

State of Colorado
Oil and Gas Conservation Commission

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



#7472

FOR OGCC USE ONLY

RECEIVED
11/15/2012

SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

OGCC Employee

☐ Spill ☐ Complaint
☐ Inspection ☐ NOAV

Tracking No:

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☐ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☒ Other (describe): Partially Buried Tank Pit Closure

OGCC Operator Number: 100264

Name of Operator: XTO Energy Inc.

Address: PO Box 6501

City: Englewood State: CO Zip: 80155

Contact Name and Telephone:

Jessica Dooling

No: 970-675-4122

Fax: 970-675-4150

API Number: 05-103-05171-00

County: Rio Blanco

Facility Name: Piceance Creek Unit

Facility Number: Location # 314328

Well Name: Piceance Creek Unit

Well Number: PCU T84-15G

Location: (QtrQtr, Sec, Twp, Rng, Meridian): SENE, 15, 2S, 96W, 6th PM Latitude: 39.87739 Longitude: -108.14646

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Produced Water and Condensate

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☐ Y ☒ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): non-cropland rangeland

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Irigul channery loam, 5 to 50% slopes

Potential receptors (water wells within 1/4 mi, surface waters, etc.): There are no known potential receptors within 1/4 mile

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):

- ☒ Soils
☐ Vegetation
☐ Groundwater
☐ Surface Water

Extent of Impact:

Benzo(A)pyrene 0.0719 mg/kg, pH, Arsenic

How Determined:

laboratory analysis

REMEDIATION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

An out of service partially buried tank was removed from the PCU T84-15G location. A sample was collected from the low point of the tank pit and analyzed for full Table 910-1. Results exceeded Table 910-1 for Benzo(A)pyrene (0.0718 mg/kg), pH (9.38) and Arsenic (2.0 mg/kg).

Describe how source is to be removed:

NA

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

Remaining elevated Benzo(A)pyrene will be mixblended with clean backfill material and pH will be covered with 3 feet of clean fill per COGCC guidance.



Tracking Number: _____
Name of Operator: XT O
OGCC Operator No: _____
Received Date: _____
Well Name & No: API # 103 05171
Facility Name & No: Location ID # 314328

OGCC Employee: _____

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Available information indicates that the uppermost groundwater bearing zone is greater than 200 feet below the ground surface. Soil samples were collected for laboratory analysis below the pit to confirm no groundwater impact potential exists (see Table 1).

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

The pit will be backfilled with clean fill material imported to the site. The pit will be closed in accordance with COGCC 900 and 1000 series regulations.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☐ Y ☒ N If yes, describe:

Based on tank pit sample results no additional assessment will be necessary.

Final disposition of E&P waste (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

NA

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: <u>10/31/2012</u>	Date Site Investigation Completed: <u>11/15/2012</u>	Date Remediation Plan Submitted: <u>11/15/2012</u>
Remediation Start Date: <u>pending approval</u>	Anticipated Completion Date: <u>pending approval</u>	Actual Completion Date: _____

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete

Print Name: Jessica Dooling

Signed: _____

Title: Environmental Coordinator

Date: 11/15/2012

OGCC Approved: _____

Title: _____

FOR Chris Canfield
EPS NW Region

Date: 12/20/2012

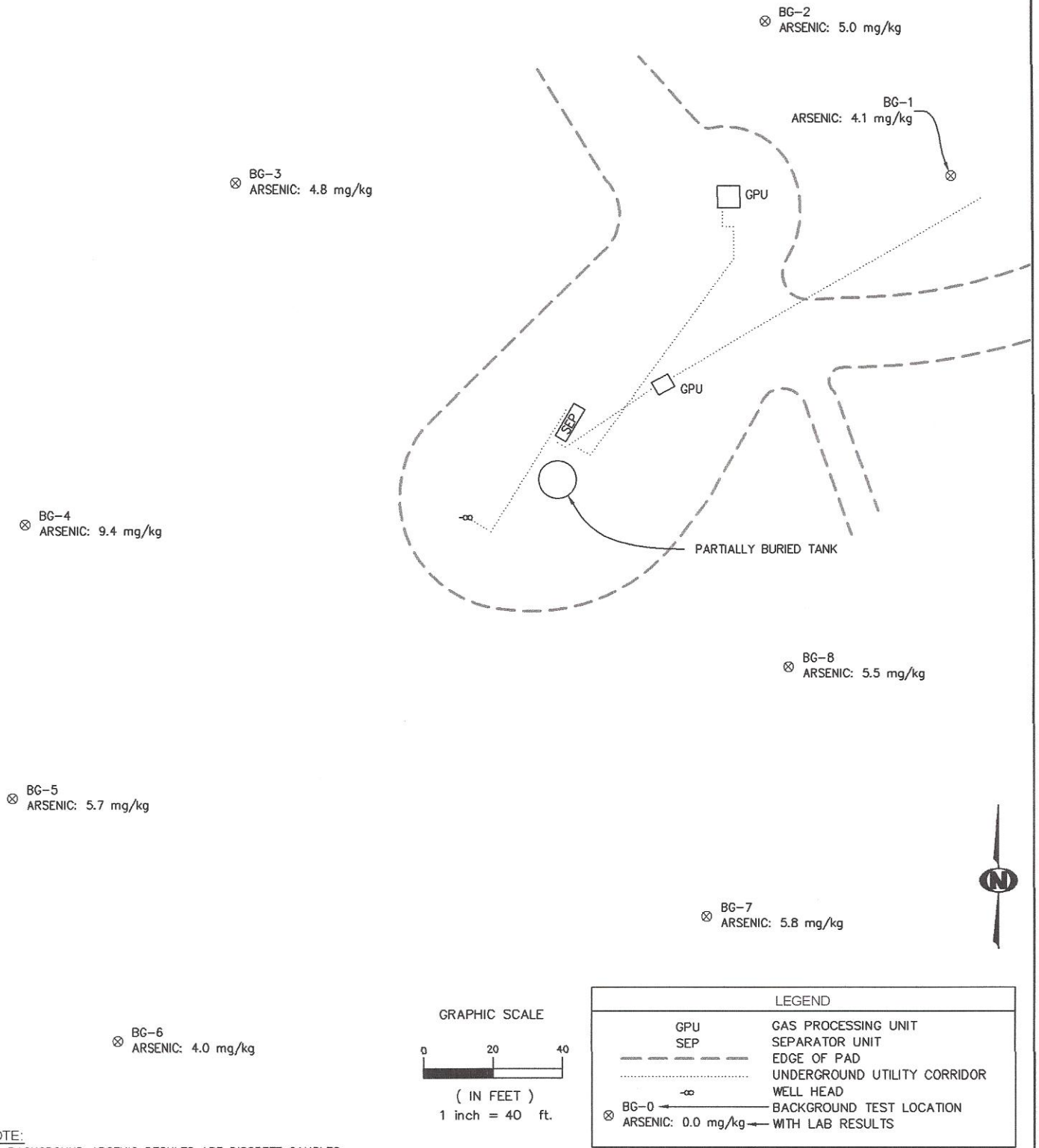
Table 1
Location: PCU T84-15G
Lab Summary

Analytical Parameter (with units)	Bottom of Excavation (11/1/12)	BACKGROUND SAMPLES (10/31/12)								Updated: COGCC Table 910-1 Concentration Levels	11/12/2012 Maximum based on Background
		BG #1	BG #2	BG #3	BG #4	BG #5	BG #6	BG #7	BG #8		
Accutest Job #	D40540	D40523								-	-
Sample Type (Composite/Discrete)	D	D	D	D	D	D	D	D	D	-	-
TPH (GRO) (mg/kg)	ND	-	-	-	-	-	-	-	-	-	-
TPH (DRO) (mg/kg)	12.6	-	-	-	-	-	-	-	-	-	-
TPH (GRO+DRO) (mg/kg)	12.6	-	-	-	-	-	-	-	-	500	-
Benzene (mg/kg)	ND	-	-	-	-	-	-	-	-	0.17	-
Toluene (mg/kg)	ND	-	-	-	-	-	-	-	-	85	-
Ethylbenzene (mg/kg)	ND	-	-	-	-	-	-	-	-	100	-
Xylenes (total) (mg/kg)	ND	-	-	-	-	-	-	-	-	175	-
Acenaphthene (mg/kg)	ND	-	-	-	-	-	-	-	-	1,000	-
Anthracene (mg/kg)	ND	-	-	-	-	-	-	-	-	1,000	-
Benzo(A)anthracene (mg/kg)	0.0684	-	-	-	-	-	-	-	-	0.22	-
Benzo(B)fluoranthene (mg/kg)	0.0868	-	-	-	-	-	-	-	-	0.22	-
Benzo(K)fluoranthene (mg/kg)	0.0405	-	-	-	-	-	-	-	-	2.2	-
Benzo(A)pyrene (mg/kg)	0.0718	-	-	-	-	-	-	-	-	0.022	-
Chrysene (mg/kg)	0.0950	-	-	-	-	-	-	-	-	22	-
Dibenzo(A,H)anthracene (mg/kg)	0.0098	-	-	-	-	-	-	-	-	0.022	-
Fluoranthene (mg/kg)	0.119	-	-	-	-	-	-	-	-	1,000	-
Fluorene (mg/kg)	ND	-	-	-	-	-	-	-	-	1,000	-
Indeno(1,2,3,C,D)pyrene (mg/kg)	0.0313	-	-	-	-	-	-	-	-	0.22	-
Naphthalene (mg/kg)	ND	-	-	-	-	-	-	-	-	23	-
Pyrene (mg/kg)	0.119	-	-	-	-	-	-	-	-	1,000	-
Electrical Conductivity (mmhos/cm)	1.130	-	-	-	-	-	-	-	-	<4or 2X BG	-
Sodium Adsorption Ratio (SAR)	2.72	-	-	-	-	-	-	-	-	<12	-
pH	9.38	-	-	-	-	-	-	-	-	6-9	-
Arsenic (mg/kg)	2.0	4.1	5.0	4.8	9.4	5.7	4.0	5.8	5.5	0.39	10.3
Barium (mg/kg)	119	-	-	-	-	-	-	-	-	15,000	-
Cadmium (mg/kg)	<1.0	-	-	-	-	-	-	-	-	70	-
Chromium (II) (mg/kg)	45.1	-	-	-	-	-	-	-	-	120,000	-
Chromium (VI) (mg/kg)	<1.0	-	-	-	-	-	-	-	-	23	-
Copper (mg/kg)	6.6	-	-	-	-	-	-	-	-	3,100	-
Lead (inorganic) (mg/kg)	<5.1	-	-	-	-	-	-	-	-	400	-
Mercury (mg/kg)	<0.084	-	-	-	-	-	-	-	-	23	-
Nickel (mg/kg)	20.5	-	-	-	-	-	-	-	-	1,600	-
Selenium (mg/kg)	<5.1	-	-	-	-	-	-	-	-	390	-
Silver (mg/kg)	<3.0	-	-	-	-	-	-	-	-	390	-
Zinc (mg/kg)	23.9	-	-	-	-	-	-	-	-	23,000	-
% Solids	97.6	84.4	86.3	82.6	89.6	82.3	81.3	84.0	84.3	-	-

Notes:

- 1) ND = not detectable to the laboratory detection limit.
- 2) Results highlighted in yellow exceed Table 910-1 parameters; results highlighted in gray exceed Table 910-1, but are within background.
- 3) "-" indicates no analysis was performed.
- 4) Refer to Figure 1 for sample locations.

\\hyper-v03\lkw-dco\sdsk\proj\cto environmental\1210-11 pcu t84-15g\back.dwg,11/15/12



DESIGNED:	CHECKED:	FIGURE	DATE	REVISIONS
DK	DK	1		
DATE:	DRAWN:			
11/15/12	DRF			
FILE NAME:		SHEET NO.		
back		1 of 1		
PROJECT NO.		SCALE:		
1210-11		1" = 40'		

KRW CONSULTING, INC.
8000 W. 14TH AVENUE, SUITE 200
LAKEWOOD, COLORADO
(303) 239-9011

FIGURE 1
PICEANCE CREEK
PCU T84-15G
SAMPLE LOCATIONS MAP
WITH ARSENIC LEVELS
PREPARED FOR XTO ENERGY



11/12/12

Technical Report for

XTO Energy

PCU T84-15G

1210-11

Accutest Job Number: D40540

Sampling Date: 11/01/12

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 Conference and/or state specific certification programs as applicable.


Brad Madadian
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW), UT (NELAP CO00049), TX (T104704511-12-1)

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: D40540-1: SUBTANK	10
4.2: D40540-1A: SUBTANK	16
Section 5: Misc. Forms	18
5.1: Chain of Custody	19
Section 6: GC/MS Volatiles - QC Data Summaries	20
6.1: Method Blank Summary	21
6.2: Blank Spike Summary	22
6.3: Matrix Spike/Matrix Spike Duplicate Summary	24
Section 7: GC/MS Volatiles - Raw Data	26
7.1: Samples	27
7.2: Method Blanks	35
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 MP8823: Ba,Cd,Cr,Cu,Pb,Ni,Se,Ag,Zn	109
14.2: Prep QC MP8824: As	119
14.3: Prep QC MP8826: Hg	124
14.4: Prep QC MP8842: Ca,Mg,Na,Sodium Adsorption Ratio	128
Section 15: General Chemistry - QC Data Summaries	138

Table of Contents

Sections:

-2-

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: D40540

PCU T84-15G
Project No: 1210-11

Sample Number	Collected		Matrix Code Type	Received	Soil	Client Sample ID
	Date	Time By				
D40540-1	11/01/12	15:20 DS	11/03/12	SO	Soil	SUBTANK
D40540-1A	11/01/12	15:20 DS	11/03/12	SO	Soil	SUBTANK

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



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: XTO Energy

Job No D40540

Site: PCU T84-15G

Report Date 11/12/2012 8:32:54 AM

On 11/03/2012, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 1.2 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D40540 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: V5V1494

- All samples were analyzed within the recommended method holding time.
- Sample(s) D40386-2MS, D40386-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO

Batch ID: OP6922

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D40540-1MS, D40540-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Volatiles by GC By Method SW846 8015B

Matrix SO

Batch ID: GGB1002

- All samples were analyzed within the recommended method holding time.
- Sample(s) D40533-1MS, D40533-1MSD 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: OP6920

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D40482-1MS, D40482-1MSD 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: MP8842

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D40653-1AMS, D40653-1AMSD, D40653-1ASDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Magnesium, Sodium are outside control limits for sample MP8842-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP8842-SD1 for Sodium: Serial dilution indicates possible matrix interference.

Matrix SO

Batch ID: MP8823

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D40540-1MS, D40540-1MSD, D40540-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Chromium, Nickel are outside control limits. Spike recovery indicates possible matrix interference.
- The matrix spike duplicate (MSD) recovery(s) of Chromium, Nickel are outside control limits. Probable cause due to matrix interference.
- The serial dilution RPD(s) for Cadmium, Silver, Chromium, Nickel, Zinc are outside control limits for sample MP8823-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP8823-SD1 for Zinc: Serial dilution indicates possible matrix interference.
- MP8823-SD1 for Chromium: Serial dilution indicates possible matrix interference.
- MP8823-SD1 for Nickel: Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix SO

Batch ID: MP8824

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D40540-1MS, D40540-1MSD, D40540-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix SO

Batch ID: MP8826

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D40522-1MS, D40522-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO

Batch ID: GN17556

- Sample(s) D40540-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM19 2540B M

Matrix SO

Batch ID: GN17541

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

Wet Chemistry By Method SW846 3060/7196A M

Matrix SO

Batch ID: R15053

- The data for SW846 3060/7196A M meets quality control requirements.
- D40540-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO

Batch ID: GP8616

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D40540-1DUP, D40540-1MS, D40540-1MSD were used as the QC samples for the Chromium, Hexavalent analysis.

Wet Chemistry By Method SW846 9045D

Matrix SO

Batch ID: GN17557

- The following samples were run outside of holding time for method SW846 9045D: D40540-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO

Batch ID: MP8842

- D40540-1A 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

Page 1 of 1

Job Number: D40540
Account: XTO Energy
Project: PCU T84-15G
Collected: 11/01/12

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

D40540-1 SUBTANK

Benzo(a)anthracene	0.0684	0.0085	0.0044	mg/kg	SW846 8270C BY SIM
Benzo(b)fluoranthene	0.0868	0.0085	0.0044	mg/kg	SW846 8270C BY SIM
Benzo(k)fluoranthene	0.0405	0.0085	0.0044	mg/kg	SW846 8270C BY SIM
Benzo(a)pyrene	0.0718	0.0085	0.0044	mg/kg	SW846 8270C BY SIM
Chrysene	0.0950	0.0085	0.0044	mg/kg	SW846 8270C BY SIM
Dibenzo(a,h)anthracene	0.0098	0.0085	0.0044	mg/kg	SW846 8270C BY SIM
Fluoranthene	0.119	0.0085	0.0044	mg/kg	SW846 8270C BY SIM
Indeno(1,2,3-cd)pyrene	0.0313	0.0085	0.0044	mg/kg	SW846 8270C BY SIM
Pyrene	0.119	0.0085	0.0044	mg/kg	SW846 8270C BY SIM
TPH-DRO (C10-C28)	12.6 J	14	8.9	mg/kg	SW846-8015B
Arsenic	2.0	0.10		mg/kg	SW846 6020A
Barium	119	1.0		mg/kg	SW846 6010C
Chromium	45.1	1.0		mg/kg	SW846 6010C
Copper	6.6	1.0		mg/kg	SW846 6010C
Nickel	20.5	3.0		mg/kg	SW846 6010C
Zinc	23.9	3.0		mg/kg	SW846 6010C
Specific Conductivity	1130	1.0		umhos/cm	SM2510B-1997 MOD
Chromium, Trivalent ^a	45.1	2.0		mg/kg	SW846 3060/7196A M
Redox Potential Vs H2	211			mv	ASTM D1498-76M
pH	9.38			su	SW846 9045D

D40540-1A SUBTANK

Calcium	122	2.0		mg/l	SW846 6010C
Magnesium	41.2	1.0		mg/l	SW846 6010C
Sodium	136	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio ^b	2.72			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:	SUBTANK	Date Sampled:	11/01/12
Lab Sample ID:	D40540-1	Date Received:	11/03/12
Matrix:	SO - Soil	Percent Solids:	97.6
Method:	SW846 8260B		
Project:	PCU T84-15G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V24501.D	1	11/05/12	BD	n/a	n/a	V5V1494
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.07 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.052	0.026	mg/kg	
108-88-3	Toluene	ND	0.10	0.052	mg/kg	
100-41-4	Ethylbenzene	ND	0.10	0.020	mg/kg	
1330-20-7	Xylene (total)	ND	0.21	0.10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	96%		64-130%
460-00-4	4-Bromofluorobenzene	97%		62-131%
17060-07-0	1,2-Dichloroethane-D4	98%		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:	SUBTANK	Date Sampled:	11/01/12
Lab Sample ID:	D40540-1	Date Received:	11/03/12
Matrix:	SO - Soil	Percent Solids:	97.6
Method:	SW846 8270C BY SIM SW846 3546		
Project:	PCU T84-15G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G11944.D	1	11/06/12	DC	11/06/12	OP6922	E3G564
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0085	0.0044	mg/kg	
120-12-7	Anthracene	ND	0.0085	0.0044	mg/kg	
56-55-3	Benzo(a)anthracene	0.0684	0.0085	0.0044	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.0868	0.0085	0.0044	mg/kg	
207-08-9	Benzo(k)fluoranthene	0.0405	0.0085	0.0044	mg/kg	
50-32-8	Benzo(a)pyrene	0.0718	0.0085	0.0044	mg/kg	
218-01-9	Chrysene	0.0950	0.0085	0.0044	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	0.0098	0.0085	0.0044	mg/kg	
206-44-0	Fluoranthene	0.119	0.0085	0.0044	mg/kg	
86-73-7	Fluorene	ND	0.0085	0.0044	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	0.0313	0.0085	0.0044	mg/kg	
91-20-3	Naphthalene	ND	0.012	0.011	mg/kg	
129-00-0	Pyrene	0.119	0.0085	0.0044	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	55%		10-159%
321-60-8	2-Fluorobiphenyl	67%		19-131%
1718-51-0	Terphenyl-d14	74%		18-150%

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:	SUBTANK	
Lab Sample ID:	D40540-1	Date Sampled: 11/01/12
Matrix:	SO - Soil	Date Received: 11/03/12
Method:	SW846 8015B	Percent Solids: 97.6
Project:	PCU T84-15G	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB18351.D	1	11/05/12	SK	n/a	n/a	GGB1002
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.2	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	92%		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:	SUBTANK						
Lab Sample ID:	D40540-1					Date Sampled:	11/01/12
Matrix:	SO - Soil					Date Received:	11/03/12
Method:	SW846-8015B	SW846	3546			Percent Solids:	97.6
Project:	PCU T84-15G						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD19330.D	1	11/09/12	AV	11/06/12	OP6920	GFD974
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	12.6	14	8.9	mg/kg	J
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	117%		35-130%		

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:	SUBTANK	Date Sampled:	11/01/12
Lab Sample ID:	D40540-1	Date Received:	11/03/12
Matrix:	SO - Soil	Percent Solids:	97.6
Project:	PCU T84-15G		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	2.0	0.10	mg/kg	5	11/06/12	11/09/12 JB	SW846 6020A ³	SW846 3050B ⁵
Barium	119	1.0	mg/kg	1	11/06/12	11/06/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Cadmium	< 1.0	1.0	mg/kg	1	11/06/12	11/06/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Chromium	45.1	1.0	mg/kg	1	11/06/12	11/06/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Copper	6.6	1.0	mg/kg	1	11/06/12	11/06/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Lead	< 5.1	5.1	mg/kg	1	11/06/12	11/06/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Mercury	< 0.084	0.084	mg/kg	1	11/07/12	11/07/12 JB	SW846 7471B ²	SW846 7471B ⁶
Nickel	20.5	3.0	mg/kg	1	11/06/12	11/06/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Selenium	< 5.1	5.1	mg/kg	1	11/06/12	11/06/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Silver	< 3.0	3.0	mg/kg	1	11/06/12	11/06/12 JM	SW846 6010C ¹	SW846 3050B ⁴
Zinc	23.9	3.0	mg/kg	1	11/06/12	11/06/12 JM	SW846 6010C ¹	SW846 3050B ⁴

(1) Instrument QC Batch: MA2971

(2) Instrument QC Batch: MA2973

(3) Instrument QC Batch: MA2981

(4) Prep QC Batch: MP8823

(5) Prep QC Batch: MP8824

(6) Prep QC Batch: MP8826

RL = Reporting Limit

Report of Analysis

Client Sample ID: SUBTANK
Lab Sample ID: D40540-1
Matrix: SO - Soil
Project: PCU T84-15G

Date Sampled: 11/01/12
Date Received: 11/03/12
Percent Solids: 97.6

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	1130	1.0	umhos/cm	1	11/09/12	JD	SM2510B-1997 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	11/07/12	KB	SW846 3060A/7196A
Chromium, Trivalent ^a	45.1	2.0	mg/kg	1	11/07/12	KB	SW846 3060/7196A M
Redox Potential Vs H2	211		mv	1	11/05/12	JD	ASTM D1498-76M
Solids, Percent	97.6		%	1	11/05/12	SWT	SM19 2540B M
pH	9.38		su	1	11/05/12 14:00	JK	SW846 9045D

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

RL = Reporting Limit

Report of Analysis

Client Sample ID: SUBTANK
Lab Sample ID: D40540-1A
Matrix: SO - Soil
Project: PCU T84-15G

Date Sampled: 11/01/12
Date Received: 11/03/12
Percent Solids: 97.6

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	122	2.0	mg/l	1	11/08/12	11/08/12 JM	SW846 6010C ¹	SW846 3010A/M ²
Magnesium	41.2	1.0	mg/l	1	11/08/12	11/08/12 JM	SW846 6010C ¹	SW846 3010A/M ²
Sodium	136	2.0	mg/l	1	11/08/12	11/08/12 JM	SW846 6010C ¹	SW846 3010A/M ²

(1) Instrument QC Batch: MA2979
(2) Prep QC Batch: MP8842

RL = Reporting Limit

4.2
4

Report of Analysis

Client Sample ID: SUBTANK
Lab Sample ID: D40540-1A
Matrix: SO - Soil
Project: PCU T84-15G

Date Sampled: 11/01/12
Date Received: 11/03/12
Percent Solids: 97.6

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	2.72		ratio	1	11/08/12 14:58	JM	USDA HANDBOOK 60

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

RL = Reporting Limit

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

4036 Youngfield Street, Wheat Ridge, CO 80033
TEL: 303-425-6021 FAX: 303-425-6854
www.accutest.com

Client / Reporting Information				Project Information				Requested Analysis (see TEST CODE sheet)										Matrix Codes							
Company Name KRW Consulting				Project Name: XTO PCU T84-15G				TABLE 910										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED-Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WIP - Wipe FB-Field Blank EB-Equipment Blank RB- Rinse Blank TB-Trip Blank							
Street Address 8000 West 14th Street; Suite 200				Street																					
City Lakewood, CO 80214				Billing Information (If different from Report to) Company Name XTO Energy																					
Project Contact Dwayne Knudson				Street Address 21459 CR5																					
Phone # (970) 488-1098				City Rifle, CO 81650																					
Sampler(s) Name(s) DAVID SANDERS				Project Manager Joe Hess				Attention: Jessica Dooling																	
Accutest Sample # Field ID / Point of Collection SUBTANK				MECH/ID Vial #				Collection Date 11-1-12 Time 15:20				Number of preserved Bottles Sampled by DLS Matrix SO # of bottles 5				<input checked="" type="checkbox"/> SOI <input checked="" type="checkbox"/> NNOS <input checked="" type="checkbox"/> HSC04 <input checked="" type="checkbox"/> NONE <input checked="" type="checkbox"/> DI Water <input checked="" type="checkbox"/> MEDH <input checked="" type="checkbox"/> ENCORE				LAB USE ONLY 01					
Turnaround Time (Business days)				Data Deliverable Information				Comments / Special Instructions																	
<input type="checkbox"/> Std. 10 Business Days <input checked="" type="checkbox"/> Std. 5 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day Emergency <input type="checkbox"/> 2 Day Emergency <input type="checkbox"/> 1 Day Emergency <input type="checkbox"/> Emergency & Rush TIA data available VIA Lablink				Approved By (Accutest PM): / Date: _____ _____ _____ _____ _____				<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> COMMBN <input type="checkbox"/> COMMBN+ <input type="checkbox"/> Commercial "A" = Results Only <input type="checkbox"/> Commercial "B" = Results + QC Summary <input type="checkbox"/> Commercial BN = Results/QC Narrative (+ = chromatograms)				<input type="checkbox"/> State Forms Required <input type="checkbox"/> Send Forms to State <input type="checkbox"/> Report by Fax <input checked="" type="checkbox"/> Report by PDF ONLY <input type="checkbox"/> EDD Format				Please Email Results to KRW Piceance Team _____ _____ _____									
Relinquished by Sampler: 1 [Signature] Relinquished by Sampler: 3 [Signature] Relinquished by: 6 [Signature]				Date Time: 11/2/12 16:20 Received By: 1 [Signature] Received By: 3 [Signature] Received By: 5 [Signature]				Relinquished By: 2 [Signature] Relinquished By: 4 [Signature] Custody Seal # FE074 <input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact				Date Time: 11/3/12 11:30 Received By: 2 [Signature] Received By: 4 [Signature] On Ice 2 Cooler Temp. 1.2													

D40540: Chain of Custody

Page 1 of 1

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

Page 1 of 1

Job Number: D40540
Account: XTOKRWR XTO Energy
Project: PCU T84-15G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1494-MB	5V24487.D	1	11/05/12	BD	n/a	n/a	V5V1494

The QC reported here applies to the following samples:

Method: SW846 8260B

D40540-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	25	ug/kg	
100-41-4	Ethylbenzene	ND	100	19	ug/kg	
108-88-3	Toluene	ND	100	50	ug/kg	
1330-20-7	Xylene (total)	ND	200	100	ug/kg	

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	97% 64-130%
460-00-4	4-Bromofluorobenzene	88% 62-131%
17060-07-0	1,2-Dichloroethane-D4	98% 70-130%

Blank Spike Summary

Page 1 of 1

Job Number: D40540

Account: XTOKRWR XTO Energy

Project: PCU T84-15G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1494-BS	5V24488.D	1	11/05/12	BD	n/a	n/a	V5V1494

The QC reported here applies to the following samples:

Method: SW846 8260B

D40540-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	50.8	102	70-130
100-41-4	Ethylbenzene	50	51.4	103	70-130
108-88-3	Toluene	50	48.9	98	70-130
1330-20-7	Xylene (total)	150	157	105	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	99%	64-130%
460-00-4	4-Bromofluorobenzene	97%	62-131%
17060-07-0	1,2-Dichloroethane-D4	96%	70-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: D40540
Account: XTOKRWR XTO Energy
Project: PCU T84-15G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1494-BS	5V24489.D	1	11/05/12	BD	n/a	n/a	V5V1494

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

D40540-1

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

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	100%	64-130%
460-00-4	4-Bromofluorobenzene	89%	62-131%
17060-07-0	1,2-Dichloroethane-D4	91%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D40540
Account: XTOKRWR XTO Energy
Project: PCU T84-15G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D40386-2MS	5V24491.D	1	11/05/12	BD	n/a	n/a	V5V1494
D40386-2MSD	5V24492.D	1	11/05/12	BD	n/a	n/a	V5V1494
D40386-2	5V24490.D	1	11/05/12	BD	n/a	n/a	V5V1494

The QC reported here applies to the following samples:

Method: SW846 8260B

D40540-1

CAS No.	Compound	D40386-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3850	4410	114	4360	113	1	64-139/30
100-41-4	Ethylbenzene	822		3850	4940	107	5030	109	2	68-136/30
108-88-3	Toluene	ND		3850	4000	104	4100	106	2	60-130/30
1330-20-7	Xylene (total)	3130		11600	15500	107	15600	108	1	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D40386-2	Limits
2037-26-5	Toluene-D8	97%	99%	99%	64-130%
460-00-4	4-Bromofluorobenzene	109%	109%	99%	62-131%
17060-07-0	1,2-Dichloroethane-D4	93%	95%	95%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D40540
Account: XTOKRWR XTO Energy
Project: PCU T84-15G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D40386-2MS	5V24493.D	1	11/05/12	BD	n/a	n/a	V5V1494
D40386-2MSD	5V24494.D	1	11/05/12	BD	n/a	n/a	V5V1494
D40386-2	5V24490.D	1	11/05/12	BD	n/a	n/a	V5V1494

The QC reported here applies to the following samples:

Method: SW846 8260B

D40540-1

CAS No.	Compound	D40386-2 ug/kg	Spike Q	ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
---------	----------	-------------------	------------	-------	-------------	---------	--------------	----------	-----	-------------------

CAS No.	Surrogate Recoveries	MS	MSD	D40386-2	Limits
2037-26-5	Toluene-D8	101%	100%	99%	64-130%
460-00-4	4-Bromofluorobenzene	101%	99%	99%	62-131%
17060-07-0	1,2-Dichloroethane-D4	95%	92%	95%	70-130%

* = Outside of Control Limits.

GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5110512.S\
Data File : 5V24501.D
Acq On : 5 Nov 2012 7:40 pm
Operator : BRETD
Sample : D40540-1
Misc : MS4904,V5V1494,5.065,,100,5,1
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Nov 06 11:00:51 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1487TVH1487.M
Quant Title : 8260
QLast Update : Wed Oct 31 11:00:18 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	144997	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.446	114	184580	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.106	117	184945	50.00	ug/l	0.01
74) 1,4-Dichlorobenzene-d4	17.081	152	135892	50.00	ug/l	0.01

System Monitoring Compounds						
33) 1,2-Dichloroethane-d4	12.024	102	13093	48.97	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	97.94%
61) Toluene-d8	13.850	98	208091	48.09	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	96.18%
69) 4-Bromofluorobenzene	16.054	95	94671	48.54	ug/l	0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	97.08%

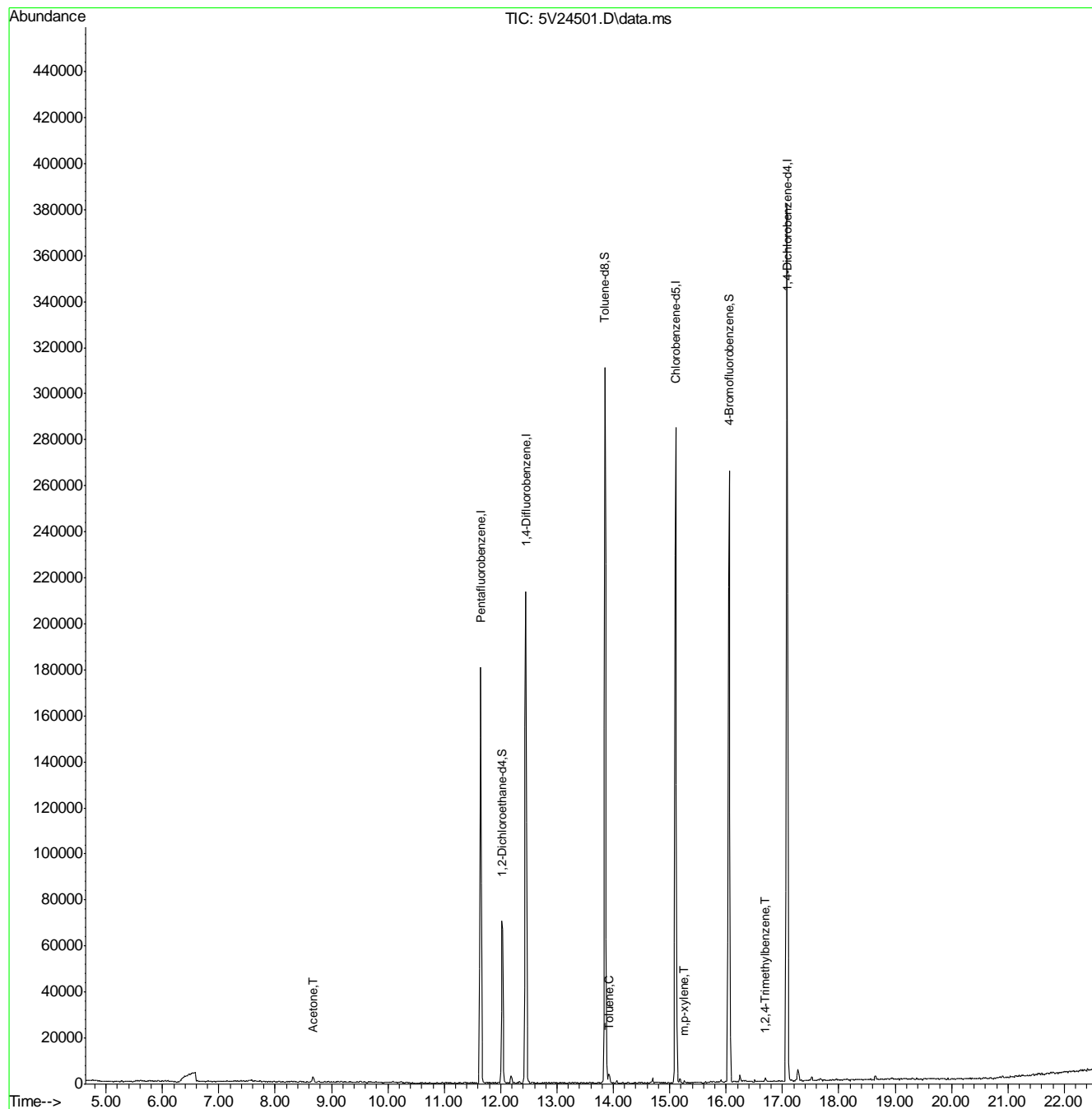
Target Compounds					Qvalue
1) TVH-Gasoline	13.102	TIC	-14189m	40.43	ug/l
15) Acetone	8.667	58	1068	12.93	ug/l # 91
62) Toluene	13.919	92	1544	0.44	ug/l # 84
72) m,p-xylene	15.255	106	181	0.07	ug/l # 1
82) 1,2,4-Trimethylbenzene	16.693	105	1687	0.95	ug/l # 74

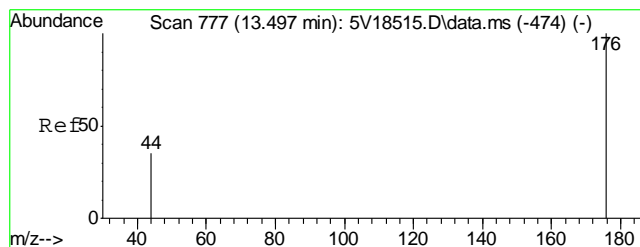
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5110512.S\
Data File : 5V24501.D
Acq On : 5 Nov 2012 7:40 pm
Operator : BRETD
Sample : D40540-1
Misc : MS4904,V5V1494,5.065,,100,5,1
ALS Vial : 18 Sample Multiplier: 1

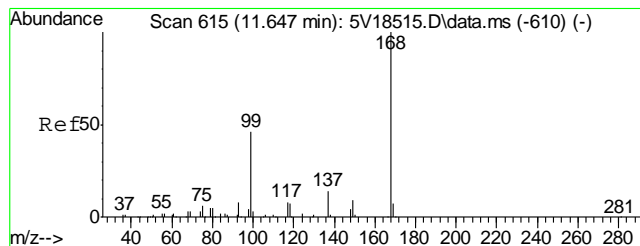
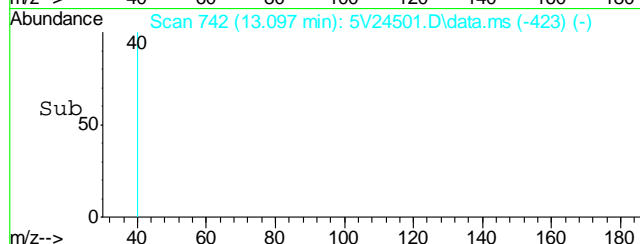
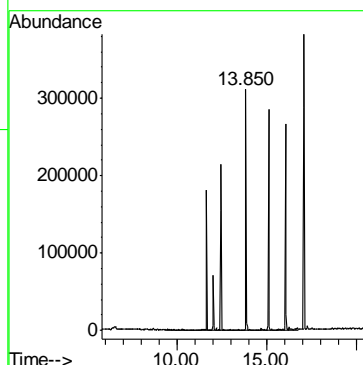
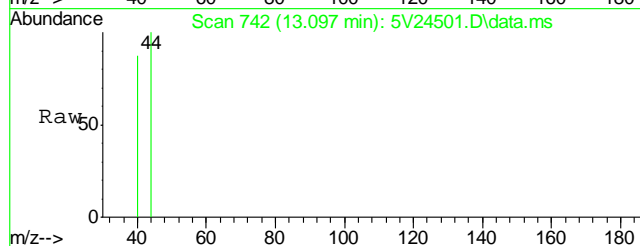
Quant Time: Nov 06 11:00:51 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1487TVH1487.M
Quant Title : 8260
QLast Update : Wed Oct 31 11:00:18 2012
Response via : Initial Calibration





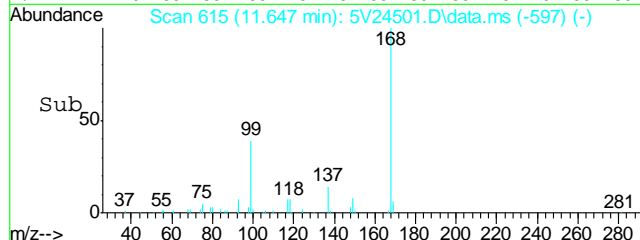
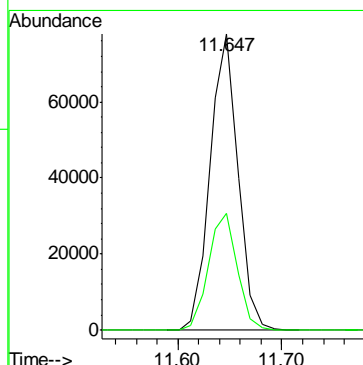
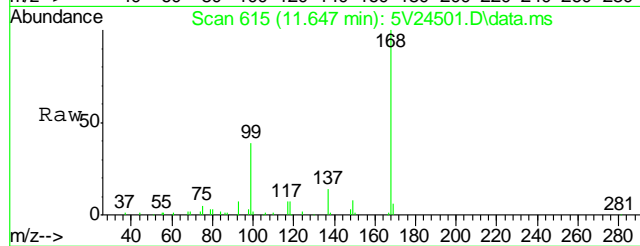
#1
TVH-Gasoline
Concen: 40.43 ug/l m
RT: 13.102 min Scan# 742
Delta R.T. 0.000 min
Lab File: 5V24501.D
Acq: 5 Nov 2012 7:40 pm

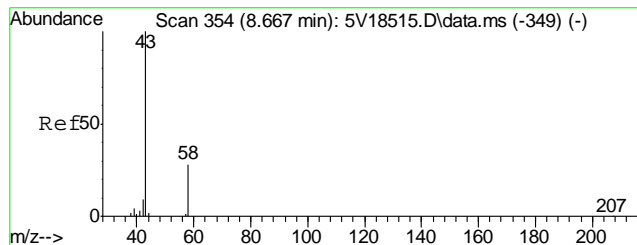
Tgt Ion:TIC Resp: -14189



#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.647 min Scan# 615
Delta R.T. 0.000 min
Lab File: 5V24501.D
Acq: 5 Nov 2012 7:40 pm

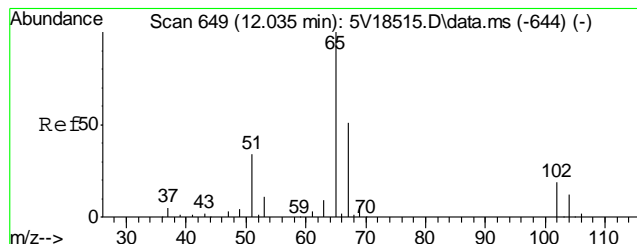
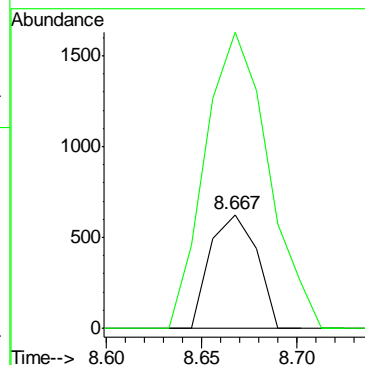
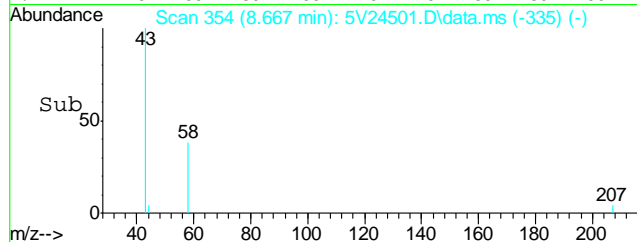
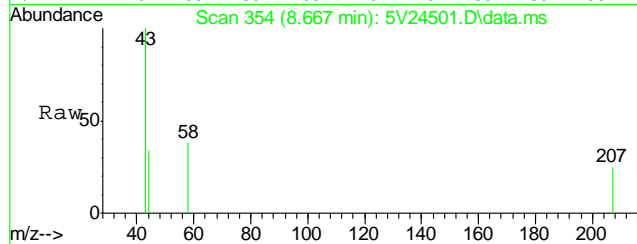
Tgt Ion:168 Resp: 144997
Ion Ratio Lower Upper
168 100
99 40.7 37.4 56.2





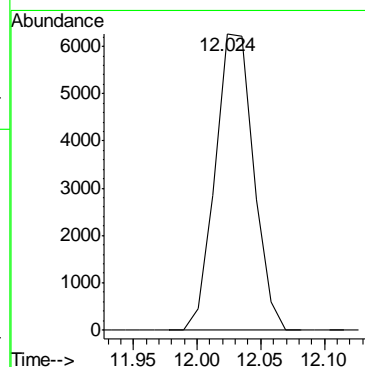
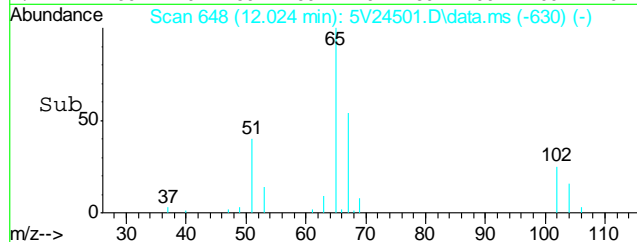
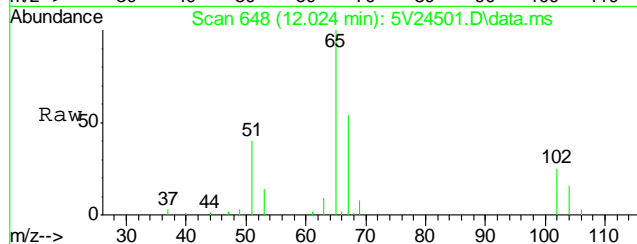
#15
Acetone
Concen: 12.93 ug/l
RT: 8.667 min Scan# 354
Delta R.T. 0.011 min
Lab File: 5V24501.D
Acq: 5 Nov 2012 7:40 pm

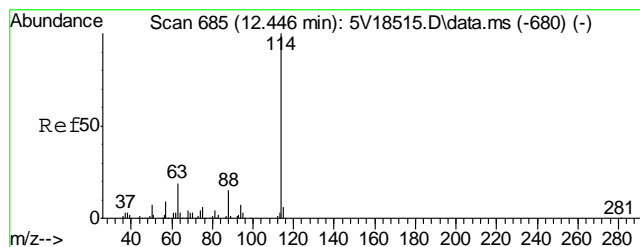
Tgt Ion: 58 Resp: 1068
Ion Ratio Lower Upper
58 100
43 352.2 353.6 393.6#



#33
1,2-Dichloroethane-d4
Concen: 48.97 ug/l
RT: 12.024 min Scan# 648
Delta R.T. 0.000 min
Lab File: 5V24501.D
Acq: 5 Nov 2012 7:40 pm

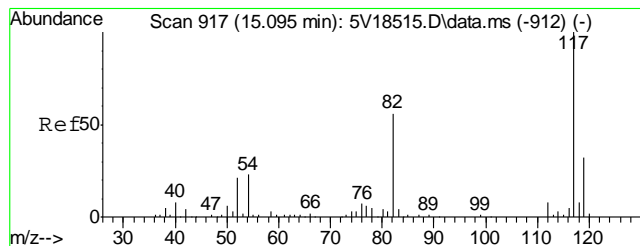
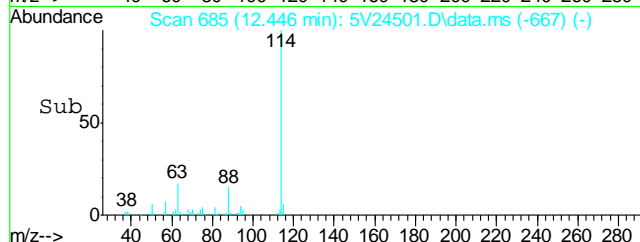
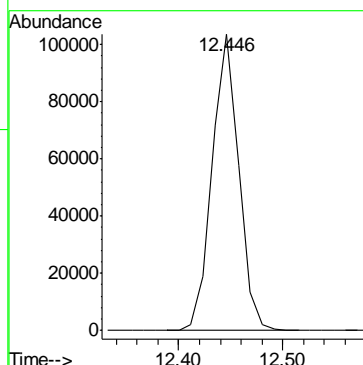
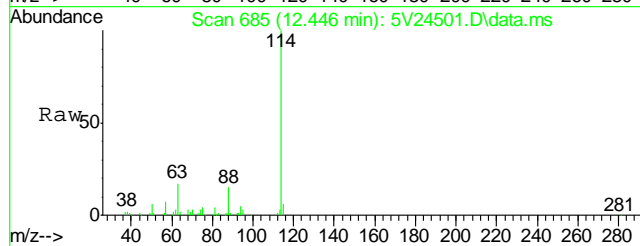
Tgt Ion: 102 Resp: 13093





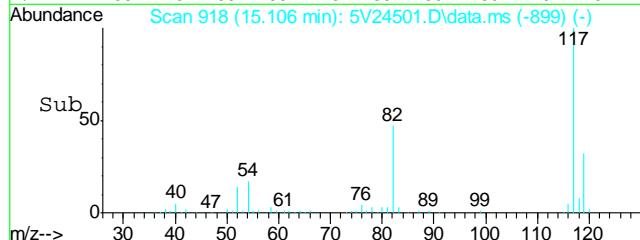
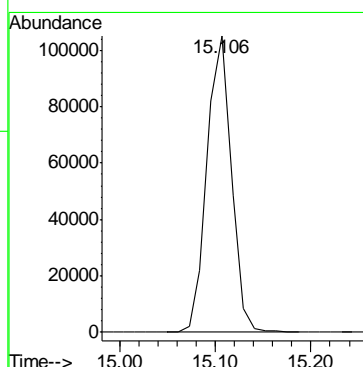
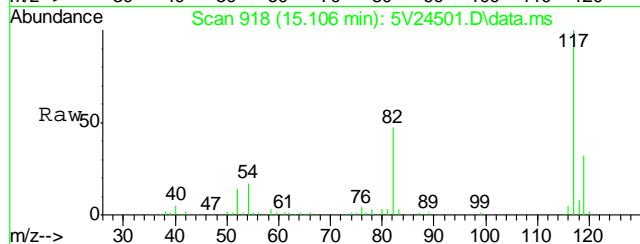
#35
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.446 min Scan# 685
Delta R.T. 0.000 min
Lab File: 5V24501.D
Acq: 5 Nov 2012 7:40 pm

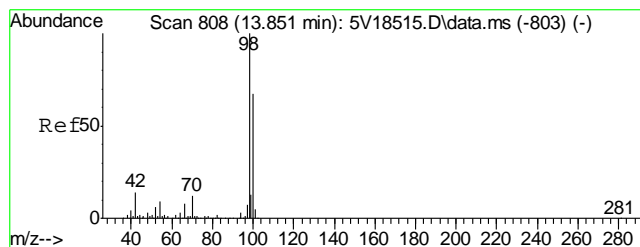
Tgt Ion:114 Resp: 184580



#53
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.106 min Scan# 918
Delta R.T. 0.011 min
Lab File: 5V24501.D
Acq: 5 Nov 2012 7:40 pm

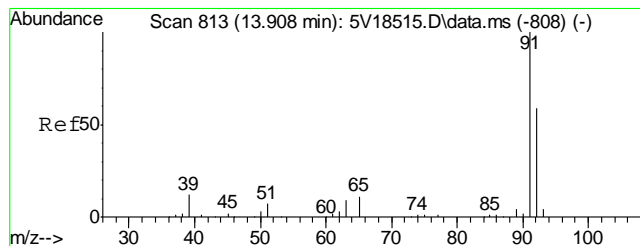
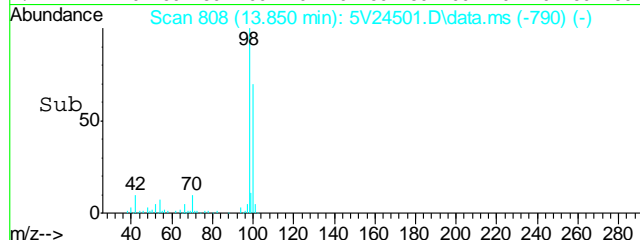
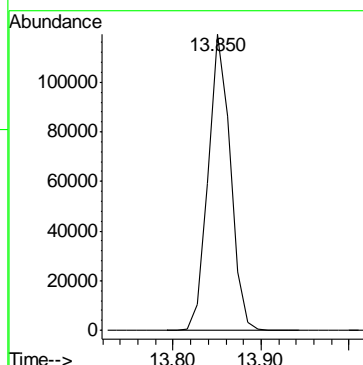
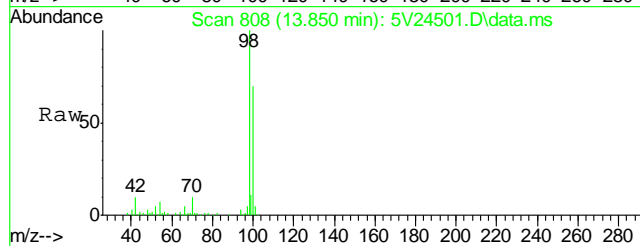
Tgt Ion:117 Resp: 184945





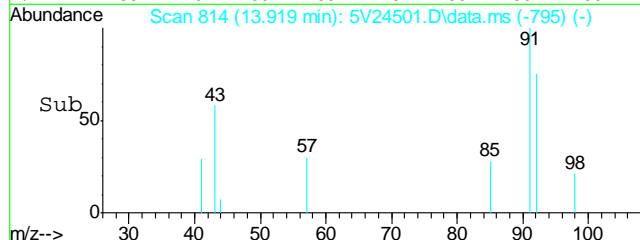
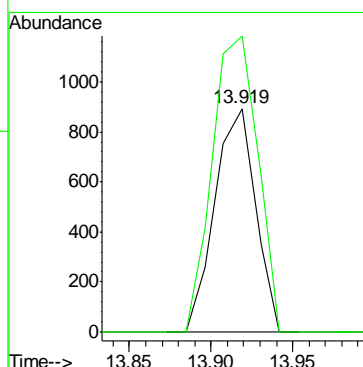
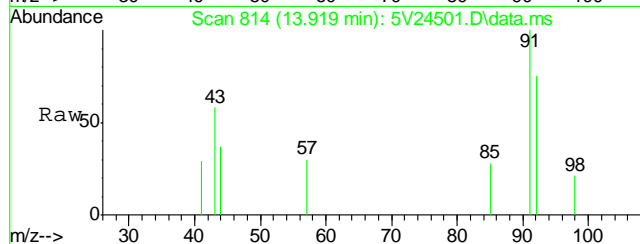
#61
Toluene-d8
Concen: 48.09 ug/l
RT: 13.850 min Scan# 808
Delta R.T. 0.000 min
Lab File: 5V24501.D
Acq: 5 Nov 2012 7:40 pm

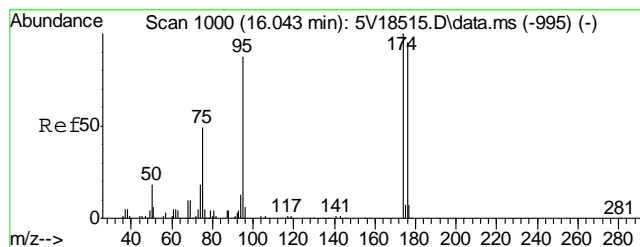
Tgt Ion: 98 Resp: 208091



#62
Toluene
Concen: 0.44 ug/l
RT: 13.919 min Scan# 814
Delta R.T. 0.011 min
Lab File: 5V24501.D
Acq: 5 Nov 2012 7:40 pm

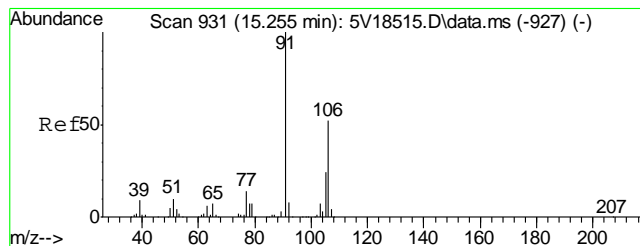
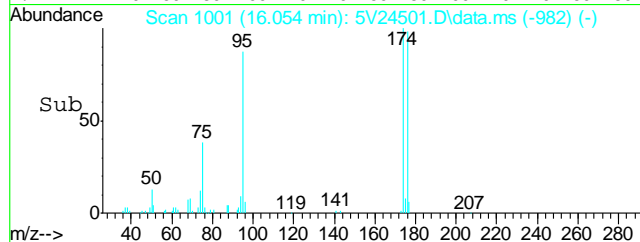
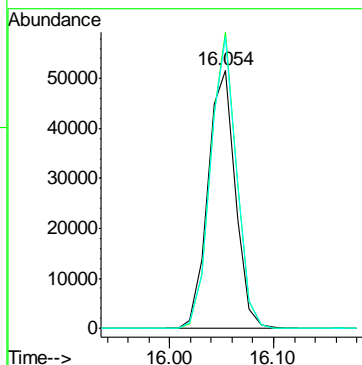
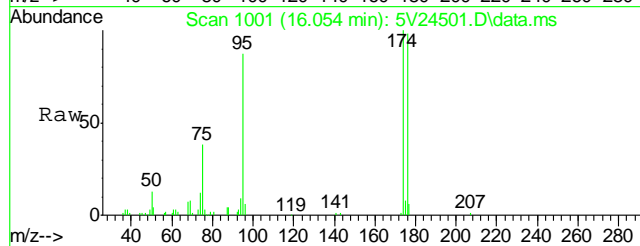
Tgt Ion: 92 Resp: 1544
Ion Ratio Lower Upper
92 100
91 148.1 149.8 189.8#





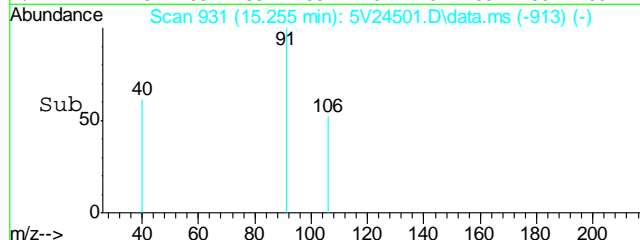
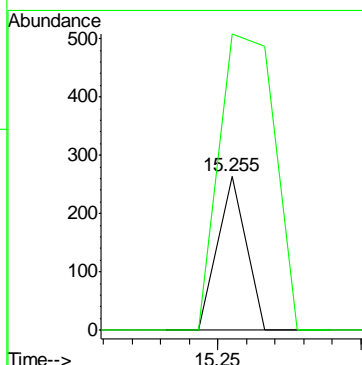
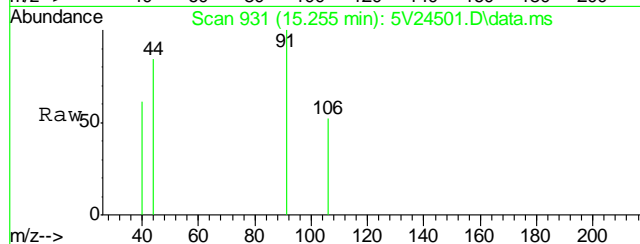
#69
4-Bromofluorobenzene
Concen: 48.54 ug/l
RT: 16.054 min Scan# 1001
Delta R.T. 0.011 min
Lab File: 5V24501.D
Acq: 5 Nov 2012 7:40 pm

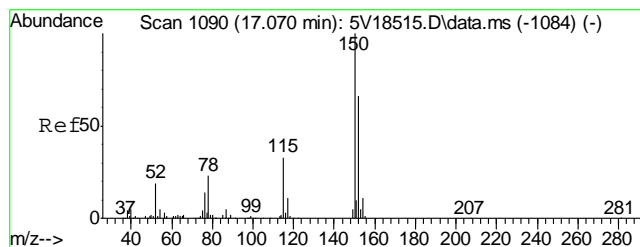
Tgt Ion	Resp	Lower	Upper
95	100		
174	107.8	77.1	117.1
176	107.0	73.4	113.4



#72
m,p-xylene
Concen: 0.07 ug/l
RT: 15.255 min Scan# 931
Delta R.T. 0.000 min
Lab File: 5V24501.D
Acq: 5 Nov 2012 7:40 pm

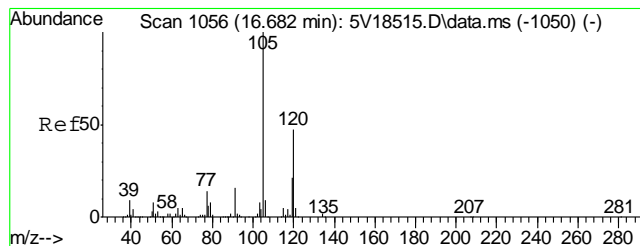
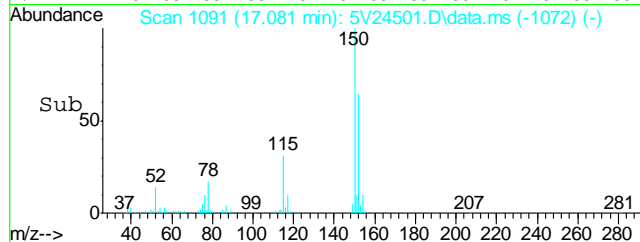
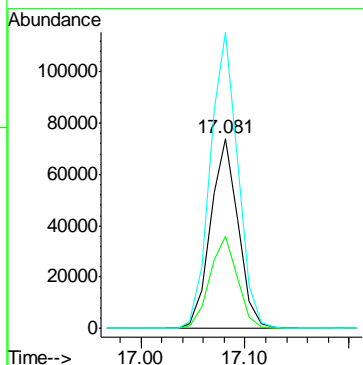
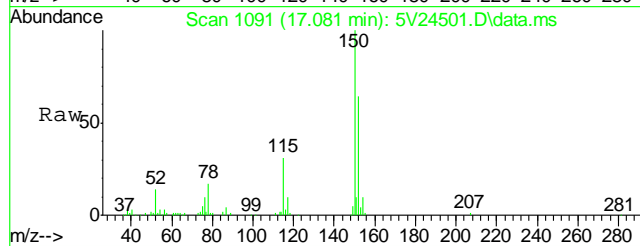
Tgt Ion	Resp	Lower	Upper
106	100		
91	376.8	177.1	217.1#





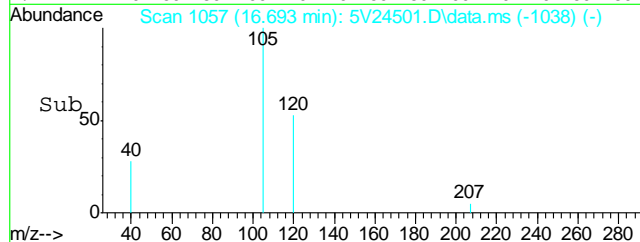
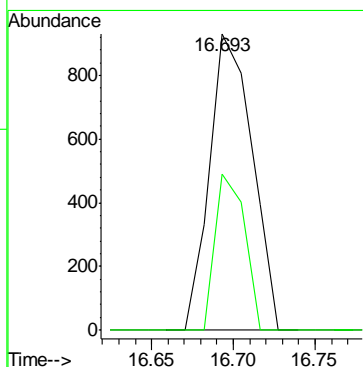
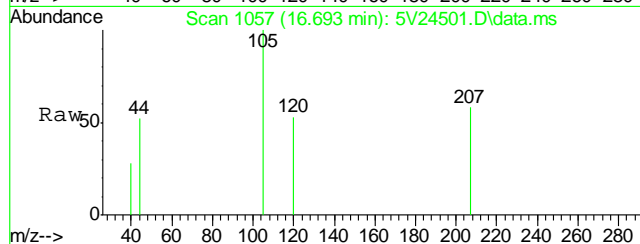
#74
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.081 min Scan# 1091
Delta R.T. 0.011 min
Lab File: 5V24501.D
Acq: 5 Nov 2012 7:40 pm

Tgt Ion	Ratio	Lower	Upper
152	100		
115	48.4	41.4	62.0
150	157.0	153.9	230.9



#82
1,2,4-Trimethylbenzene
Concen: 0.95 ug/l
RT: 16.693 min Scan# 1057
Delta R.T. 0.012 min
Lab File: 5V24501.D
Acq: 5 Nov 2012 7:40 pm

Tgt Ion	Ratio	Lower	Upper
105	100		
120	36.2	43.8	65.8#



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5110512.S\
Data File : 5V24487.D
Acq On : 5 Nov 2012 11:58 am
Operator : BRETD
Sample : MB
Misc : MS4904,V5V1494,5.00,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 06 10:38:21 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1487TVH1487.M
Quant Title : 8260
QLast Update : Wed Oct 31 11:00:18 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	136299	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.446	114	175262	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.106	117	173298	50.00	ug/l	0.01
74) 1,4-Dichlorobenzene-d4	17.081	152	118204	50.00	ug/l	0.01

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.035	102	12297	48.92	ug/l	0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	97.84%
61) Toluene-d8	13.850	98	197128	48.62	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	97.24%
69) 4-Bromofluorobenzene	16.054	95	80063	43.81	ug/l	0.01
Spiked Amount	50.000	Range	70 - 130	Recovery	=	87.62%

Target Compounds

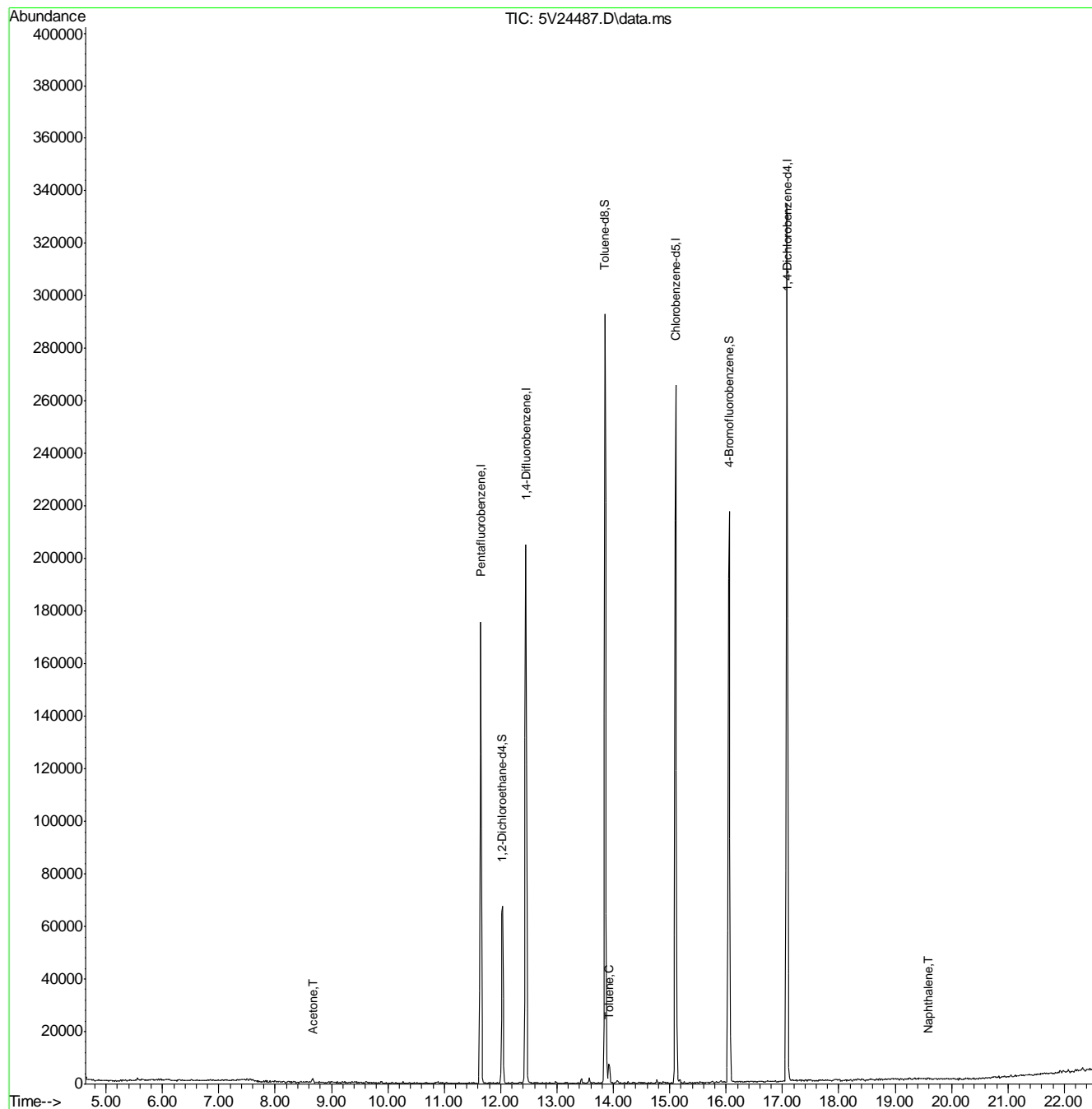
					Qvalue
1) TVH-Gasoline	13.102	TIC	-7837m	41.15	ug/l
15) Acetone	8.667	58	509	6.56	ug/l # 67
62) Toluene	13.919	92	662	0.20	ug/l # 46
91) Naphthalene	19.593	128	444	0.95	ug/l 100

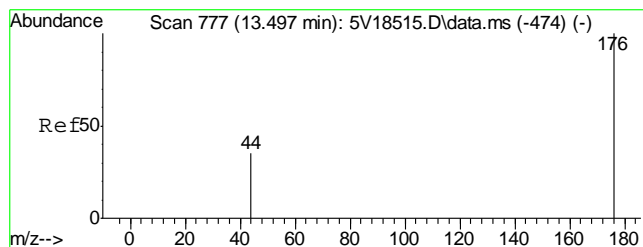
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5110512.S\
Data File : 5V24487.D
Acq On : 5 Nov 2012 11:58 am
Operator : BRETD
Sample : MB
Misc : MS4904,V5V1494,5.00,,100,5,1
ALS Vial : 4 Sample Multiplier: 1

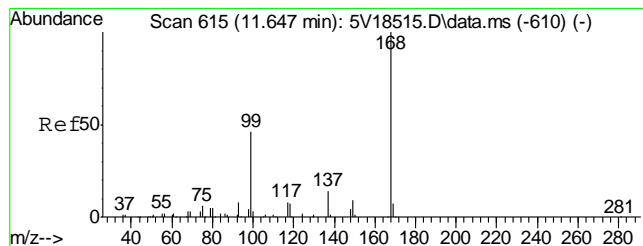
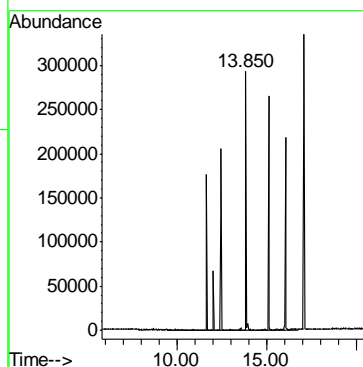
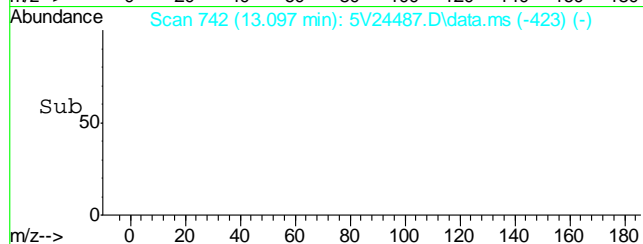
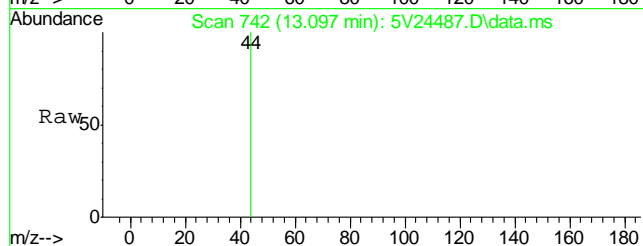
Quant Time: Nov 06 10:38:21 2012
Quant Method : C:\msdchem\1\METHODS\V5AP1487TVH1487.M
Quant Title : 8260
QLast Update : Wed Oct 31 11:00:18 2012
Response via : Initial Calibration





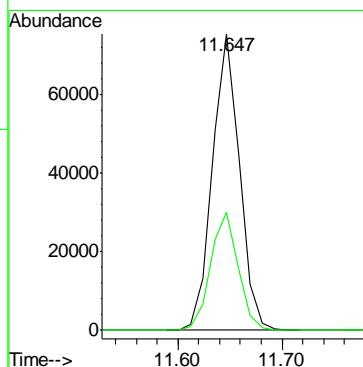
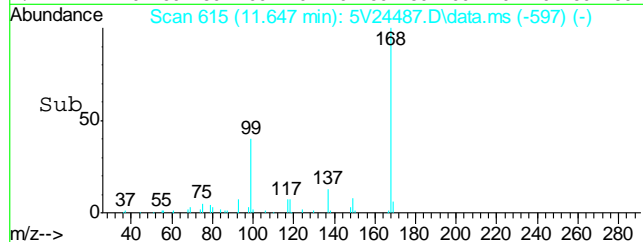
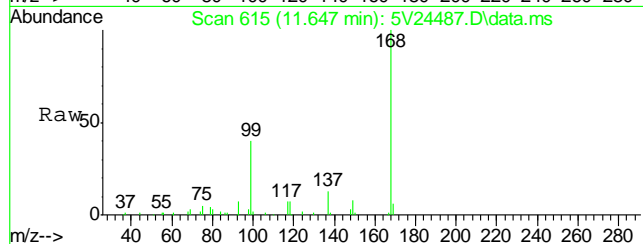
#1
TVH-Gasoline
Concen: 41.15 ug/l m
RT: 13.102 min Scan# 742
Delta R.T. 0.000 min
Lab File: 5V24487.D
Acq: 5 Nov 2012 11:58 am

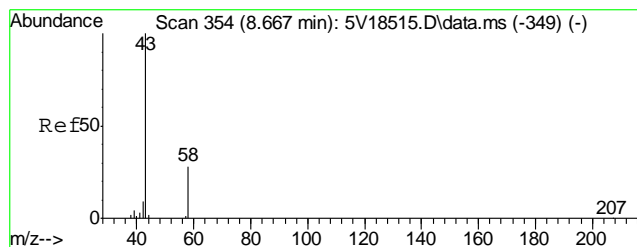
Tgt Ion:TIC Resp: -7837



#2
Pentafluorobenzene
Concen: 50.00 ug/l
RT: 11.647 min Scan# 615
Delta R.T. -0.000 min
Lab File: 5V24487.D
Acq: 5 Nov 2012 11:58 am

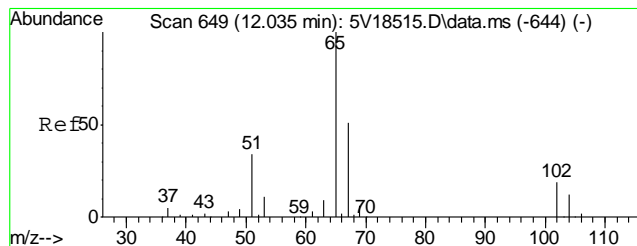
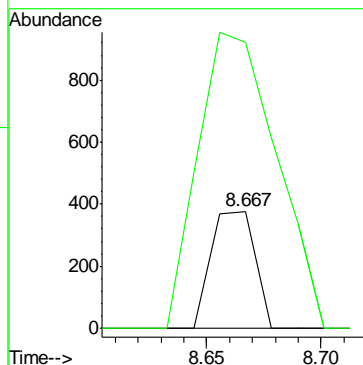
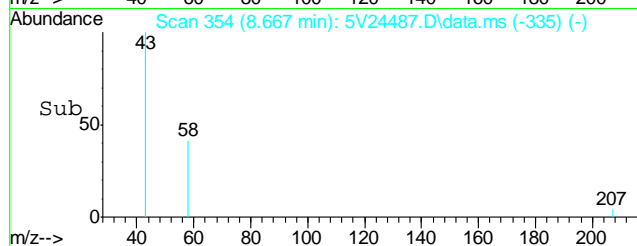
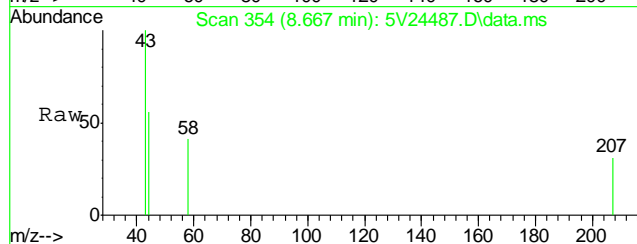
Tgt Ion:168 Resp: 136299
Ion Ratio Lower Upper
168 100
99 40.4 37.4 56.2





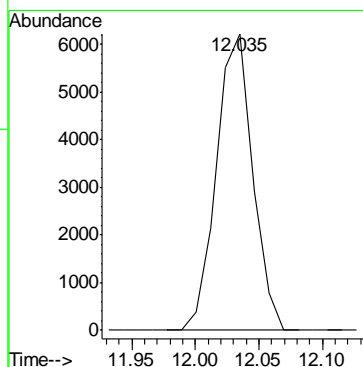
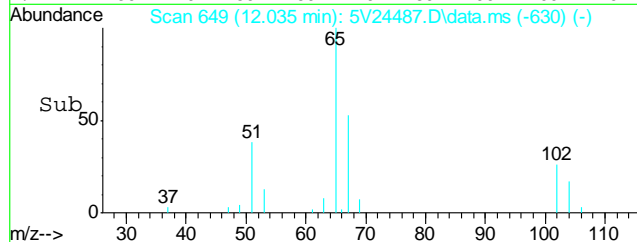
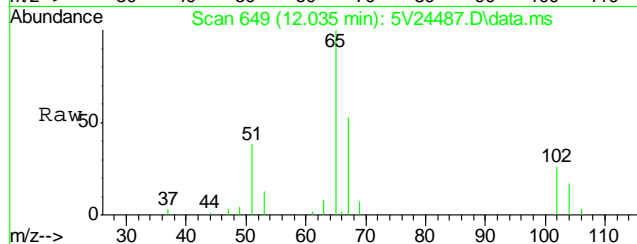
#15
Acetone
Concen: 6.56 ug/l
RT: 8.667 min Scan# 354
Delta R.T. 0.011 min
Lab File: 5V24487.D
Acq: 5 Nov 2012 11:58 am

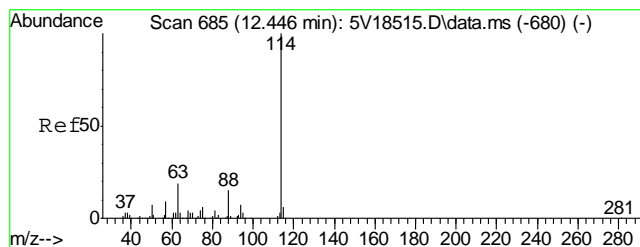
Tgt Ion: 58 Resp: 509
Ion Ratio Lower Upper
58 100
43 447.5 353.6 393.6#



#33
1,2-Dichloroethane-d4
Concen: 48.92 ug/l
RT: 12.035 min Scan# 649
Delta R.T. 0.011 min
Lab File: 5V24487.D
Acq: 5 Nov 2012 11:58 am

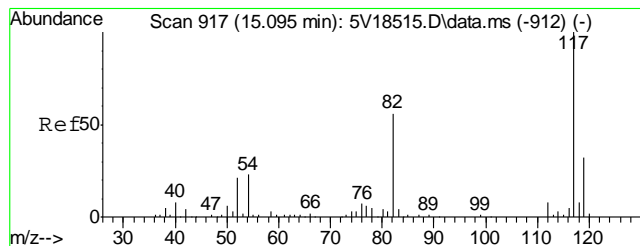
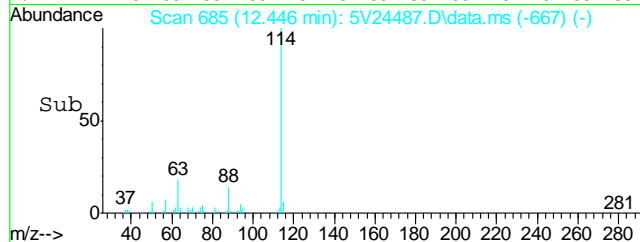
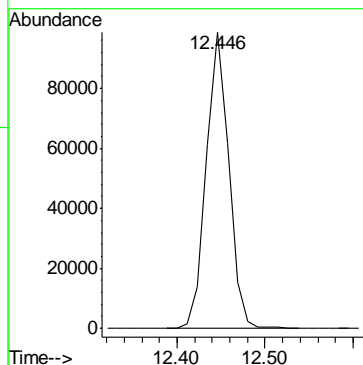
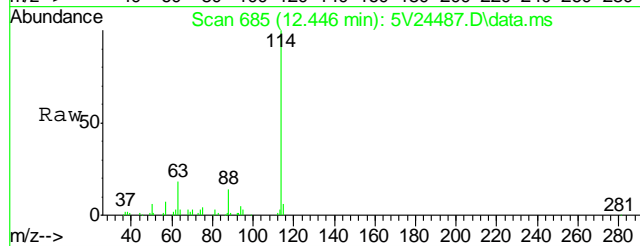
Tgt Ion: 102 Resp: 12297





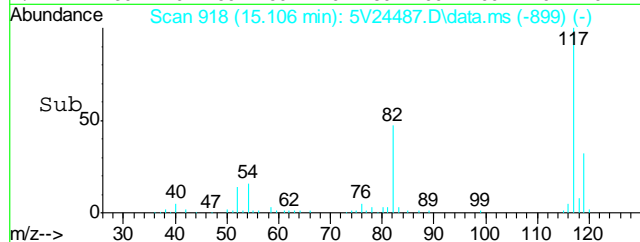
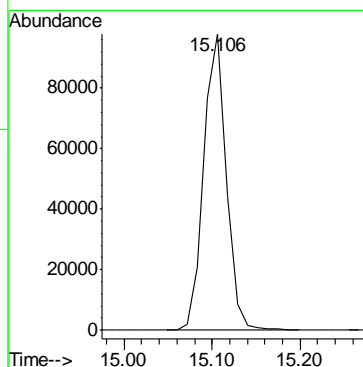
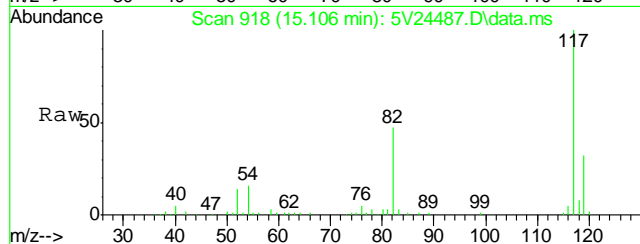
#35
1,4-Difluorobenzene
Concen: 50.00 ug/l
RT: 12.446 min Scan# 685
Delta R.T. -0.000 min
Lab File: 5V24487.D
Acq: 5 Nov 2012 11:58 am

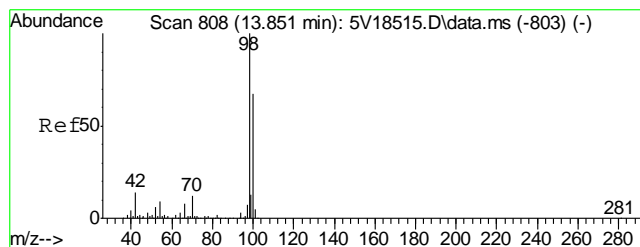
Tgt Ion:114 Resp: 175262



#53
Chlorobenzene-d5
Concen: 50.00 ug/l
RT: 15.106 min Scan# 918
Delta R.T. 0.011 min
Lab File: 5V24487.D
Acq: 5 Nov 2012 11:58 am

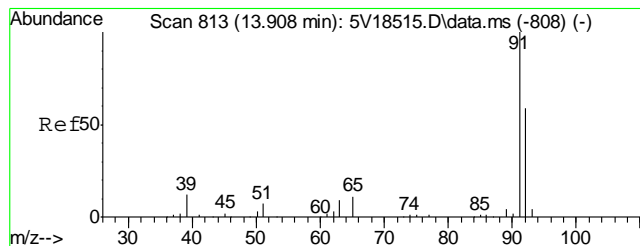
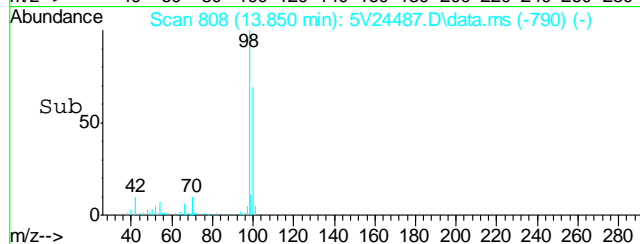
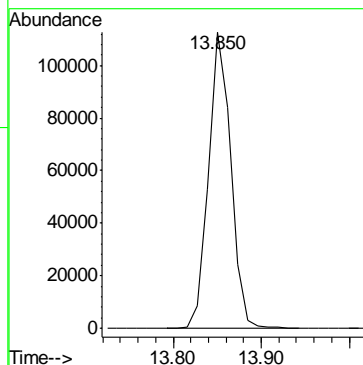
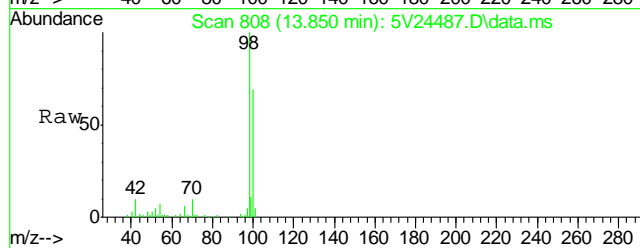
Tgt Ion:117 Resp: 173298





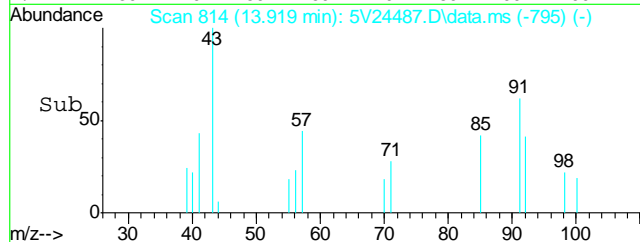
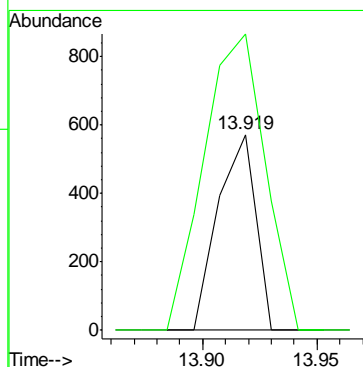
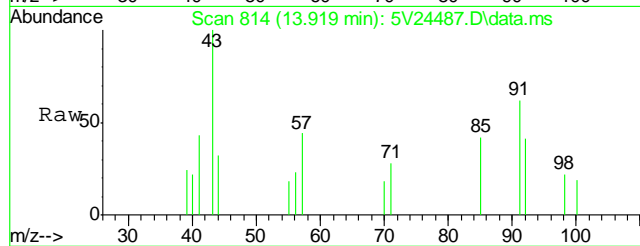
#61
Toluene-d8
Concen: 48.62 ug/l
RT: 13.850 min Scan# 808
Delta R.T. -0.000 min
Lab File: 5V24487.D
Acq: 5 Nov 2012 11:58 am

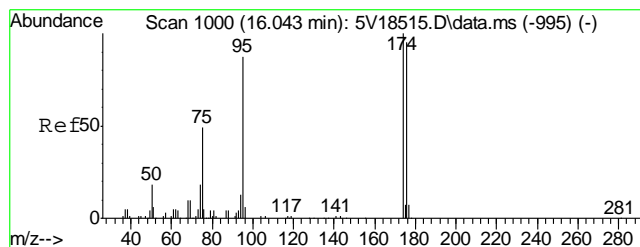
Tgt Ion: 98 Resp: 197128



#62
Toluene
Concen: 0.20 ug/l
RT: 13.919 min Scan# 814
Delta R.T. 0.011 min
Lab File: 5V24487.D
Acq: 5 Nov 2012 11:58 am

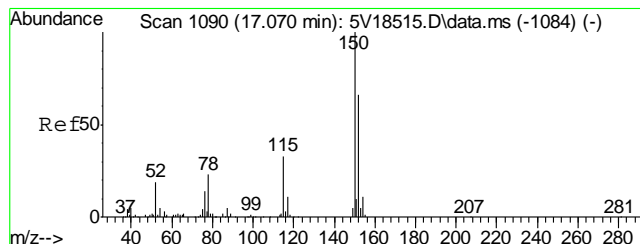
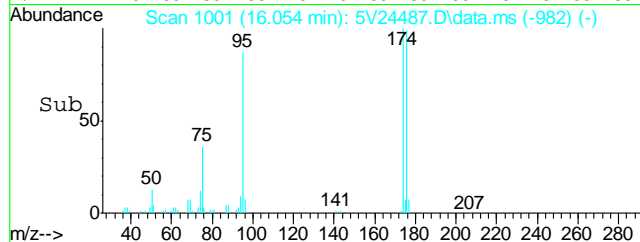
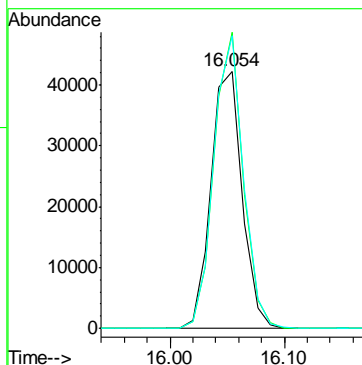
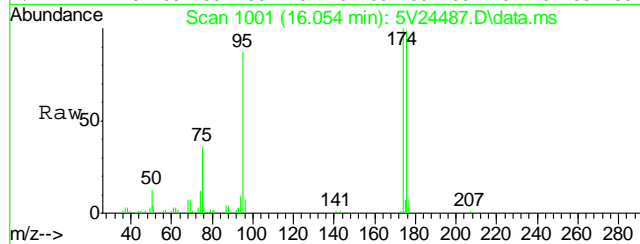
Tgt Ion: 92 Resp: 662
Ion Ratio Lower Upper
92 100
91 243.8 149.8 189.8#





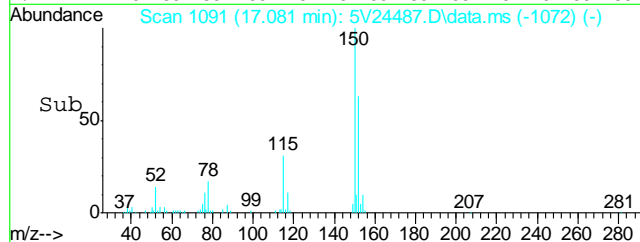
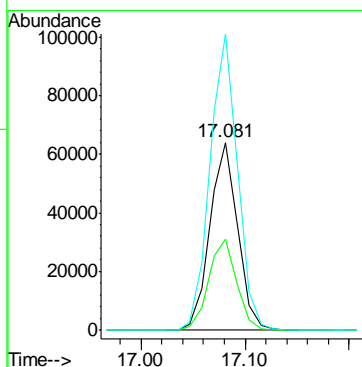
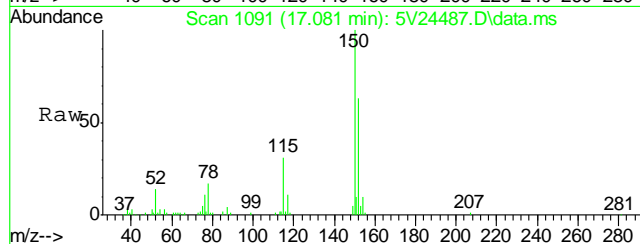
#69
4-Bromofluorobenzene
Concen: 43.81 ug/l
RT: 16.054 min Scan# 1001
Delta R.T. 0.011 min
Lab File: 5V24487.D
Acq: 5 Nov 2012 11:58 am

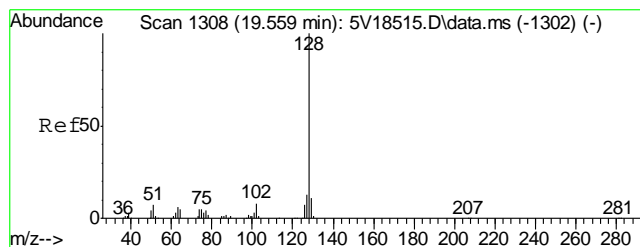
Tgt Ion	Resp	Lower	Upper
95	80063		
174	107.6	77.1	117.1
176	107.9	73.4	113.4



#74
1,4-Dichlorobenzene-d4
Concen: 50.00 ug/l
RT: 17.081 min Scan# 1091
Delta R.T. 0.011 min
Lab File: 5V24487.D
Acq: 5 Nov 2012 11:58 am

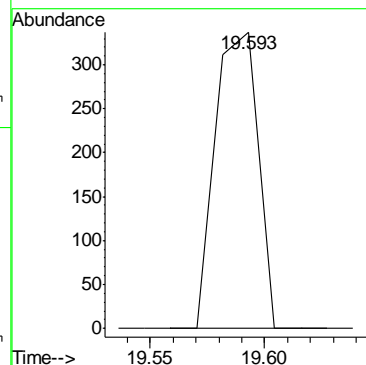
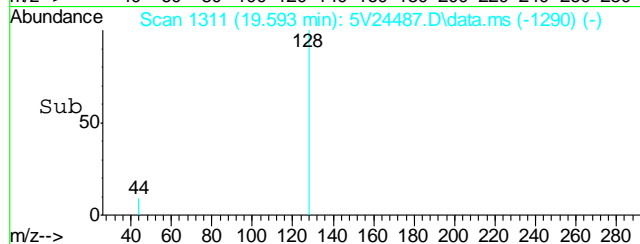
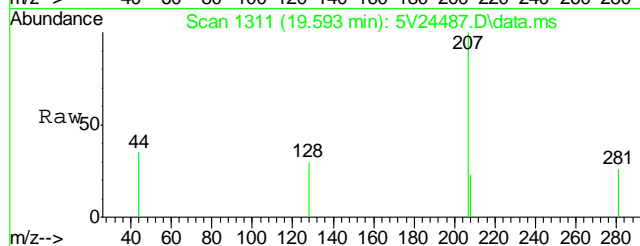
Tgt Ion	Resp	Lower	Upper
152	118204		
115	48.9	41.4	62.0
150	157.7	153.9	230.9





#91
Naphthalene
Concen: 0.95 ug/l
RT: 19.593 min Scan# 1311
Delta R.T. 0.035 min
Lab File: 5V24487.D
Acq: 5 Nov 2012 11:58 am

Tgt Ion:128 Resp: 444



GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: D40540
Account: XTOKRWR XTO Energy
Project: PCU T84-15G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6922-MB	3G11939.D	1	11/06/12	DC	11/06/12	OP6922	E3G564

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

D40540-1

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	4.3	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	72% 10-159%
321-60-8	2-Fluorobiphenyl	85% 19-131%
1718-51-0	Terphenyl-d14	85% 18-150%

8.1.1

8

Blank Spike Summary

Page 1 of 1

Job Number: D40540
Account: XTOKRWR XTO Energy
Project: PCU T84-15G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6922-BS	3G11940.D	1	11/06/12	DC	11/06/12	OP6922	E3G564

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D40540-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	70.5	85	68-130
120-12-7	Anthracene	83.3	75.8	91	67-130
56-55-3	Benzo(a)anthracene	83.3	71.9	86	65-130
205-99-2	Benzo(b)fluoranthene	83.3	82.9	99	44-130
207-08-9	Benzo(k)fluoranthene	83.3	87.3	105	56-131
50-32-8	Benzo(a)pyrene	83.3	86.1	103	62-130
218-01-9	Chrysene	83.3	85.8	103	70-130
53-70-3	Dibenzo(a,h)anthracene	83.3	75.6	91	55-130
206-44-0	Fluoranthene	83.3	71.7	86	70-130
86-73-7	Fluorene	83.3	78.0	94	70-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	80.2	96	56-130
91-20-3	Naphthalene	83.3	62.3	75	70-130
129-00-0	Pyrene	83.3	85.8	103	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	65%	10-159%
321-60-8	2-Fluorobiphenyl	74%	19-131%
1718-51-0	Terphenyl-d14	82%	18-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D40540
Account: XTOKRWR XTO Energy
Project: PCU T84-15G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6922-MS	3G11945.D	1	11/06/12	DC	11/06/12	OP6922	E3G564
OP6922-MSD	3G11946.D	1	11/06/12	DC	11/06/12	OP6922	E3G564
D40540-1	3G11944.D	1	11/06/12	DC	11/06/12	OP6922	E3G564

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D40540-1

CAS No.	Compound	D40540-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		85.4	68.8	81	74.7	87	8	25-151/30
120-12-7	Anthracene	ND		85.4	81.2	95	89.4	105	10	39-159/30
56-55-3	Benzo(a)anthracene	68.4		85.4	141	85	132	74	7	39-168/30
205-99-2	Benzo(b)fluoranthene	86.8		85.4	171	99	152	76	12	24-163/30
207-08-9	Benzo(k)fluoranthene	40.5		85.4	109	80	97.7	67	11	10-188/30
50-32-8	Benzo(a)pyrene	71.8		85.4	145	86	127	65	13	32-144/30
218-01-9	Chrysene	95.0		85.4	171	89	138	50	21	43-150/30
53-70-3	Dibenzo(a,h)anthracene	9.8		85.4	78.0	80	79.2	81	2	21-152/30
206-44-0	Fluoranthene	119		85.4	181	73	165	54	9	36-157/30
86-73-7	Fluorene	ND		85.4	77.7	91	85.6	100	10	10-182/30
193-39-5	Indeno(1,2,3-cd)pyrene	31.3		85.4	100	80	98.1	78	2	20-154/30
91-20-3	Naphthalene	ND		85.4	71.1	83	74.6	87	5	10-163/30
129-00-0	Pyrene	119		85.4	201	96	169	59	17	25-180/30

CAS No.	Surrogate Recoveries	MS	MSD	D40540-1	Limits
4165-60-0	Nitrobenzene-d5	59%	66%	55%	10-159%
321-60-8	2-Fluorobiphenyl	67%	73%	67%	19-131%
1718-51-0	Terphenyl-d14	72%	78%	74%	18-150%

* = Outside of Control Limits.

GC/MS Semi-volatiles

Raw Data

6

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\110612\
 Data File : 3g11944.D
 Acq On : 6 Nov 2012 6:32 pm
 Operator : DONC
 Sample : D40540-1
 Misc : OP6914,E3G564,30.03,,,1,1
 ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 07 08:50:02 2012
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G558.M
 Quant Title : PAHSIM BASE
 QLast Update : Wed Oct 31 14:49:52 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.789	136	193174	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.507	164	113993	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.987	188	185059	4.0000	ug/mL	0.00
19) Chrysene-d12	11.630	240	140742	4.0000	ug/mL	0.00
24) Perylene-d12	13.035	264	97782	4.0000	ug/mL	0.00

System Monitoring Compounds

2) Nitrobenzene-d5	5.103	82	657976	27.5485	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	55.10%		
7) 2-Fluorobiphenyl	6.846	172	1580356	33.3914	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	66.78%		
21) Terphenyl-d14	10.578	244	738436	36.8921	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	73.78%		

Target Compounds

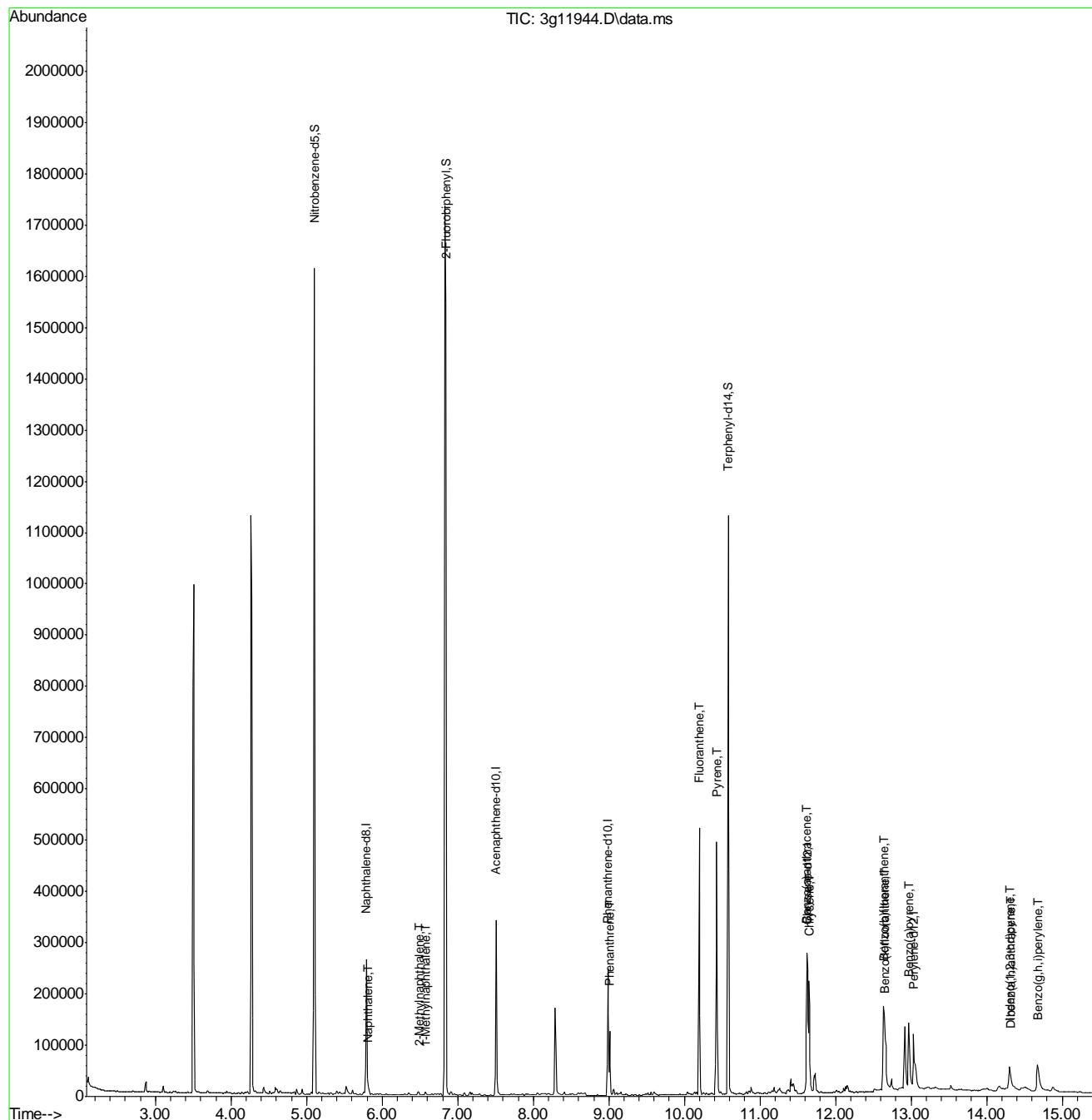
					Qvalue
3) N-Nitrosodimethylamine	2.494	74	26	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D. d	
5) Naphthalene	5.814	128	12896	0.2100 ug/mL#	73
8) 2-Methylnaphthalene	6.487	142	3705	0.0901 ug/mL	95
9) 1-Methylnaphthalene	6.574	142	2403	0.0663 ug/mL	89
10) Acenaphthylene	7.366	152	336	N.D.	
11) Acenaphthene	7.543	154	1909	N.D.	
12) Dibenzofuran	7.708	168	1436	N.D.	
13) Fluorene	8.051	166	1958	N.D.	
14) Diphenylamine	8.417	169	1893	N.D.	
16) Phenanthrene	9.011	178	68985	1.0345 ug/mL	97
17) Anthracene	0.000	178	0	N.D. d	
18) Fluoranthene	10.198	202	252783	3.4976 ug/mL	98
20) Pyrene	10.428	202	253219	3.4925 ug/mL	95
22) Benzo(a)anthracene	11.617	228	129825	2.0033 ug/mL	93
23) Chrysene	11.650	228	169622	2.7852 ug/mL	96
25) Benzo(b)fluoranthene	12.635	252	150923m	2.5455 ug/mL	
26) Benzo(k)fluoranthene	12.656	252	56424m	1.1873 ug/mL	
27) Benzo(a)pyrene	12.972	252	110587	2.1057 ug/mL	96
28) Indeno(1,2,3-cd)pyrene	14.307	276	49133m	0.9176 ug/mL	
29) Dibenz(a,h)anthracene	14.318	278	12097m	0.2873 ug/mL	
30) Benzo(g,h,i)perylene	14.676	276	60686	1.3197 ug/mL	99

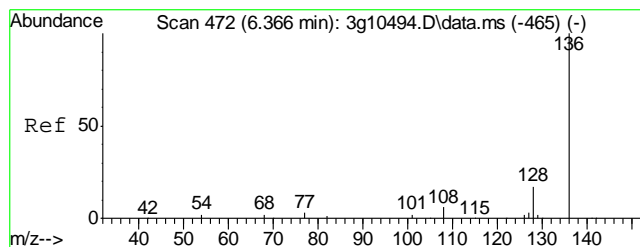
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\110612\
 Data File : 3g11944.D
 Acq On : 6 Nov 2012 6:32 pm
 Operator : DONC
 Sample : D40540-1
 Misc : OP6914,E3G564,30.03,,,1,1
 ALS Vial : 9 Sample Multiplier: 1

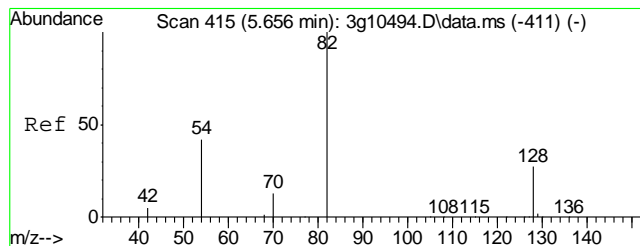
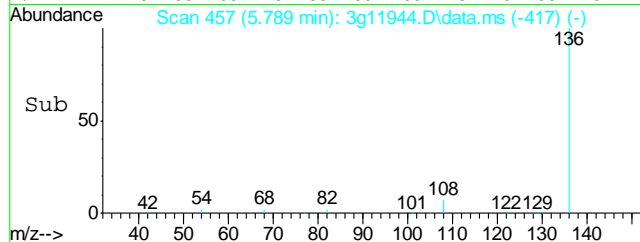
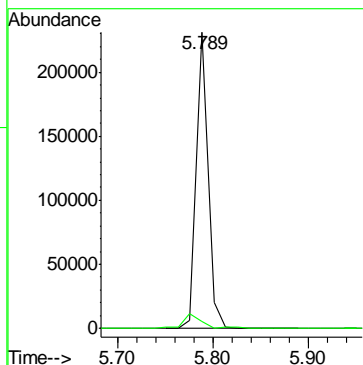
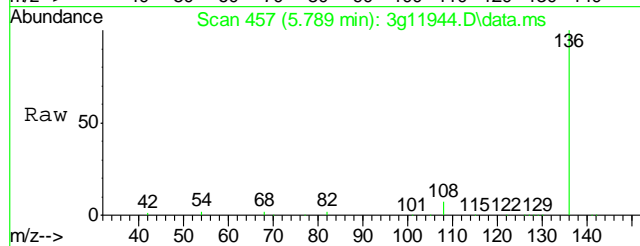
Quant Time: Nov 07 08:50:02 2012
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G558.M
 Quant Title : PAHSIM BASE
 QLast Update : Wed Oct 31 14:49:52 2012
 Response via : Initial Calibration





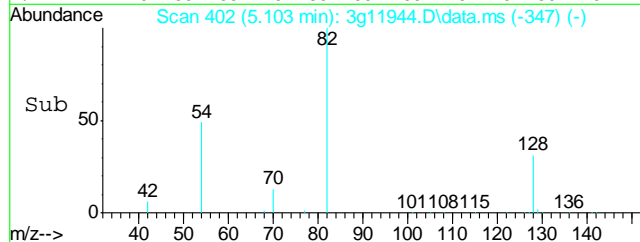
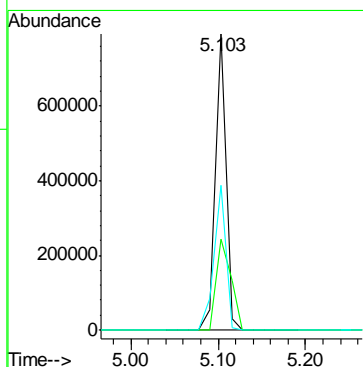
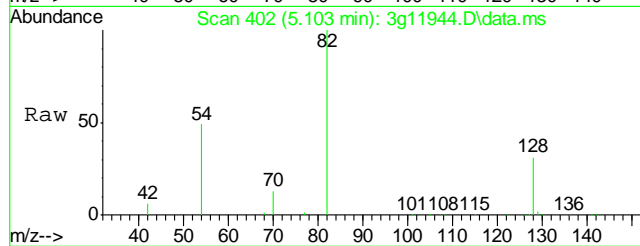
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.789 min Scan# 457
Delta R.T. 0.000 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

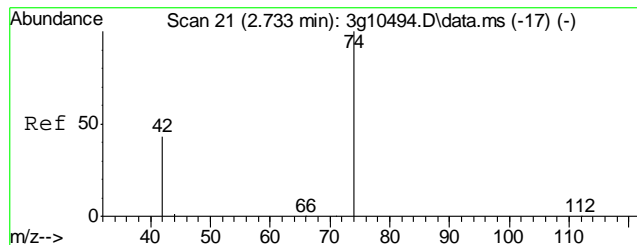
Tgt Ion	Ratio	Lower	Upper
136	100		
68	6.9	0.0	28.7



#2
Nitrobenzene-d5
Concen: 27.5485 ug/mL
RT: 5.103 min Scan# 402
Delta R.T. 0.000 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

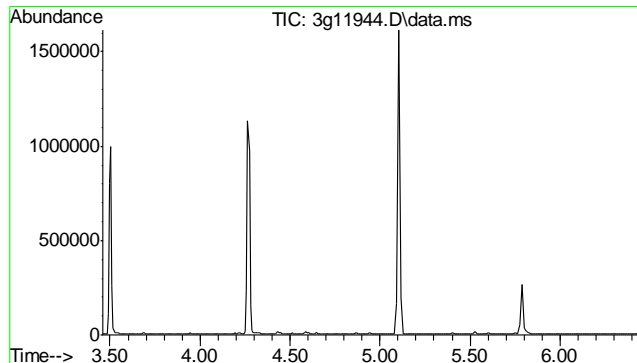
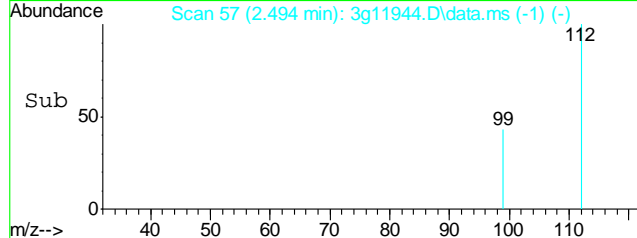
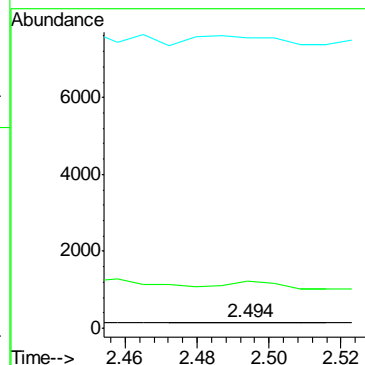
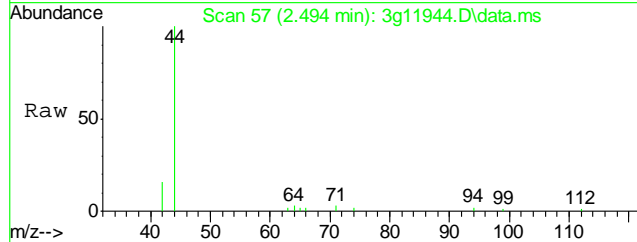
Tgt Ion	Ratio	Lower	Upper
82	100		
128	42.8	17.4	57.4
54	54.3	32.8	72.8





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.494 min Scan# 57
Delta R.T. 0.007 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

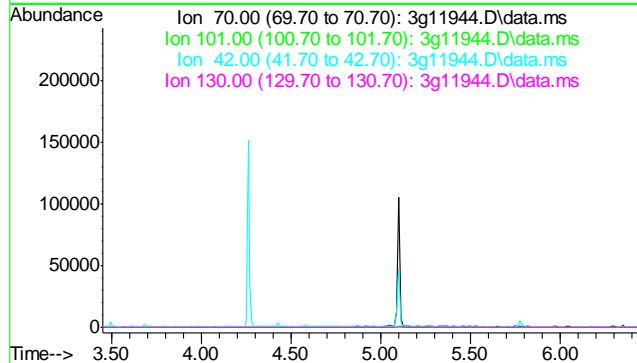
Tgt Ion: 74 Resp: 26
Ion Ratio Lower Upper
74 100
42 0.0 53.7 93.7#
44 0.0 0.0 24.1

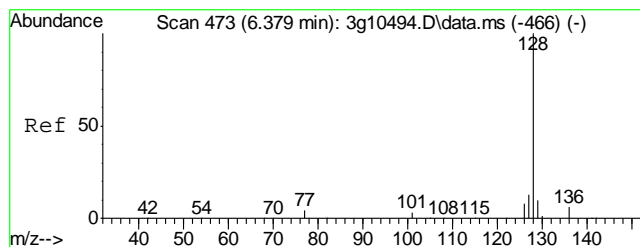


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.95 min

Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

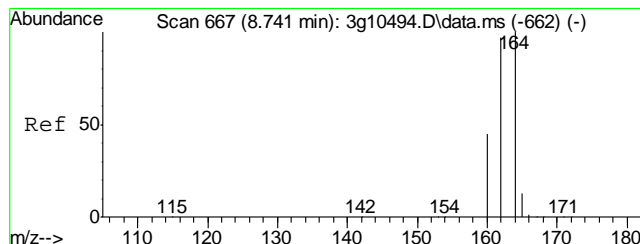
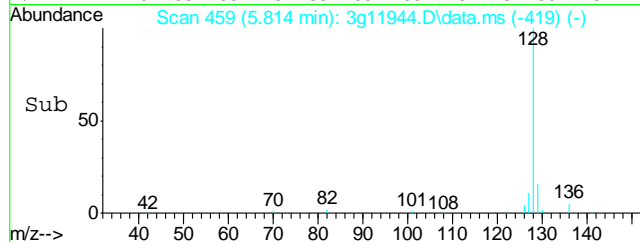
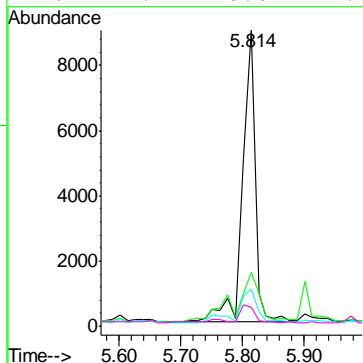
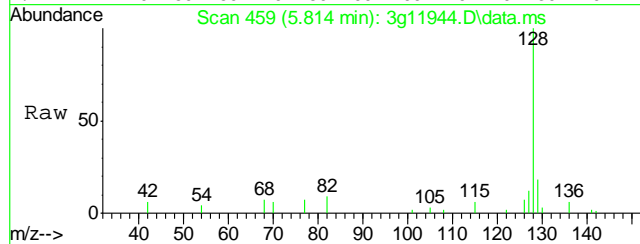
Tgt Ion: 70
Sig Exp Ratio
70 100
101 12.3
42 51.9
130 24.1





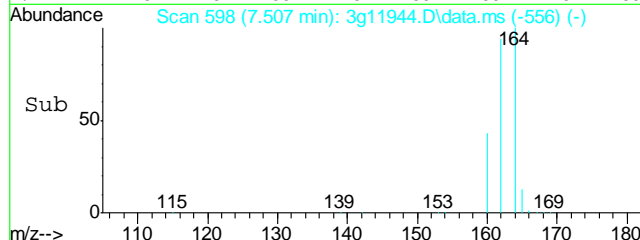
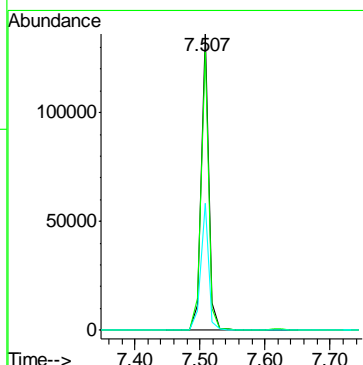
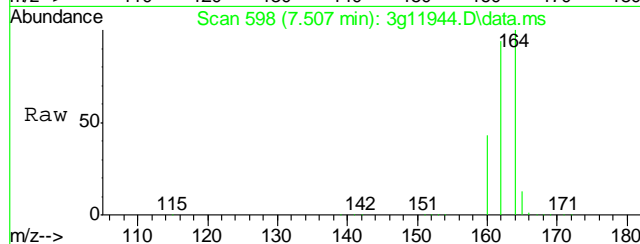
#5
Naphthalene
Concen: 0.2100 ug/mL
RT: 5.814 min Scan# 459
Delta R.T. 0.000 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

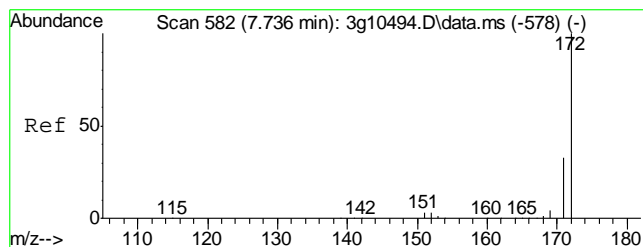
Tgt Ion	Ratio	Lower	Upper
128	100		
129	33.3	0.0	31.1#
127	18.4	0.0	32.6
126	7.1	0.0	27.3



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.507 min Scan# 598
Delta R.T. 0.000 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

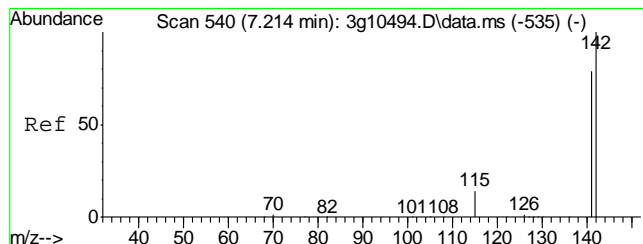
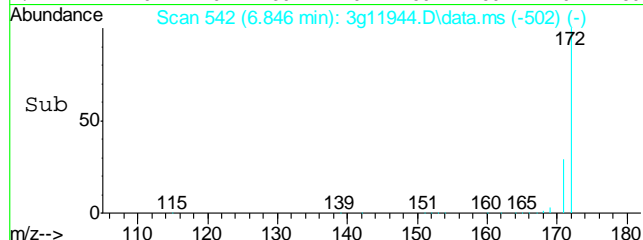
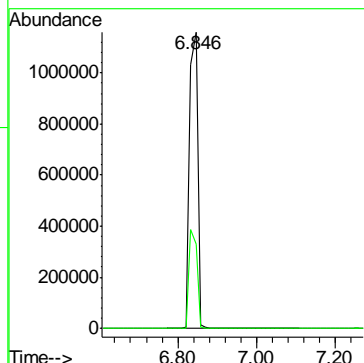
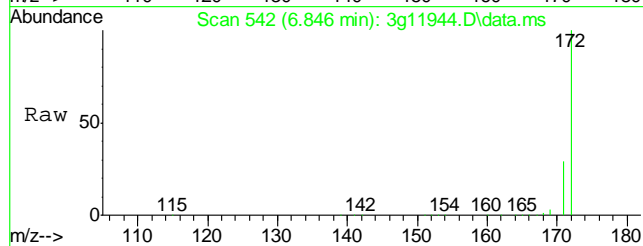
Tgt Ion	Ratio	Lower	Upper
164	100		
162	95.5	77.7	117.7
160	44.4	26.6	66.6





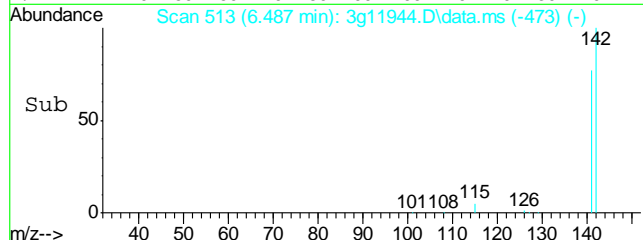
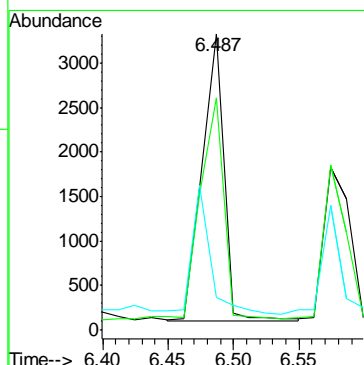
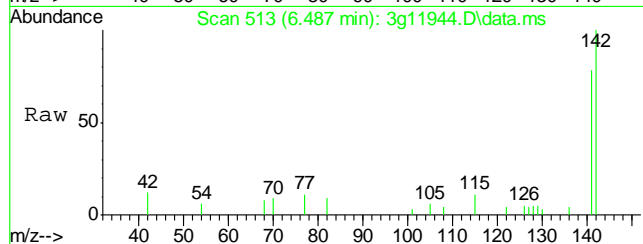
#7
2-Fluorobiphenyl
Concen: 33.3914 ug/mL
RT: 6.846 min Scan# 542
Delta R.T. 0.000 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

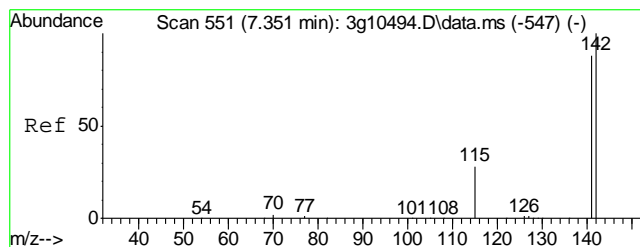
Tgt Ion	Ratio	Lower	Upper
172	100		
171	32.9	12.9	52.9



#8
2-Methylnaphthalene
Concen: 0.0901 ug/mL
RT: 6.487 min Scan# 513
Delta R.T. 0.000 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

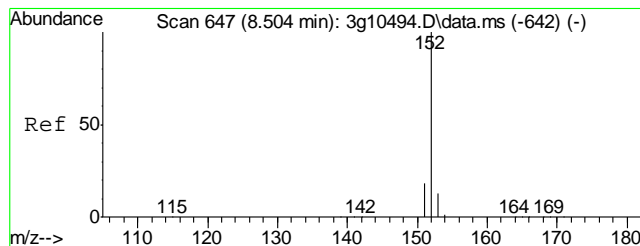
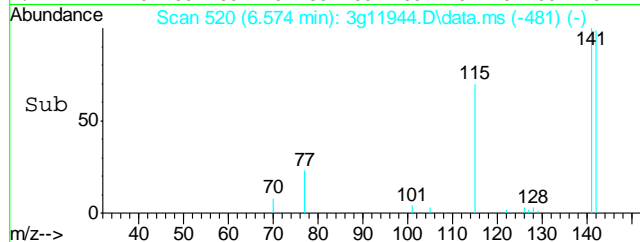
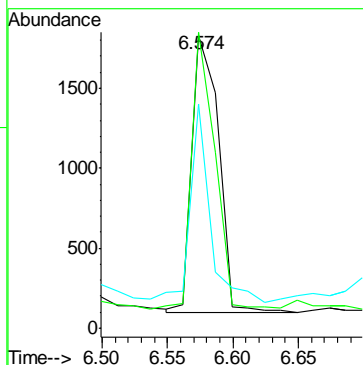
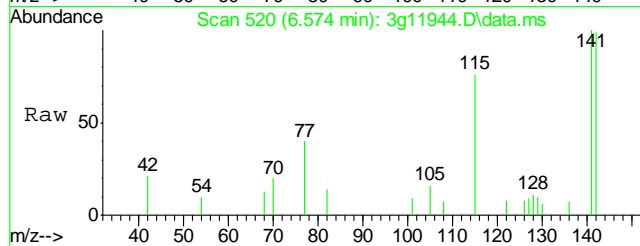
Tgt Ion	Ratio	Lower	Upper
142	100		
141	83.0	62.7	102.7
115	37.8	8.3	48.3





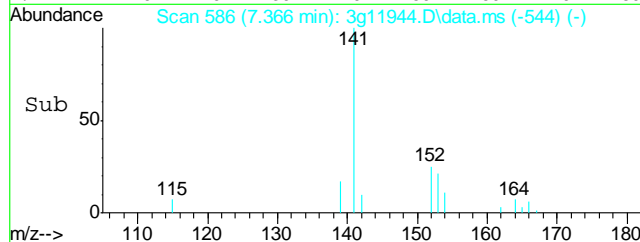
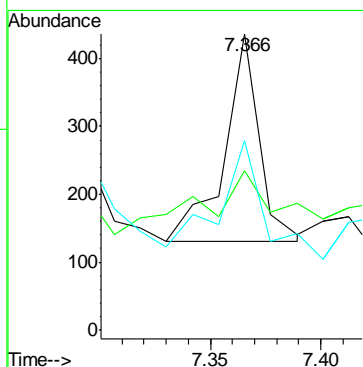
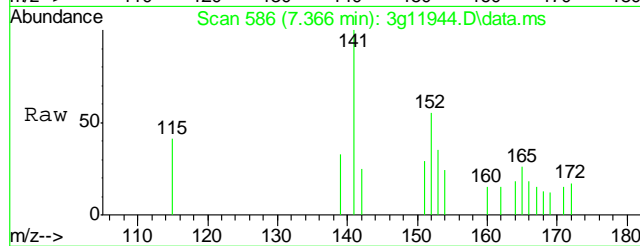
#9
1-Methylnaphthalene
Concen: 0.0663 ug/mL
RT: 6.574 min Scan# 520
Delta R.T. -0.012 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

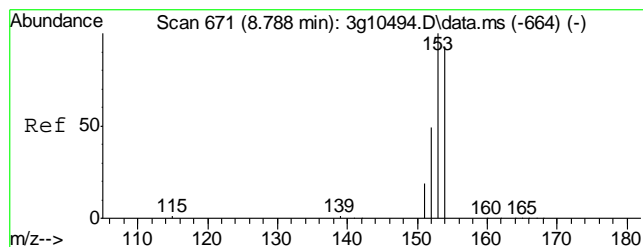
Tgt Ion:	142	Resp:	2403
Ion Ratio	Lower	Upper	
142	100		
141	87.8	65.6	105.6
115	53.7	14.0	54.0



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.366 min Scan# 586
Delta R.T. 0.000 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

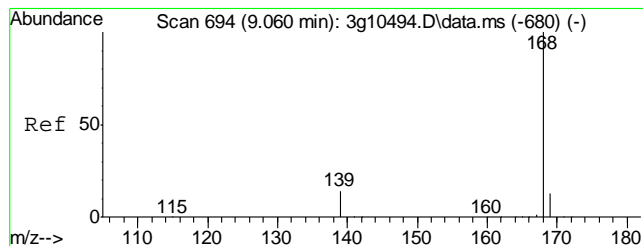
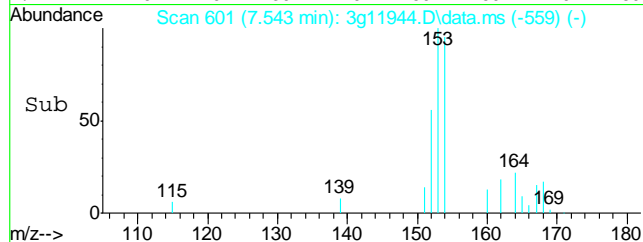
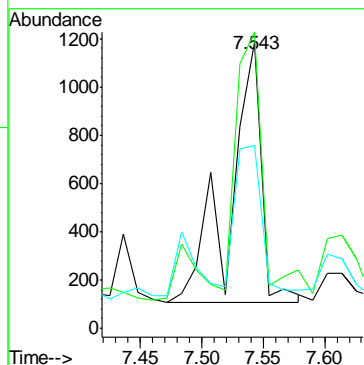
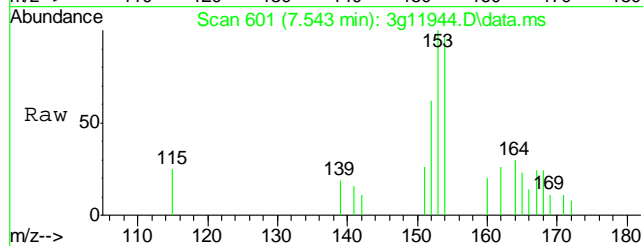
Tgt Ion:	152	Resp:	336
Ion Ratio	Lower	Upper	
152	100		
151	71.4	0.0	39.6#
153	75.3	0.0	33.0#





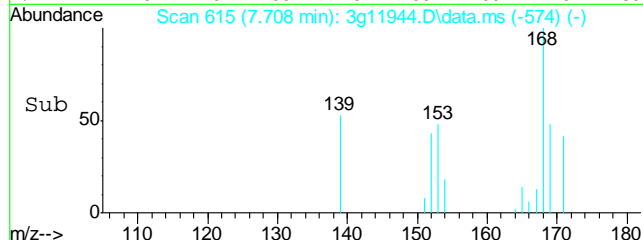
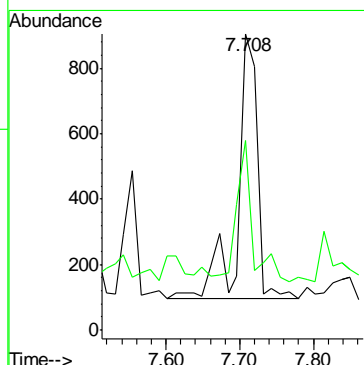
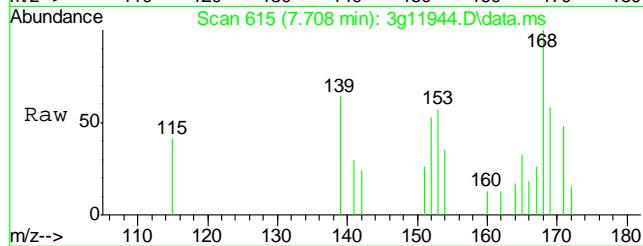
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.543 min Scan# 601
Delta R.T. 0.000 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

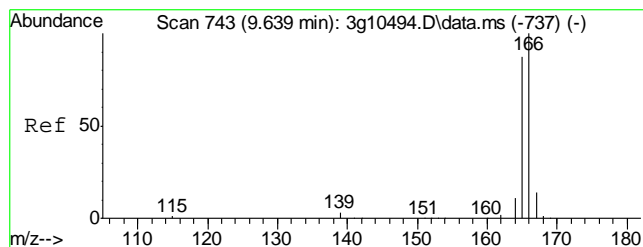
Tgt Ion	Ratio	Lower	Upper
154	100		
153	78.5	83.1	123.1#
152	45.2	29.1	69.1



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.708 min Scan# 615
Delta R.T. -0.012 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

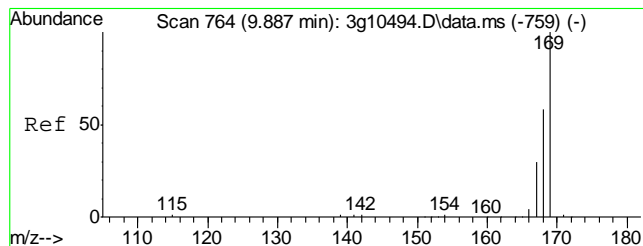
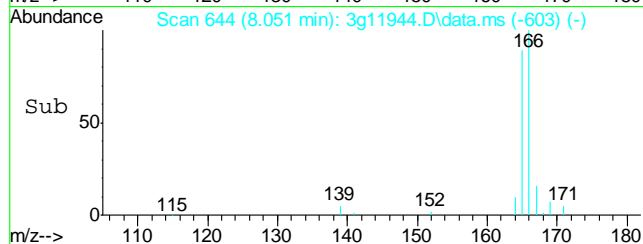
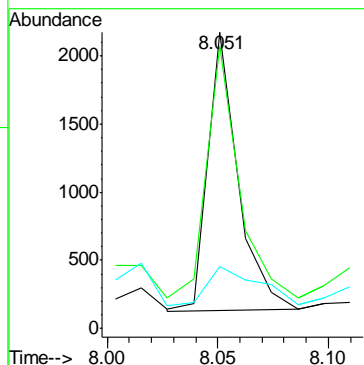
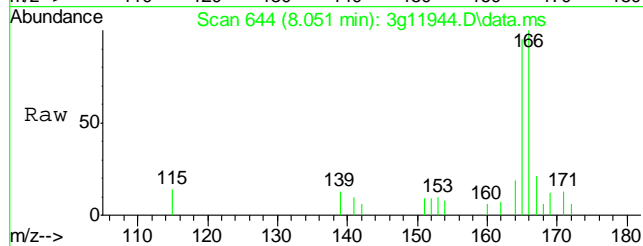
Tgt Ion	Ratio	Lower	Upper
168	100		
139	44.3	14.1	54.1





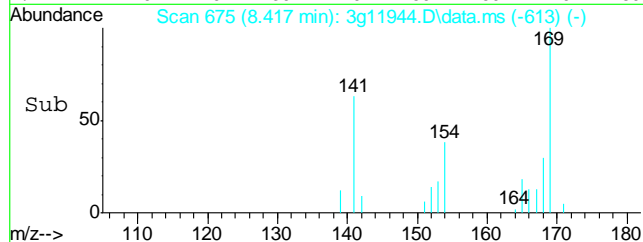
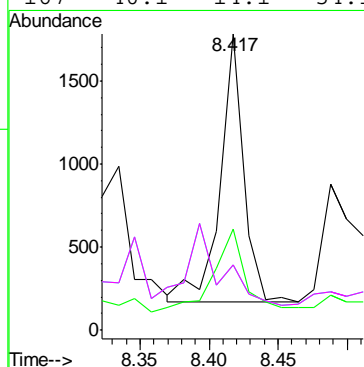
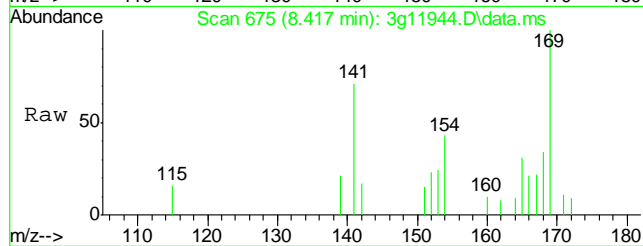
#13
Fluorene
Concen: Below ug/mL
RT: 8.051 min Scan# 644
Delta R.T. -0.012 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

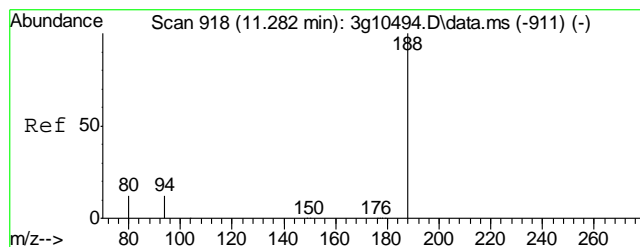
Tgt Ion:	166	Resp:	1958
Ion Ratio	Lower	Upper	
166	100		
165	96.6	72.9	112.9
167	28.9	0.0	33.2



#14
Diphenylamine
Concen: Below ug/mL
RT: 8.417 min Scan# 675
Delta R.T. 0.236 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

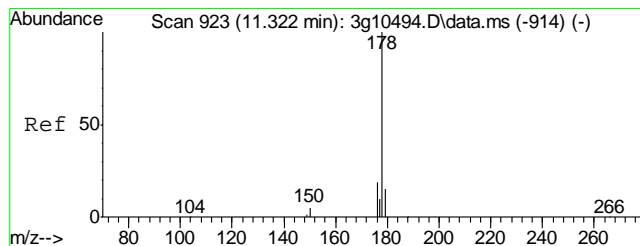
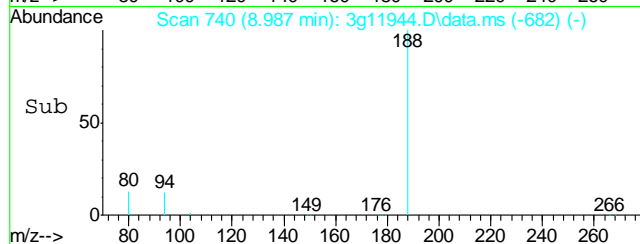
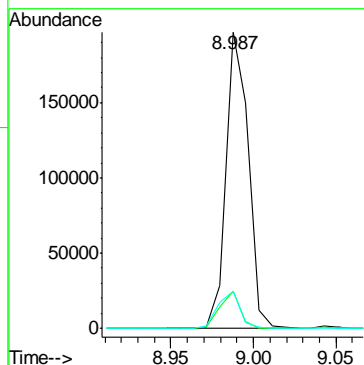
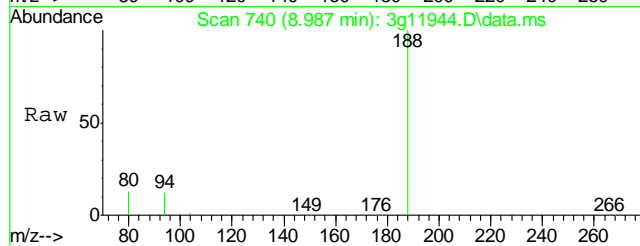
Tgt Ion:	169	Resp:	1893
Ion Ratio	Lower	Upper	
169	100		
168	42.0	42.0	82.0
167	40.1	14.1	54.1
167	40.1	14.1	54.1





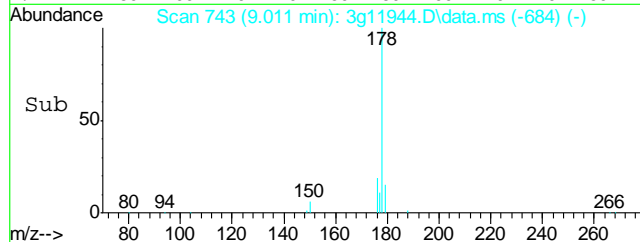
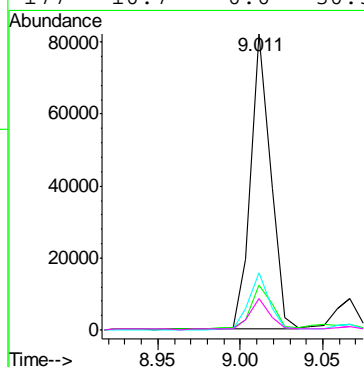
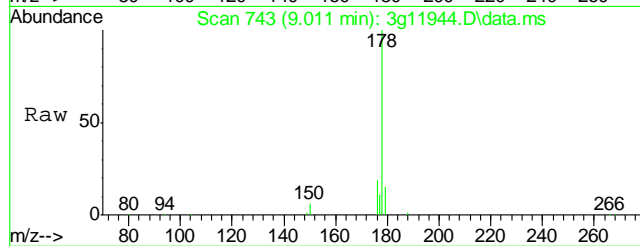
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.987 min Scan# 740
Delta R.T. -0.008 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

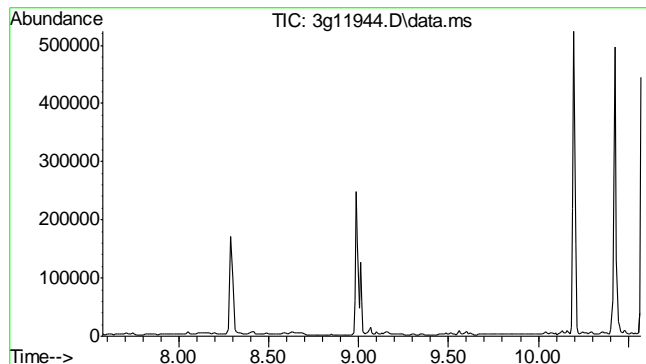
Tgt Ion:188	Resp:	185059
Ion Ratio	Lower	Upper
188 100		
94 11.4	0.0	33.4
80 11.9	0.0	34.7



#16
Phenanthrene
Concen: 1.0345 ug/mL
RT: 9.011 min Scan# 743
Delta R.T. -0.008 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

Tgt Ion:178	Resp:	68985
Ion Ratio	Lower	Upper
178 100		
179 17.7	0.0	35.2
176 19.2	0.0	38.9
177 10.7	0.0	30.3

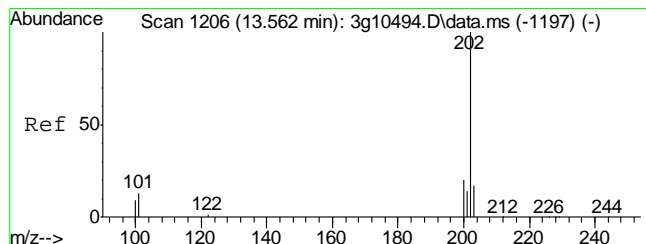
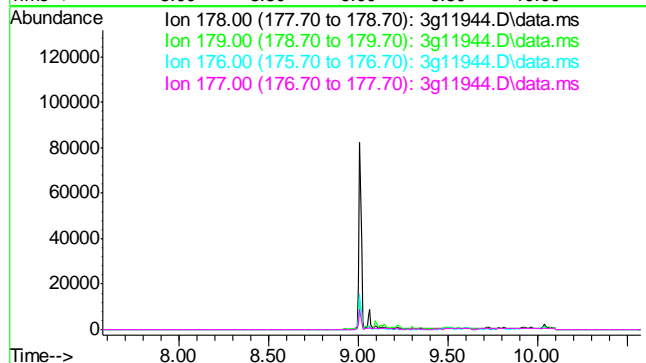




#17
Anthracene
Concen: N.D. ug/mL
Expected RT: 9.07 min

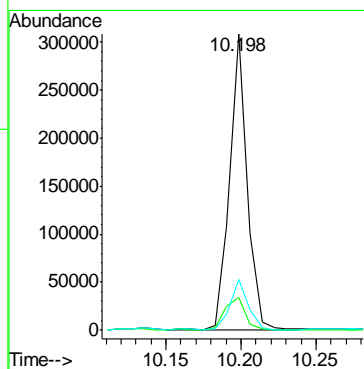
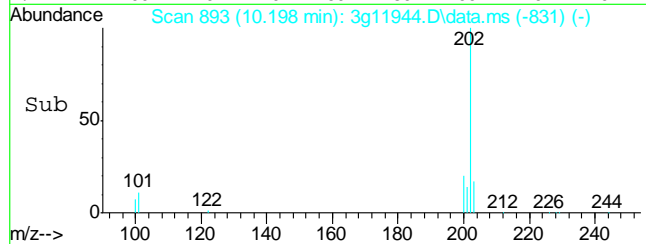
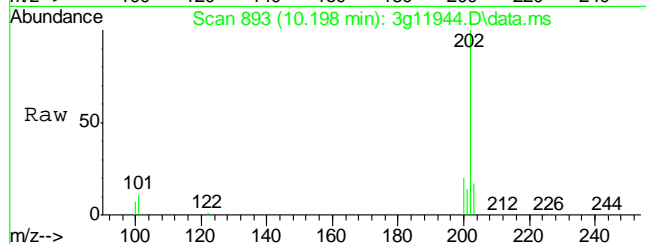
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

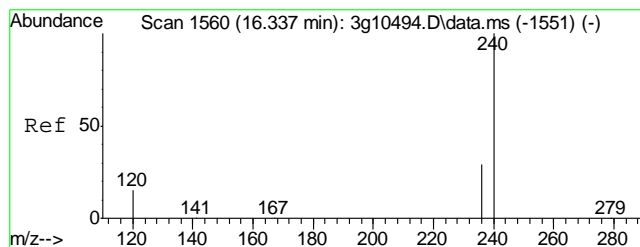
Tgt Ion: 178
Sig Exp Ratio
178 100
179 15.1
176 18.3
177 8.9



#18
Fluoranthene
Concen: 3.4976 ug/mL
RT: 10.198 min Scan# 893
Delta R.T. -0.008 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

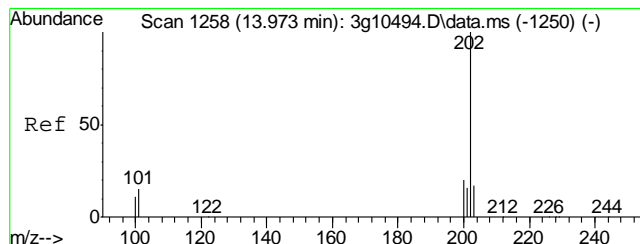
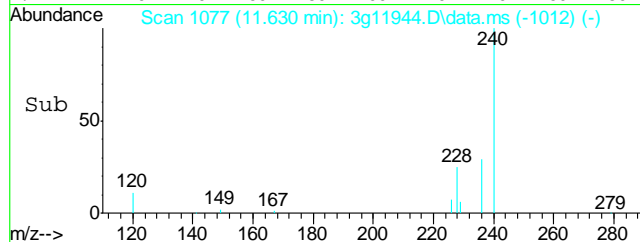
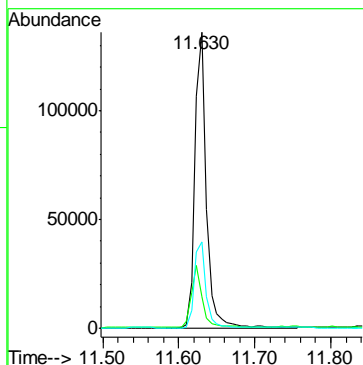
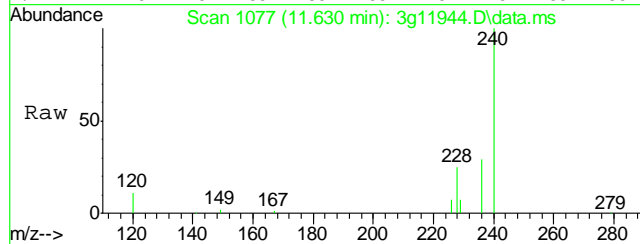
Tgt Ion: 202 Resp: 252783
Ion Ratio Lower Upper
202 100
101 12.6 0.0 33.9
203 18.0 0.0 37.2





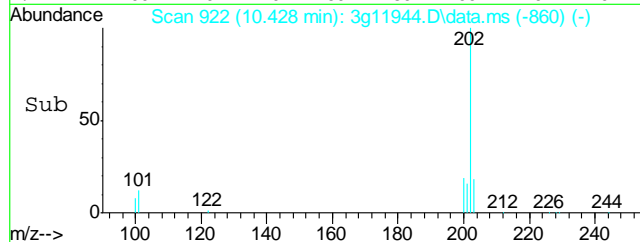
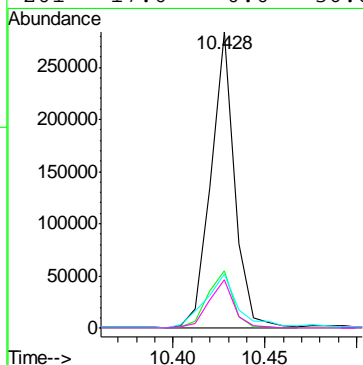
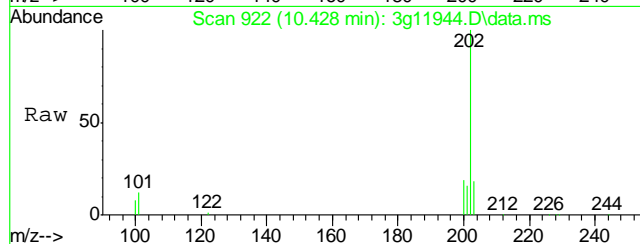
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.630 min Scan# 1077
Delta R.T. -0.007 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

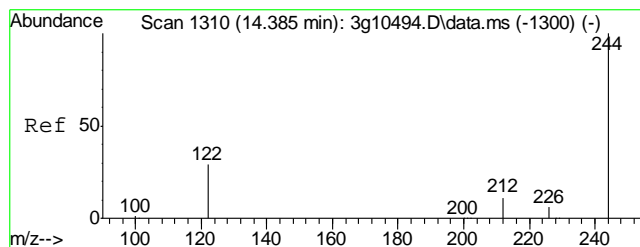
Tgt Ion:	240	Resp:	140742
Ion Ratio	Lower	Upper	
240	100		
120	19.6	1.4	41.4
236	30.3	9.7	49.7



#20
Pyrene
Concen: 3.4925 ug/mL
RT: 10.428 min Scan# 922
Delta R.T. -0.008 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

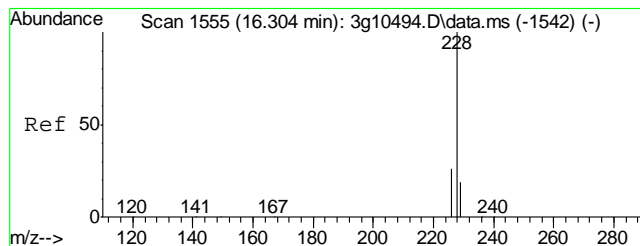
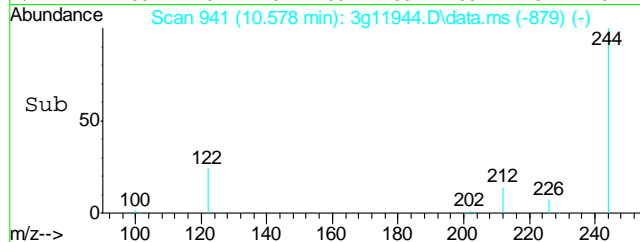
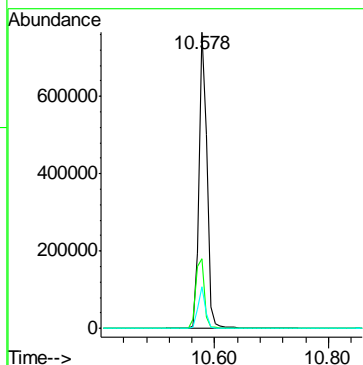
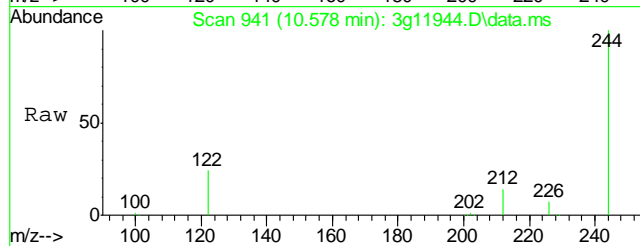
Tgt Ion:	202	Resp:	253219
Ion Ratio	Lower	Upper	
202	100		
200	20.8	0.8	40.8
203	24.3	0.0	37.9
201	17.0	0.0	36.8





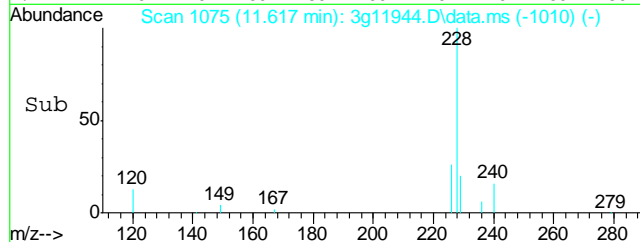
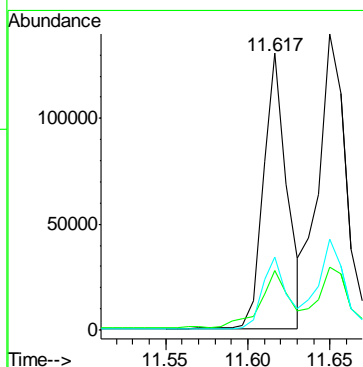
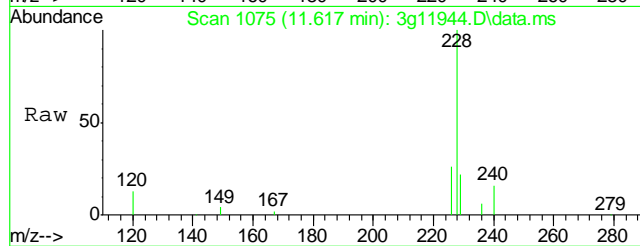
#21
Terphenyl-d14
Concen: 36.8921 ug/mL
RT: 10.578 min Scan# 941
Delta R.T. -0.008 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

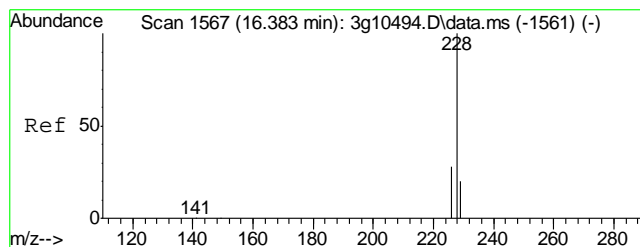
Tgt Ion	Ratio	Lower	Upper
244	100		
122	26.0	6.6	46.6
212	13.0	0.0	31.7



#22
Benzo(a)anthracene
Concen: 2.0033 ug/mL
RT: 11.617 min Scan# 1075
Delta R.T. -0.007 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

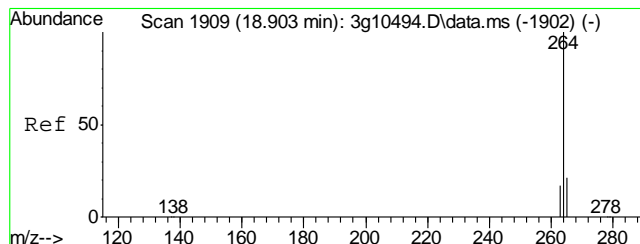
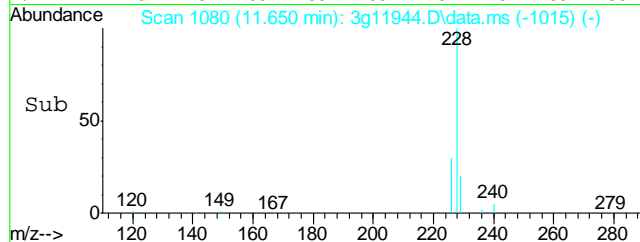
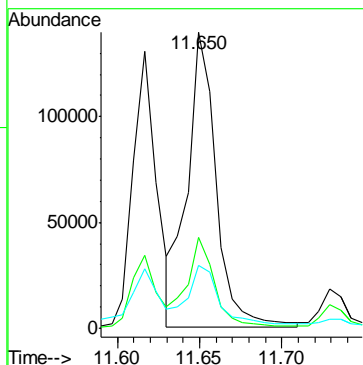
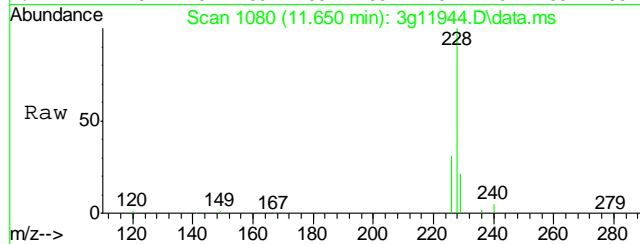
Tgt Ion	Ratio	Lower	Upper
228	100		
229	26.7	0.0	39.5
226	27.3	7.1	47.1





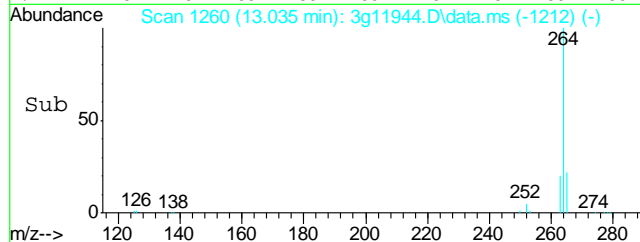
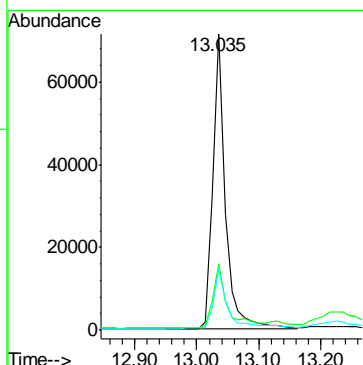
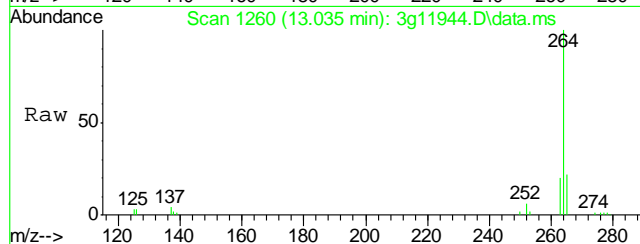
#23
Chrysene
Concen: 2.7852 ug/mL
RT: 11.650 min Scan# 1080
Delta R.T. -0.013 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

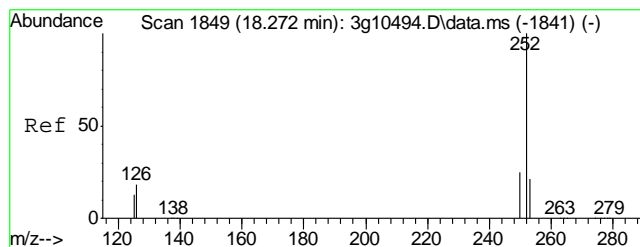
Tgt Ion:	228	Resp:	169622
Ion Ratio	Lower	Upper	
228	100		
226	29.3	9.6	49.6
229	23.9	0.0	39.3



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 13.035 min Scan# 1260
Delta R.T. 0.000 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

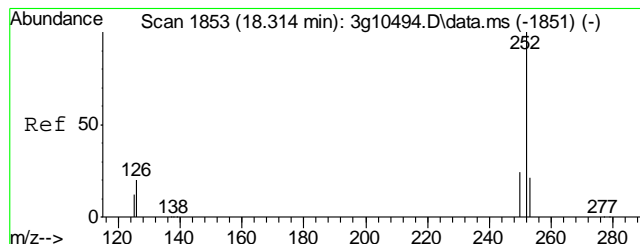
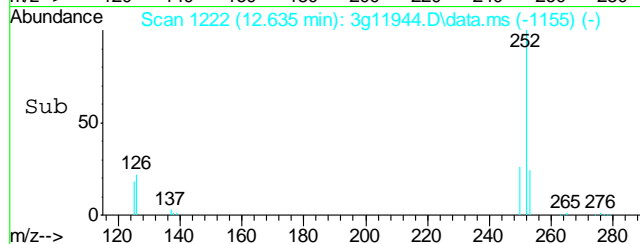
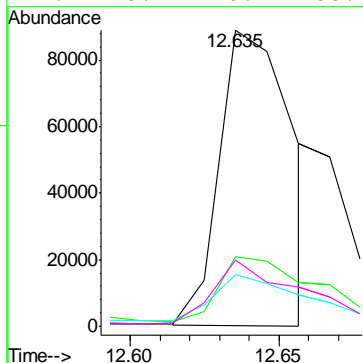
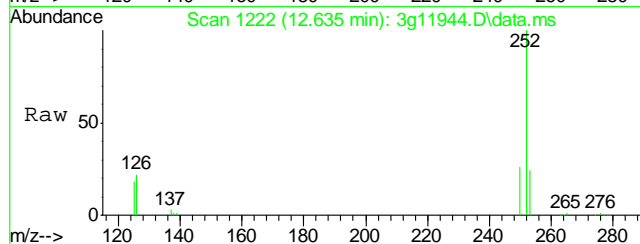
Tgt Ion:	264	Resp:	97782
Ion Ratio	Lower	Upper	
264	100		
265	25.1	1.2	41.2
263	24.0	0.0	39.6





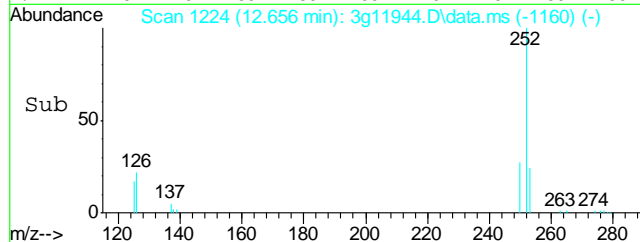
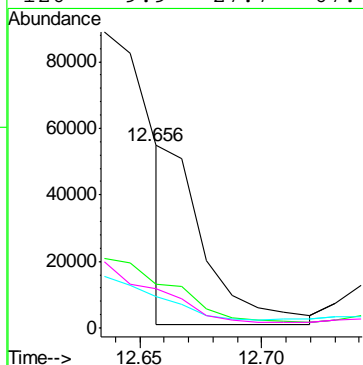
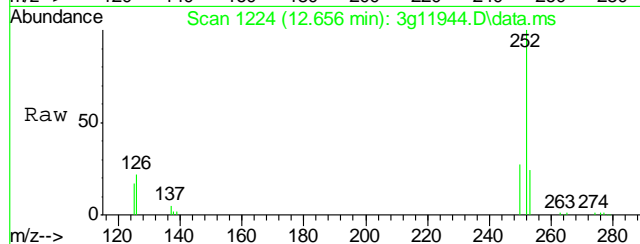
#25
Benzo(b)fluoranthene
Concen: 2.5455 ug/mL m
RT: 12.635 min Scan# 1222
Delta R.T. -0.011 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

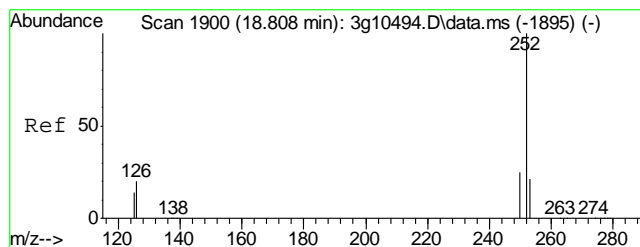
Tgt Ion:	252	Resp:	150923
Ion Ratio	Lower	Upper	
252	100		
253	34.3	1.0	41.0
125	19.6	6.5	46.5
126	28.1	18.4	58.4



#26
Benzo(k)fluoranthene
Concen: 1.1873 ug/mL m
RT: 12.656 min Scan# 1224
Delta R.T. -0.021 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

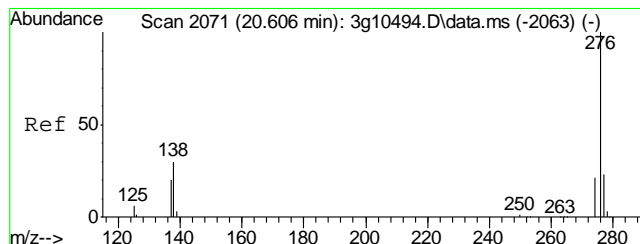
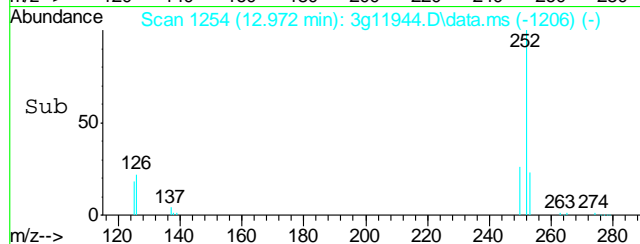
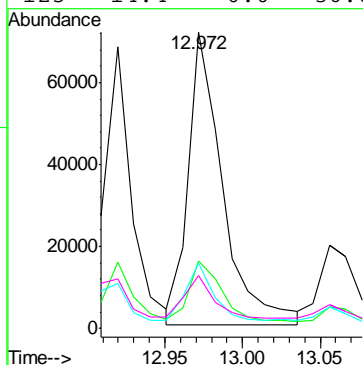
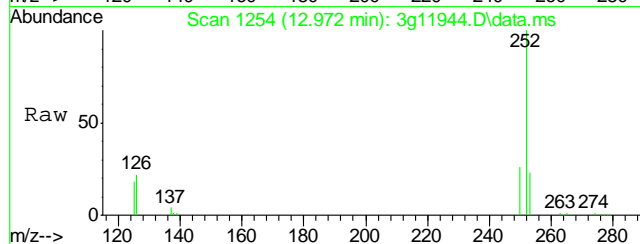
Tgt Ion:	252	Resp:	56424
Ion Ratio	Lower	Upper	
252	100		
253	14.9	6.1	46.1
125	5.2	12.9	52.9#
126	9.9	27.7	67.7#





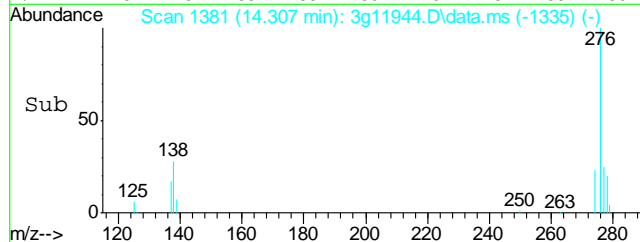
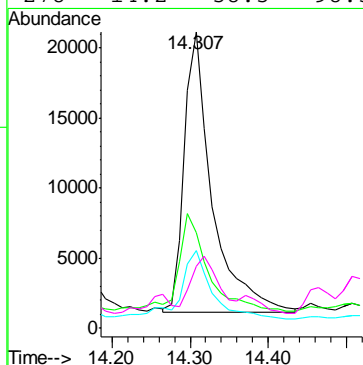
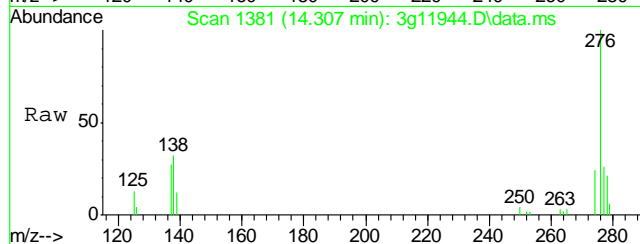
#27
Benzo(a)pyrene
Concen: 2.1057 ug/mL
RT: 12.972 min Scan# 1254
Delta R.T. -0.010 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

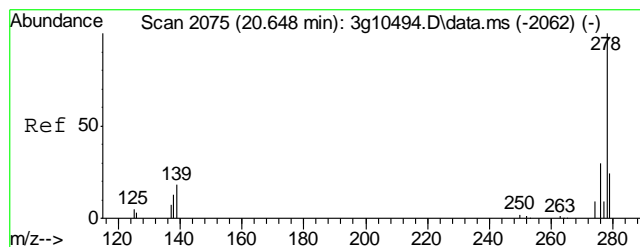
Tgt Ion	Ratio	Lower	Upper
252	100		
253	24.6	1.7	41.7
126	20.9	1.5	41.5
125	14.4	0.0	36.0



#28
Indeno(1,2,3-cd)pyrene
Concen: 0.9176 ug/mL m
RT: 14.307 min Scan# 1381
Delta R.T. -0.021 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

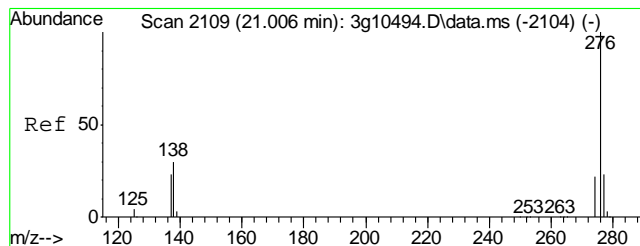
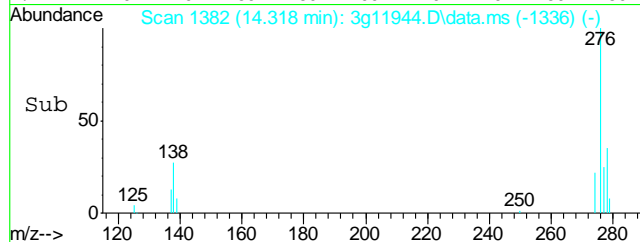
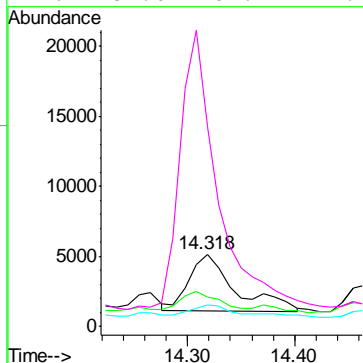
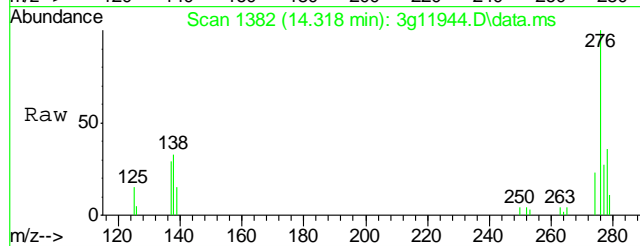
Tgt Ion	Ratio	Lower	Upper
276	100		
138	6.8	24.2	64.2#
277	3.8	5.0	45.0#
278	14.2	58.5	98.5#





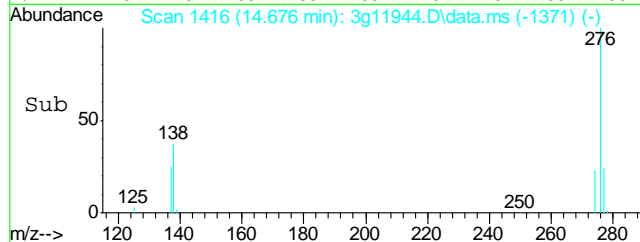
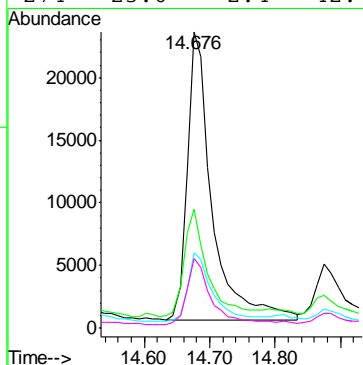
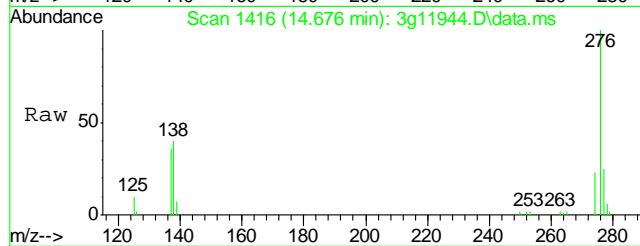
#29
Dibenz(a,h)anthracene
Concen: 0.2873 ug/mL m
RT: 14.318 min Scan# 1382
Delta R.T. -0.021 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

Tgt Ion:	278	Resp:	12097
Ion Ratio	Lower	Upper	
278	100		
139	16.1	13.5	53.5
279	16.7	3.1	43.1
276	82.0	107.4	147.4#



#30
Benzo(g,h,i)perylene
Concen: 1.3197 ug/mL
RT: 14.676 min Scan# 1416
Delta R.T. -0.032 min
Lab File: 3g11944.D
Acq: 6 Nov 12 6:32 pm

Tgt Ion:	276	Resp:	60686
Ion Ratio	Lower	Upper	
276	100		
138	39.2	18.4	58.4
277	24.1	3.6	43.6
274	23.0	2.4	42.4



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\110612\
Data File : 3g11939.D
Acq On : 6 Nov 2012 4:32 pm
Operator : DONC
Sample : OP6922-MB
Misc : OP6914,E3G564,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 07 08:34:27 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G558.M
Quant Title : PAHSIM BASE
QLast Update : Wed Oct 31 14:49:52 2012
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.789	136	160753	4.0000	ug/mL	0.00
6) Acenaphthene-d10	7.507	164	100472	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.995	188	174495	4.0000	ug/mL	0.00
19) Chrysene-d12	11.637	240	115613	4.0000	ug/mL	0.00
24) Perylene-d12	13.046	264	77921	4.0000	ug/mL	0.01

System Monitoring Compounds

2) Nitrobenzene-d5	5.103	82	710562	35.7502	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	71.50%		
7) 2-Fluorobiphenyl	6.846	172	1766284	42.3422	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	84.68%		
21) Terphenyl-d14	10.586	244	701356	42.6556	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	85.32%		

Target Compounds

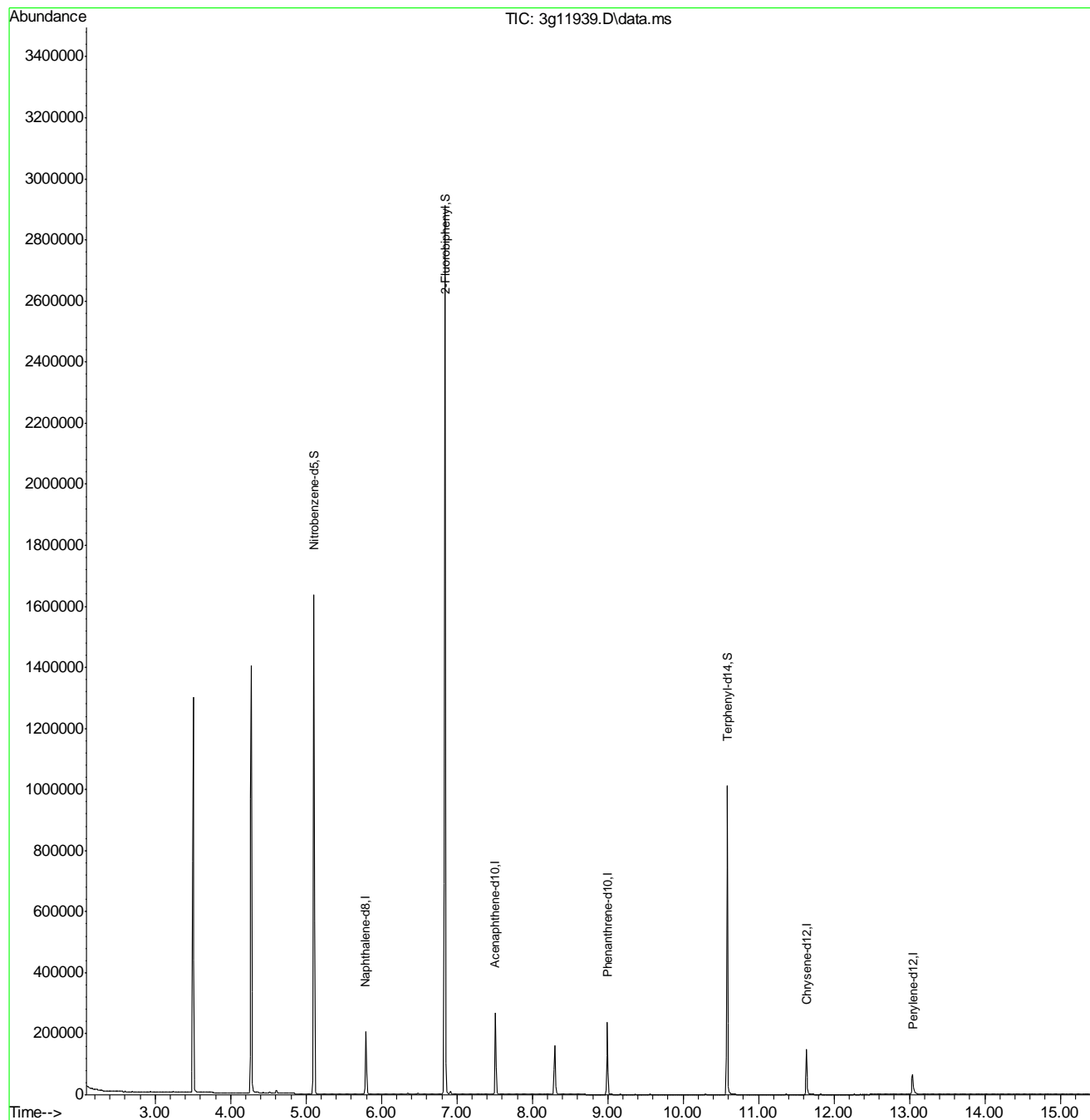
					Qvalue
3) N-Nitrosodimethylamine	2.465	74	51	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.814	128	845	N.D.	
8) 2-Methylnaphthalene	6.487	142	1338	N.D.	
9) 1-Methylnaphthalene	6.487	142	1338	N.D.	
10) Acenaphthylene	7.366	152	164	N.D.	
11) Acenaphthene	7.578	154	28	N.D.	
12) Dibenzofuran	7.720	168	251	N.D.	
13) Fluorene	0.000	166	0	N.D.	d
14) Diphenylamine	0.000	169	0	N.D.	d
16) Phenanthrene	9.019	178	647	N.D.	
17) Anthracene	9.067	178	155	N.D.	
18) Fluoranthene	10.206	202	210	N.D.	
20) Pyrene	10.436	202	197	N.D.	
22) Benzo(a)anthracene	11.630	228	643	N.D.	
23) Chrysene	11.630	228	643	N.D.	
25) Benzo(b)fluoranthene	12.646	252	87	N.D.	
26) Benzo(k)fluoranthene	12.646	252	87	N.D.	
27) Benzo(a)pyrene	12.941	252	54	N.D.	
28) Indeno(1,2,3-cd)pyrene	14.329	276	23	N.D.	
29) Dibenz(a,h)anthracene	14.360	278	115	N.D.	
30) Benzo(g,h,i)perylene	14.728	276	167	N.D.	

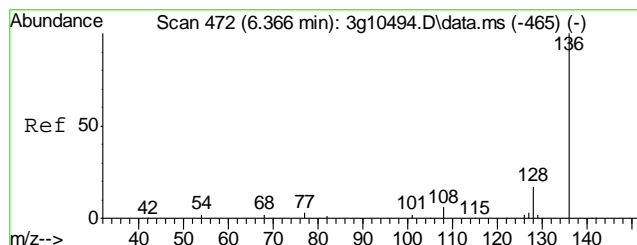
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\110612\
Data File : 3g11939.D
Acq On : 6 Nov 2012 4:32 pm
Operator : DONC
Sample : OP6922-MB
Misc : OP6914,E3G564,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

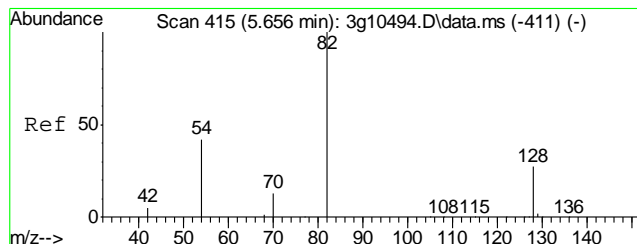
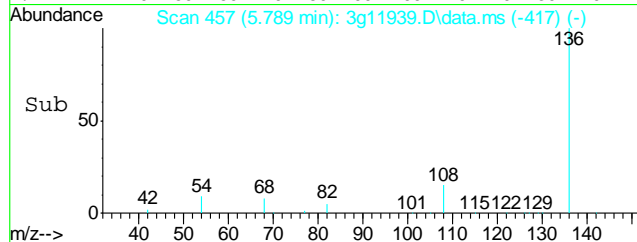
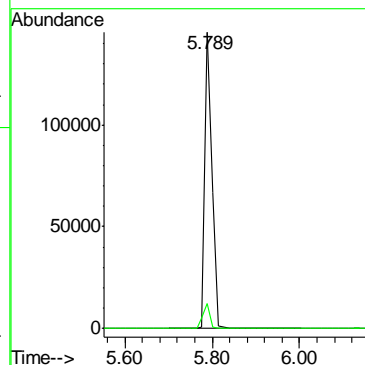
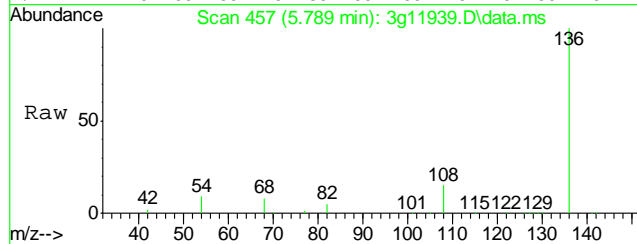
Quant Time: Nov 07 08:34:27 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G558.M
Quant Title : PAHSIM BASE
QLast Update : Wed Oct 31 14:49:52 2012
Response via : Initial Calibration





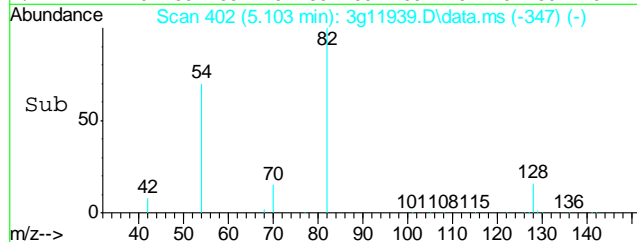
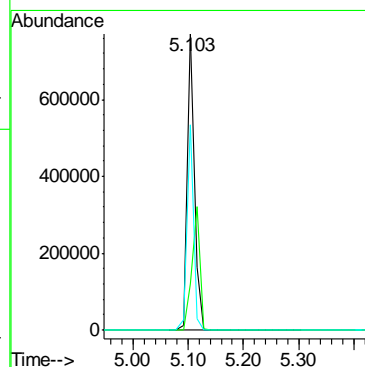
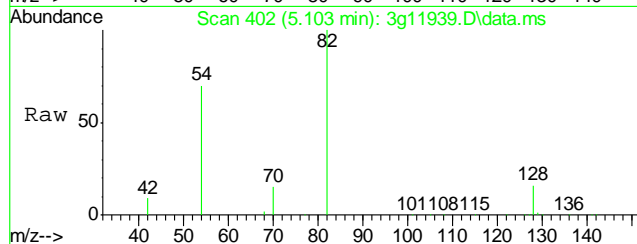
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.789 min Scan# 457
Delta R.T. 0.000 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

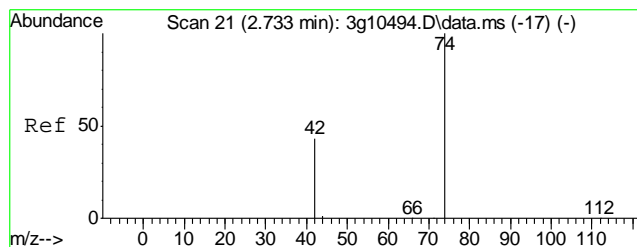
Tgt Ion:	136	Resp:	160753
Ion Ratio	Lower	Upper	
136	100		
68	8.2	0.0	28.7



#2
Nitrobenzene-d5
Concen: 35.7502 ug/mL
RT: 5.103 min Scan# 402
Delta R.T. 0.000 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

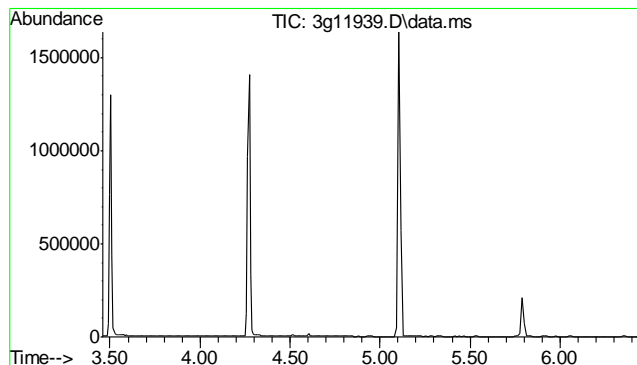
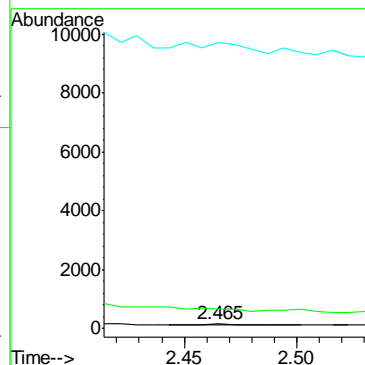
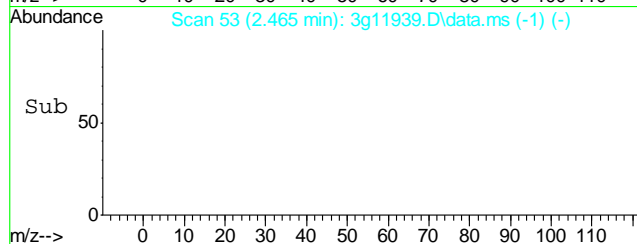
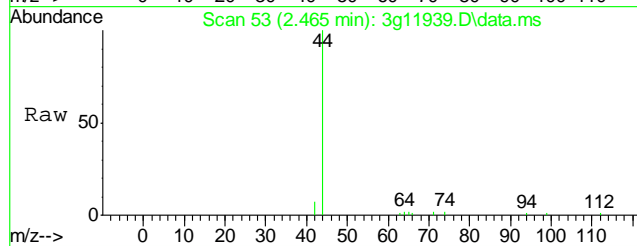
Tgt Ion:	82	Resp:	710562
Ion Ratio	Lower	Upper	
82	100		
128	46.9	17.4	57.4
54	62.2	32.8	72.8





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.465 min Scan# 53
Delta R.T. -0.022 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

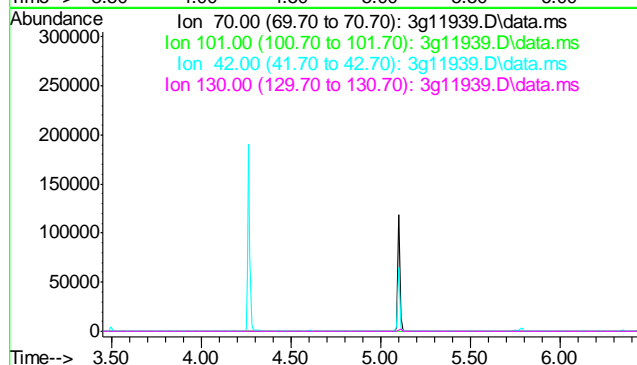
Tgt Ion: 74 Resp: 51
Ion Ratio Lower Upper
74 100
42 0.0 53.7 93.7#
44 0.0 0.0 24.1

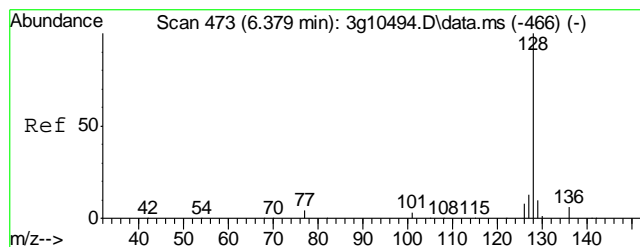


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.95 min

Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

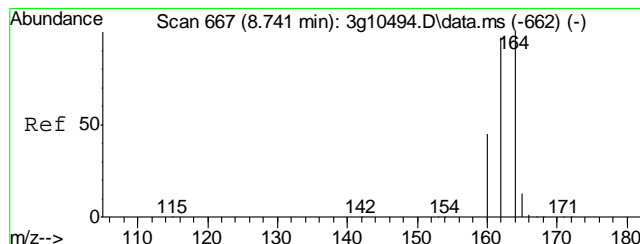
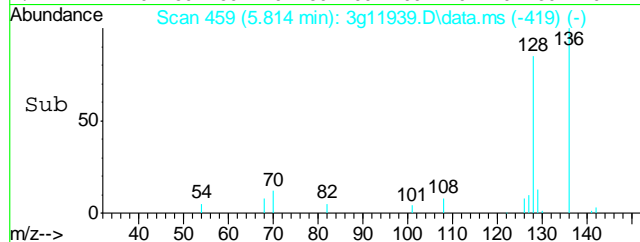
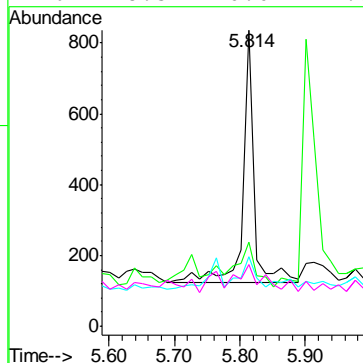
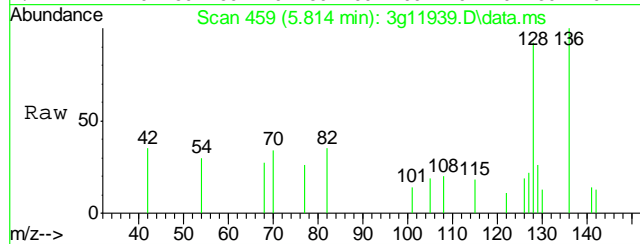
Tgt Ion: 70
Sig Exp Ratio
70 100
101 12.3
42 51.9
130 24.1





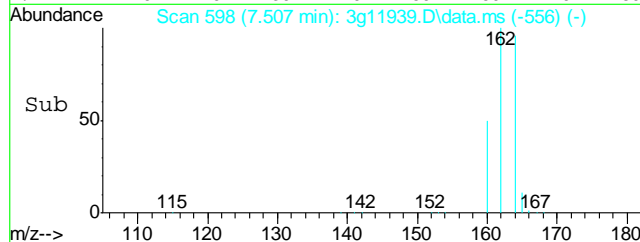
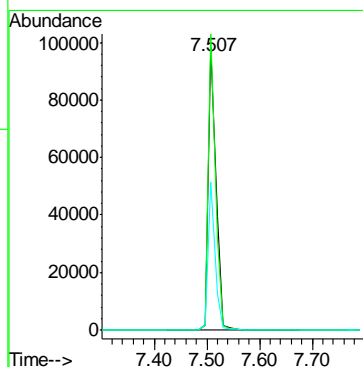
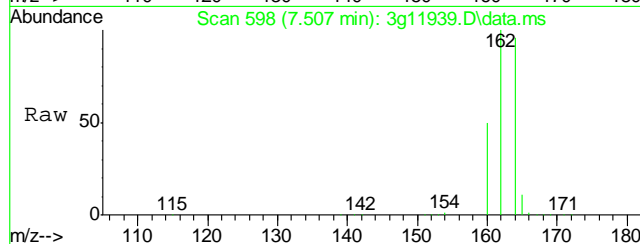
#5
Naphthalene
Concen: Below ug/mL
RT: 5.814 min Scan# 459
Delta R.T. 0.000 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

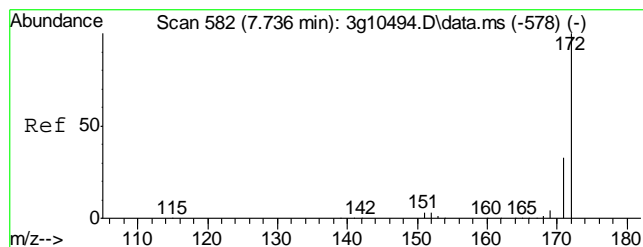
Tgt Ion	128	Resp	845
Ion Ratio	100		
Lower	0.0		
Upper	31.1#		
129	36.7		
127	9.7		
126	18.5		



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.507 min Scan# 598
Delta R.T. 0.000 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

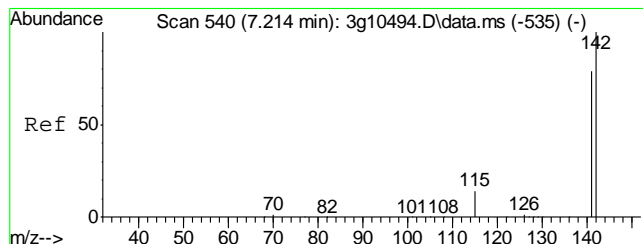
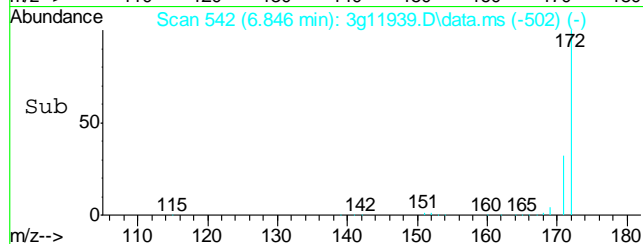
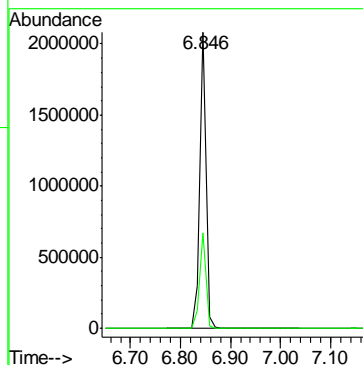
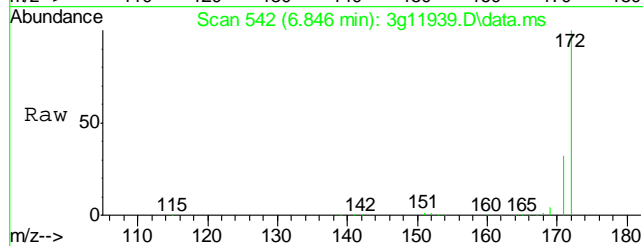
Tgt Ion	164	Resp	100472
Ion Ratio	100		
Lower	77.7		
Upper	117.7		
162	98.3		
160	47.3		





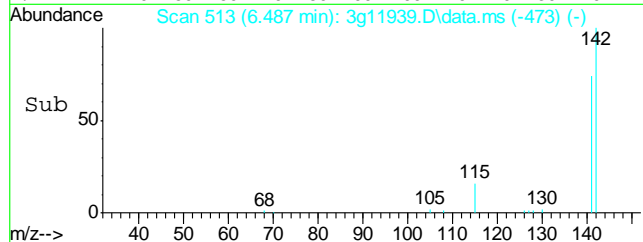
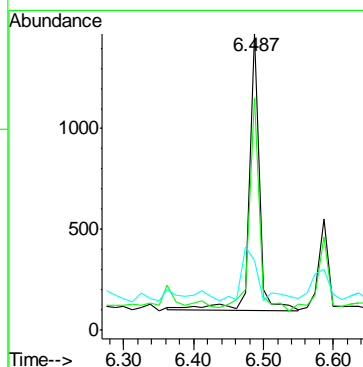
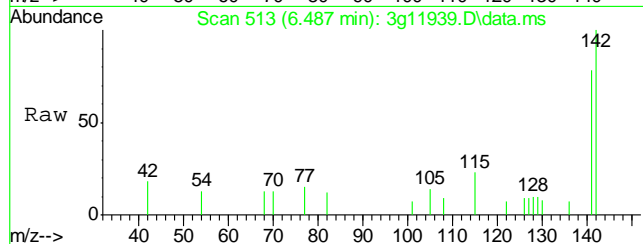
#7
2-Fluorobiphenyl
Concen: 42.3422 ug/mL
RT: 6.846 min Scan# 542
Delta R.T. 0.000 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

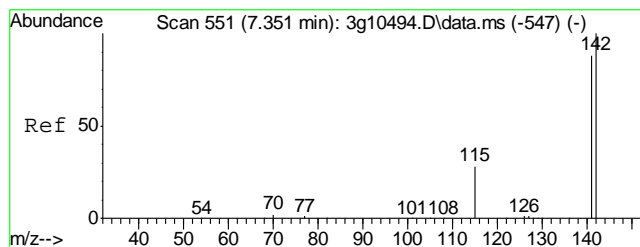
Tgt Ion:172 Resp: 1766284
Ion Ratio Lower Upper
172 100
171 33.2 12.9 52.9



#8
2-Methylnaphthalene
Concen: Below ug/mL
RT: 6.487 min Scan# 513
Delta R.T. 0.000 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

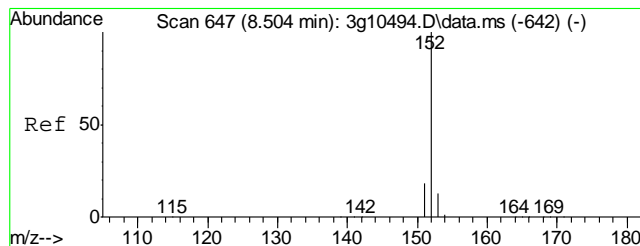
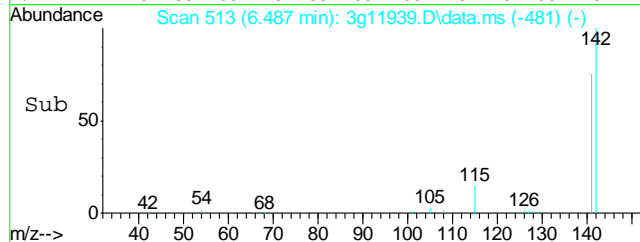
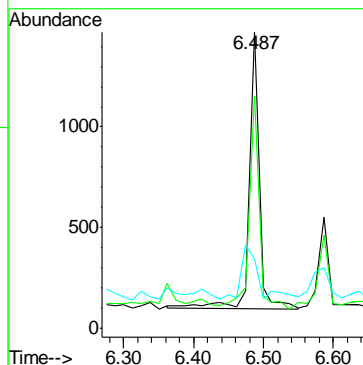
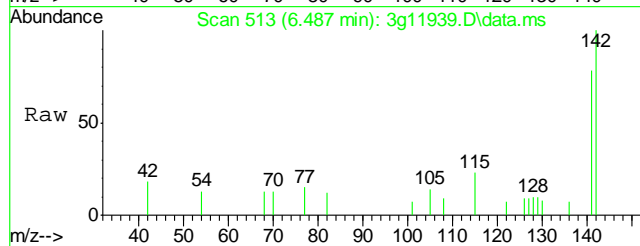
Tgt Ion:142 Resp: 1338
Ion Ratio Lower Upper
142 100
141 77.3 62.7 102.7
115 31.2 8.3 48.3





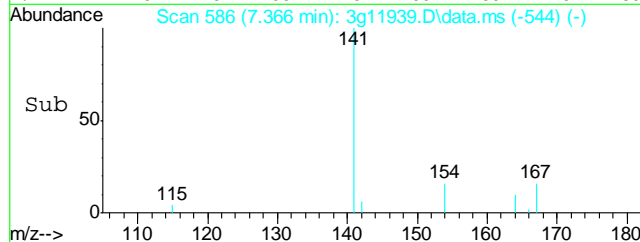
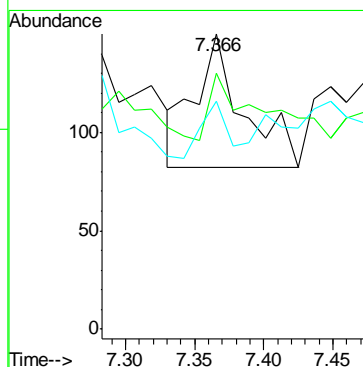
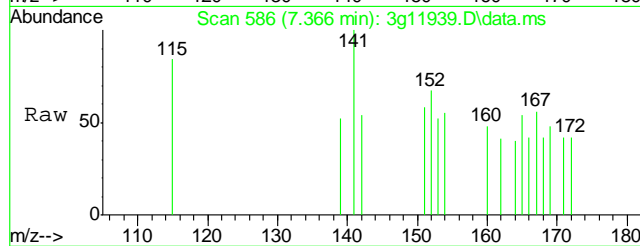
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.487 min Scan# 513
Delta R.T. -0.100 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

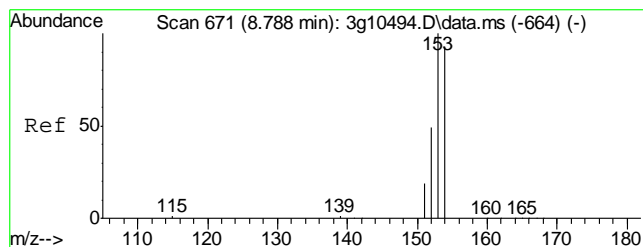
Tgt Ion:142	Resp:	1338
Ion Ratio	Lower	Upper
142	100	
141	77.3	65.6 105.6
115	31.2	14.0 54.0



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.366 min Scan# 586
Delta R.T. 0.000 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

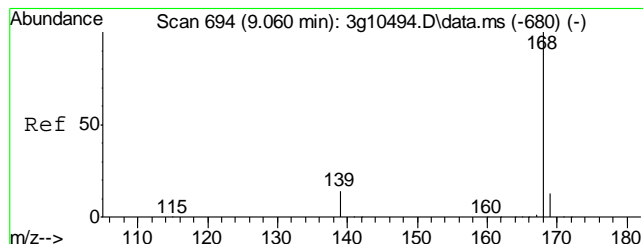
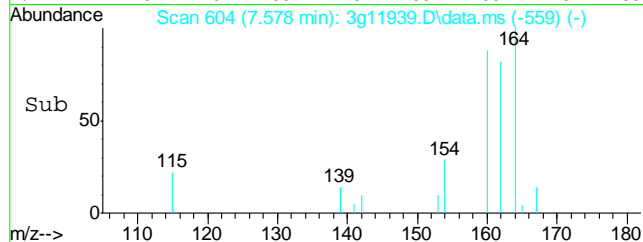
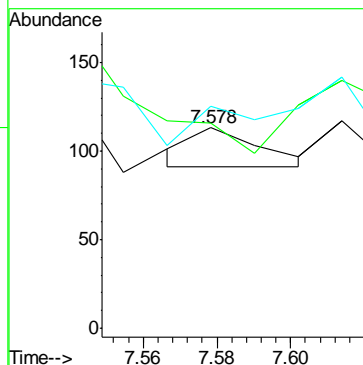
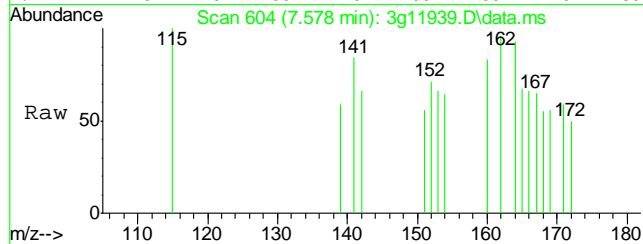
Tgt Ion:152	Resp:	164
Ion Ratio	Lower	Upper
152	100	
151	56.7	0.0 39.6#
153	25.0	0.0 33.0





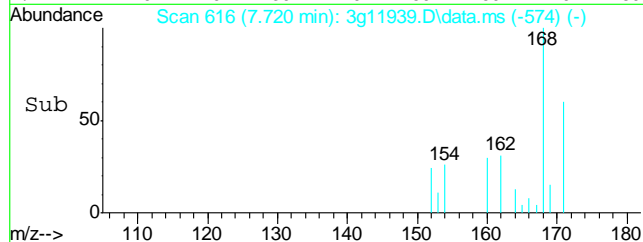
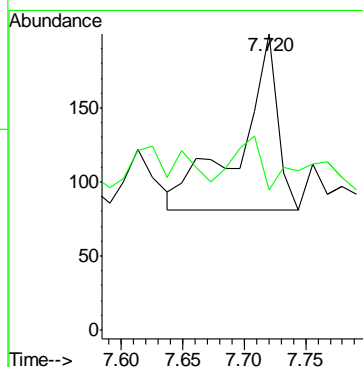
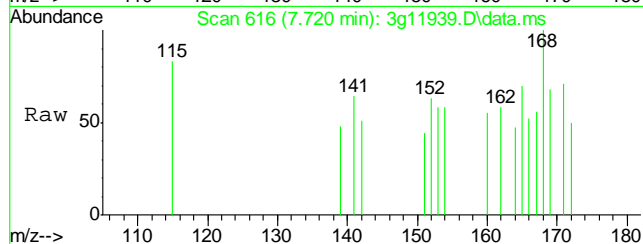
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.578 min Scan# 604
Delta R.T. 0.036 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

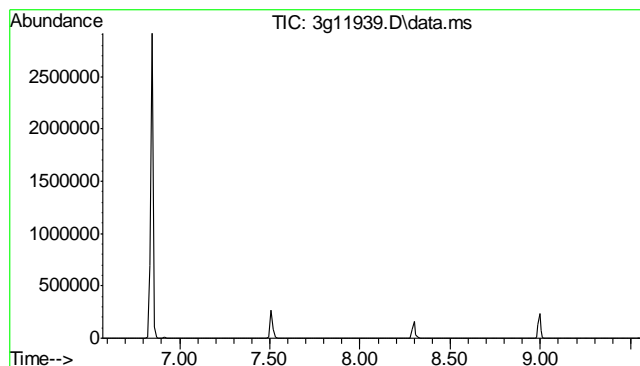
Tgt Ion:154 Resp: 28
Ion Ratio Lower Upper
154 100
153 360.7 83.1 123.1#
152 285.7 29.1 69.1#



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.720 min Scan# 616
Delta R.T. 0.000 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

Tgt Ion:168 Resp: 251
Ion Ratio Lower Upper
168 100
139 43.4 14.1 54.1

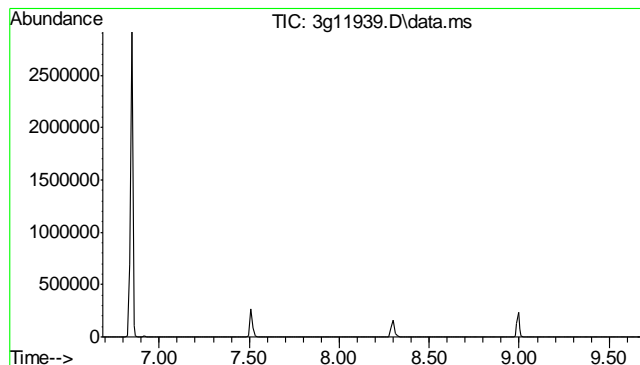
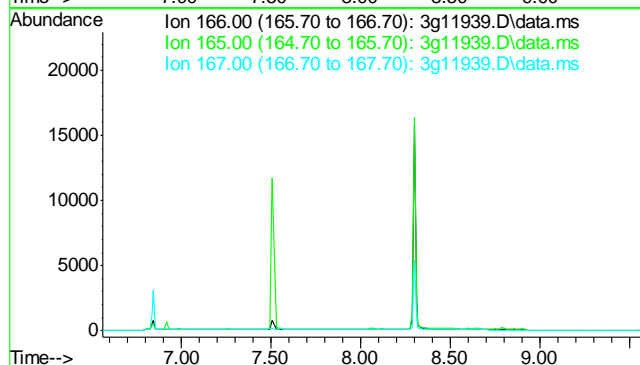




#13
Fluorene
Concen: N.D. ug/mL
Expected RT: 8.06 min

Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

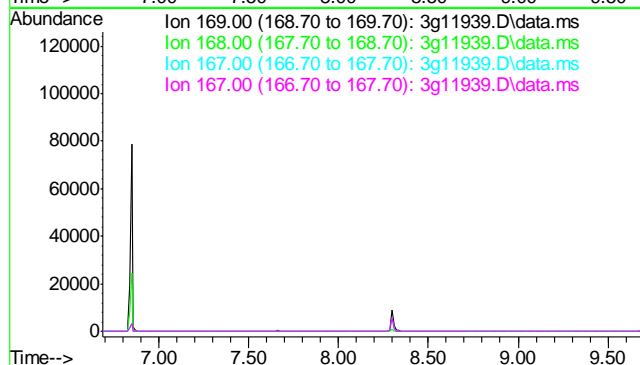
Tgt Ion:	166
Sig	Exp Ratio
166	100
165	92.9
167	13.2

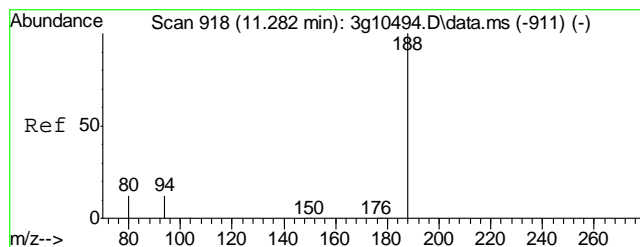


#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.18 min

Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

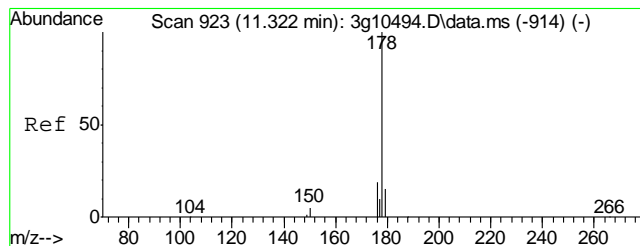
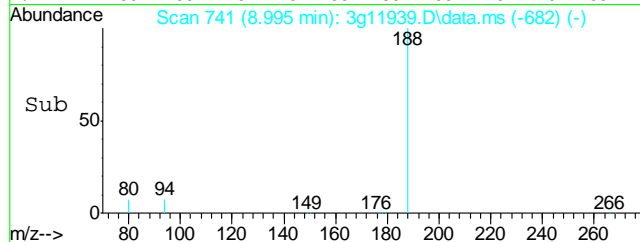
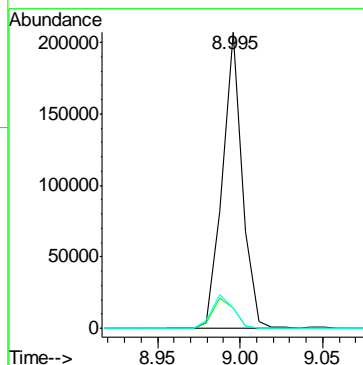
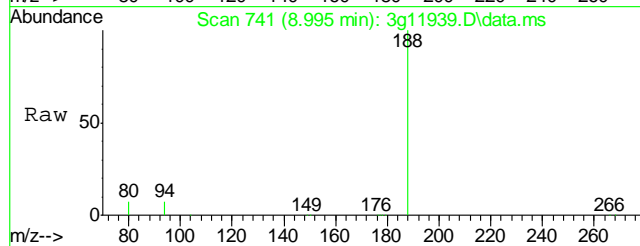
Tgt Ion:	169
Sig	Exp Ratio
169	100
168	62.0
167	34.1
167	34.1





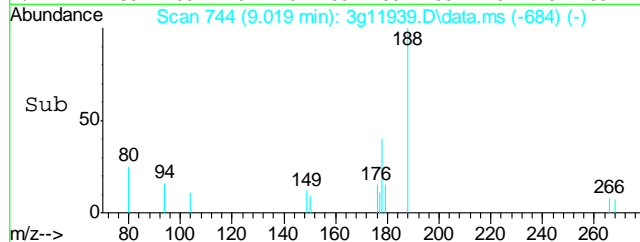
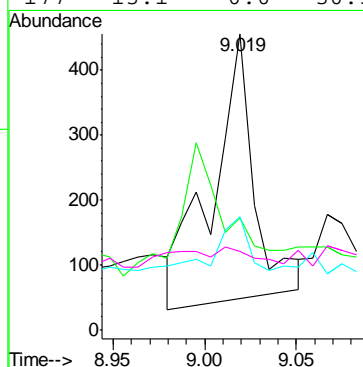
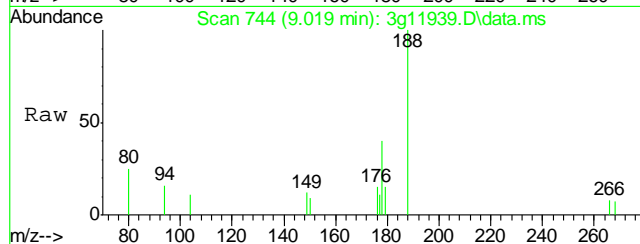
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.995 min Scan# 741
Delta R.T. 0.000 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

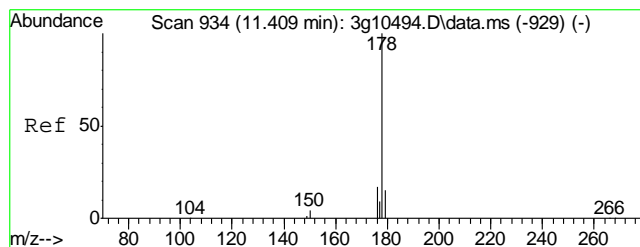
Tgt Ion	Ratio	Lower	Upper
188	100		
94	11.3	0.0	33.4
80	12.0	0.0	34.7



#16
Phenanthrene
Concen: Below ug/mL
RT: 9.019 min Scan# 744
Delta R.T. 0.000 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

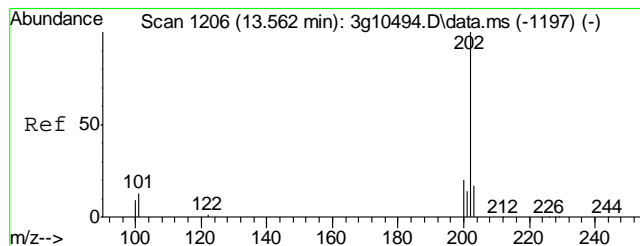
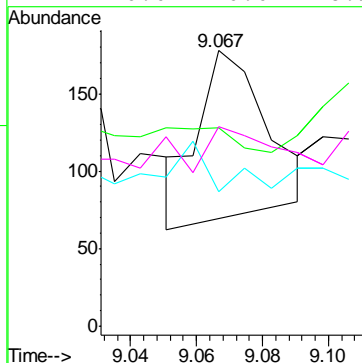
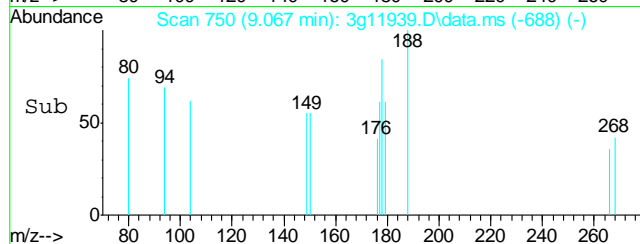
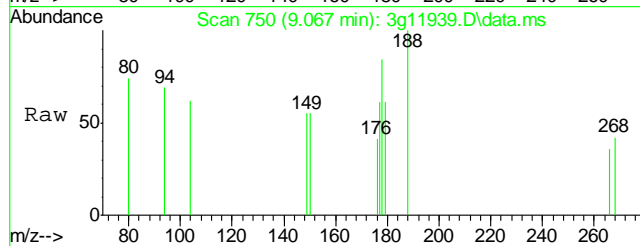
Tgt Ion	Ratio	Lower	Upper
178	100		
179	61.7	0.0	35.2#
176	14.7	0.0	38.9
177	13.1	0.0	30.3





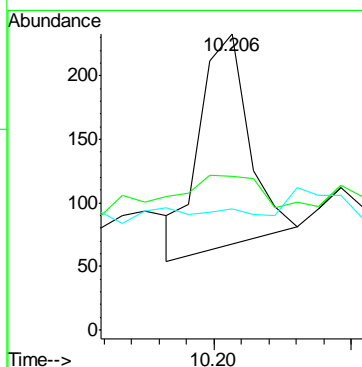
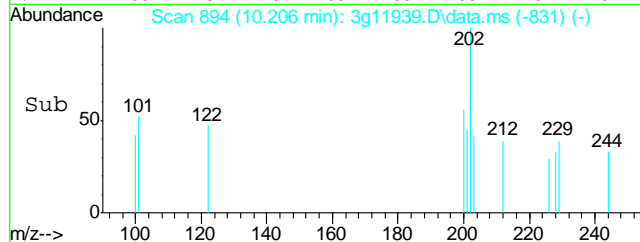
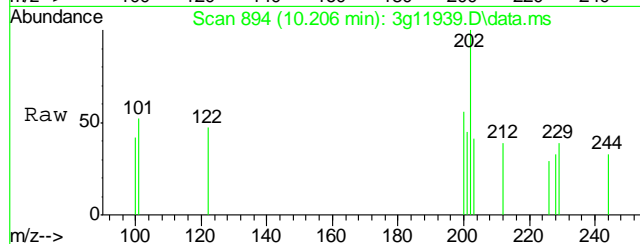
#17
 Anthracene
 Concen: Below ug/mL
 RT: 9.067 min Scan# 750
 Delta R.T. -0.008 min
 Lab File: 3g11939.D
 Acq: 6 Nov 12 4:32 pm

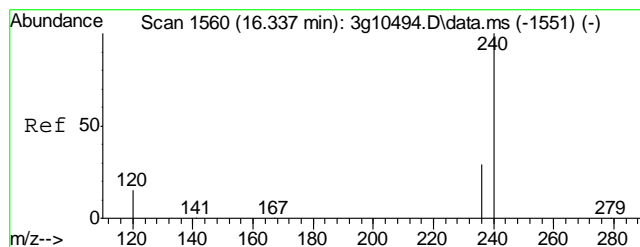
Tgt Ion: 178 Resp: 155
 Ion Ratio Lower Upper
 178 100
 179 0.0 0.0 35.1
 176 0.0 0.0 38.3
 177 0.0 0.0 28.9



#18
 Fluoranthene
 Concen: Below ug/mL
 RT: 10.206 min Scan# 894
 Delta R.T. 0.000 min
 Lab File: 3g11939.D
 Acq: 6 Nov 12 4:32 pm

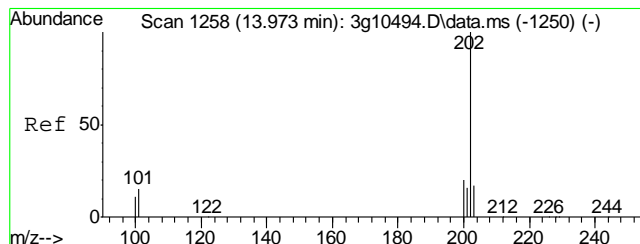
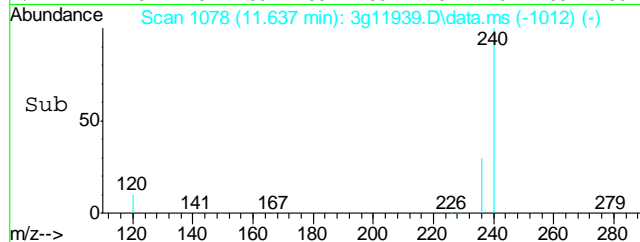
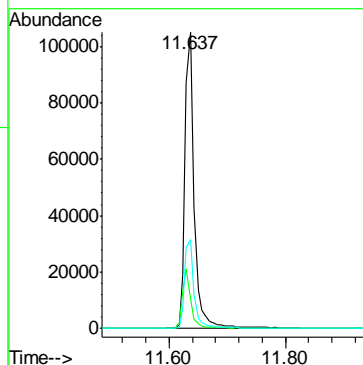
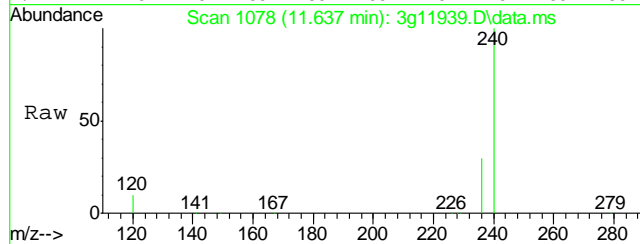
Tgt Ion: 202 Resp: 210
 Ion Ratio Lower Upper
 202 100
 101 0.0 0.0 33.9
 203 0.0 0.0 37.2





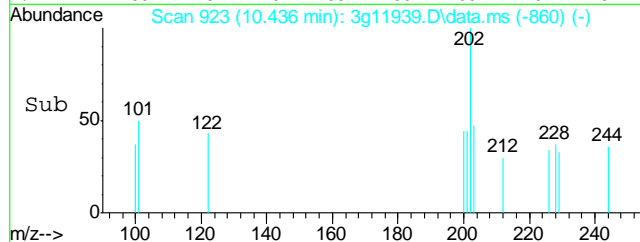
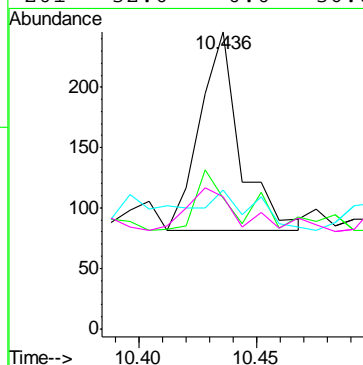
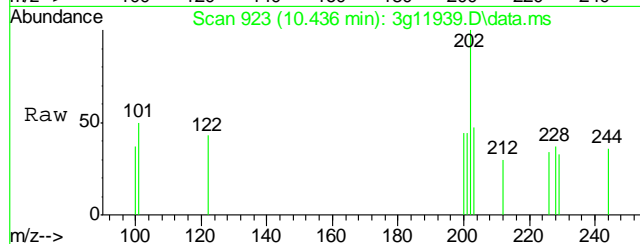
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.637 min Scan# 1078
Delta R.T. 0.000 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

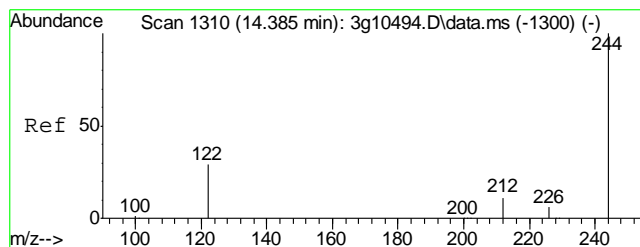
Tgt Ion:	240	Resp:	115613
Ion Ratio	Lower	Upper	
240	100		
120	18.7	1.4	41.4
236	30.7	9.7	49.7



#20
Pyrene
Concen: Below ug/mL
RT: 10.436 min Scan# 923
Delta R.T. 0.000 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

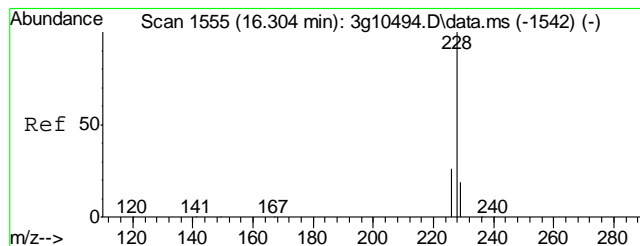
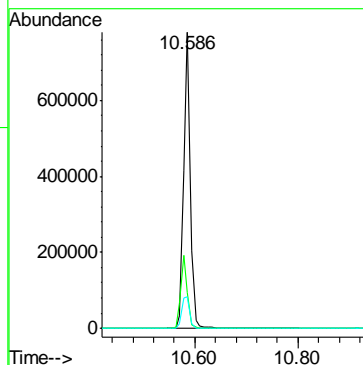
Tgt Ion:	202	Resp:	197
Ion Ratio	Lower	Upper	
202	100		
200	0.0	0.8	40.8#
203	18.8	0.0	37.9
201	32.0	0.0	36.8





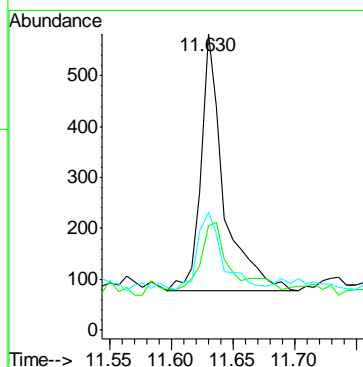
#21
Terphenyl-d14
Concen: 42.6556 ug/mL
RT: 10.586 min Scan# 942
Delta R.T. 0.000 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

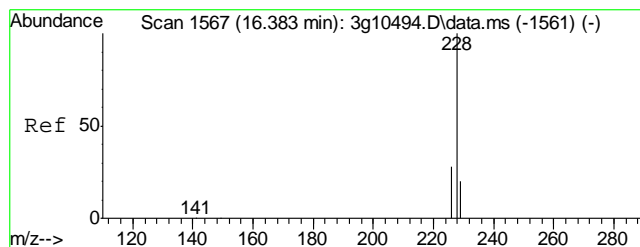
Tgt Ion	Ratio	Lower	Upper
244	100		
122	25.0	6.6	46.6
212	13.0	0.0	31.7



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.630 min Scan# 1077
Delta R.T. 0.007 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

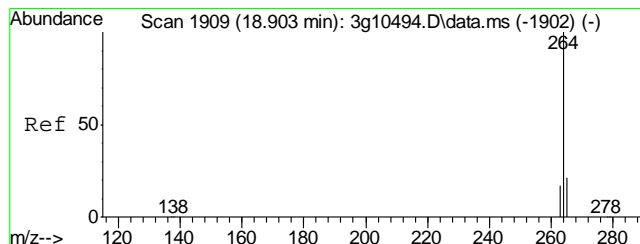
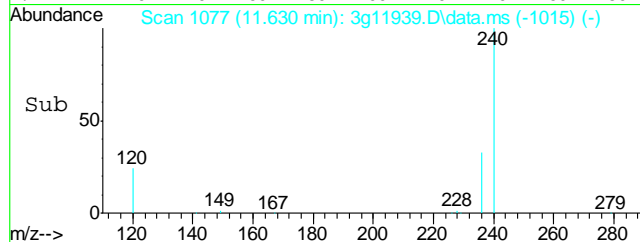
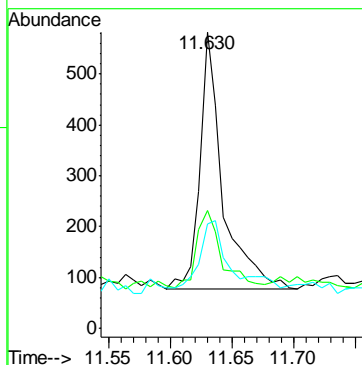
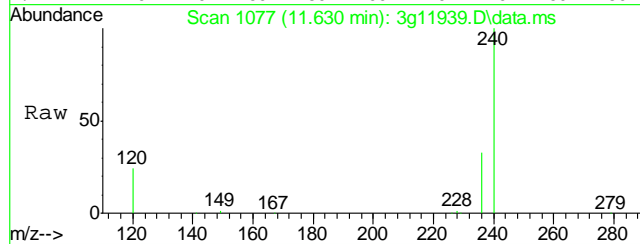
Tgt Ion	Ratio	Lower	Upper
228	100		
229	29.2	0.0	39.5
226	32.5	7.1	47.1





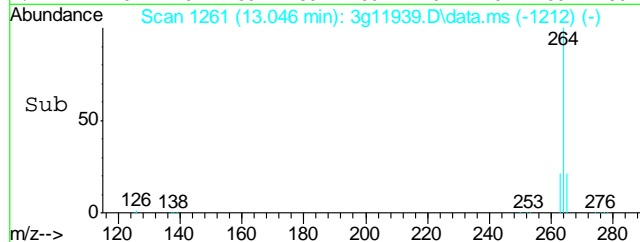
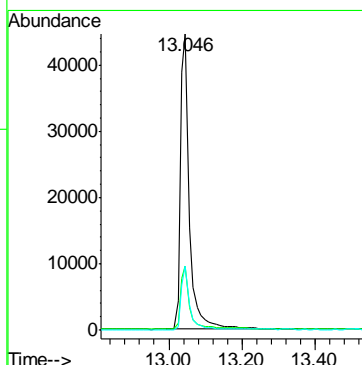
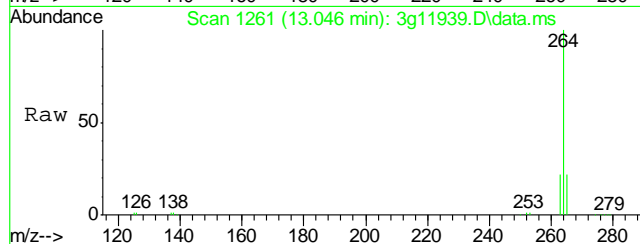
#23
Chrysene
Concen: Below ug/mL
RT: 11.630 min Scan# 1077
Delta R.T. -0.033 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

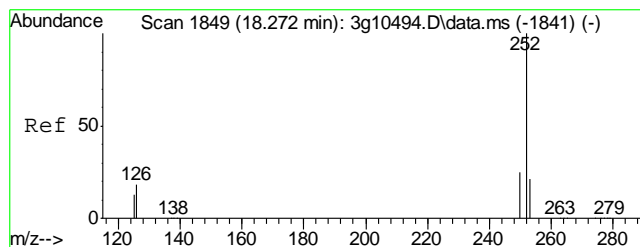
Tgt Ion:	228	Resp:	643
Ion Ratio	Lower	Upper	
228	100		
226	32.5	9.6	49.6
229	29.2	0.0	39.3



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 13.046 min Scan# 1261
Delta R.T. 0.011 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

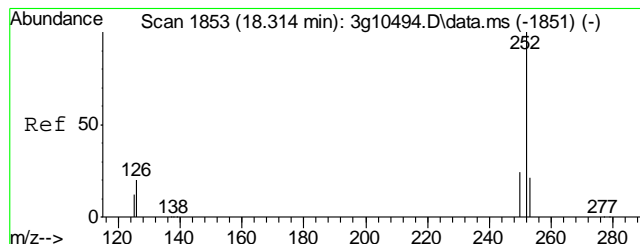
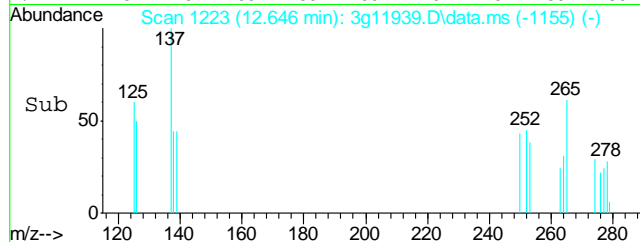
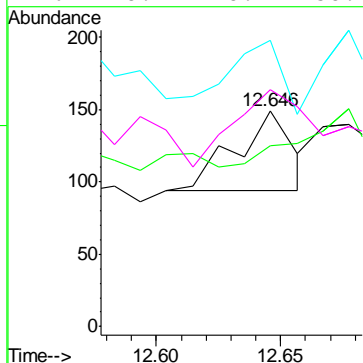
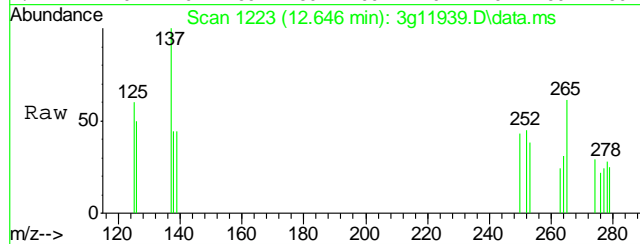
Tgt Ion:	264	Resp:	77921
Ion Ratio	Lower	Upper	
264	100		
265	20.4	1.2	41.2
263	20.3	0.0	39.6





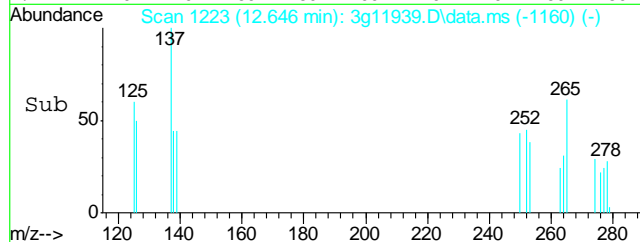
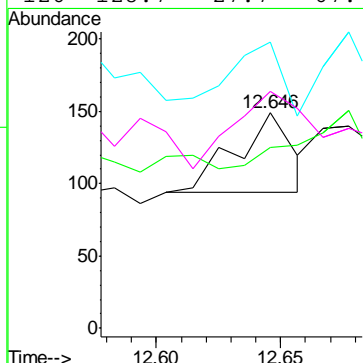
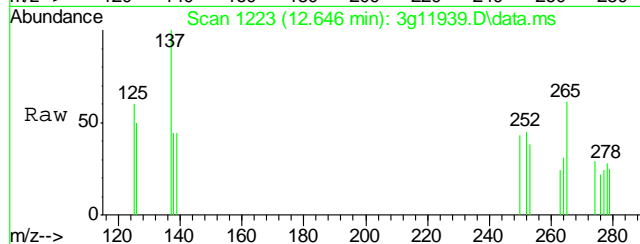
#25
Benzo(b)fluoranthene
Concen: Below ug/mL
RT: 12.646 min Scan# 1223
Delta R.T. 0.000 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

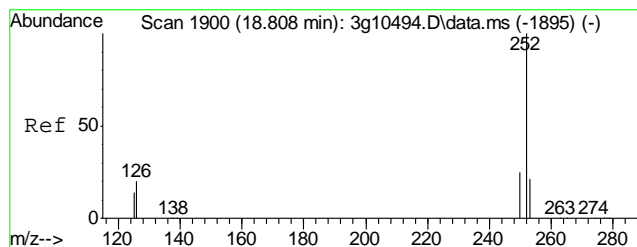
Tgt Ion	Ratio	Lower	Upper
252	100		
253	0.0	1.0	41.0#
125	0.0	6.5	46.5#
126	128.7	18.4	58.4#



#26
Benzo(k)fluoranthene
Concen: Below ug/mL
RT: 12.646 min Scan# 1223
Delta R.T. -0.031 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

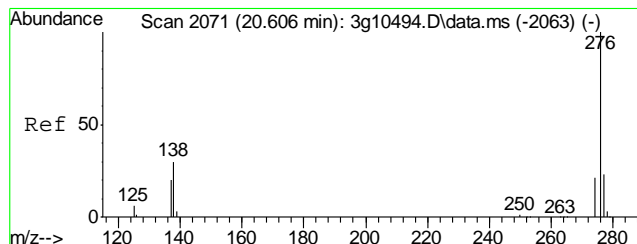
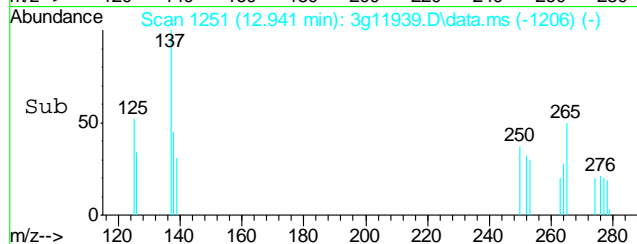
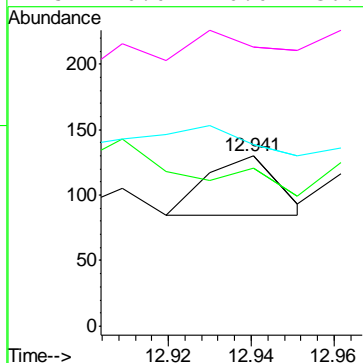
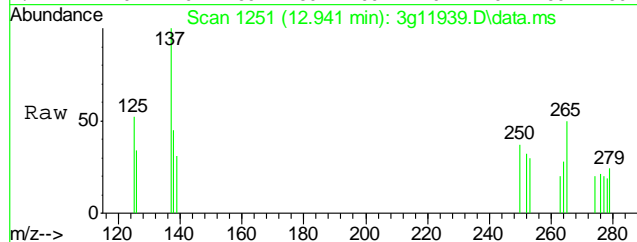
Tgt Ion	Ratio	Lower	Upper
252	100		
253	0.0	6.1	46.1#
125	0.0	12.9	52.9#
126	128.7	27.7	67.7#





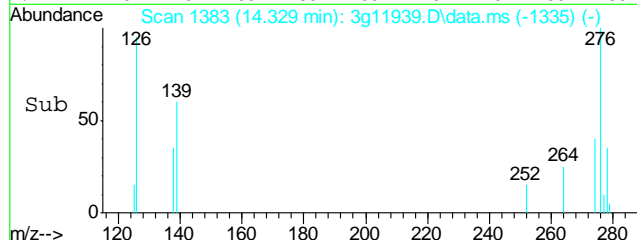
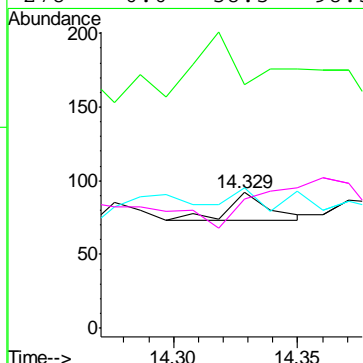
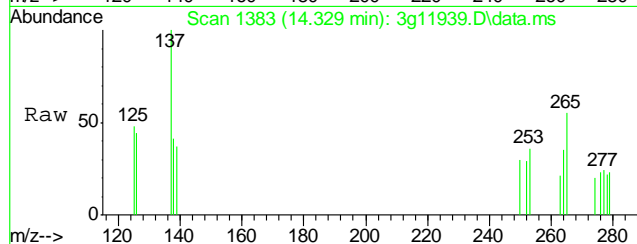
#27
Benzo(a)pyrene
Concen: Below ug/mL
RT: 12.941 min Scan# 1251
Delta R.T. -0.042 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

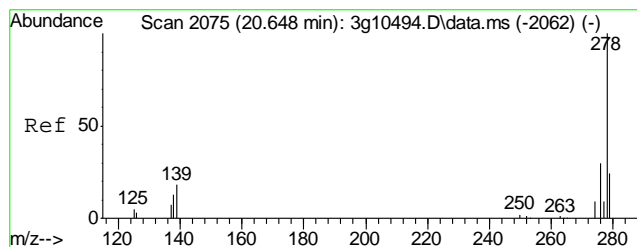
Tgt Ion	Ratio	Lower	Upper
252	100		
253	144.4	1.7	41.7#
126	0.0	1.5	41.5#
125	0.0	0.0	36.0



#28
Indeno(1,2,3-cd)pyrene
Concen: Below ug/mL
RT: 14.329 min Scan# 1383
Delta R.T. 0.000 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

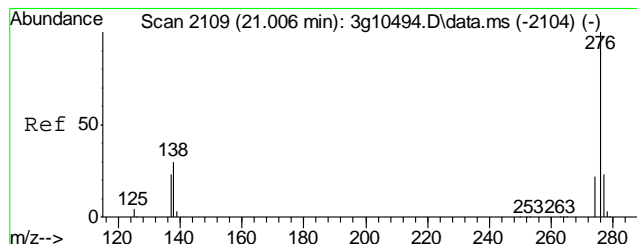
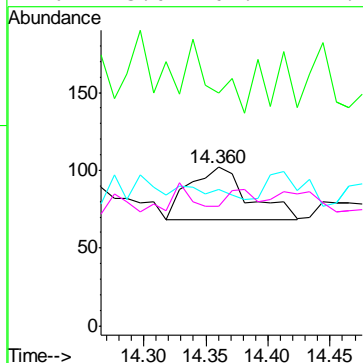
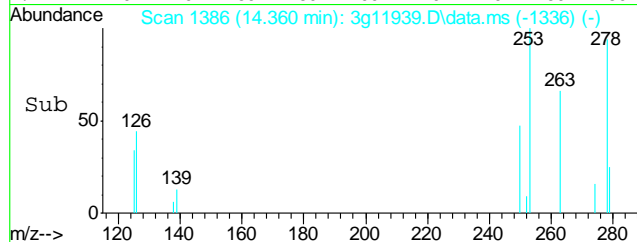
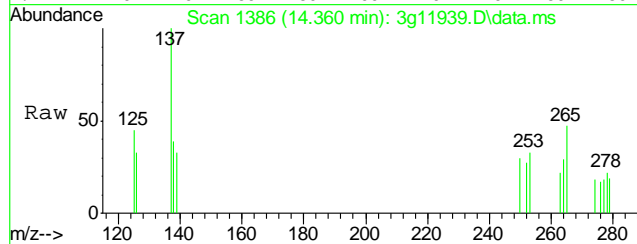
Tgt Ion	Ratio	Lower	Upper
276	100		
138	360.9	24.2	64.2#
277	43.5	5.0	45.0
278	0.0	58.5	98.5#





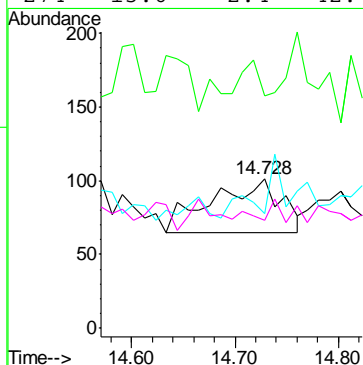
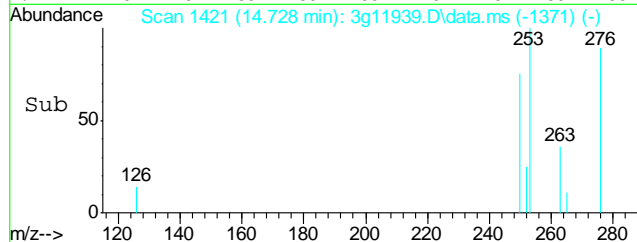
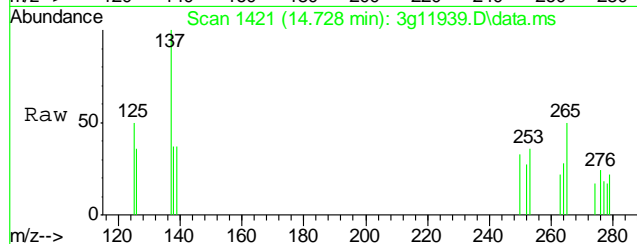
#29
Dibenzo(a,h)anthracene
Concen: Below ug/mL
RT: 14.360 min Scan# 1386
Delta R.T. 0.021 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

Tgt Ion: 278 Resp: 115
Ion Ratio Lower Upper
278 100
139 20.9 13.5 53.5
279 0.0 3.1 43.1#
276 13.0 107.4 147.4#



#30
Benzo(g,h,i)perylene
Concen: Below ug/mL
RT: 14.728 min Scan# 1421
Delta R.T. 0.021 min
Lab File: 3g11939.D
Acq: 6 Nov 12 4:32 pm

Tgt Ion: 276 Resp: 167
Ion Ratio Lower Upper
276 100
138 15.0 18.4 58.4#
277 41.3 3.6 43.6
274 15.6 2.4 42.4



GC Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: D40540
Account: XTOKRWR XTO Energy
Project: PCU T84-15G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1002-MB	GB18340.D	1	11/05/12	SK	n/a	n/a	GGB1002

The QC reported here applies to the following samples:

Method: SW846 8015B

D40540-1

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	90% 60-140%

10.1.1
10

Blank Spike Summary

Job Number: D40540
Account: XTOKRWR XTO Energy
Project: PCU T84-15G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1002-BS	GB18341.D	1	11/05/12	SK	n/a	n/a	GGB1002

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

D40540-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	118	107	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	100%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D40540
Account: XTOKRWR XTO Energy
Project: PCU T84-15G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D40533-1MS	GB18343.D	1	11/05/12	SK	n/a	n/a	GGB1002
D40533-1MSD	GB18344.D	1	11/05/12	SK	n/a	n/a	GGB1002
D40533-1	GB18342.D	1	11/05/12	SK	n/a	n/a	GGB1002

The QC reported here applies to the following samples:

Method: SW846 8015B

D40540-1

CAS No.	Compound	D40533-1 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND	134	149	112	147	110	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D40533-1	Limits
120-82-1	1,2,4-Trichlorobenzene	105%	105%	88%	60-140%

* = Outside of Control Limits.

GC Volatiles

Raw Data

11

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\110512\GB18351.D\FID1A.CH Vial: 14
 Signal #2 : Y:\1\DATA\110512\GB18351.D\FID2B.CH
 Acq On : 5 Nov 2012 9:27 pm Operator: StephK
 Sample : D40540-1, 50X Inst : GC/MS Ins
 Misc : GC3222,GGB1002,5.065,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Nov 06 07:54:16 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Mon Nov 05 14:32:34 2012
 Response via : Initial Calibration
 DataAcq Meth : TVB4.M

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

	Compound	R.T.	Response	Conc	Units	

System Monitoring Compounds						
2) S	1,2,4-Trichlorobenzene	14.39	2894304	92.369 %	m	
10) S	1,2,4-Trichlorobenzene (P)	14.39	15455482	95.095 %		
Target Compounds						
1) H	TVH-Gasoline	7.23	4909307	<MDL	mg/L	
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L	d
5) T	Benzene	0.00	0	N.D.	ug/L	d
6) T	Toluene	7.69	207742	0.524	ug/L	
7) T	Ethylbenzene	0.00	0	N.D.	ug/L	d
8) T	m,p-Xylene	0.00	0	N.D.	ug/L	d
9) T	o-Xylene	0.00	0	N.D.	ug/L	d
11) T	Naphthalene	14.57	210153	1.065	ug/L	

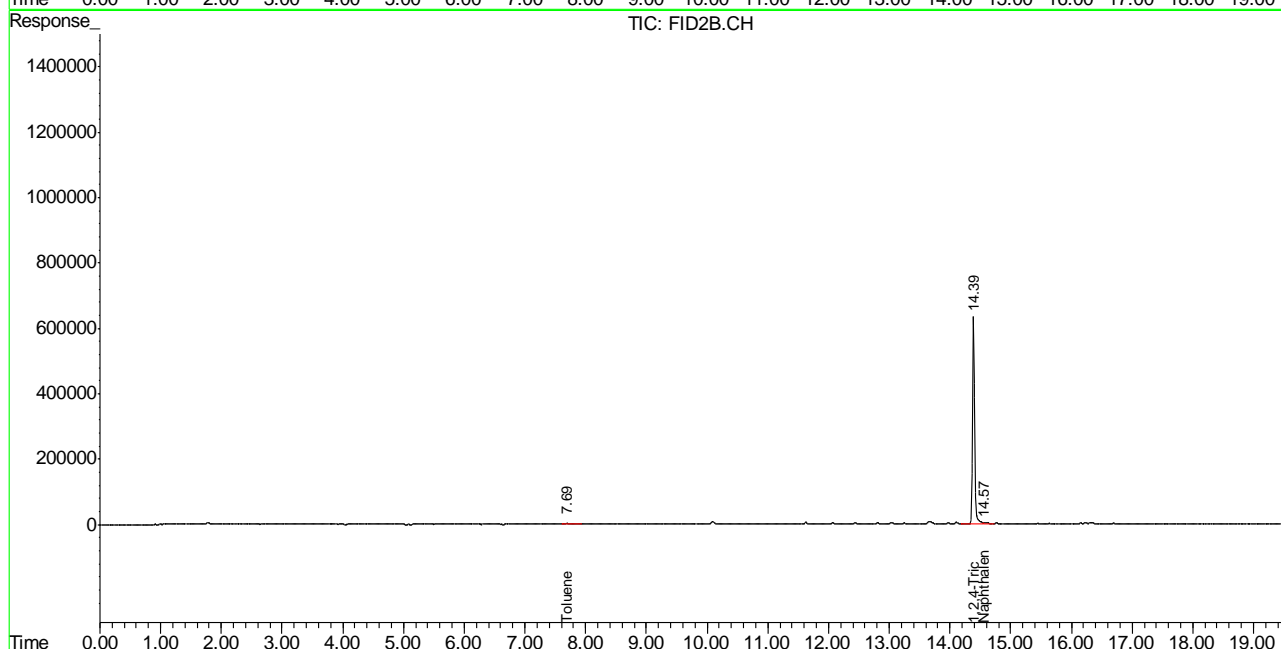
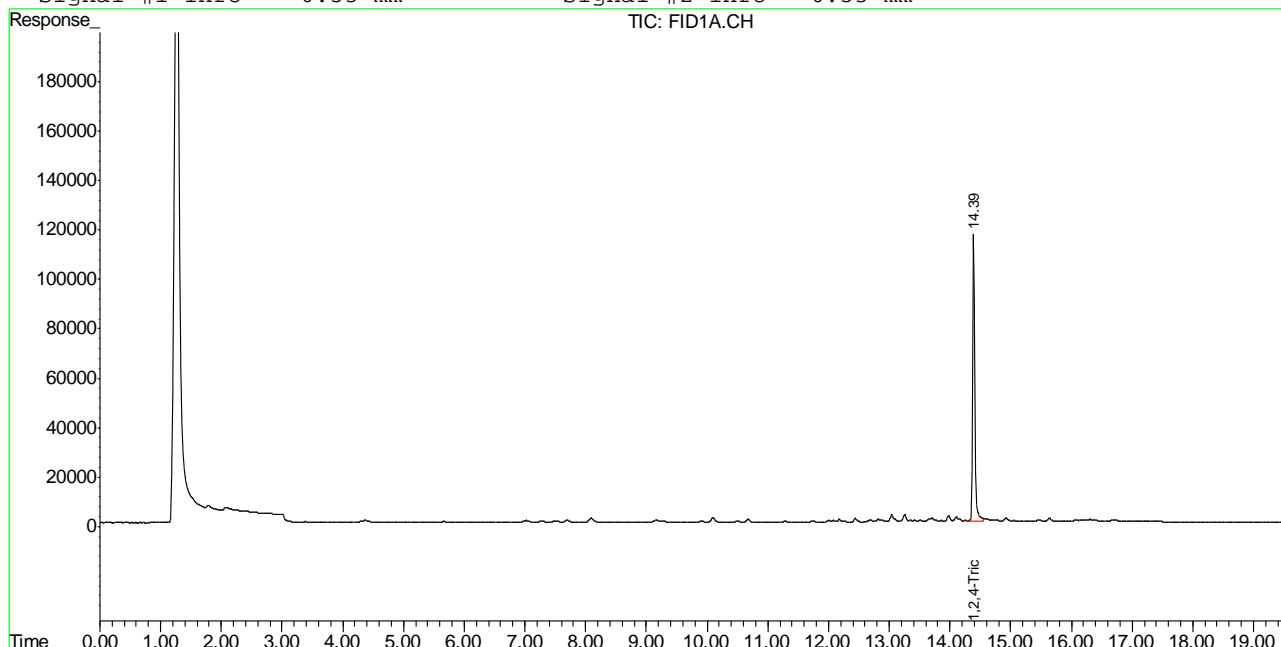
11.1.1
 11

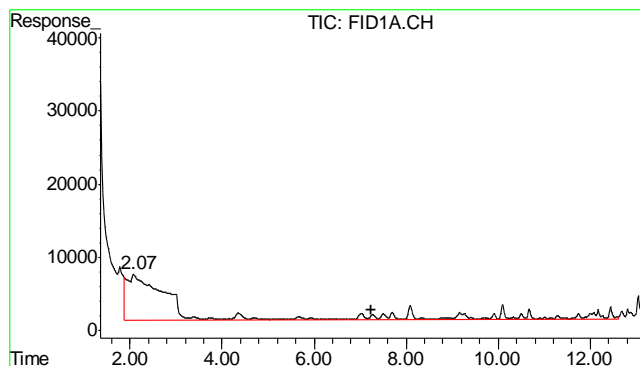
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\110512\GB18351.D\FID1A.CH Vial: 14
 Signal #2 : Y:\1\DATA\110512\GB18351.D\FID2B.CH
 Acq On : 5 Nov 2012 9:27 pm Operator: StephK
 Sample : D40540-1, 50X Inst : GC/MS Ins
 Misc : GC3222,GGB1002,5.065,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Nov 6 8:07 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Mon Nov 05 14:32:34 2012
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

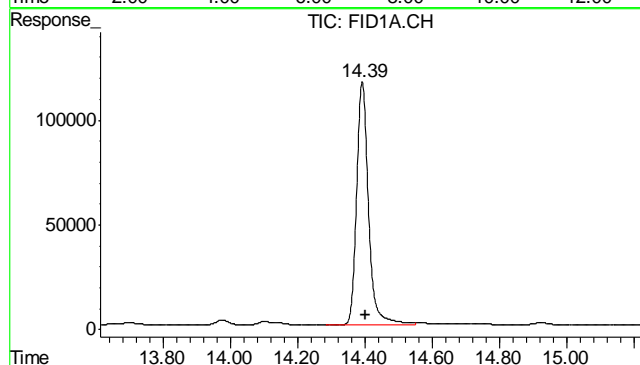
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





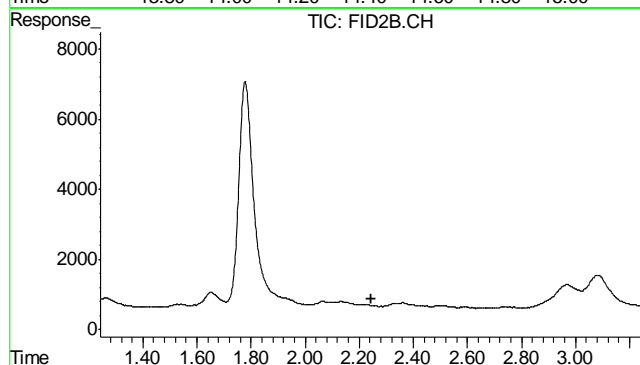
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 4909307
Conc: N.D.



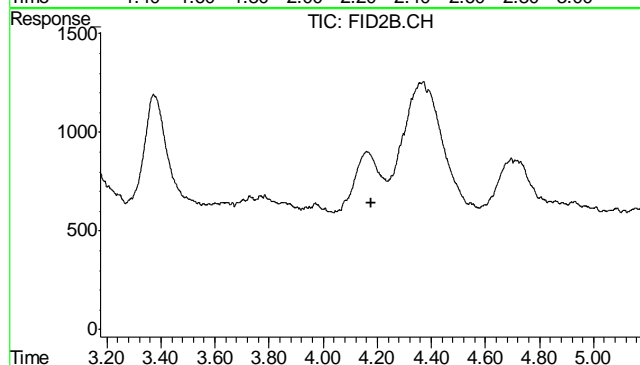
#2 1,2,4-Trichlorobenzene

R.T.: 14.392 min
Delta R.T.: -0.010 min
Response: 2894304
Conc: 92.37 % m



#4 Methyl-t-butyl-ether

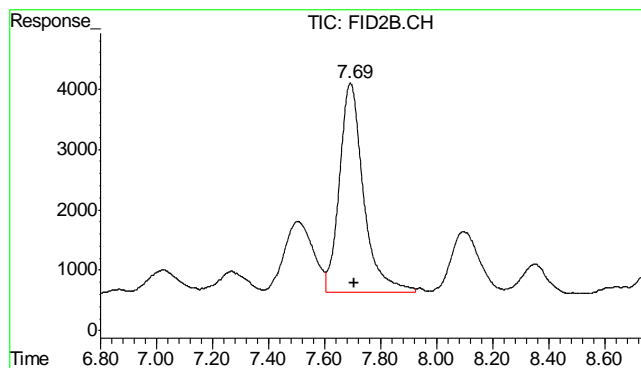
R.T.: 0.000 min
Exp R.T.: 2.243 min
Response: 0
Conc: N.D.



#5 Benzene

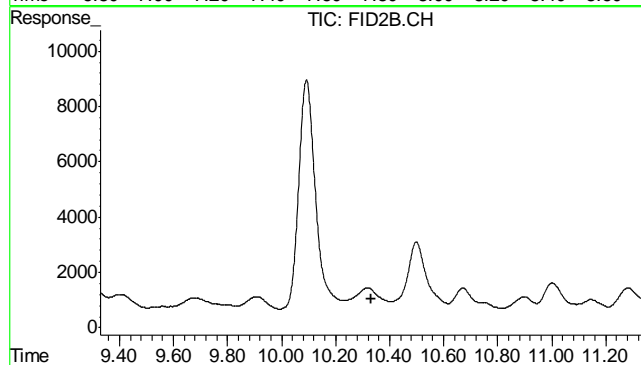
R.T.: 0.000 min
Exp R.T.: 4.176 min
Response: 0
Conc: N.D.

11.11
11



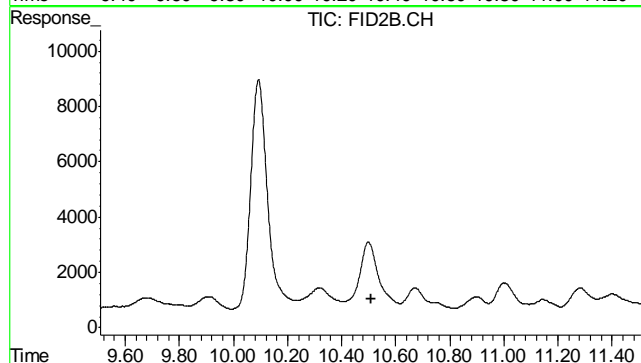
#6 Toluene

R.T.: 7.692 min
Delta R.T.: -0.015 min
Response: 207742
Conc: 0.52 ug/L



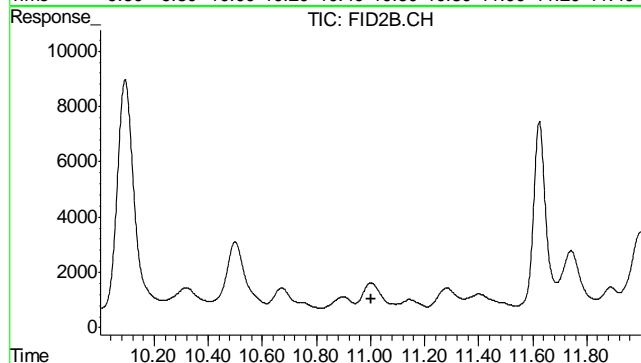
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T.: 10.330 min
Response: 0
Conc: N.D.



#8 m,p-Xylene

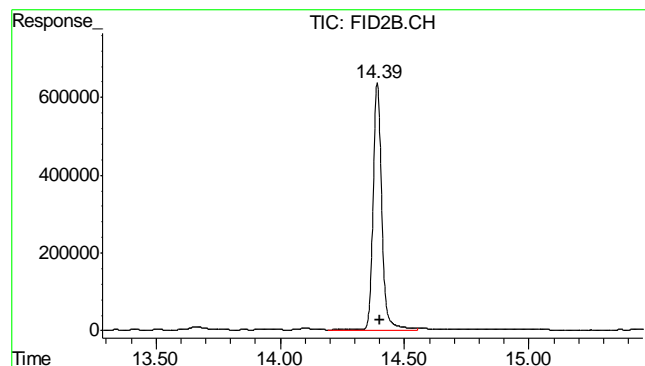
R.T.: 0.000 min
Exp R.T.: 10.508 min
Response: 0
Conc: N.D.



#9 o-Xylene

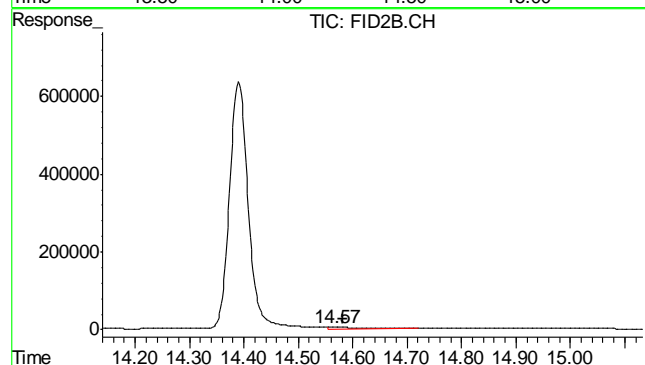
R.T.: 0.000 min
Exp R.T.: 11.001 min
Response: 0
Conc: N.D.

11.11



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

R.T.: 14.390 min
Delta R.T.: -0.009 min
Response: 15455482
Conc: 95.09 %



#11 Naphthalene

R.T.: 14.567 min
Delta R.T.: -0.015 min
Response: 210153
Conc: 1.07 ug/L

11.1.1

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\110512\GB18340.D\FID1A.CH Vial: 3
 Signal #2 : Y:\1\DATA\110512\GB18340.D\FID2B.CH
 Acq On : 5 Nov 2012 2:57 pm Operator: StephK
 Sample : MB Inst : GC/MS Ins
 Misc : GC3222,GGB1002,5.000,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Nov 05 14:32:56 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Mon Nov 05 14:32:34 2012
 Response via : Initial Calibration
 DataAcq Meth : TVB4.M

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

	Compound	R.T.	Response	Conc	Units

System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.40	2832293	90.390	%
10) S	1,2,4-Trichlorobenzene (P)	14.40	15363906	94.531	%
Target Compounds					
1) H	TVH-Gasoline	7.23	4731499	<MDL	mg/L
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T	Benzene	0.00	0	N.D.	ug/L d
6) T	Toluene	7.70	248834	0.628	ug/L
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	0.00	0	N.D.	ug/L d
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.58	179731	0.911	ug/L

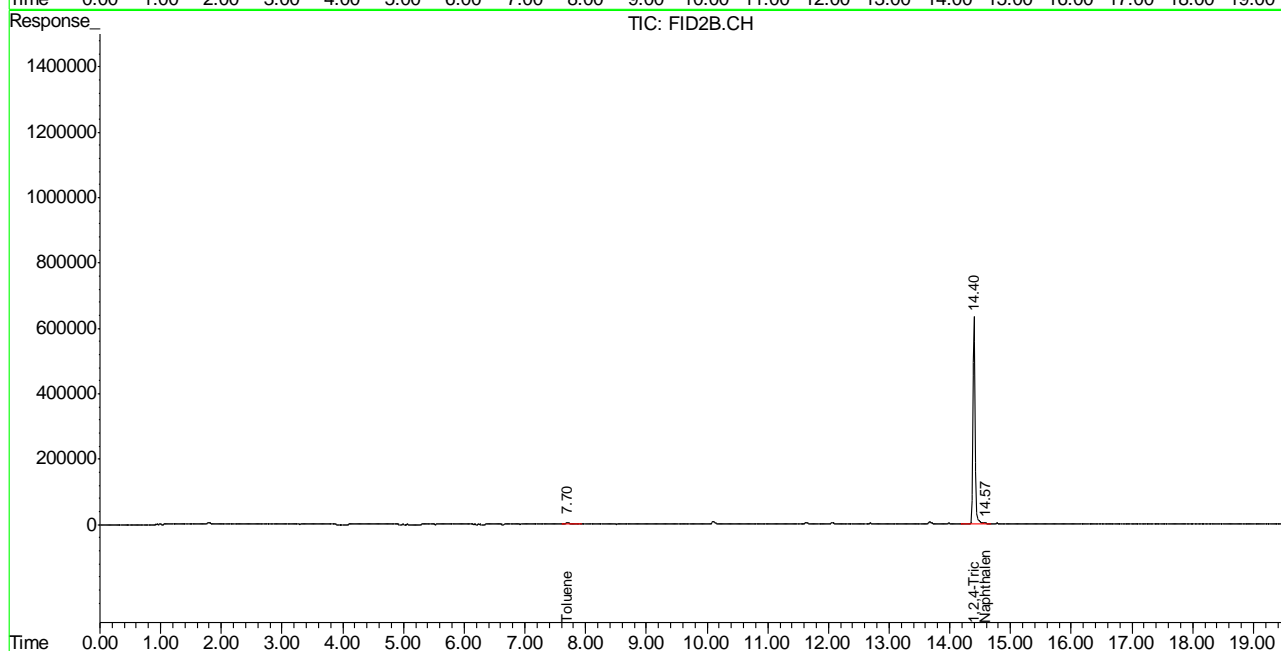
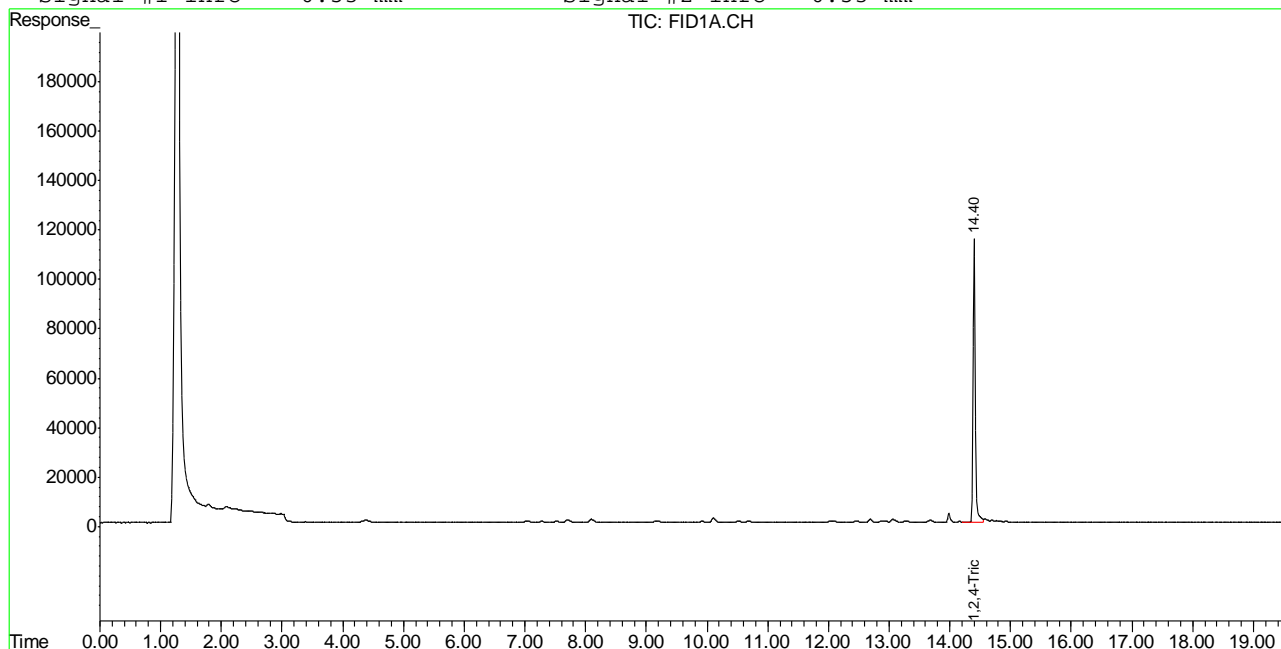
(f)=RT Delta > 1/2 Window (m)=manual int.
 GB18340.D TB868GB868SOIL.M Tue Nov 06 08:00:28 2012 GC

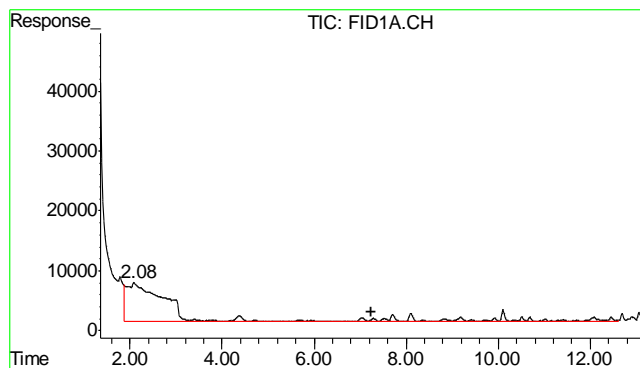
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\110512\GB18340.D\FID1A.CH Vial: 3
Signal #2 : Y:\1\DATA\110512\GB18340.D\FID2B.CH
Acq On : 5 Nov 2012 2:57 pm Operator: StephK
Sample : MB Inst : GC/MS Ins
Misc : GC3222,GGB1002,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Nov 5 14:42 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Mon Nov 05 14:32:34 2012
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

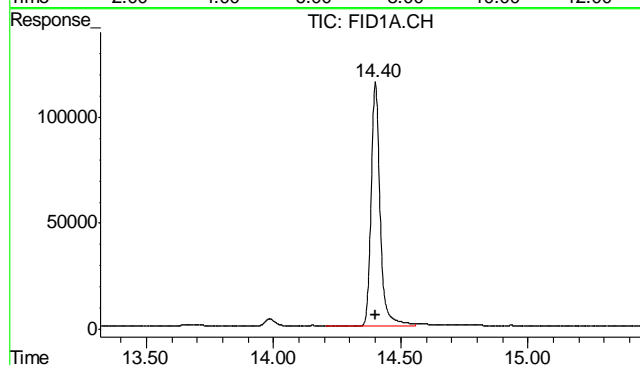
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





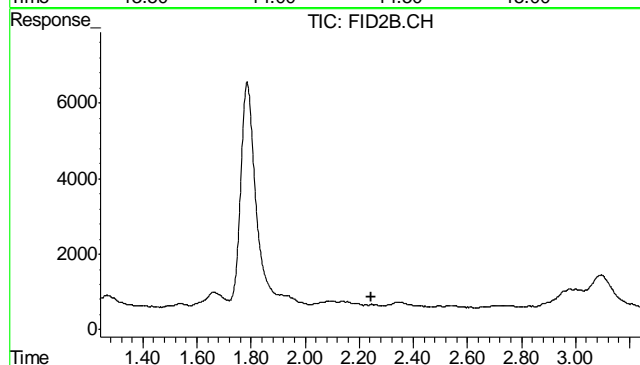
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 4731499
Conc: N.D.



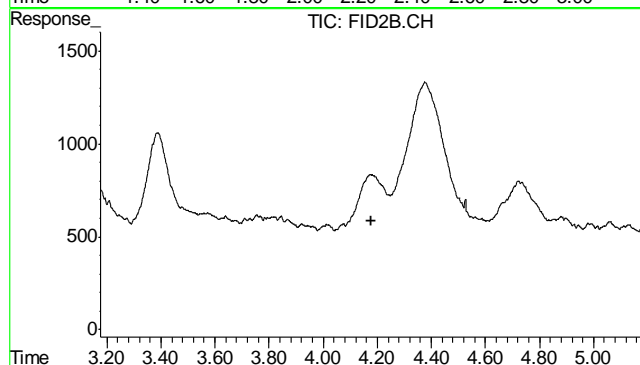
#2 1,2,4-Trichlorobenzene

R.T.: 14.400 min
Delta R.T.: -0.001 min
Response: 2832293
Conc: 90.39 %



#4 Methyl-t-butyl-ether

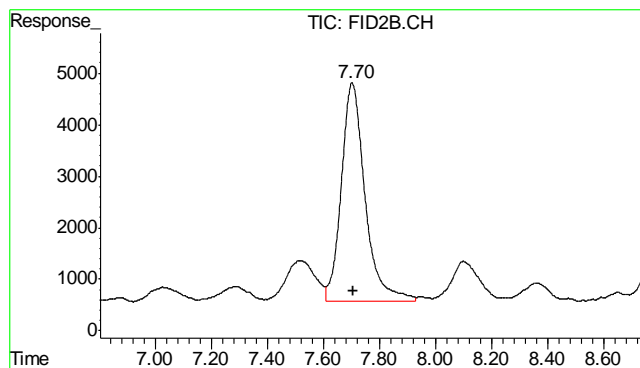
R.T.: 0.000 min
Exp R.T.: 2.243 min
Response: 0
Conc: N.D.



#5 Benzene

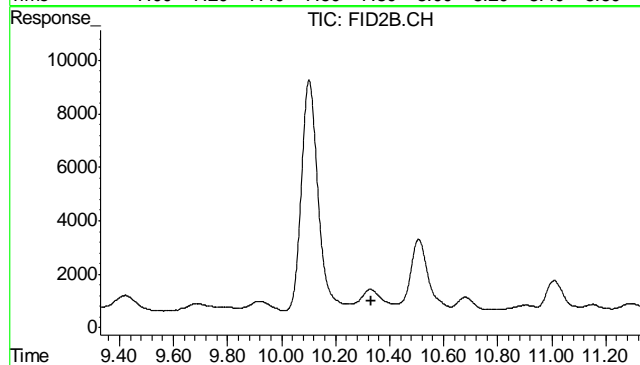
R.T.: 0.000 min
Exp R.T.: 4.176 min
Response: 0
Conc: N.D.

11.21
11



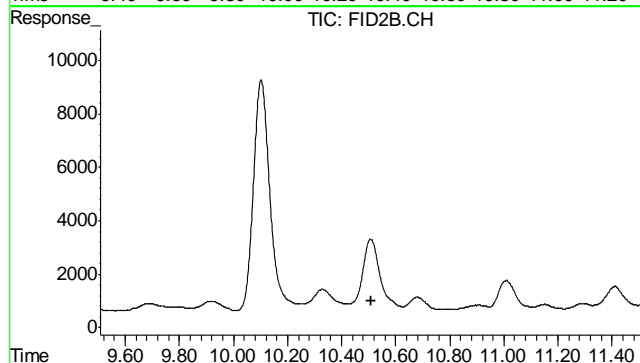
#6 Toluene

R.T.: 7.703 min
Delta R.T.: -0.004 min
Response: 248834
Conc: 0.63 ug/L



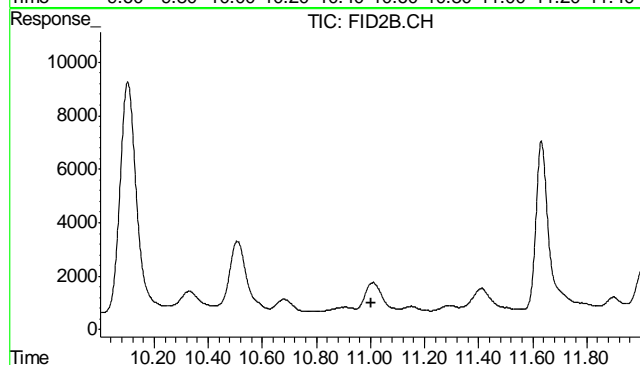
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T. : 10.330 min
Response: 0
Conc: N.D.



#8 m,p-Xylene

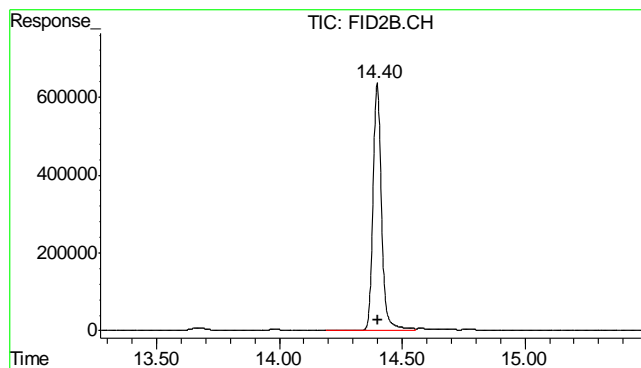
R.T.: 0.000 min
Exp R.T. : 10.508 min
Response: 0
Conc: N.D.



#9 o-Xylene

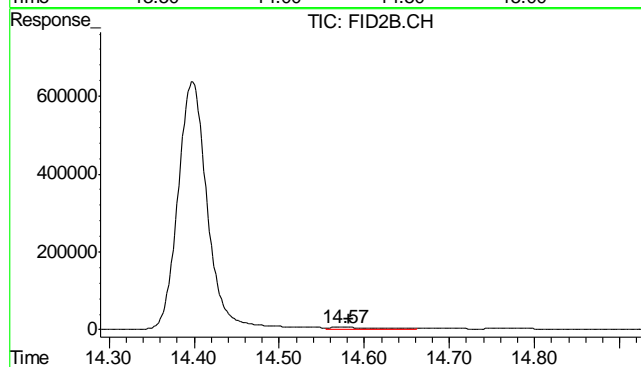
R.T.: 0.000 min
Exp R.T. : 11.001 min
Response: 0
Conc: N.D.

11.21
11



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

R.T.: 14.398 min
Delta R.T.: -0.001 min
Response: 15363906
Conc: 94.53 %



#11 Naphthalene

R.T.: 14.576 min
Delta R.T.: -0.006 min
Response: 179731
Conc: 0.91 ug/L

11.2.1
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: D40540
Account: XTOKRWR XTO Energy
Project: PCU T84-15G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6920-MB	FD19224.D	1	11/07/12	AV	11/06/12	OP6920	GFD970

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

D40540-1

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

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	110% 35-130%

Blank Spike Summary

Page 1 of 1

Job Number: D40540
Account: XTOKRWR XTO Energy
Project: PCU T84-15G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6920-BS	FD19226.D	1	11/07/12	AV	11/06/12	OP6920	GFD970

The QC reported here applies to the following samples:

Method: SW846-8015B

D40540-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	744	112	48-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	128%	35-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D40540
Account: XTOKRWR XTO Energy
Project: PCU T84-15G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6920-MS	FD19230.D	1	11/07/12	AV	11/06/12	OP6920	GFD970
OP6920-MSD	FD19232.D	1	11/07/12	AV	11/06/12	OP6920	GFD970
D40482-1	FD19228.D	1	11/07/12	AV	11/06/12	OP6920	GFD970

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

D40540-1

CAS No.	Compound	D40482-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	95.7		755	740	85	867	102	16	20-168/30

CAS No.	Surrogate Recoveries	MS	MSD	D40482-1	Limits
84-15-1	o-Terphenyl	111%	128%	123%	35-130%

* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\NOV\FD110912.SEC\FD19330.D Vial: 53
Acq On : 09 Nov 2012 11:16 am Operator: ashleyv
Sample : D40540-1 Inst : FID5
Misc : OP6920,GFD974,30.00,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 09 11:42:07 2012 Quant Results File: DRO-GFD939R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD939R.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Thu Nov 01 15:20:48 2012
Response via : Initial Calibration
DataAcq Meth : DRODUAL.M

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

Compound	R.T.	Response	Conc Units

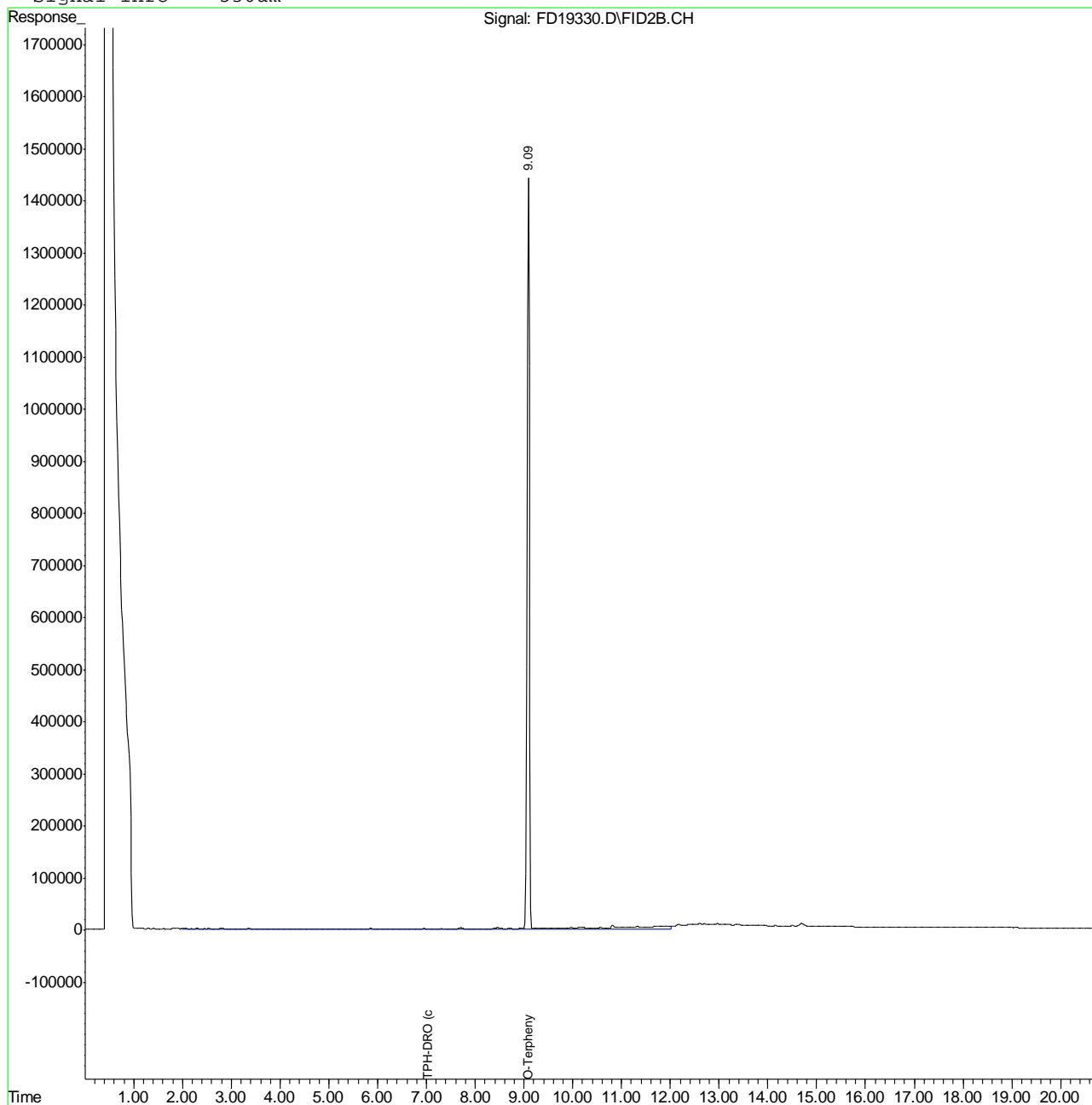
System Monitoring Compounds			
1) S O-Terphenyl	9.09	47426221	1168.979 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	7.04	6691744	183.774 mg/L

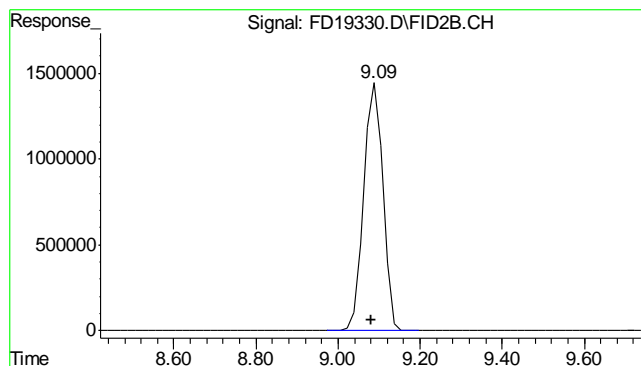
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\NOV\FD110912.SEC\FD19330.D Vial: 53
Acq On : 09 Nov 2012 11:16 am Operator: ashleyv
Sample : D40540-1 Inst : FID5
Misc : OP6920,GFD974,30.00,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 9 11:42 2012 Quant Results File: DRO-GFD939R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD939R.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Thu Nov 01 15:20:48 2012
Response via : Multiple Level Calibration
DataAcq Meth : DRODUAL.M

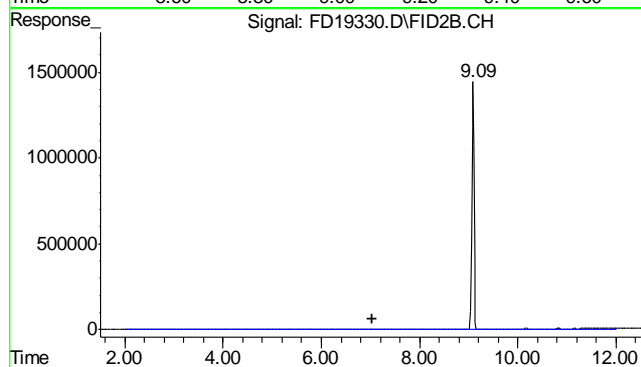
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.094 min
 Delta R.T.: 0.014 min
 Response: 47426221
 Conc: 1168.98 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 7.035 min
 Delta R.T.: 0.000 min
 Response: 6691744
 Conc: 183.77 mg/L m

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\NOV\FD110712.SEC\FD19224.D Vial: 55
Acq On : 07 Nov 2012 12:25 pm Operator: ashleyv
Sample : OP6920-MB Inst : FID5
Misc : OP6920,GFD970,30.00,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 07 15:10:33 2012 Quant Results File: DRO-GFD939R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD939R.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Wed Nov 07 14:47:21 2012
Response via : Initial Calibration
DataAcq Meth : DRODUAL.M

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

Compound	R.T.	Response	Conc Units

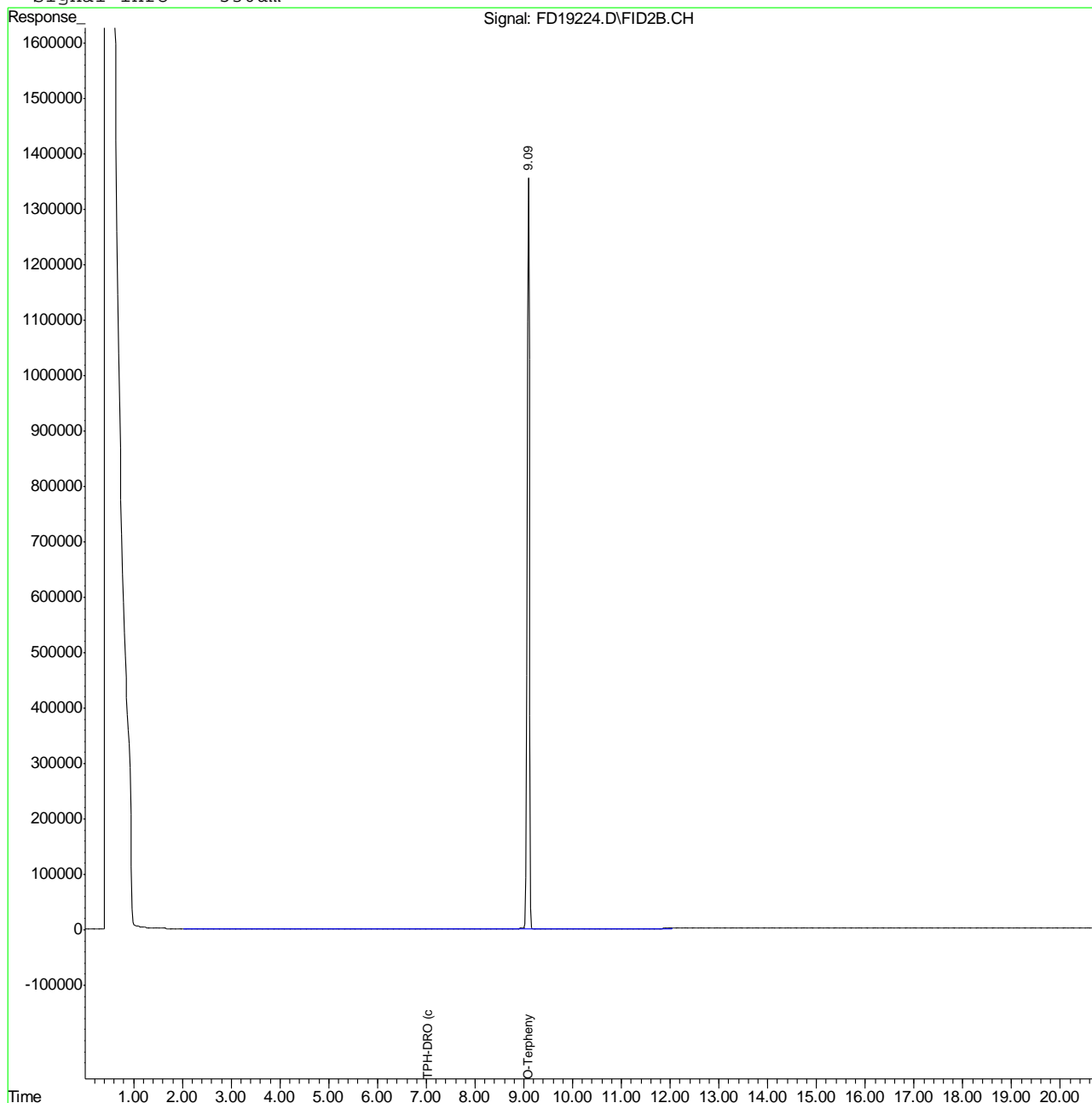
System Monitoring Compounds			
1) S O-Terphenyl	9.10	44549482	1098.072 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	7.04	818320	22.473 mg/L

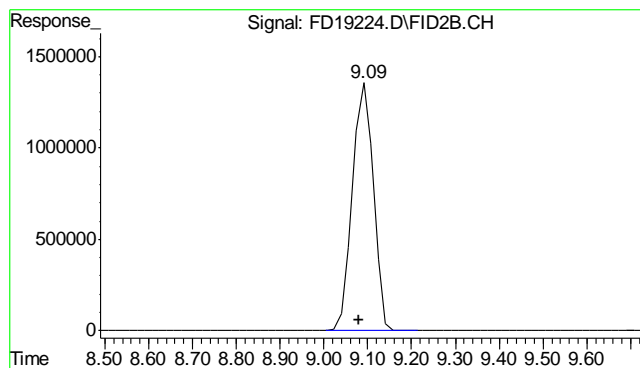
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\NOV\FD110712.SEC\FD19224.D Vial: 55
Acq On : 07 Nov 2012 12:25 pm Operator: ashleyv
Sample : OP6920-MB Inst : FID5
Misc : OP6920,GFD970,30.00,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Nov 7 14:10 2012 Quant Results File: DRO-GFD939R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD939R.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Wed Nov 07 14:47:21 2012
Response via : Multiple Level Calibration
DataAcq Meth : DRODUAL.M

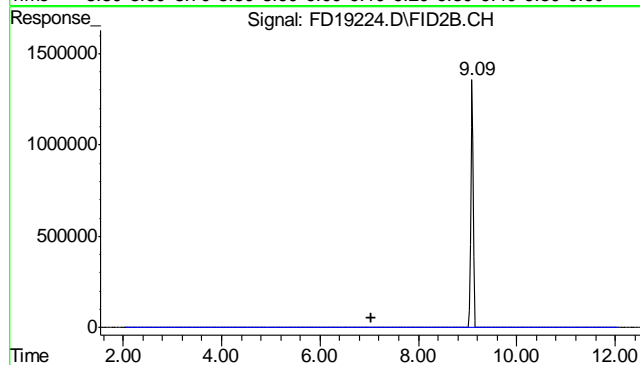
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.097 min
Delta R.T.: 0.017 min
Response: 44549482
Conc: 1098.07 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 7.035 min
Delta R.T.: 0.000 min
Response: 818320
Conc: 22.47 mg/L m

13.2.1
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: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8823
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/06/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.96	.57		
Antimony	3.0	.17	.12		
Arsenic	2.5	.44	.56		
Barium	1.0	.01	.11	0.060	<1.0
Beryllium	1.0	.13	.15		
Boron	5.0	.1	.06		
Cadmium	1.0	.06	.036	0.020	<1.0
Calcium	40	.54	9		
Chromium	1.0	.03	.03	0.020	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	0.020	<1.0
Iron	7.0	.12	.87		
Lead	5.0	.19	.24	0.020	<5.0
Lithium	0.20	.05	.054		
Magnesium	20	.65	.98		
Manganese	0.50	.12	.022		
Molybdenum	1.0	.21	.08		
Nickel	3.0	.05	.026	0.0	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	0.11	<5.0
Silicon	5.0	.29	.37		
Silver	3.0	.04	.06	0.0	<3.0
Sodium	40	.59	1.9		
Strontium	5.0	.004	.017		
Thallium	1.0	.29	.53		
Tin	5.0	1.2	2		
Titanium	1.0	.01	.038		
Uranium	5.0	.22	.26		
Vanadium	1.0	.02	.036		
Zinc	3.0	.05	.37	0.17	<3.0

Associated samples MP8823: D40540-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8823
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8823
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/06/12

Metal	D40540-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	119	312	197	98.0	75-125
Beryllium					
Boron					
Cadmium	0.17	41.9	49.3	84.7	75-125
Calcium	anr				
Chromium	45.1	73.6	49.3	57.9N(a)	75-125
Cobalt					
Copper	6.6	51.2	49.3	90.5	75-125
Iron					
Lead	5.0	90.6	98.5	86.9	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	20.5	54.0	49.3	68.0N(a)	75-125
Phosphorus					
Potassium					
Selenium	0.0	84.9	98.5	86.2	75-125
Silicon					
Silver	0.041	17.8	19.7	90.1	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	23.9	65.6	49.3	84.7	75-125

Associated samples MP8823: D40540-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8823
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

14.1.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8823
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 11/06/12

Metal	D40540-1 Original	MSD	Spikelot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	119	325	199	103.5	4.1	20
Beryllium						
Boron						
Cadmium	0.17	42.7	49.7	85.5	1.9	20
Calcium	anr					
Chromium	45.1	66.6	49.7	43.2N(a)	10.0	20
Cobalt						
Copper	6.6	55.0	49.7	97.3	7.2	20
Iron						
Lead	5.0	91.3	99.5	86.8	0.8	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	20.5	51.5	49.7	62.3N(a)	4.7	20
Phosphorus						
Potassium						
Selenium	0.0	85.3	99.5	85.8	0.5	20
Silicon						
Silver	0.041	18.1	19.9	90.8	1.7	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	23.9	66.4	49.7	85.4	1.2	20

Associated samples MP8823: D40540-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8823
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D40540
 Account: XTOKRWR - XTO Energy
 Project: PCU T84-15G

QC Batch ID: MP8823
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 11/06/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	192	200	96.0	80-120
Beryllium				
Boron				
Cadmium	45.4	50	90.8	80-120
Calcium	anr			
Chromium	47.8	50	95.6	80-120
Cobalt				
Copper	45.1	50	90.2	80-120
Iron				
Lead	94.8	100	94.8	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	45.0	50	90.0	80-120
Phosphorus				
Potassium				
Selenium	92.2	100	92.2	80-120
Silicon				
Silver	19.1	20	95.5	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	45.4	50	90.8	80-120

Associated samples MP8823: D40540-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8823
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8823
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 11/06/12

Metal	D40540-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	1170	1280	9.7	0-10
Beryllium				
Boron				
Cadmium	1.70	0.00	100.0(a)	0-10
Calcium	anr			
Chromium	445	505	13.6*(b)	0-10
Cobalt				
Copper	64.7	66.5	2.8	0-10
Iron				
Lead	49.2	53.0	7.7	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	202	234	15.7*(b)	0-10
Phosphorus				
Potassium				
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.400	2.50	525.0(a)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	235	285	21.1*(b)	0-10

Associated samples MP8823: D40540-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8823
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date:

Metal

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8824
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 11/06/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.006	.06	0.011	<0.10
Barium	1.0	.0065	.037		
Beryllium	0.10	.016	.09		
Boron	20	1.2	1.2		
Cadmium	0.050	.014	.021		
Calcium	200	7.9	8		
Chromium	1.0	.033	.19		
Cobalt	0.10	.0012	.015		
Copper	1.0	.017	.065		
Iron	20	.8	5		
Lead	0.25	.0011	.024		
Magnesium	50	.44	.85		
Manganese	0.50	.0043	.02		
Molybdenum	0.50	.018	.018		
Nickel	1.0	.0049	.011		
Phosphorus	30	1.4	3.6		
Potassium	100	9.8	10		
Selenium	0.20	.029	.14		
Silver	0.050	.0009	.0065		
Sodium	250	1.5	2.3		
Strontium	10	.036	.036		
Thallium	0.10	.00095	.0095		
Tin	5.0	.023	.34		
Titanium	1.0	.044	.1		
Uranium	0.25	.00085	.001		
Vanadium	2.0	.12	.21		
Zinc	5.0	.033	.35		

Associated samples MP8824: D40540-1

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: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8824
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 11/06/12

Metal	D40540-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	2.0	109	98.5	108.6	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP8824: D40540-1

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: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8824
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 11/06/12

Metal	D40540-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	2.0	113	99.5	111.6	3.6	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP8824: D40540-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8824
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 11/06/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	107	100	107.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8824: D40540-1

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

14.2.3
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8824
Matrix Type: SOLID

Methods: SW846 6020A
Units: ug/l

Prep Date: 11/06/12

Metal	D40540-1			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	20.2	20.9	3.3	0-10	
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP8824: D40540-1

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

14.2.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8826
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 11/07/12

Metal	RL	IDL	MDL	MB raw	final
-------	----	-----	-----	-----------	-------

Mercury	0.10	.0011	.0009	-0.0037	<0.10
---------	------	-------	-------	---------	-------

Associated samples MP8826: D40540-1

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: D40540
 Account: XTOKRWR - XTO Energy
 Project: PCU T84-15G

QC Batch ID: MP8826
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 11/07/12

Metal	D40522-1		SpikeLot		QC
	Original	MS	HGWSR1	% Rec	Limits
Mercury	0.070	0.40	0.354	93.2	75-125

Associated samples MP8826: D40540-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40540
 Account: XTOKRWR - XTO Energy
 Project: PCU T84-15G

QC Batch ID: MP8826
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 11/07/12

Metal	D40522-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.070	0.40	0.36	91.6	0.0	20

Associated samples MP8826: D40540-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D40540
 Account: XTOKRWR - XTO Energy
 Project: PCU T84-15G

QC Batch ID: MP8826
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 11/07/12

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.42	0.4	105.0	80-120

Associated samples MP8826: D40540-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8842
Matrix Type: AQUEOUS

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

Prep Date: 11/08/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	48	130		
Antimony	150	8.5	18		
Arsenic	130	22	42		
Barium	50	.5	9		
Beryllium	50	6.5	16		
Boron	250	5	22		
Cadmium	50	3	3		
Calcium	2000	27	80	19.5	<2000
Chromium	50	1.5	2.8		
Cobalt	25	2	2.1		
Copper	50	6	15		
Iron	350	6	100		
Lead	250	9.5	15		
Lithium	10	2.5			
Magnesium	1000	33	110	-13	<1000
Manganese	25	6	6		
Molybdenum	50	11	11		
Nickel	150	2.5	2.9		
Phosphorus	500	70	300		
Potassium	5000	310	750		
Selenium	250	24	55		
Silicon	250	15			
Silver	150	2	4.9		
Sodium	2000	30	490	-200	<2000
Strontium	25	.2	7.5		
Thallium	50	15	43		
Tin	250	60			
Titanium	50	.5			
Uranium	250	11	23		
Vanadium	50	1	2.4		
Zinc	150	2.5	12		

Associated samples MP8842: D40540-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8842
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8842
Matrix Type: AQUEOUS

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

Prep Date: 11/08/12

Metal	D40653-1A Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	660000	778000	125000	94.4	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	79.0	123000	125000	98.3	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	703000	824000	125000	96.8	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP8842: D40540-1A

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

14.4.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8842
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: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8842
Matrix Type: AQUEOUS

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

Prep Date: 11/08/12

Metal	D40653-1A Original	MSD	SpikeLot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	660000	788000	125000	102.4	1.3	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	79.0	123000	125000	98.3	0.0	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	703000	832000	125000	103.2	1.0	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP8842: D40540-1A

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

14.4.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8842
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: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8842
Matrix Type: AQUEOUS

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

Prep Date: 11/08/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	132000	125000	105.6	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	122000	125000	97.6	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	124000	125000	99.2	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP8842: D40540-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8842
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8842
Matrix Type: AQUEOUS

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

Prep Date: 11/08/12

Metal		D40653-1A Original SDL 1:5		%DIF	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	132000	141000	6.6	0-10	
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	15.8	0.00	100.0(a)	0-10	
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	141000	164000	16.6*(b)	0-10	
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP8842: D40540-1A

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

14.4.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

QC Batch ID: MP8842
Matrix Type: AQUEOUS

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

Prep Date:

Metal

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

14.4.4
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: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP8616/GN17590	1.0	0.0	mg/kg	176.0	176	99.7	80-120%
Specific Conductivity	GP8649/GN17613			umhos/cm	9992	9800	98.1	90-110%
pH	GN17557			su	8.00	7.98	99.8	99.3-100.7%

Associated Samples:
Batch GP8616: D40540-1
Batch GP8649: D40540-1
Batch GN17557: D40540-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP8616/GN17590	D40540-1	mg/kg	0.0	0.0	0.0	0-20%
Redox Potential Vs H2	GN17556	D40540-1	mv	211	212	0.5	0-20%

Associated Samples:
Batch GP8616: D40540-1
Batch GN17556: D40540-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP8616/GN17590	D40540-1	mg/kg	0.0	0.4	40.8	102.0	75-125%

Associated Samples:

Batch GP8616: D40540-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D40540
Account: XTOKRWR - XTO Energy
Project: PCU T84-15G

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP8616/GN17590	D40540-1	mg/kg	0.0	0.4	38.8	5.2	20%

Associated Samples:
Batch GP8616: D40540-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

15.4
15