Zinc				

Associated samples MP12366: D55189-1, D55189-2, D55189-3, D55189-4, D55189-5, D55189-6

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D55189
 Account: XTOKRWR - XTO Energy
 Project: PCU T33X-29G

QC Batch ID: MP12366
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: ug/l

Prep Date: 02/24/14

Metal	D55311-1 Original	SDL 5:25	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	29.9	25.6	14.4*(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	anr			
Vanadium				
Zinc				

Associated samples MP12366: D55189-1, D55189-2, D55189-3, D55189-4, D55189-5, D55189-6

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