

State of Colorado
Oil and Gas Conservation Commission



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

#7519

FOR OGCC USE ONLY

RECEIVED
12/13/2012

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: 05-103-08182

County: Rio Blanco

Facility Name: Piceance Creek Unit

Facility Number:

Well Name: Piceance Creek Unit

Well Number: PCU T18-13G

Location: (QtrQtr, Sec, Twp, Rng, Meridian): SWSW, 13, 2S, 97W, 6th PM Latitude: 39.87076 Longitude: -108.23717

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: Castner channery loam, 5 to 10% 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:

Arsenic

How Determined:

laboratory analysis

REMEDIALATION 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 T18-13G 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 Arsenic (2.6 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.:

NA



Tracking Number: _____
Name of Operator: XTO
OGCC Operator No: _____
Received Date: 12/13/12
Well Name & No: PCU T18-136
Facility Name & No: Location ID # 315261

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 onsite or 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:

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>11/29/2012</u>	Date Site Investigation Completed: <u>12/13/2012</u>	Date Remediation Plan Submitted: <u>212/13/2012</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: 12/13/2012

OGCC Approved: _____

Title: _____

FOR Chris Confield Date: 01/22/2013
EPS NW Region

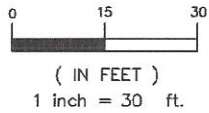
Table 1
Location: PCU T18-13G
Lab Summary

Analytical Parameter (with units)	Bottom of Excavation (11/29/12)	BACKGROUND SAMPLES (11/29/12)								Updated: COGCC Table 910-1 Concentration Levels	12/12/2012 Maximum based on Background
		BG #1	BG #2	BG #3	BG #4	BG #5	BG #6	BG #7	BG #8		
Accutest Job #	D41381	D41379								-	-
Sample Type (Composite/Discrete)	D	D	D	D	D	D	D	D	D	-	-
TPH (GRO) (mg/kg)	ND	-	-	-	-	-	-	-	-	-	-
TPH (DRO) (mg/kg)	18.0	-	-	-	-	-	-	-	-	-	-
TPH (GRO+DRO) (mg/kg)	18.0	-	-	-	-	-	-	-	-	-	-
Benzene (mg/kg)	ND	-	-	-	-	-	-	-	-	500	-
Toluene (mg/kg)	ND	-	-	-	-	-	-	-	-	0.17	-
Ethylbenzene (mg/kg)	ND	-	-	-	-	-	-	-	-	85	-
Xylenes (total) (mg/kg)	ND	-	-	-	-	-	-	-	-	100	-
Acenaphthene (mg/kg)	ND	-	-	-	-	-	-	-	-	175	-
Anthracene (mg/kg)	ND	-	-	-	-	-	-	-	-	1,000	-
Benzo(A)anthracene (mg/kg)	ND	-	-	-	-	-	-	-	-	1,000	-
Benzo(B)fluoranthene (mg/kg)	ND	-	-	-	-	-	-	-	-	0.22	-
Benzo(K)fluoranthene (mg/kg)	ND	-	-	-	-	-	-	-	-	0.22	-
Benzo(A)pyrene (mg/kg)	ND	-	-	-	-	-	-	-	-	2.2	-
Chrysene (mg/kg)	ND	-	-	-	-	-	-	-	-	0.022	-
Dibenzo(A,H)anthracene (mg/kg)	ND	-	-	-	-	-	-	-	-	22	-
Fluoranthene (mg/kg)	ND	-	-	-	-	-	-	-	-	0.022	-
Fluorene (mg/kg)	ND	-	-	-	-	-	-	-	-	1,000	-
Indeno(1,2,3,C,D)pyrene (mg/kg)	ND	-	-	-	-	-	-	-	-	1,000	-
Naphthalene (mg/kg)	ND	-	-	-	-	-	-	-	-	0.22	-
Pyrene (mg/kg)	ND	-	-	-	-	-	-	-	-	23	-
Electrical Conductivity (mmhos/cm)	0.392	-	-	-	-	-	-	-	-	1,000	-
Sodium Adsorption Ratio (SAR)	1.42	-	-	-	-	-	-	-	-	<4or 2X BG	-
pH	8.89	-	-	-	-	-	-	-	-	<12	-
Arsenic (mg/kg)	4.8	5.5	5.6	4.9	4.3	5.0	8.5	3.8	5.9	6-9	-
Barium (mg/kg)	228	-	-	-	-	-	-	-	-	0.39	9.4
Cadmium (mg/kg)	<1.1	-	-	-	-	-	-	-	-	15,000	-
Chromium (III) (mg/kg)	25.2	-	-	-	-	-	-	-	-	70	-
Chromium (VI) (mg/kg)	<1.0	-	-	-	-	-	-	-	-	120,000	-
Copper (mg/kg)	14.9	-	-	-	-	-	-	-	-	23	-
Lead (inorganic) (mg/kg)	12.5	-	-	-	-	-	-	-	-	3,100	-
Mercury (mg/kg)	<0.094	-	-	-	-	-	-	-	-	400	-
Nickel (mg/kg)	15.9	-	-	-	-	-	-	-	-	23	-
Selenium (mg/kg)	<5.6	-	-	-	-	-	-	-	-	1,600	-
Silver (mg/kg)	<3.4	-	-	-	-	-	-	-	-	390	-
Zinc (mg/kg)	41.4	-	-	-	-	-	-	-	-	390	-
% Solids	88.6	89.9	91.0	89.5	86.7	90.3	93.4	88.8	88.5	23,000	-
										-	-

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.

GRAPHIC SCALE



⊗ BG-2
ARSENIC: 5.6 mg/kg

⊗ BG-1
ARSENIC: 5.5 mg/kg

PARTIALLY BURIED TANK
TPH: 18.0 mg/kg
BENZENE: ND
ARSENIC: 4.8 mg/kg

⊗ BG-3
ARSENIC: 4.9 mg/kg

⊗ BG-4
ARSENIC: 4.3 mg/kg

⊗ BG-5
ARSENIC: 5.0 mg/kg

⊗ BG-6
ARSENIC: 8.5 mg/kg

⊗ BG-7
ARSENIC: 3.8 mg/kg

⊗ BG-8
ARSENIC: 5.9 mg/kg

LEGEND	
GPU	GAS PROCESSING UNIT
SEP	SEPARATOR
---	EDGE OF PAD
----	UNDERGROUND UTILITY
—o—	WELL HEAD
⊗ BG-0	BACKGROUND TEST LOCATION
ARSENIC: mg/kg	← WITH LAB RESULTS

NOTES:

1. BACKGROUND ARSENIC RESULTS ARE DISCRETE SAMPLES.
2. ND INDICATES NOT DETECTED WITHIN LABORATORY DETECTION LIMITS.

GPS:	CHECKED:	FIGURE	DATE	REVISIONS
TRIMBLE	DK			
DATE:	DRAWN:	1		
12/12/12	DRF			
FILE NAME:	SHEET NO.	1 of 1		
tsamp				
PROJECT NO.	SCALE:	1" = 40'		
1211-14				

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

FIGURE 1
PICEANCE CREEK
PCU T18-13G
SAMPLE LOCATIONS MAP
WITH ARSENIC LEVELS
PREPARED FOR XTO ENERGY

\\hyper-v03\kwd-co\sdk\proj\cto environmental\1211-14 pcu t18-13g\tsamp.dwg,12/12/12



12/10/12

Technical Report for

XTO Energy

PCU T18-13G

1211-14

Accutest Job Number: D41381

Sampling Date: 11/29/12

Report to:

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Total number of pages in report: 140



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.

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Sample Summary

XTO Energy

Job No: D41381

PCU T18-13G
Project No: 1211-14

Sample Number	Collected		Matrix Code Type	Received	Client Sample ID
	Date	Time By			
D41381-1	11/29/12	13:45 DS	12/01/12 SO	Soil	SUBTANK
D41381-1A	11/29/12	13:45 DS	12/01/12 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 D41381

Site: PCU T18-13G

Report Date 12/10/2012 4:13:13 PM

On 12/01/2012, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2.7 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D41381 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: V3V1282

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D41381-1MS, D41381-1MSD were used as the QC samples indicated.

Extractables by GCMS By Method SW846 8270C BY SIM

Matrix SO

Batch ID: OP7075

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) D41381-1MS, D41381-1MSD 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: GGB1018

- All samples were analyzed within the recommended method holding time.
- Sample(s) D41375-1MS, D41375-1MSD 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: OP7053

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D41381-1MS, D41381-1MSD were used as the QC samples indicated.

Metals By Method SW846 6010C

Matrix AQ

Batch ID: MP9015

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D41381-1AMS, D41381-1AMSD, D41381-1ASDL were used as the QC samples for the metals analysis.

Matrix SO

Batch ID: MP9006

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D41381-1MS, D41381-1MSD, D41381-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Barium, Cadmium, Lead, Nickel are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- The matrix spike duplicate (MSD) recovery(s) of Cadmium, Lead, 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 MP9006-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP9006-MB1 for Barium: All sample results >10x method blank concentration or <RL.
- MP9006-SD1 for Nickel: Serial dilution indicates possible matrix interference.
- MP9006-S1 for Lead: Spike recovery indicates possible matrix interference.
- MP9006-S1 for Cadmium: Spike recovery indicates possible matrix interference.
- MP9006-SD1 for Zinc: Serial dilution indicates possible matrix interference.
- MP9006-SD1 for Chromium: Serial dilution indicates possible matrix interference.
- MP9006-S1 for Nickel: Spike recovery indicates possible matrix interference.

Metals By Method SW846 6020A

Matrix SO

Batch ID: MP9007

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D41381-1MS, D41381-1MSD, D41381-1SDL were used as the QC samples for the metals analysis.

Metals By Method SW846 7471B

Matrix SO

Batch ID: MP8991

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D41298-1MS, D41298-1MSD were used as the QC samples for the metals analysis.

Wet Chemistry By Method ASTM D1498-76M

Matrix SO

Batch ID: GN17931

- Sample(s) D41407-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM19 2540B M

Matrix SO	Batch ID: GN17924
------------------	--------------------------

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

Wet Chemistry By Method SW846 3060A/7196A

Matrix SO	Batch ID: GP8811
------------------	-------------------------

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D41305-1DUP, D41305-1MS, D41305-1MSD were used as the QC samples for the Chromium, Hexavalent analysis.

Wet Chemistry By Method SW846 3060A/7196A M

Matrix SO	Batch ID: R15351
------------------	-------------------------

- The data for SW846 3060A/7196A M meets quality control requirements.
- D41381-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 9045D

Matrix SO	Batch ID: GN17928
------------------	--------------------------

- The following samples were run outside of holding time for method SW846 9045D: D41381-1

Wet Chemistry By Method USDA HANDBOOK 60

Matrix SO	Batch ID: MP9015
------------------	-------------------------

- D41381-1A 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: D41381
Account: XTO Energy
Project: PCU T18-13G
Collected: 11/29/12



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

D41381-1 SUBTANK

TPH-DRO (C10-C28)	18.0	7.5	4.5	mg/kg	SW846-8015B
Arsenic	4.8	0.11		mg/kg	SW846 6020A
Barium	228	5.6		mg/kg	SW846 6010C
Chromium	25.2	1.1		mg/kg	SW846 6010C
Copper	14.9	1.1		mg/kg	SW846 6010C
Lead	12.5	5.6		mg/kg	SW846 6010C
Nickel	15.9	3.4		mg/kg	SW846 6010C
Zinc	41.4	3.4		mg/kg	SW846 6010C
Specific Conductivity	392	1.0		umhos/cm	SM2510B-1997 MOD
Chromium, Trivalent ^a	25.2	2.1		mg/kg	SW846 3060A/7196A M
Redox Potential Vs H2	151			mv	ASTM D1498-76M
pH	8.89			su	SW846 9045D

D41381-1A SUBTANK

Calcium	32.6	2.0		mg/l	SW846 6010C
Magnesium	8.18	1.0		mg/l	SW846 6010C
Sodium	35.0	2.0		mg/l	SW846 6010C
Sodium Adsorption Ratio ^b	1.42			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:	11/29/12
Lab Sample ID:	D41381-1	Date Received:	12/01/12
Matrix:	SO - Soil	Percent Solids:	88.6
Method:	SW846 8260B		
Project:	PCU T18-13G		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V21964.D	1	12/04/12	BD	n/a	n/a	V3V1282
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.24 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.060	0.030	mg/kg	
108-88-3	Toluene	ND	0.12	0.060	mg/kg	
100-41-4	Ethylbenzene	ND	0.12	0.023	mg/kg	
1330-20-7	Xylene (total)	ND	0.24	0.12	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	92%		64-130%
460-00-4	4-Bromofluorobenzene	101%		62-131%
17060-07-0	1,2-Dichloroethane-D4	103%		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	
Lab Sample ID:	D41381-1	Date Sampled: 11/29/12
Matrix:	SO - Soil	Date Received: 12/01/12
Method:	SW846 8270C BY SIM SW846 3546	Percent Solids: 88.6
Project:	PCU T18-13G	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G12510.D	1	12/10/12	DC	12/10/12	OP7075	E3G593
Run #2							

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

COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.0094	0.0049	mg/kg	
120-12-7	Anthracene	ND	0.0094	0.0049	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.0094	0.0049	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.0094	0.0049	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.0094	0.0049	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.0094	0.0049	mg/kg	
218-01-9	Chrysene	ND	0.0094	0.0049	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.0094	0.0049	mg/kg	
206-44-0	Fluoranthene	ND	0.0094	0.0049	mg/kg	
86-73-7	Fluorene	ND	0.0094	0.0049	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.0094	0.0049	mg/kg	
91-20-3	Naphthalene	ND	0.013	0.012	mg/kg	
129-00-0	Pyrene	ND	0.0094	0.0049	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	70%		10-159%
321-60-8	2-Fluorobiphenyl	57%		19-131%
1718-51-0	Terphenyl-d14	72%		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:	D41381-1	Date Sampled: 11/29/12
Matrix:	SO - Soil	Date Received: 12/01/12
Method:	SW846 8015B	Percent Solids: 88.6
Project:	PCU T18-13G	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB18711.D	1	12/02/12	SK	n/a	n/a	GGB1018
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.2 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	12	6.0	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	87%		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:	D41381-1			Date Sampled:	11/29/12
Matrix:	SO - Soil			Date Received:	12/01/12
Method:	SW846-8015B	SW846	3546	Percent Solids:	88.6
Project:	PCU T18-13G				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH008063.D	1	12/05/12	TR	12/05/12	OP7053	GFH446
Run #2							

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

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	18.0	7.5	4.5	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	68%		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:	11/29/12
Lab Sample ID:	D41381-1	Date Received:	12/01/12
Matrix:	SO - Soil	Percent Solids:	88.6
Project:	PCU T18-13G		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	4.8	0.11	mg/kg	5	12/05/12	12/07/12 JM	SW846 6020A ⁴	SW846 3050B ⁷
Barium	228	5.6	mg/kg	5	12/05/12	12/05/12 JB	SW846 6010C ³	SW846 3050B ⁶
Cadmium	< 1.1	1.1	mg/kg	1	12/05/12	12/05/12 JB	SW846 6010C ²	SW846 3050B ⁶
Chromium	25.2	1.1	mg/kg	1	12/05/12	12/05/12 JB	SW846 6010C ²	SW846 3050B ⁶
Copper	14.9	1.1	mg/kg	1	12/05/12	12/05/12 JB	SW846 6010C ²	SW846 3050B ⁶
Lead	12.5	5.6	mg/kg	1	12/05/12	12/05/12 JB	SW846 6010C ²	SW846 3050B ⁶
Mercury	< 0.094	0.094	mg/kg	1	12/04/12	12/04/12 JB	SW846 7471B ¹	SW846 7471B ⁵
Nickel	15.9	3.4	mg/kg	1	12/05/12	12/05/12 JB	SW846 6010C ²	SW846 3050B ⁶
Selenium	< 5.6	5.6	mg/kg	1	12/05/12	12/05/12 JB	SW846 6010C ²	SW846 3050B ⁶
Silver	< 3.4	3.4	mg/kg	1	12/05/12	12/05/12 JB	SW846 6010C ²	SW846 3050B ⁶
Zinc	41.4	3.4	mg/kg	1	12/05/12	12/05/12 JB	SW846 6010C ²	SW846 3050B ⁶

(1) Instrument QC Batch: MA3048

(2) Instrument QC Batch: MA3052

(3) Instrument QC Batch: MA3055

(4) Instrument QC Batch: MA3061

(5) Prep QC Batch: MP8991

(6) Prep QC Batch: MP9006

(7) Prep QC Batch: MP9007

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SUBTANK	Date Sampled:	11/29/12
Lab Sample ID:	D41381-1	Date Received:	12/01/12
Matrix:	SO - Soil	Percent Solids:	88.6
Project:	PCU T18-13G		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
prep: DEPT.OF AG, BOOK N9							
Specific Conductivity	392	1.0	umhos/cm	1	12/04/12	JD	SM2510B-1997 MOD
Chromium, Hexavalent	< 1.0	1.0	mg/kg	1	12/04/12	KB	SW846 3060A/7196A
Chromium, Trivalent ^a	25.2	2.1	mg/kg	1	12/05/12 14:28	JB	SW846 3060A/7196A M
Redox Potential Vs H2	151		mv	1	12/04/12 13:15	JK	ASTM D1498-76M
Solids, Percent	88.6		%	1	12/04/12	SWT	SM19 2540B M
pH	8.89		su	1	12/04/12 13:15	JK	SW846 9045D

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

RL = Reporting Limit

Report of Analysis

Client Sample ID: SUBTANK
Lab Sample ID: D41381-1A
Matrix: SO - Soil
Project: PCU T18-13G

Date Sampled: 11/29/12
Date Received: 12/01/12
Percent Solids: 88.6

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium	32.6	2.0	mg/l	1	12/06/12	12/10/12 JB	SW846 6010C ¹	SW846 3010A/M ²
Magnesium	8.18	1.0	mg/l	1	12/06/12	12/10/12 JB	SW846 6010C ¹	SW846 3010A/M ²
Sodium	35.0	2.0	mg/l	1	12/06/12	12/10/12 JB	SW846 6010C ¹	SW846 3010A/M ²

(1) Instrument QC Batch: MA3069
(2) Prep QC Batch: MP9015

RL = Reporting Limit

4.2
4

Report of Analysis

Client Sample ID: SUBTANK
Lab Sample ID: D41381-1A
Matrix: SO - Soil
Project: PCU T18-13G

Date Sampled: 11/29/12
Date Received: 12/01/12
Percent Solids: 88.6

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio ^a	1.42		ratio	1	12/10/12 09:26	JB	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



CHAIN OF CUSTODY

PAGE 1 OF 1

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

FED-EX Tracking #		Bottle Order Control #	
Accutest Quote #		Accutest Job # D41381	
Client / Reporting Information		Project Information	
Company Name KRW Consulting		Project Name XTO PCUT 18-136	
Street Address 8000 West 14th Street, Suite 200		Street	
City Lakewood, CO 80214		City State	
Project Contact Dwayne Knudson		Billing Information (If different from Report to)	
Phone # 970-488-1098		Company Name XTO Energy	
Sampler(s) Name(s) DAVID SANDERS		Street Address 21459 CR 5	
970-488-1098		City Rifle, CO 81650	
Project Manager Joe Hess		Attention Jessica Dooling	
Turnaround Time (Business days)		Data Deliverable Information	
<input type="checkbox"/> Std. 10 Business Days <input checked="" type="checkbox"/> Std. 5 Business Days (By contract only) <input type="checkbox"/> 3 Day Emergency <input type="checkbox"/> 2 Day Emergency <input type="checkbox"/> 1 Day Emergency <input type="checkbox"/> Emergency & Rush T/A data available VIA Lablink		<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"/> 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 Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial BN = Results/QC/Narrative (+ chromatograms)	
Comments / Special Instructions		Please email to: KRW Piceance Team	
Sample Custody must be documented below each time samples change possession, including courier delivery.			
Relinquished by Sampler: 1 David Sanders		Received By: 1 Data Service Center	
Date/Time: 11/30/12 17:00		Date/Time: 12/1/12 9:45	
Relinquished by Sampler: 3		Received By: 4	
Date/Time:		Date/Time:	
Relinquished by: 5		Received By:	
Date/Time:		Date/Time:	
Custody Seal # PX		<input type="checkbox"/> Intact <input type="checkbox"/> Not Intact	
Preserved where applicable		On Ice <input type="checkbox"/>	
Cooler Temp. 27°			

D41381: Chain of Custody

Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D41381

Client: KRW

Immediate Client Services Action Required: No

Date / Time Received: 12/1/2012 8:45:00 AM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XTO PCU 18-13G

Airbill #'s: FX

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

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

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

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

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

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

Comments

 Accutest Laboratories
 V: (303) 425-6021

 4036 Youngfield Street
 F: (303) 425-6854

 Wheat Ridge, CO
 www.accutest.com

GC/MS Volatiles

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: D41381
Account: XTOKRWR XTO Energy
Project: PCU T18-13G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V1282-MB	3V21961.D	1	12/04/12	BD	n/a	n/a	V3V1282

The QC reported here applies to the following samples:

Method: SW846 8260B

D41381-1

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	93% 64-130%
460-00-4	4-Bromofluorobenzene	101% 62-131%
17060-07-0	1,2-Dichloroethane-D4	99% 70-130%

Blank Spike Summary

Page 1 of 1

Job Number: D41381
Account: XTOKRWR XTO Energy
Project: PCU T18-13G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V1282-BS	3V21962.D	1	12/04/12	BD	n/a	n/a	V3V1282

The QC reported here applies to the following samples:

Method: SW846 8260B

D41381-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	51.4	103	70-130
100-41-4	Ethylbenzene	50	50.9	102	70-130
108-88-3	Toluene	50	48.4	97	70-130
1330-20-7	Xylene (total)	150	149	99	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	96%	64-130%
460-00-4	4-Bromofluorobenzene	103%	62-131%
17060-07-0	1,2-Dichloroethane-D4	101%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D41381
Account: XTOKRWR XTO Energy
Project: PCU T18-13G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D41381-1MS	3V21965.D	1	12/04/12	BD	n/a	n/a	V3V1282
D41381-1MSD	3V21966.D	1	12/04/12	BD	n/a	n/a	V3V1282
D41381-1	3V21964.D	1	12/04/12	BD	n/a	n/a	V3V1282

The QC reported here applies to the following samples:

Method: SW846 8260B

D41381-1

CAS No.	Compound	D41381-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3010	3070	102	2950	98	4	64-139/30
100-41-4	Ethylbenzene	ND		3010	3000	100	2930	97	2	68-136/30
108-88-3	Toluene	ND		3010	2740	91	2680	89	2	60-130/30
1330-20-7	Xylene (total)	ND		9040	9100	101	8860	98	3	58-142/30

CAS No.	Surrogate Recoveries	MS	MSD	D41381-1	Limits
2037-26-5	Toluene-D8	91%	93%	92%	64-130%
460-00-4	4-Bromofluorobenzene	119%	122%	101%	62-131%
17060-07-0	1,2-Dichloroethane-D4	97%	104%	103%	70-130%

* = Outside of Control Limits.

GC/MS Volatiles

Raw Data

7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3120412.S\
 Data File : 3V21964.D
 Acq On : 4 Dec 2012 12:08 pm
 Operator : Jessical
 Sample : D41381-1
 Misc : MS5044,V3V1282,5.244,,100,5,1
 ALS Vial : 6 Sample Multiplier: 1

Quant Time: Dec 05 08:52:35 2012
 Quant Method : C:\msdchem\1\METHODS\V3AP1277TVH1277SOIL.M
 Quant Title : 8260
 QLast Update : Wed Nov 28 14:20:19 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.861	168	152928	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.656	114	271757	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.296	117	300612	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.282	152	156773	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.255	102	19168	51.63	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	103.26%
61) Toluene-d8	14.055	98	335060	46.23	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	92.46%
69) 4-Bromofluorobenzene	16.246	95	151130	50.74	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	101.48%

Target Compounds

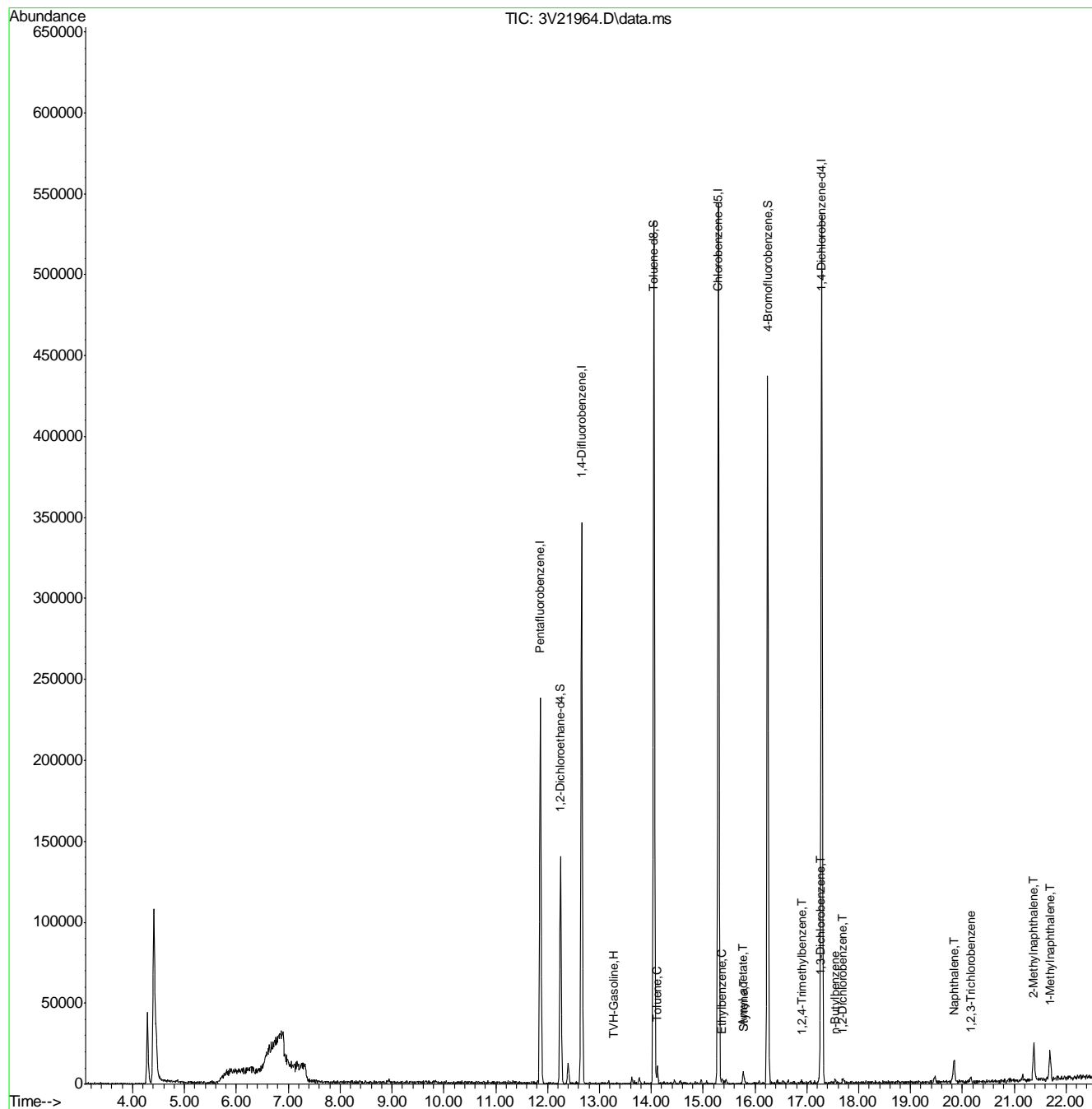
					Qvalue	
1) TVH-Gasoline	13.285	TIC	70900m	161.35	ug/l	
58) Amyl acetate	15.771	70	1372	6.23	ug/l	# 73
62) Toluene	14.116	92	1065	0.16	ug/l	# 61
66) Ethylbenzene	15.363	91	735m	0.06	ug/l	
71) Styrene	15.796	104	1279	0.33	ug/l	84
82) 1,2,4-Trimethylbenzene	16.900	105	1067	0.11	ug/l	93
84) 1,3-Dichlorobenzene	17.246	146	1111	0.21	ug/l	# 81
87) 1,2-Dichlorobenzene	17.699	146	809	0.16	ug/l	# 71
88) n-Butylbenzene	17.538	91	2218	0.24	ug/l	# 83
91) Naphthalene	19.841	128	15619	4.99	ug/l	100
93) 1,2,3-Trichlorobenzene	20.159	180	2172	0.72	ug/l	# 92
94) 2-Methylnaphthalene	21.378	142	17654	5.78	ug/l	95
95) 1-Methylnaphthalene	21.689	142	12917	4.61	ug/l	93

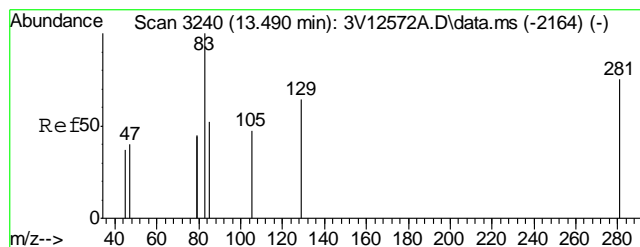
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3120412.S\
Data File : 3V21964.D
Acq On : 4 Dec 2012 12:08 pm
Operator : Jessical
Sample : D41381-1
Misc : MS5044,V3V1282,5.244,,100,5,1
ALS Vial : 6 Sample Multiplier: 1

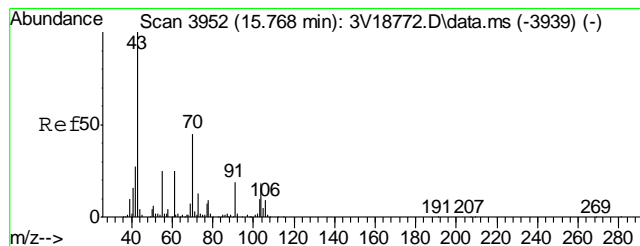
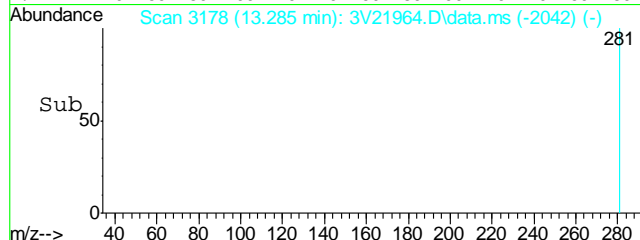
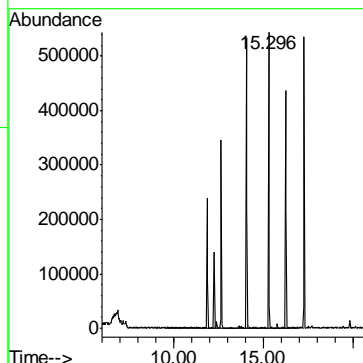
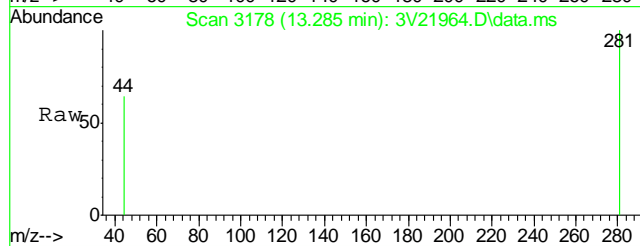
Quant Time: Dec 05 08:52:35 2012
Quant Method : C:\msdchem\1\METHODS\V3AP1277TVH1277SOIL.M
Quant Title : 8260
QLast Update : Wed Nov 28 14:20:19 2012
Response via : Initial Calibration





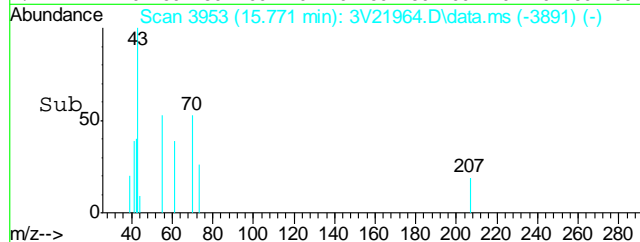
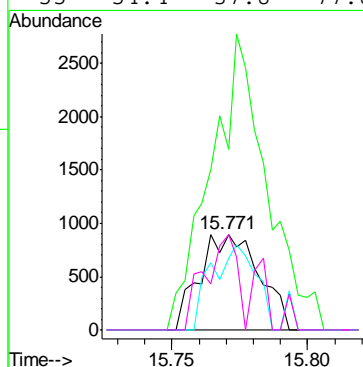
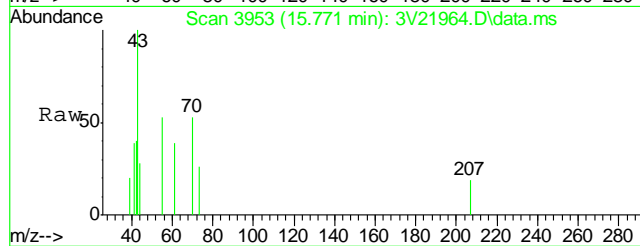
#1
TVH-Gasoline
Concen: 161.35 ug/l m
RT: 13.285 min Scan# 3178
Delta R.T. 0.000 min
Lab File: 3V21964.D
Acq: 4 Dec 2012 12:08 pm

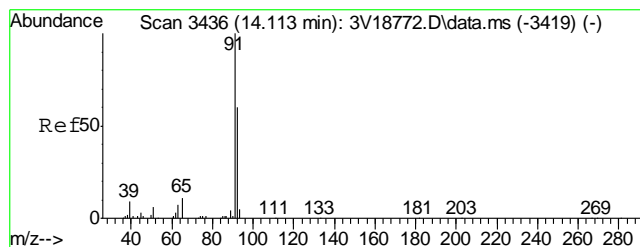
Tgt Ion:TIC Resp: 70900



#58
Amyl acetate
Concen: 6.23 ug/l
RT: 15.771 min Scan# 3953
Delta R.T. -0.000 min
Lab File: 3V21964.D
Acq: 4 Dec 2012 12:08 pm

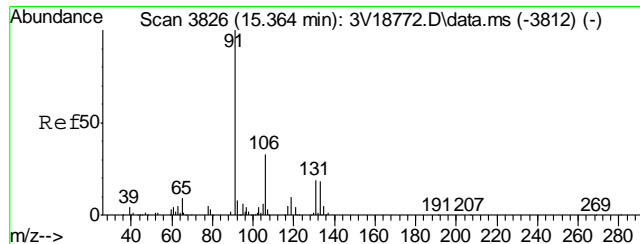
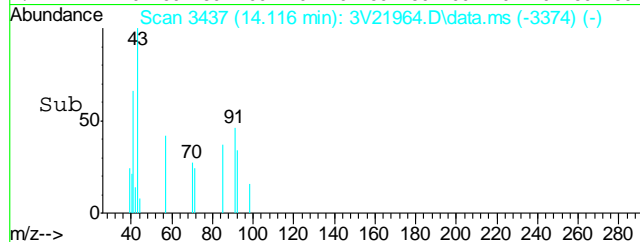
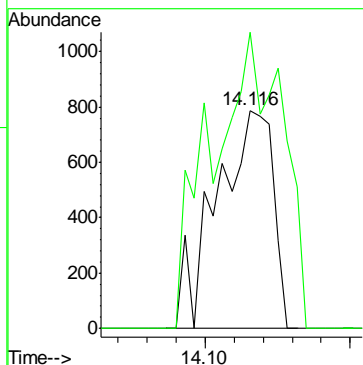
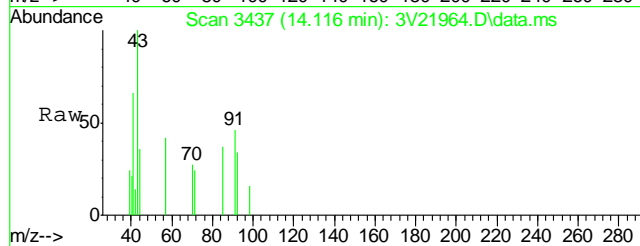
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Ion Ratio Lower Upper
70 100
43 289.4 205.3 245.3#
42 66.5 42.6 82.6
55 54.4 37.8 77.8





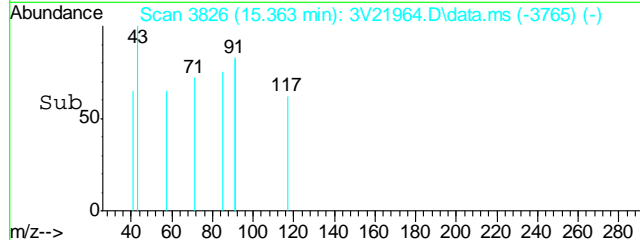
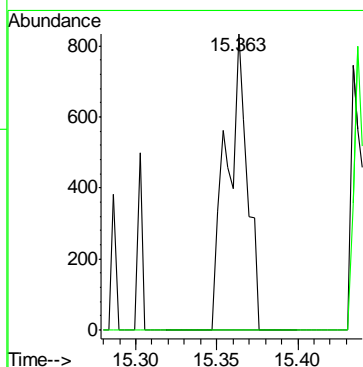
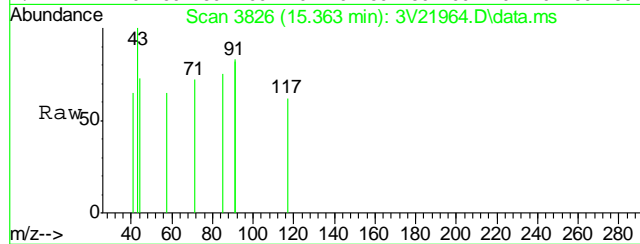
#62
Toluene
Concen: 0.16 ug/l
RT: 14.116 min Scan# 3437
Delta R.T. 0.003 min
Lab File: 3V21964.D
Acq: 4 Dec 2012 12:08 pm

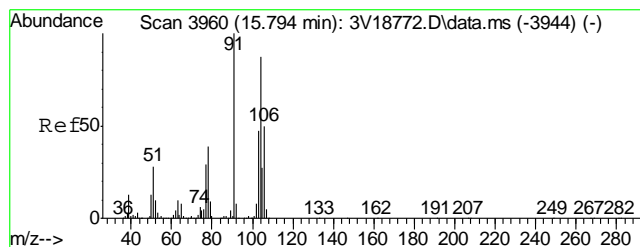
Tgt Ion: 92 Resp: 1065
Ion Ratio Lower Upper
92 100
91 116.3 150.2 190.2#



#66
Ethylbenzene
Concen: 0.06 ug/l m
RT: 15.363 min Scan# 3826
Delta R.T. -0.003 min
Lab File: 3V21964.D
Acq: 4 Dec 2012 12:08 pm

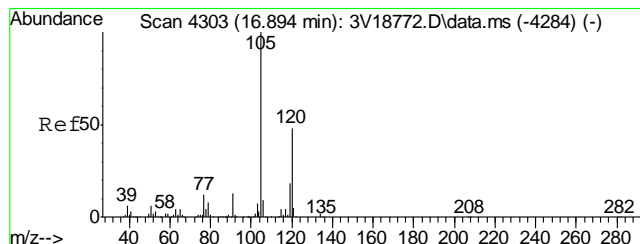
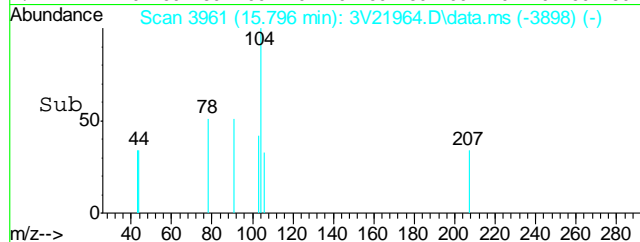
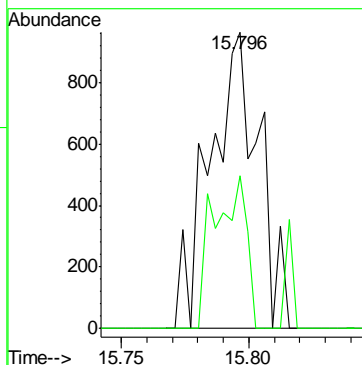
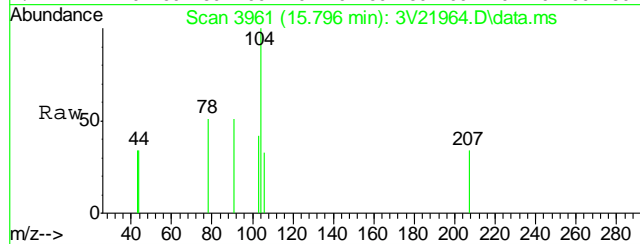
Tgt Ion: 91 Resp: 735
Ion Ratio Lower Upper
91 100
106 57.6 13.2 53.2#





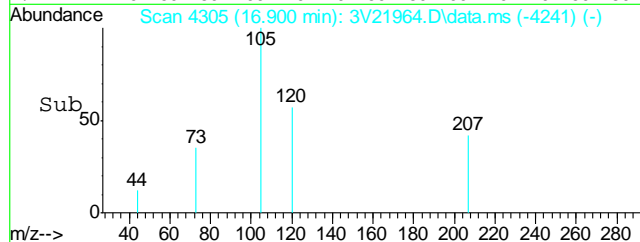
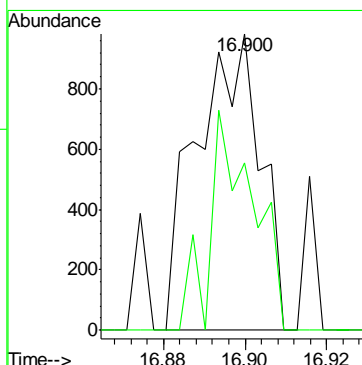
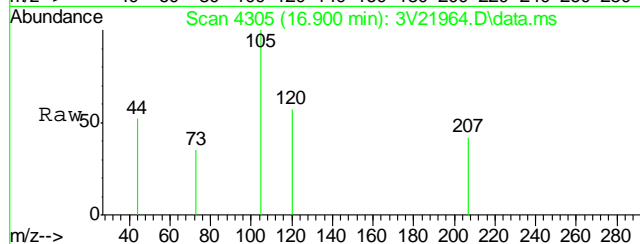
#71
Styrene
Concen: 0.33 ug/l
RT: 15.796 min Scan# 3961
Delta R.T. 0.003 min
Lab File: 3V21964.D
Acq: 4 Dec 2012 12:08 pm

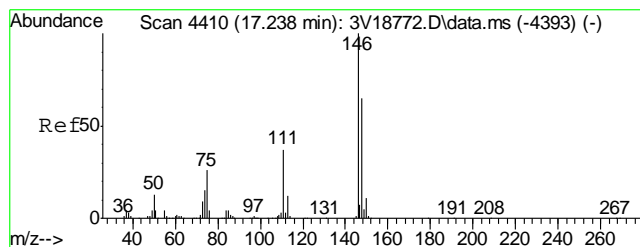
Tgt Ion:104 Resp: 1279
Ion Ratio Lower Upper
104 100
78 34.6 25.4 65.4



#82
1,2,4-Trimethylbenzene
Concen: 0.11 ug/l
RT: 16.900 min Scan# 4305
Delta R.T. 0.006 min
Lab File: 3V21964.D
Acq: 4 Dec 2012 12:08 pm

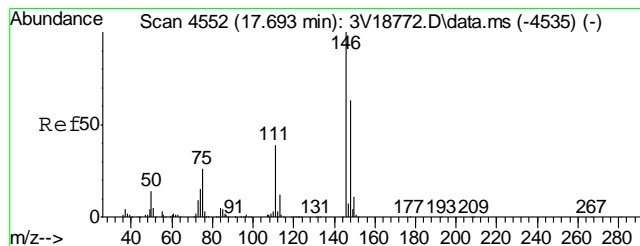
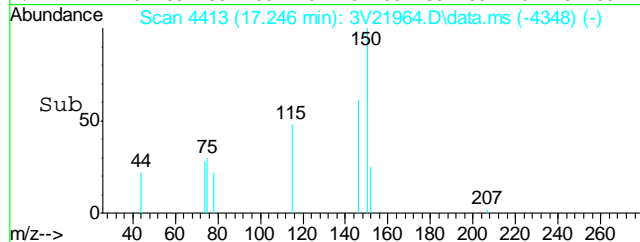
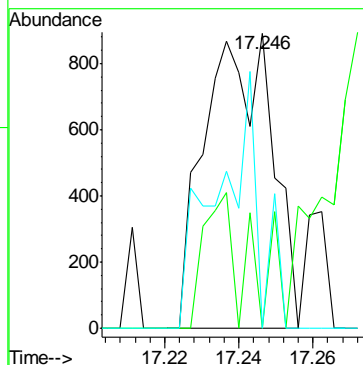
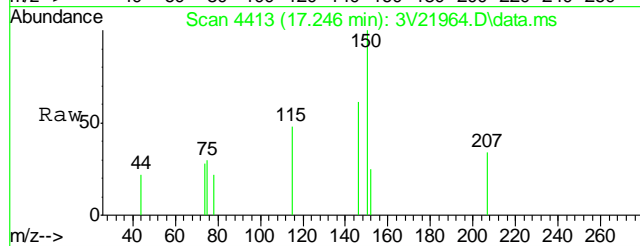
Tgt Ion:105 Resp: 1067
Ion Ratio Lower Upper
105 100
120 51.0 45.1 67.7





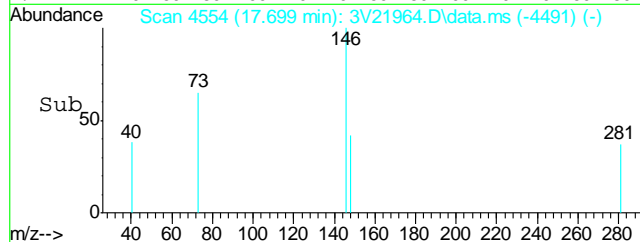
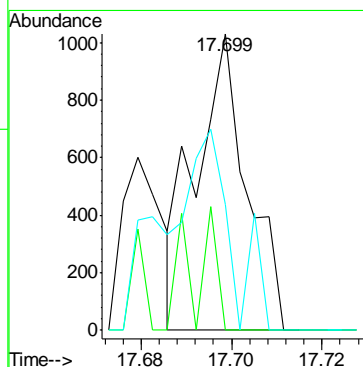
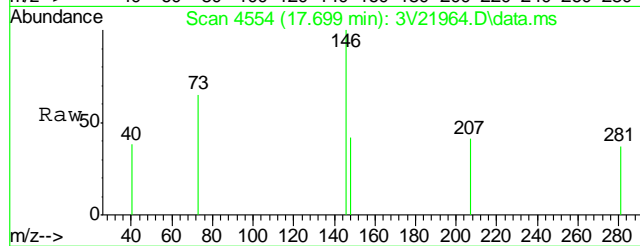
#84
1,3-Dichlorobenzene
Concen: 0.21 ug/l
RT: 17.246 min Scan# 4413
Delta R.T. 0.009 min
Lab File: 3V21964.D
Acq: 4 Dec 2012 12:08 pm

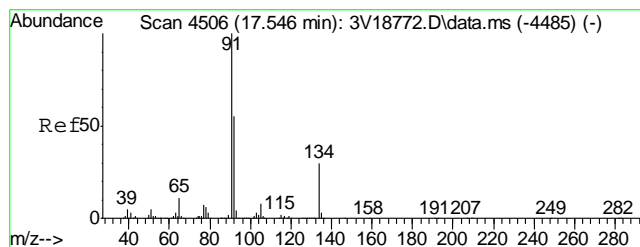
Tgt Ion	Ratio	Lower	Upper
146	100		
111	18.5	29.7	44.5#
148	55.3	51.4	77.0



#87
1,2-Dichlorobenzene
Concen: 0.16 ug/l
RT: 17.699 min Scan# 4554
Delta R.T. 0.003 min
Lab File: 3V21964.D
Acq: 4 Dec 2012 12:08 pm

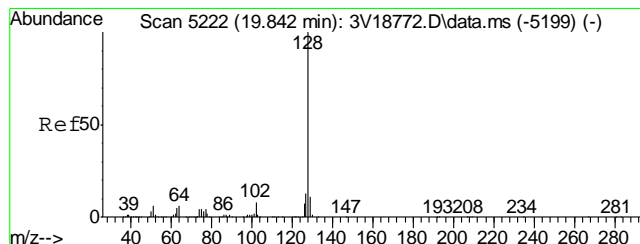
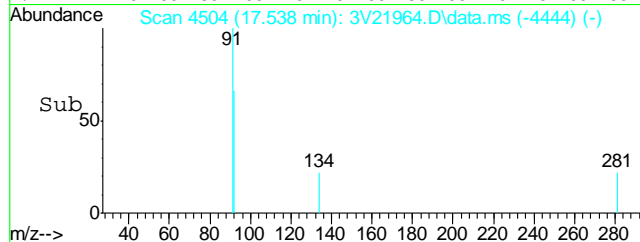
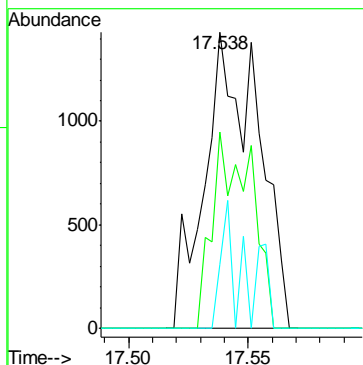
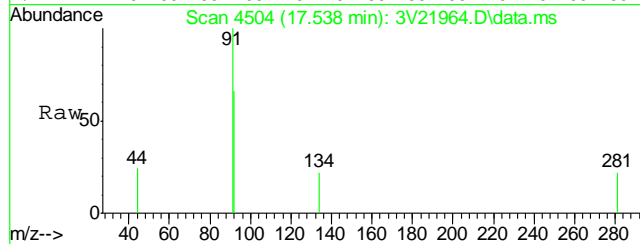
Tgt Ion	Ratio	Lower	Upper
146	100		
111	19.9	31.0	46.6#
148	86.2	51.4	77.2#





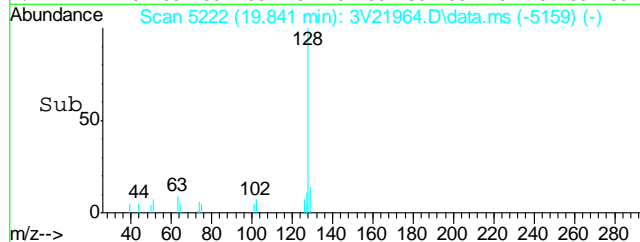
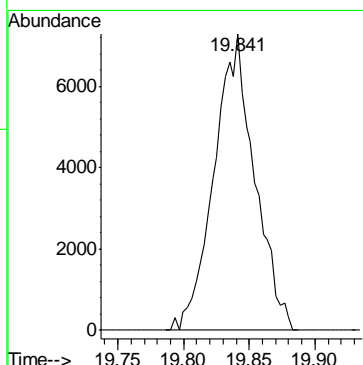
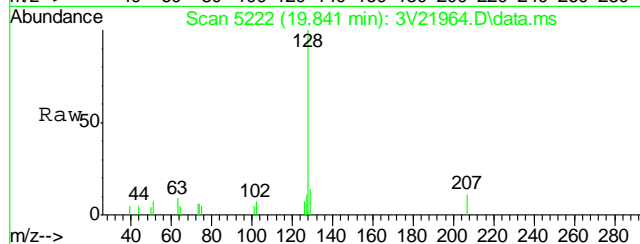
#88
n-Butylbenzene
Concen: 0.24 ug/l
RT: 17.538 min Scan# 4504
Delta R.T. -0.007 min
Lab File: 3V21964.D
Acq: 4 Dec 2012 12:08 pm

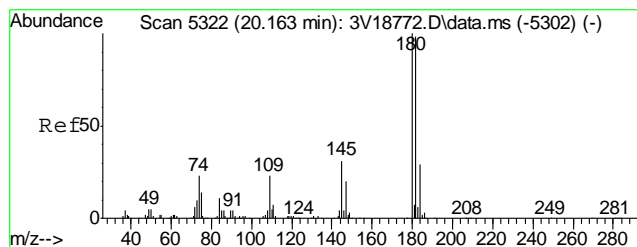
Tgt Ion	Ratio	Lower	Upper
91	100		
92	48.2	43.8	65.8
134	11.9	23.1	34.7#



#91
Naphthalene
Concen: 4.99 ug/l
RT: 19.841 min Scan# 5222
Delta R.T. 0.003 min
Lab File: 3V21964.D
Acq: 4 Dec 2012 12:08 pm

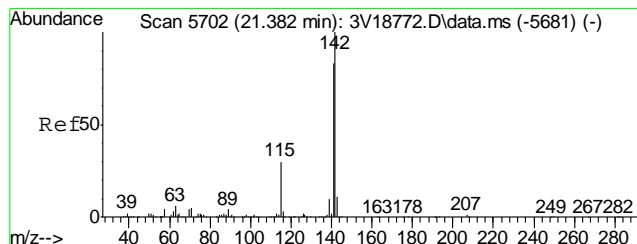
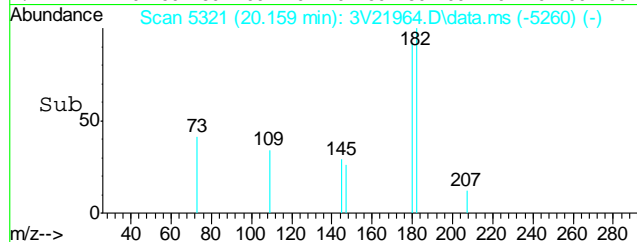
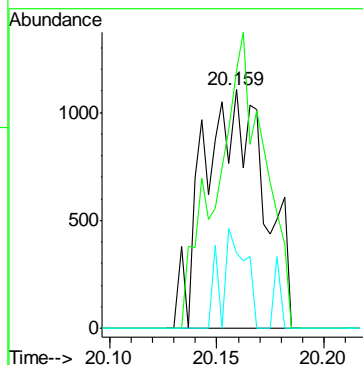
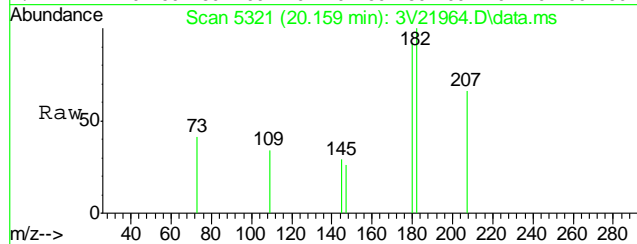
Tgt Ion: 128 Resp: 15619





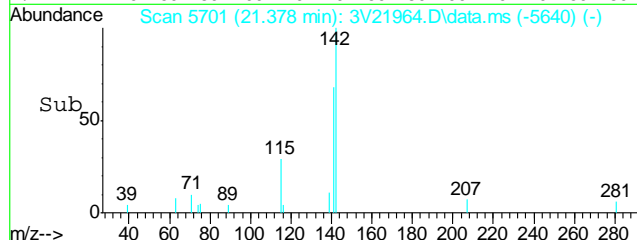
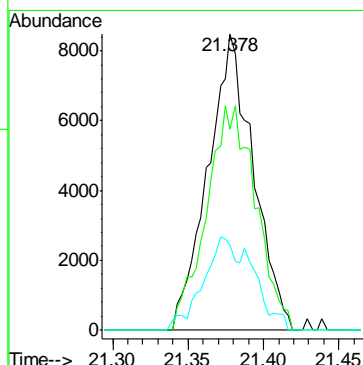
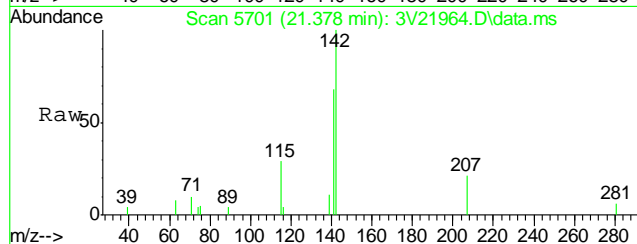
#93
1,2,3-Trichlorobenzene
Concen: 0.72 ug/l
RT: 20.159 min Scan# 5321
Delta R.T. -0.003 min
Lab File: 3V21964.D
Acq: 4 Dec 2012 12:08 pm

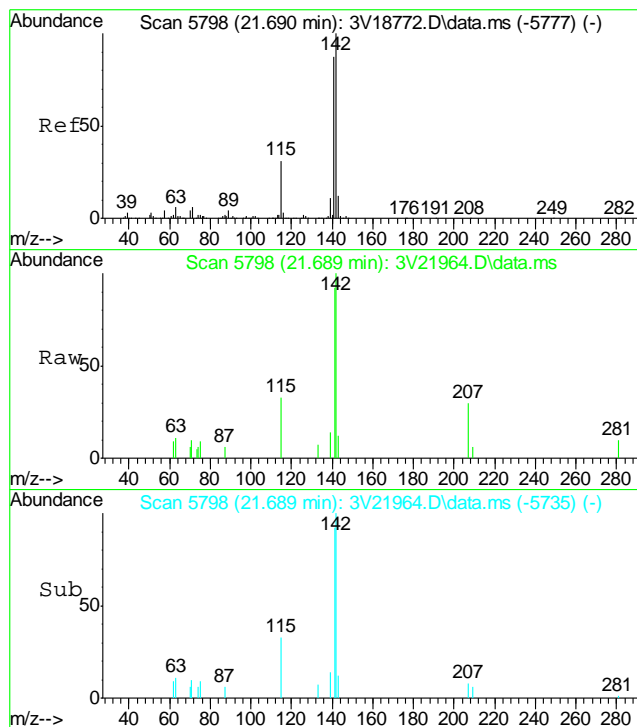
Tgt Ion	Ratio	Lower	Upper
180	100		
182	97.9	76.5	114.7
145	16.3	24.2	36.4



#94
2-Methylnaphthalene
Concen: 5.78 ug/l
RT: 21.378 min Scan# 5701
Delta R.T. -0.003 min
Lab File: 3V21964.D
Acq: 4 Dec 2012 12:08 pm

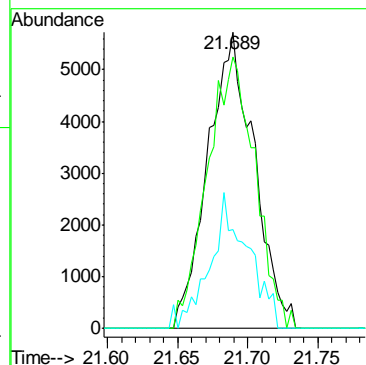
Tgt Ion	Ratio	Lower	Upper
142	100		
141	82.2	68.6	103.0
115	34.5	23.8	35.6





#95
 1-Methylnaphthalene
 Concen: 4.61 ug/l
 RT: 21.689 min Scan# 5798
 Delta R.T. 0.003 min
 Lab File: 3V21964.D
 Acq: 4 Dec 2012 12:08 pm

Tgt Ion:	142	Resp:	12917
Ion Ratio	Lower	Upper	
142	100		
141	94.7	70.6	106.0
115	36.8	25.4	38.2



7.1.1
7

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3120412.S\
 Data File : 3V21961.D
 Acq On : 4 Dec 2012 10:34 am
 Operator : Jessical
 Sample : MB
 Misc : MS5044,V3V1282,5.00,,100,5,1
 ALS Vial : 3 Sample Multiplier: 1

Quant Time: Dec 05 08:43:05 2012
 Quant Method : C:\msdchem\1\METHODS\V3AP1277TVH1277SOIL.M
 Quant Title : 8260
 QLast Update : Wed Nov 28 14:20:19 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.858	168	161672	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.653	114	283220	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.293	117	308766	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.282	152	163893	50.00	ug/l	0.00

System Monitoring Compounds						
33) 1,2-Dichloroethane-d4	12.249	102	19489	49.66	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	99.32%
61) Toluene-d8	14.049	98	347440	46.67	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	93.34%
69) 4-Bromofluorobenzene	16.243	95	154606	50.54	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	101.08%

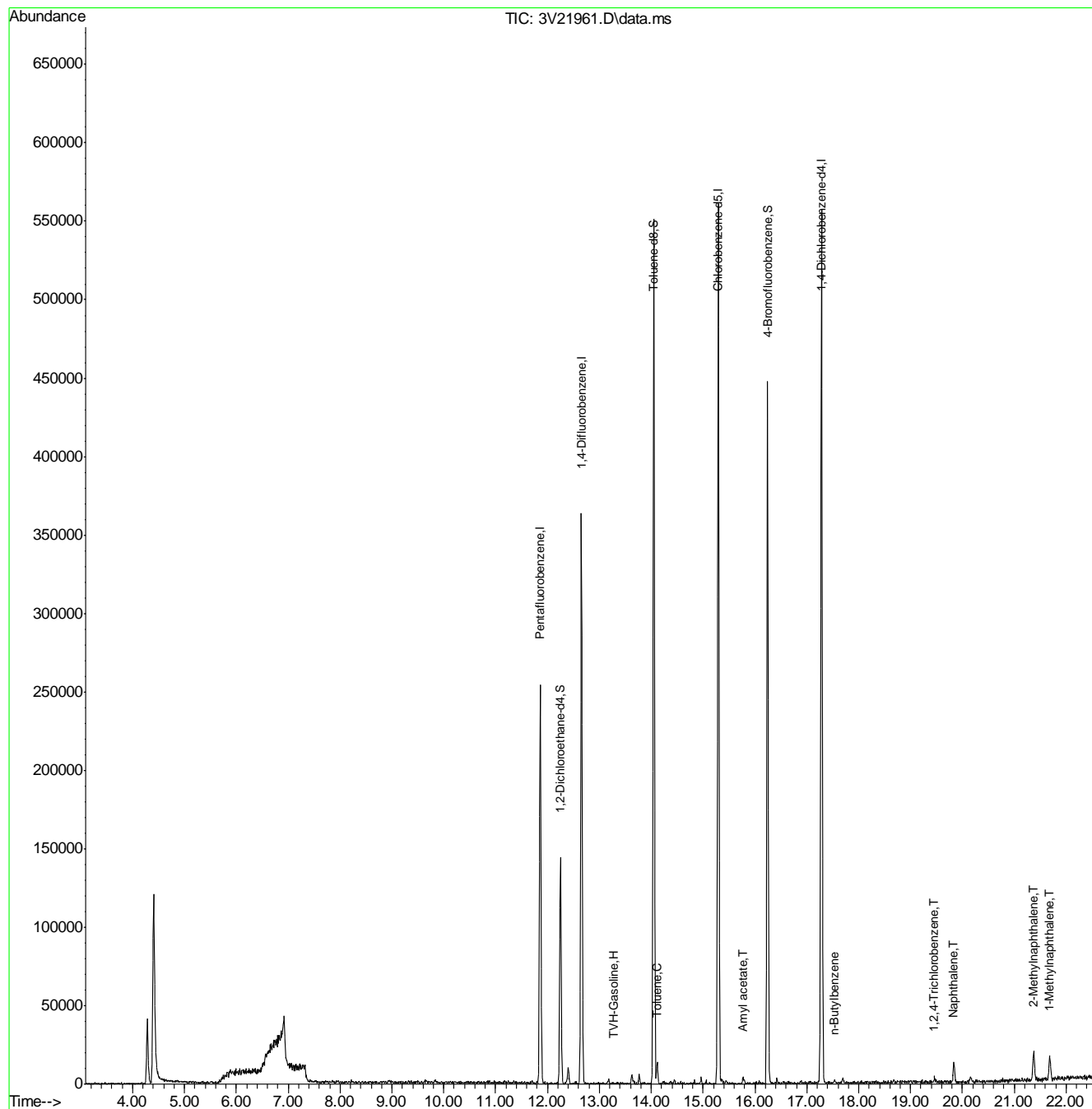
Target Compounds						Qvalue
1) TVH-Gasoline	13.285	TIC	20935m	159.73	ug/l	
58) Amyl acetate	15.768	70	919	5.78	ug/l	# 85
62) Toluene	14.113	92	891	0.13	ug/l	92
88) n-Butylbenzene	17.542	91	1453	0.15	ug/l	# 78
90) 1,2,4-Trichlorobenzene	19.467	180	1220	0.37	ug/l	# 65
91) Naphthalene	19.839	128	15538	4.90	ug/l	100
94) 2-Methylnaphthalene	21.375	142	13910	4.36	ug/l	# 95
95) 1-Methylnaphthalene	21.680	142	11334	3.87	ug/l	98

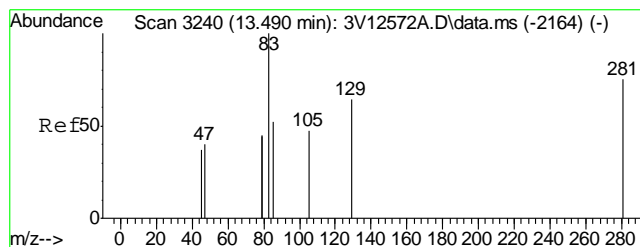
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3120412.S\
Data File : 3V21961.D
Acq On : 4 Dec 2012 10:34 am
Operator : Jessical
Sample : MB
Misc : MS5044,V3V1282,5.00,,100,5,1
ALS Vial : 3 Sample Multiplier: 1

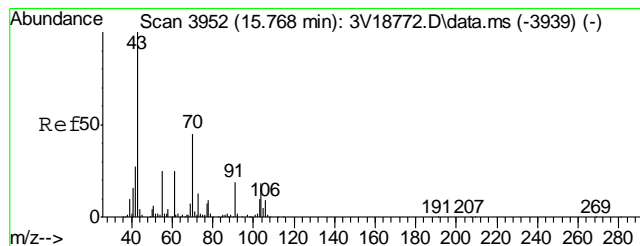
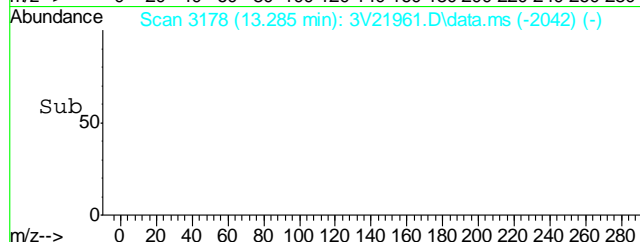
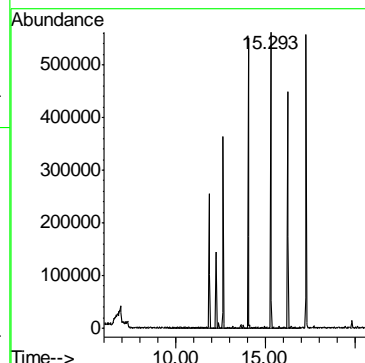
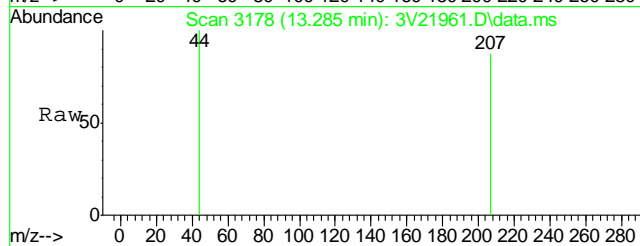
Quant Time: Dec 05 08:43:05 2012
Quant Method : C:\msdchem\1\METHODS\V3AP1277TVH1277SOIL.M
Quant Title : 8260
QLast Update : Wed Nov 28 14:20:19 2012
Response via : Initial Calibration





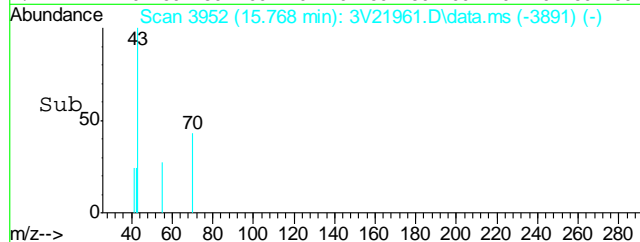
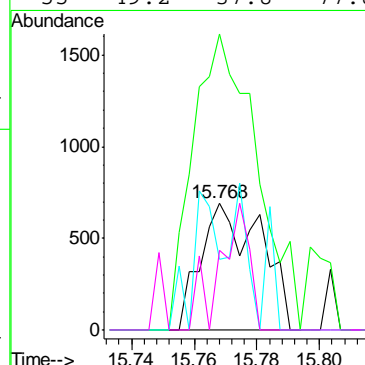
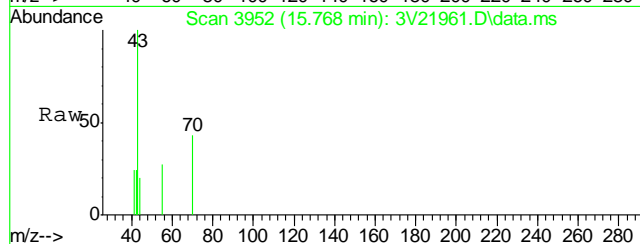
#1
TVH-Gasoline
Concen: 159.73 ug/l m
RT: 13.285 min Scan# 3178
Delta R.T. 0.000 min
Lab File: 3V21961.D
Acq: 4 Dec 2012 10:34 am

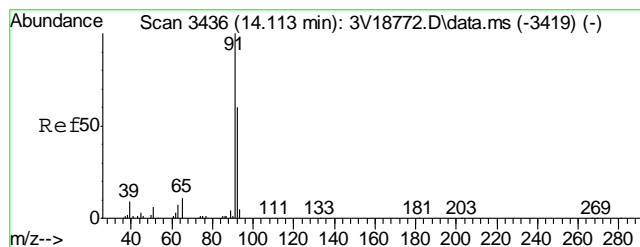
Tgt Ion:TIC Resp: 20935



#58
Amyl acetate
Concen: 5.78 ug/l
RT: 15.768 min Scan# 3952
Delta R.T. -0.003 min
Lab File: 3V21961.D
Acq: 4 Dec 2012 10:34 am

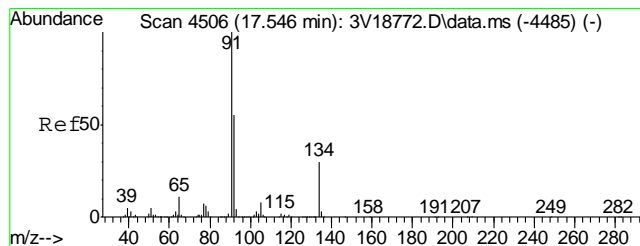
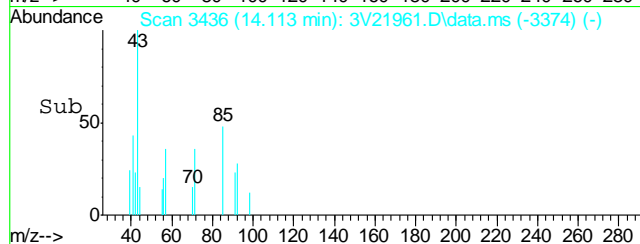
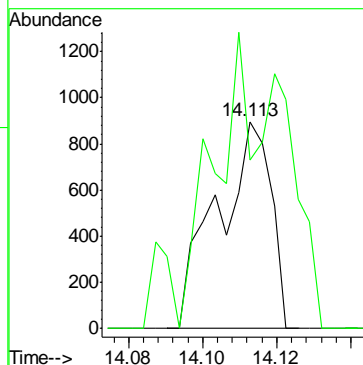
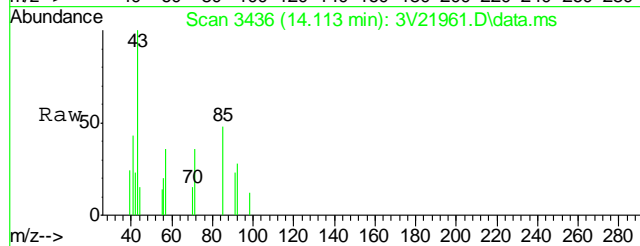
Tgt Ion: 70 Resp: 919
Ion Ratio Lower Upper
70 100
43 248.7 205.3 245.3#
42 77.5 42.6 82.6
55 49.2 37.8 77.8





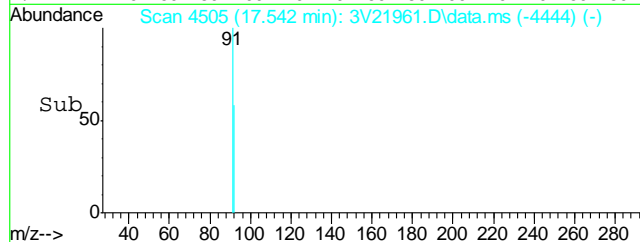
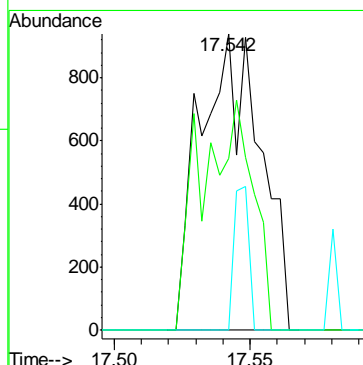
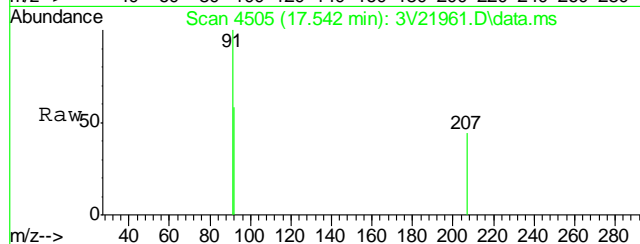
#62
Toluene
Concen: 0.13 ug/l
RT: 14.113 min Scan# 3436
Delta R.T. 0.000 min
Lab File: 3V21961.D
Acq: 4 Dec 2012 10:34 am

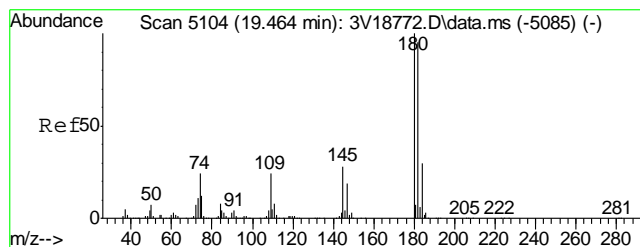
Tgt Ion: 92 Resp: 891
Ion Ratio Lower Upper
92 100
91 181.6 150.2 190.2



#88
n-Butylbenzene
Concen: 0.15 ug/l
RT: 17.542 min Scan# 4505
Delta R.T. -0.003 min
Lab File: 3V21961.D
Acq: 4 Dec 2012 10:34 am

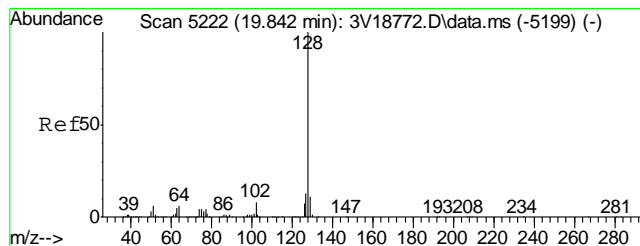
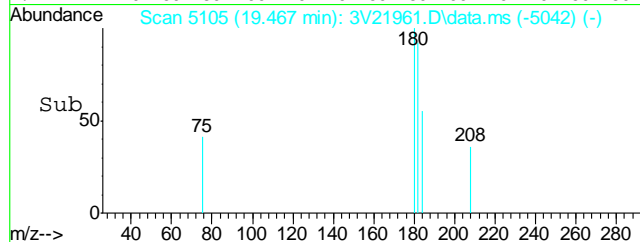
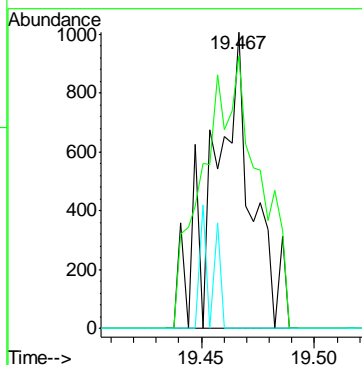
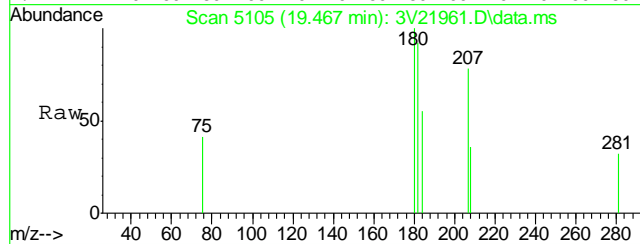
Tgt Ion: 91 Resp: 1453
Ion Ratio Lower Upper
91 100
92 66.7 43.8 65.8#
134 11.9 23.1 34.7#





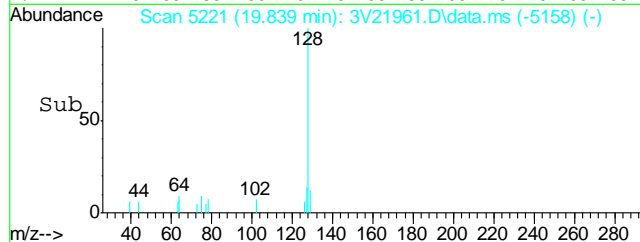
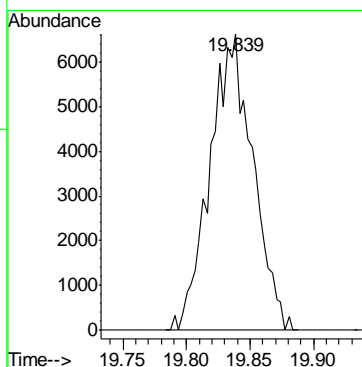
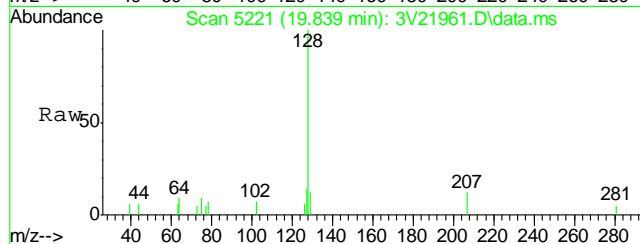
#90
1,2,4-Trichlorobenzene
Concen: 0.37 ug/l
RT: 19.467 min Scan# 5105
Delta R.T. 0.003 min
Lab File: 3V21961.D
Acq: 4 Dec 2012 10:34 am

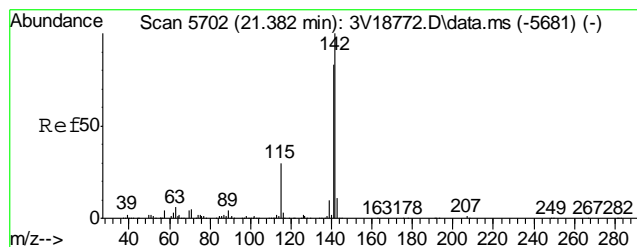
Tgt Ion	180	Resp	1220
Ion Ratio	100		
182	130.7	76.4	114.6#
145	12.3	22.9	34.3#



#91
Naphthalene
Concen: 4.90 ug/l
RT: 19.839 min Scan# 5221
Delta R.T. 0.001 min
Lab File: 3V21961.D
Acq: 4 Dec 2012 10:34 am

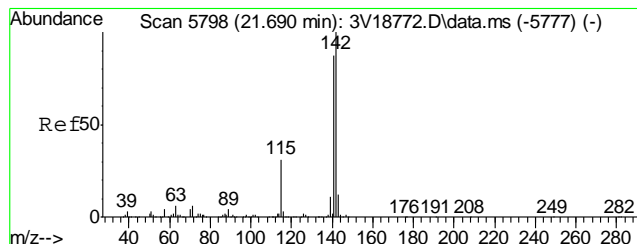
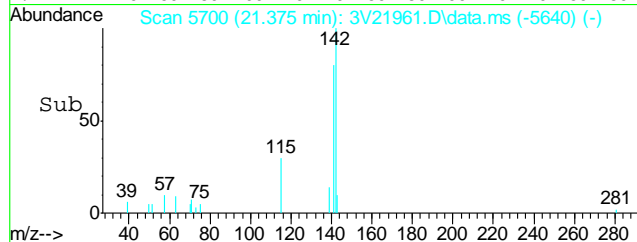
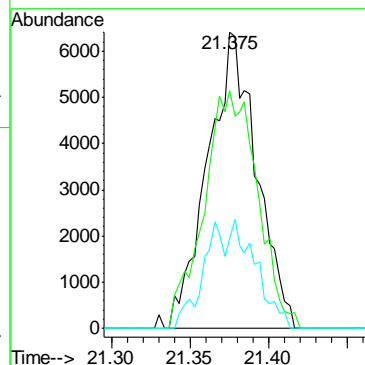
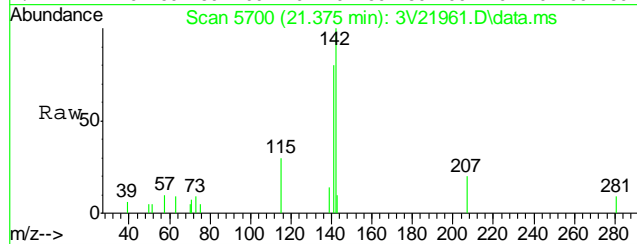
Tgt Ion	128	Resp	15538
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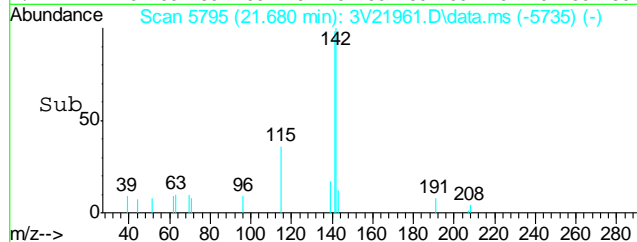
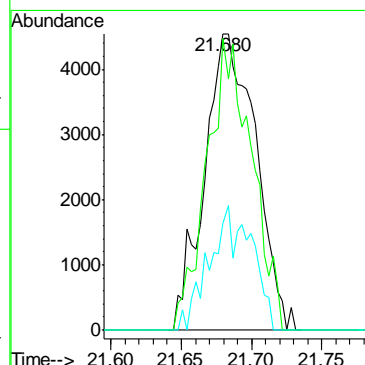
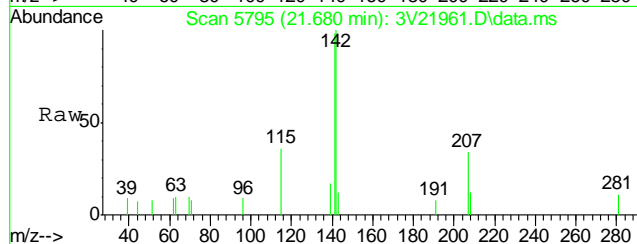
#94
2-Methylnaphthalene
Concen: 4.36 ug/l
RT: 21.375 min Scan# 5700
Delta R.T. -0.006 min
Lab File: 3V21961.D
Acq: 4 Dec 2012 10:34 am

Tgt Ion	Ratio	Lower	Upper
142	100		
141	88.2	68.6	103.0
115	36.9	23.8	35.6#



#95
1-Methylnaphthalene
Concen: 3.87 ug/l
RT: 21.680 min Scan# 5795
Delta R.T. -0.006 min
Lab File: 3V21961.D
Acq: 4 Dec 2012 10:34 am

Tgt Ion	Ratio	Lower	Upper
142	100		
141	86.8	70.6	106.0
115	34.6	25.4	38.2



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: D41381
Account: XTOKRWR XTO Energy
Project: PCU T18-13G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7075-MB	3G12508.D	1	12/10/12	DC	12/10/12	OP7075	E3G593

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

D41381-1

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	88% 10-159%
321-60-8	2-Fluorobiphenyl	79% 19-131%
1718-51-0	Terphenyl-d14	91% 18-150%

8.1.1

8

Blank Spike Summary

Page 1 of 1

Job Number: D41381
Account: XTOKRWR XTO Energy
Project: PCU T18-13G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7075-BS	3G12509.D	1	12/10/12	DC	12/10/12	OP7075	E3G593

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D41381-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	74.0	89	68-130
120-12-7	Anthracene	83.3	63.0	76	67-130
56-55-3	Benzo(a)anthracene	83.3	72.7	87	65-130
205-99-2	Benzo(b)fluoranthene	83.3	83.2	100	44-130
207-08-9	Benzo(k)fluoranthene	83.3	66.7	80	56-131
50-32-8	Benzo(a)pyrene	83.3	74.9	90	62-130
218-01-9	Chrysene	83.3	74.6	90	70-130
53-70-3	Dibenzo(a,h)anthracene	83.3	72.2	87	55-130
206-44-0	Fluoranthene	83.3	63.1	76	70-130
86-73-7	Fluorene	83.3	71.5	86	70-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	72.0	86	56-130
91-20-3	Naphthalene	83.3	78.0	94	70-130
129-00-0	Pyrene	83.3	76.0	91	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	97%	10-159%
321-60-8	2-Fluorobiphenyl	76%	19-131%
1718-51-0	Terphenyl-d14	87%	18-150%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D41381
Account: XTOKRWR XTO Energy
Project: PCU T18-13G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7075-MS	3G12511.D	1	12/10/12	DC	12/10/12	OP7075	E3G593
OP7075-MSD	3G12512.D	1	12/10/12	DC	12/10/12	OP7075	E3G593
D41381-1	3G12510.D	1	12/10/12	DC	12/10/12	OP7075	E3G593

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D41381-1

CAS No.	Compound	D41381-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		93.9	77.2	82	74.1	79	4	25-151/30
120-12-7	Anthracene	ND		93.9	71.0	76	69.6	74	2	39-159/30
56-55-3	Benzo(a)anthracene	ND		93.9	80.7	86	79.9	85	1	39-168/30
205-99-2	Benzo(b)fluoranthene	ND		93.9	85.0	90	85.9	92	1	24-163/30
207-08-9	Benzo(k)fluoranthene	ND		93.9	77.1	82	76.7	82	1	10-188/30
50-32-8	Benzo(a)pyrene	ND		93.9	83.5	89	81.1	86	3	32-144/30
218-01-9	Chrysene	ND		93.9	80.3	85	81.0	86	1	43-150/30
53-70-3	Dibenzo(a,h)anthracene	ND		93.9	81.0	86	77.6	83	4	21-152/30
206-44-0	Fluoranthene	ND		93.9	71.8	76	69.7	74	3	36-157/30
86-73-7	Fluorene	ND		93.9	80.0	85	74.9	80	7	10-182/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		93.9	79.8	85	77.7	83	3	20-154/30
91-20-3	Naphthalene	ND		93.9	77.2	82	73.0	78	6	10-163/30
129-00-0	Pyrene	ND		93.9	83.7	89	83.2	89	1	25-180/30

CAS No.	Surrogate Recoveries	MS	MSD	D41381-1	Limits
4165-60-0	Nitrobenzene-d5	83%	78%	70%	10-159%
321-60-8	2-Fluorobiphenyl	69%	64%	57%	19-131%
1718-51-0	Terphenyl-d14	78%	78%	72%	18-150%

* = Outside of Control Limits.

GC/MS Semi-volatiles

Raw Data

6

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121012\
 Data File : 3g12510.D
 Acq On : 10 Dec 2012 12:39 pm
 Operator : DONC
 Sample : D41381-1
 Misc : OP7075,E3G593,30.08,,,1,1
 ALS Vial : 6 Sample Multiplier: 1

Quant Time: Dec 10 13:59:22 2012
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G586.M
 Quant Title : PAHSIM BASE
 QLast Update : Tue Dec 04 08:50:28 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.670	136	125774	4.0000	ug/mL	-0.01
6) Acenaphthene-d10	7.385	164	87363	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.859	188	156894	4.0000	ug/mL	-0.02
19) Chrysene-d12	11.496	240	112193	4.0000	ug/mL	-0.02
24) Perylene-d12	12.873	264	89434	4.0000	ug/mL	-0.02

System Monitoring Compounds

2) Nitrobenzene-d5	4.985	82	438772	34.8991	ug/mL	-0.01
Spiked Amount	50.000	Range	25 - 135	Recovery	=	69.80%
7) 2-Fluorobiphenyl	6.723	172	1116026	28.3022	ug/mL	0.00
Spiked Amount	50.000	Range	25 - 135	Recovery	=	56.60%
21) Terphenyl-d14	10.450	244	597395	36.1741	ug/mL	-0.02
Spiked Amount	50.000	Range	25 - 135	Recovery	=	72.34%

Target Compounds

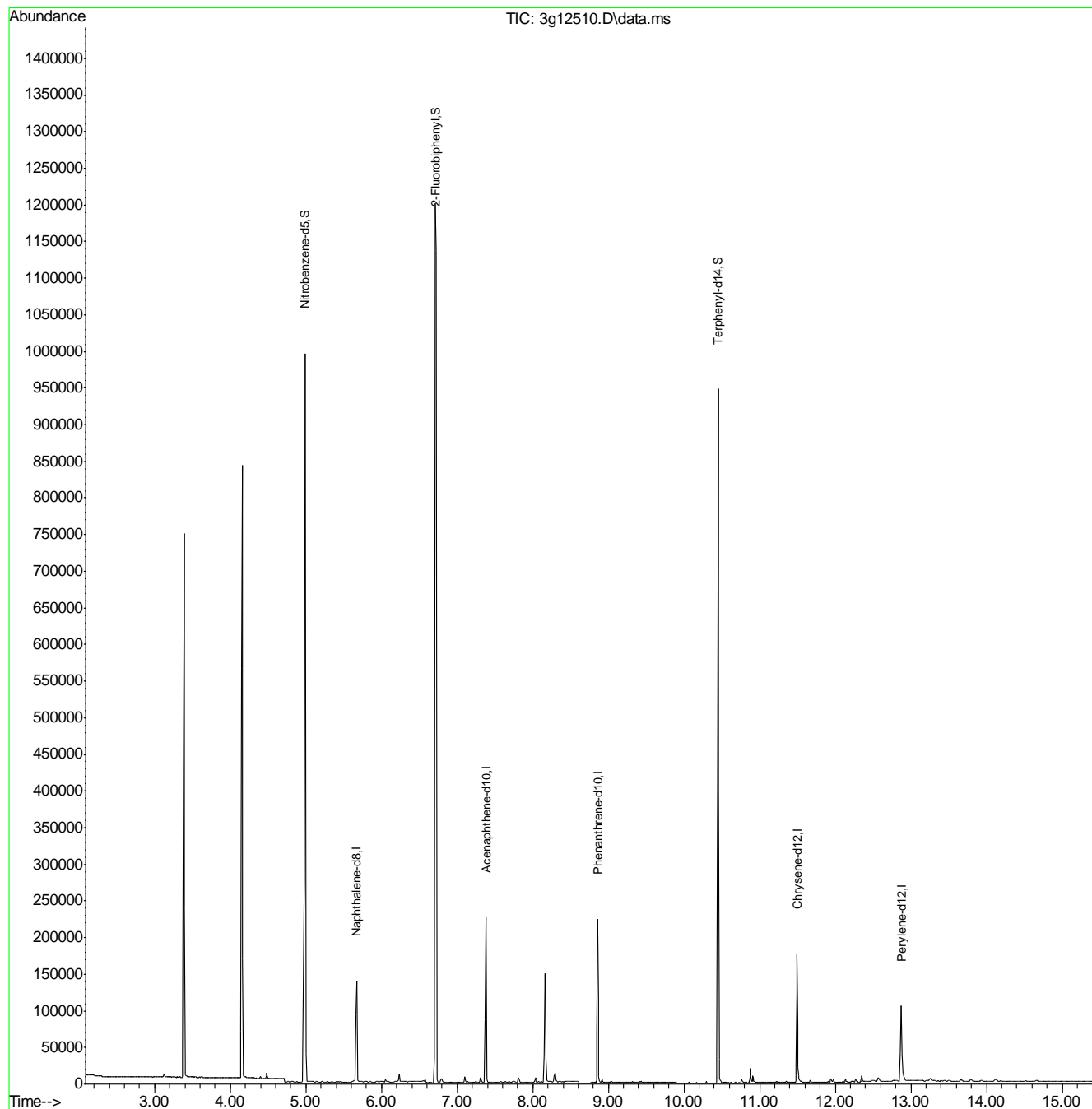
					Qvalue
3) N-Nitrosodimethylamine	2.363	74	36	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.683	128	479	N.D.	
8) 2-Methylnaphthalene	6.356	142	250	N.D.	
9) 1-Methylnaphthalene	6.456	142	154	N.D.	
10) Acenaphthylene	6.853	152	554	N.D.	
11) Acenaphthene	7.385	154	494	Below	Cal # 29
12) Dibenzofuran	7.585	168	320	N.D.	
13) Fluorene	0.000	166	0	N.D.	d
14) Diphenylamine	0.000	169	0	N.D.	d
16) Phenanthrene	8.883	178	967	N.D.	
17) Anthracene	8.938	178	380	N.D.	
18) Fluoranthene	10.070	202	838	N.D.	
20) Pyrene	10.292	202	1146	N.D.	
22) Benzo(a)anthracene	11.483	228	1536	N.D.	
23) Chrysene	11.483	228	1536	N.D.	
25) Benzo(b)fluoranthene	12.494	252	1583	N.D.	
26) Benzo(k)fluoranthene	12.494	252	1583	N.D.	
27) Benzo(a)pyrene	12.810	252	669	N.D.	
28) Indeno(1,2,3-cd)pyrene	14.093	276	628	N.D.	
29) Dibenz(a,h)anthracene	14.103	278	352	N.D.	
30) Benzo(g,h,i)perylene	14.429	276	770	N.D.	

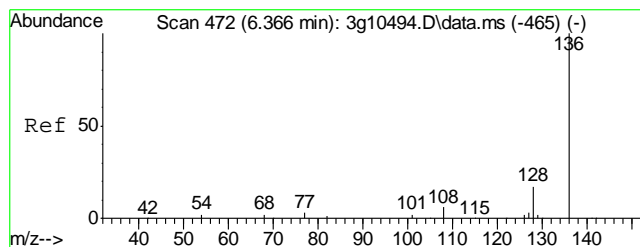
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121012\
Data File : 3g12510.D
Acq On : 10 Dec 2012 12:39 pm
Operator : DONC
Sample : D41381-1
Misc : OP7075,E3G593,30.08,,,1,1
ALS Vial : 6 Sample Multiplier: 1

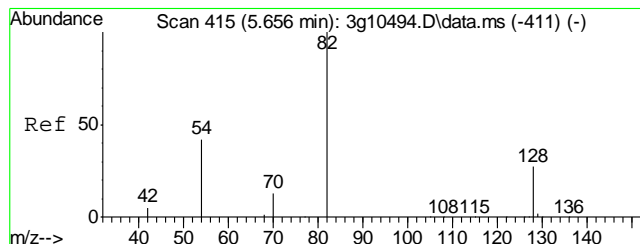
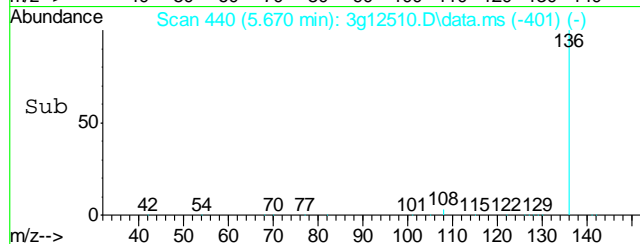
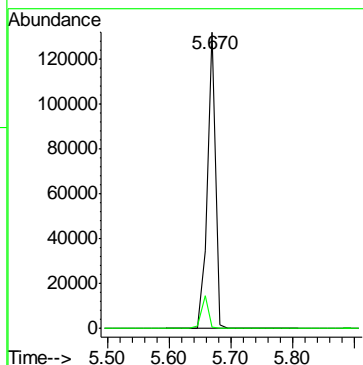
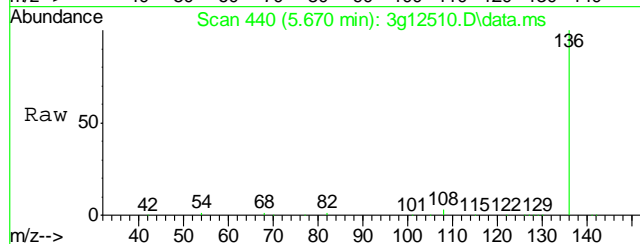
Quant Time: Dec 10 13:59:22 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G586.M
Quant Title : PAHSIM BASE
QLast Update : Tue Dec 04 08:50:28 2012
Response via : Initial Calibration





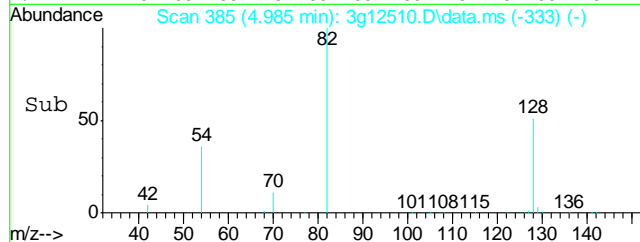
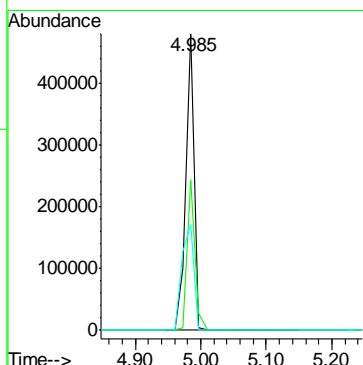
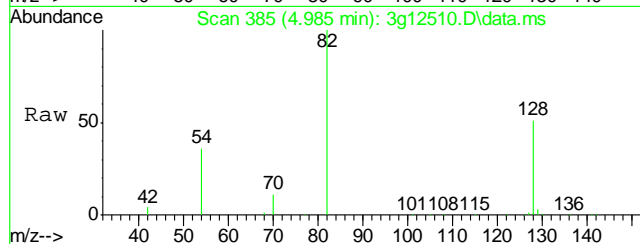
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.670 min Scan# 440
Delta R.T. -0.011 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

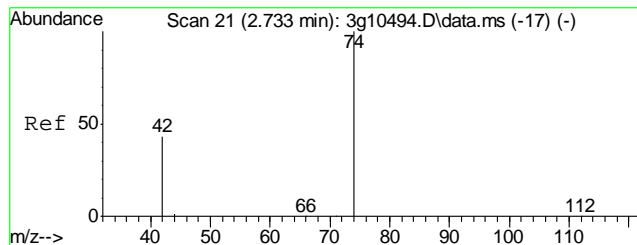
Tgt Ion: 136 Resp: 125774
Ion Ratio Lower Upper
136 100
68 9.8 0.0 28.4



#2
Nitrobenzene-d5
Concen: 34.8991 ug/mL
RT: 4.985 min Scan# 385
Delta R.T. -0.011 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

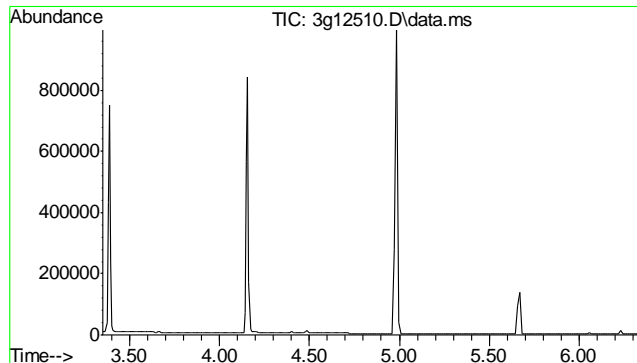
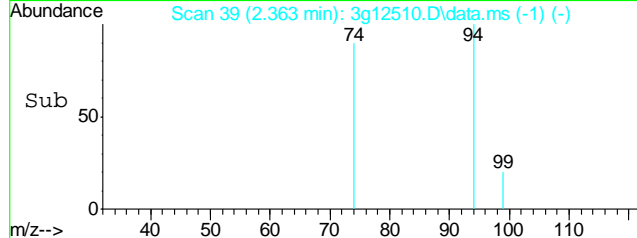
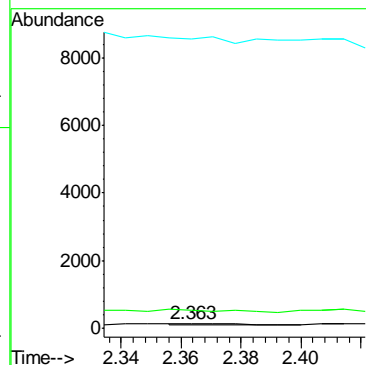
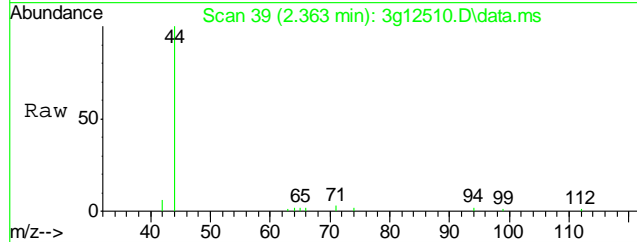
Tgt Ion: 82 Resp: 438772
Ion Ratio Lower Upper
82 100
128 47.1 31.8 71.8
54 51.3 29.2 69.2





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.363 min Scan# 39
Delta R.T. -0.015 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

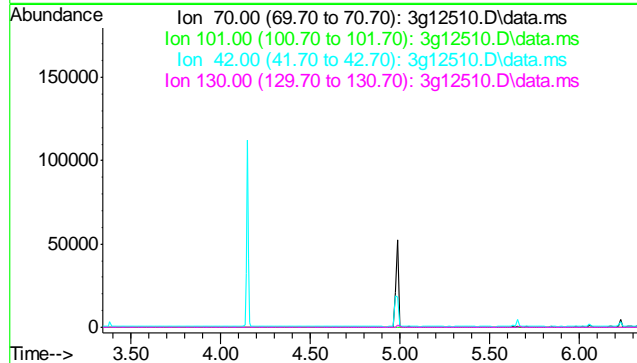
Tgt Ion: 74 Resp: 36
Ion Ratio Lower Upper
74 100
42 0.0 52.5 92.5#
44 0.0 0.0 24.1

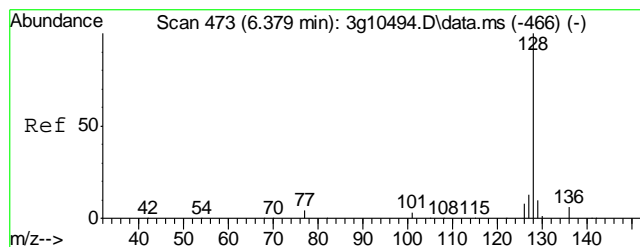


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

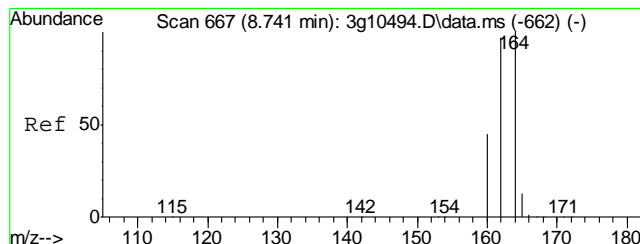
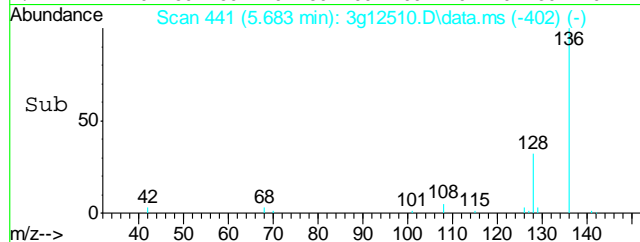
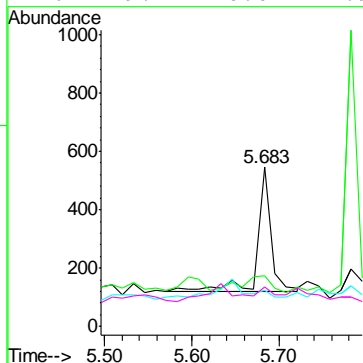
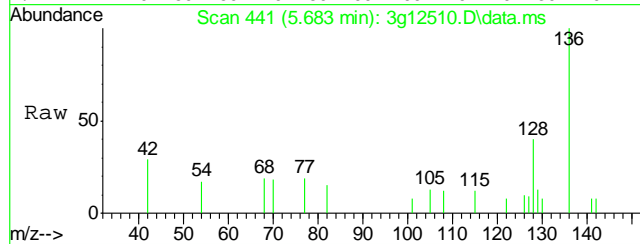
Tgt Ion: 70
Sig Exp Ratio
70 100
101 12.2
42 67.9
130 33.2





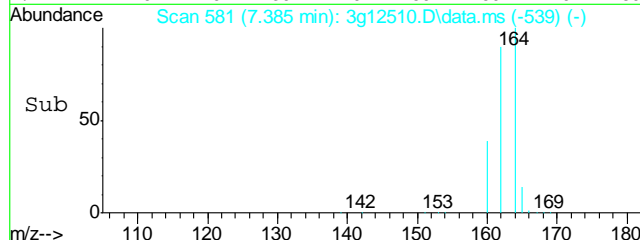
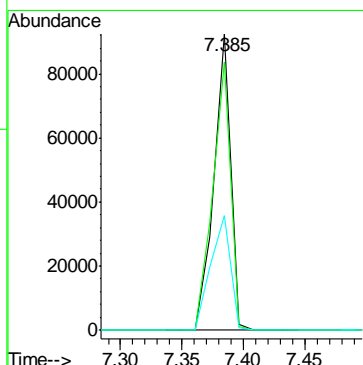
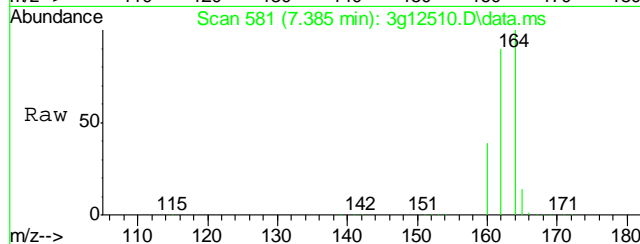
#5
Naphthalene
Concen: Below ug/mL
RT: 5.683 min Scan# 441
Delta R.T. -0.011 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

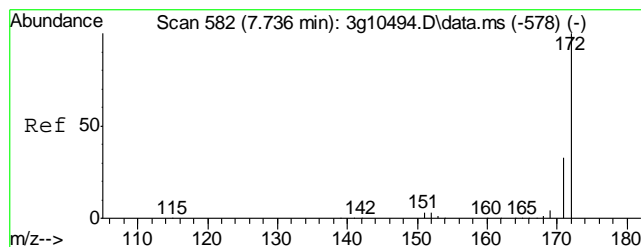
Tgt Ion:	128	Resp:	479
Ion Ratio	Lower	Upper	
128	100		
129	28.8	0.0	30.7
127	0.0	0.0	33.2
126	9.4	0.0	27.9



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.385 min Scan# 581
Delta R.T. -0.004 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

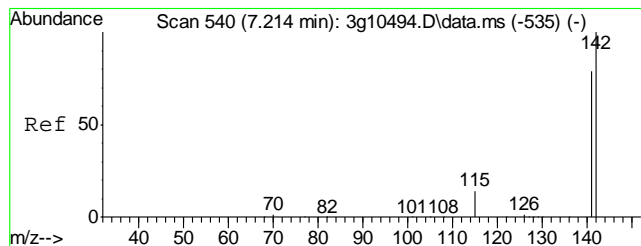
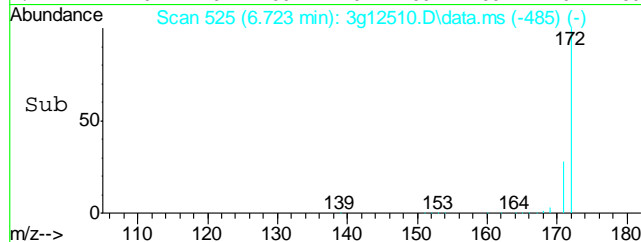
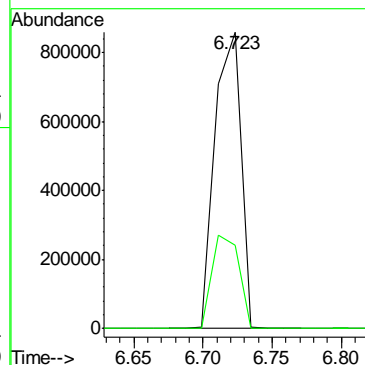
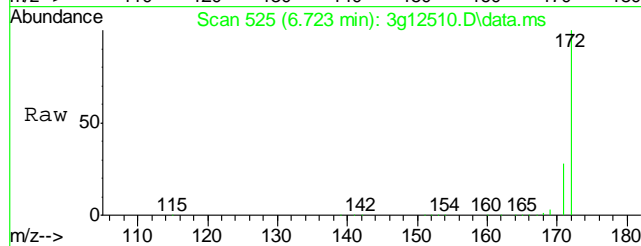
Tgt Ion:	164	Resp:	87363
Ion Ratio	Lower	Upper	
164	100		
162	96.2	78.0	118.0
160	45.5	27.3	67.3





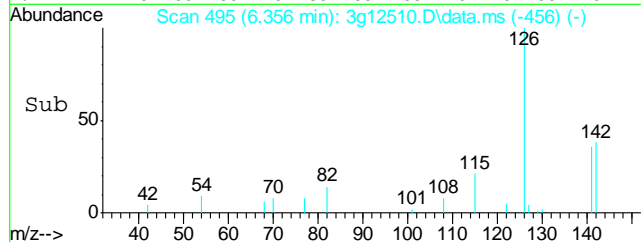
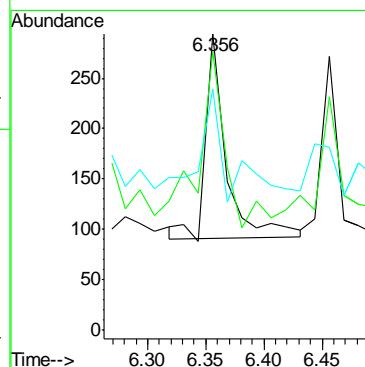
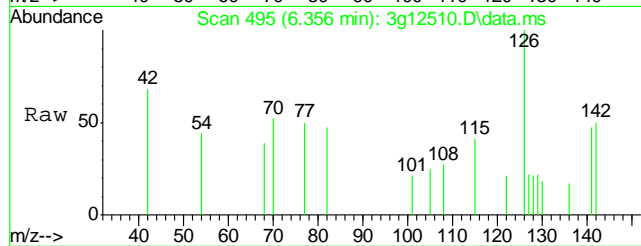
#7
2-Fluorobiphenyl
Concen: 28.3022 ug/mL
RT: 6.723 min Scan# 525
Delta R.T. -0.004 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

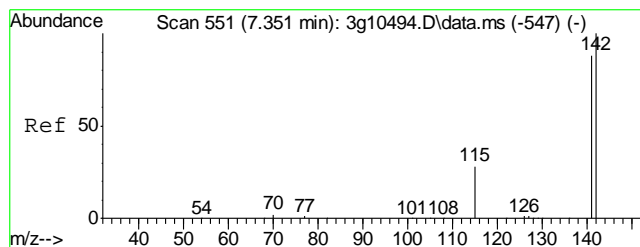
Tgt Ion:172 Resp: 1116026
Ion Ratio Lower Upper
172 100
171 32.5 13.7 53.7



#8
2-Methylnaphthalene
Concen: Below ug/mL
RT: 6.356 min Scan# 495
Delta R.T. -0.011 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

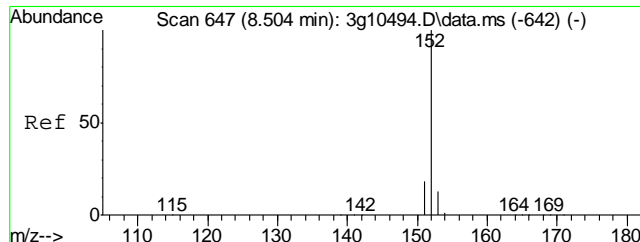
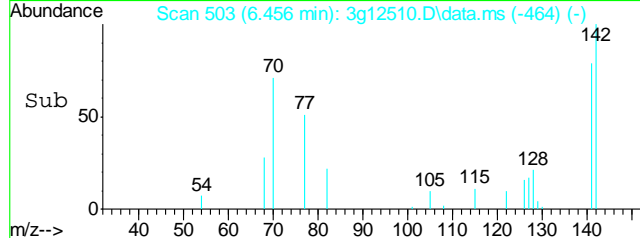
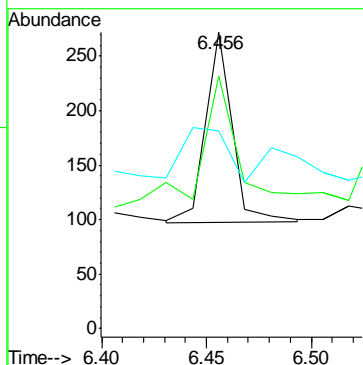
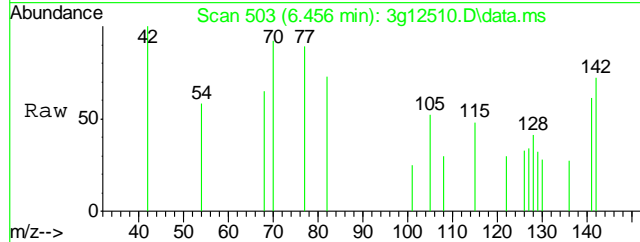
Tgt Ion:142 Resp: 250
Ion Ratio Lower Upper
142 100
141 112.4 65.6 105.6#
115 0.0 12.2 52.2#





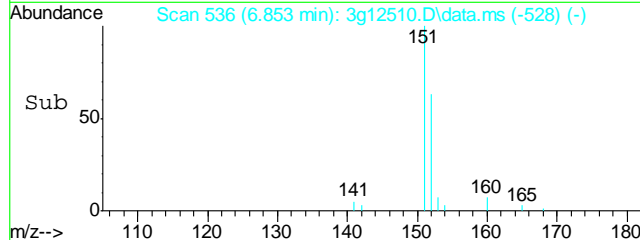
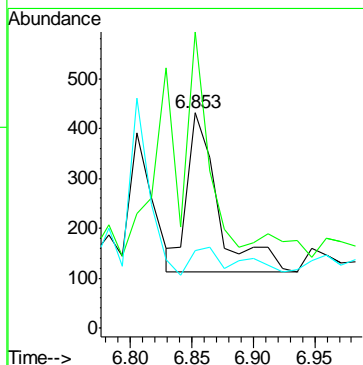
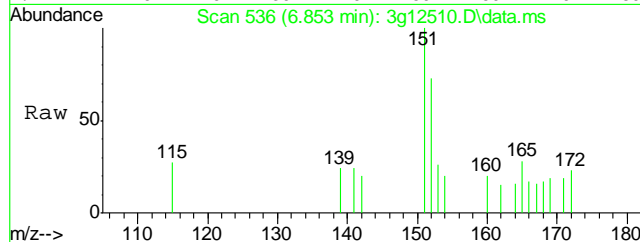
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.456 min Scan# 503
Delta R.T. -0.011 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

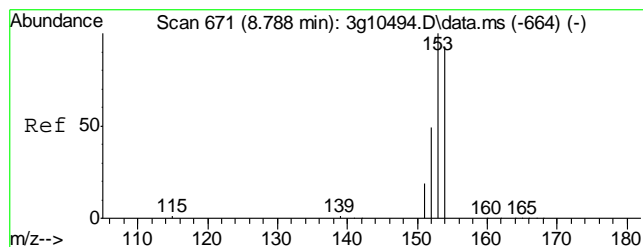
Tgt Ion	Ratio	Lower	Upper
142	100		
141	115.6	67.0	107.0#
115	0.0	9.3	49.3#



#10
Acenaphthylene
Concen: Below ug/mL
RT: 6.853 min Scan# 536
Delta R.T. -0.406 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

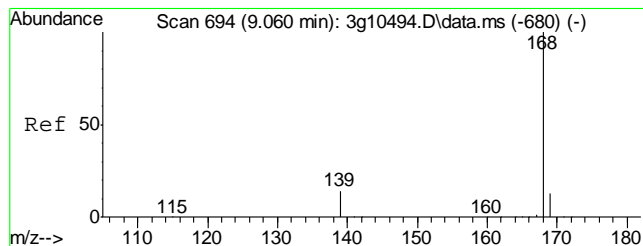
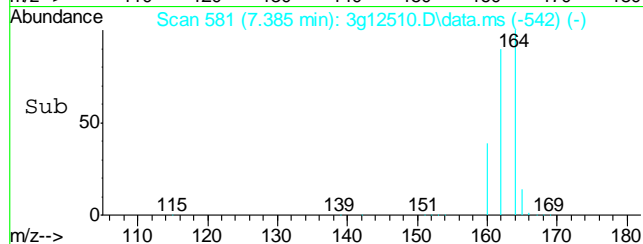
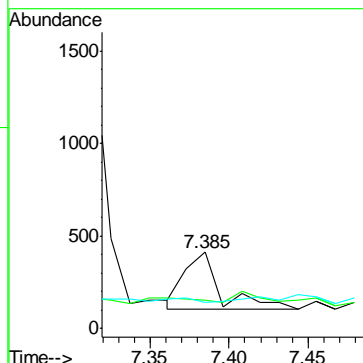
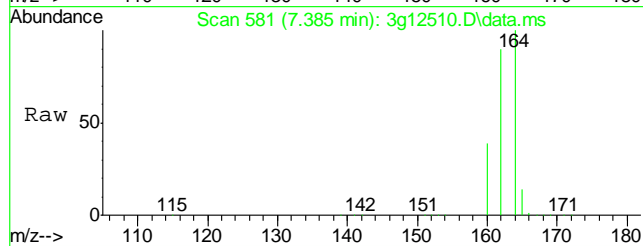
Tgt Ion	Ratio	Lower	Upper
152	100		
151	14.3	0.0	39.5
153	27.3	0.0	33.0





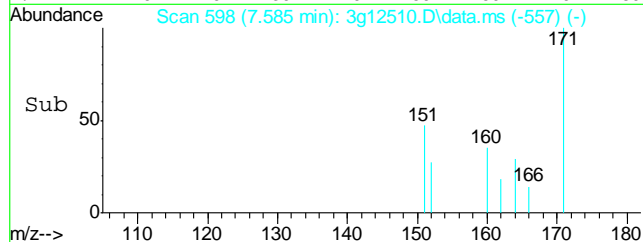
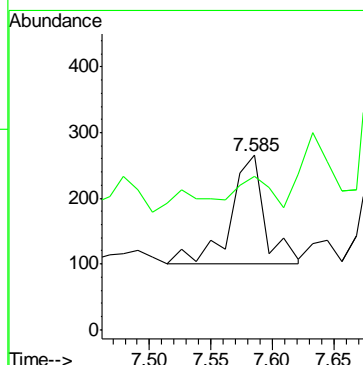
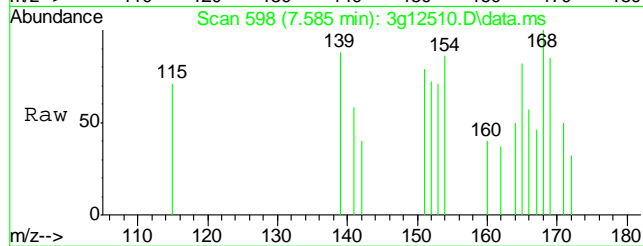
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.385 min Scan# 581
Delta R.T. -0.040 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

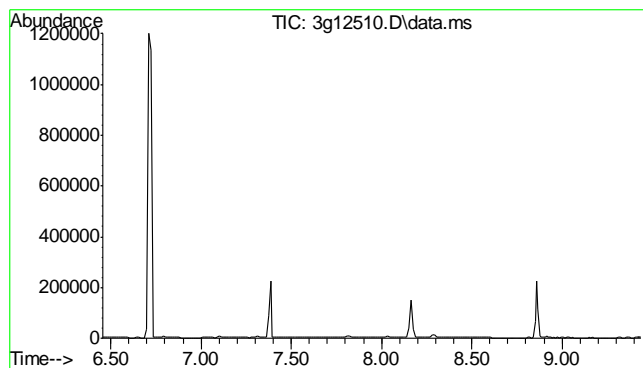
Tgt Ion	Ratio	Lower	Upper
154	100		
153	32.4	84.7	124.7#
152	0.0	30.2	70.2#



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.585 min Scan# 598
Delta R.T. -0.016 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

Tgt Ion	Ratio	Lower	Upper
168	100		
139	24.7	12.0	52.0

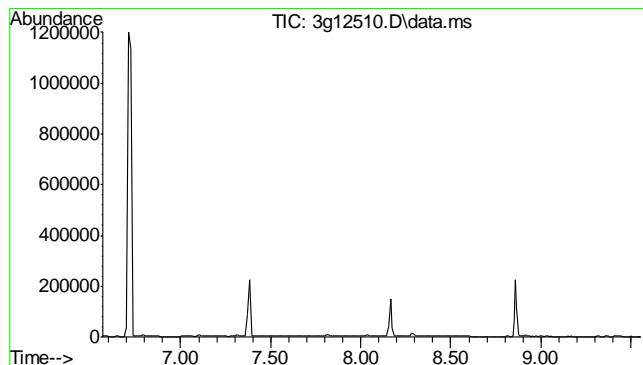
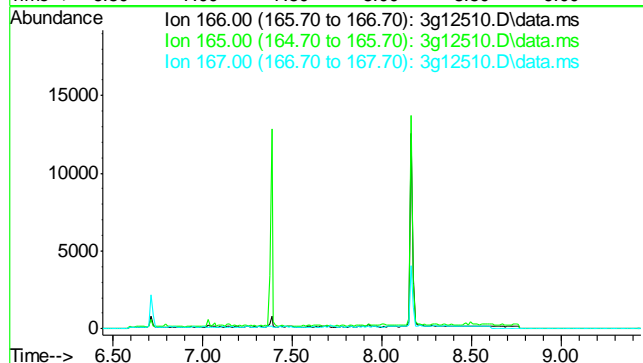




#13
 Fluorene
 Concen: N.D. ug/mL
 Expected RT: 7.94 min

 Lab File: 3g12510.D
 Acq: 10 Dec 12 12:39 pm

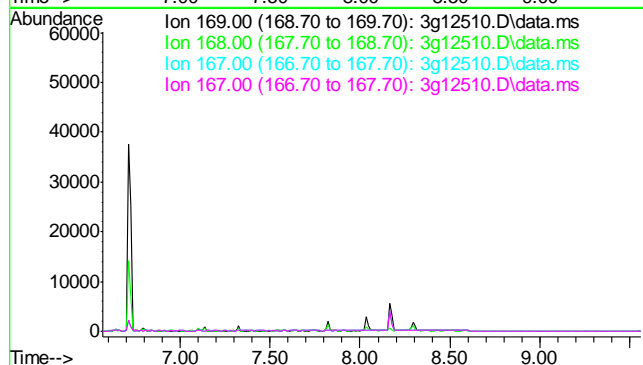
Tgt Ion	Sig	Exp Ratio
166	100	
165	90.1	
167	13.4	

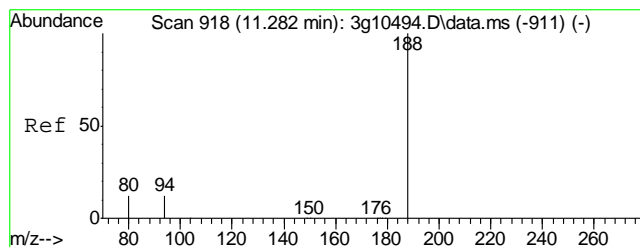


#14
 Diphenylamine
 Concen: N.D. ug/mL
 Expected RT: 8.06 min

 Lab File: 3g12510.D
 Acq: 10 Dec 12 12:39 pm

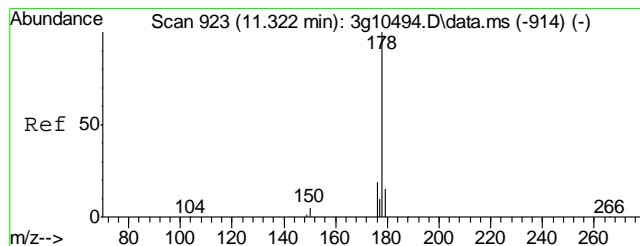
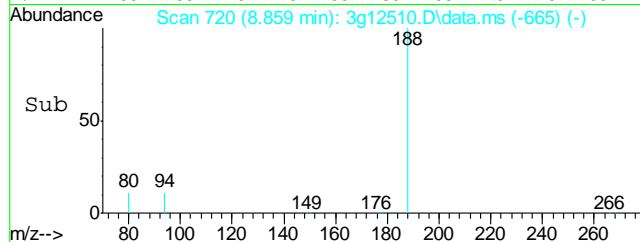
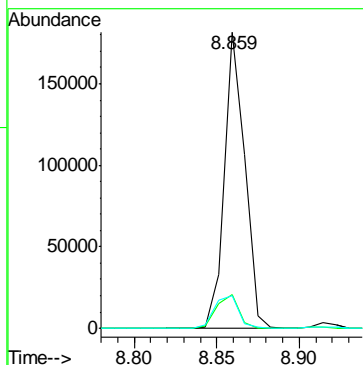
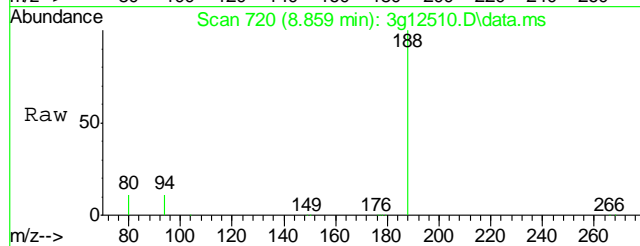
Tgt Ion	Sig	Exp Ratio
169	100	
168	60.1	
167	32.1	
167	32.1	





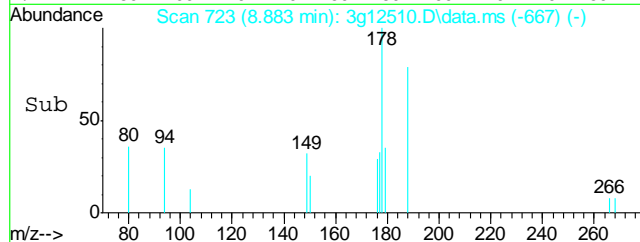
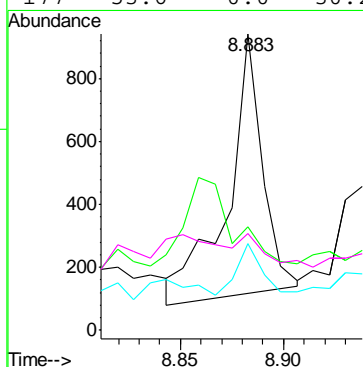
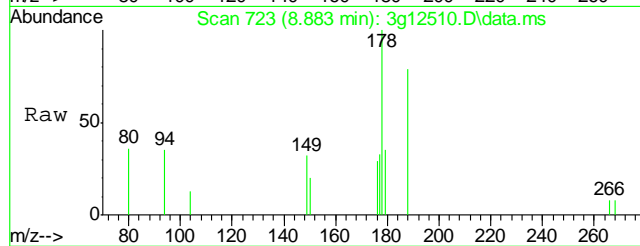
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.859 min Scan# 720
Delta R.T. -0.019 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

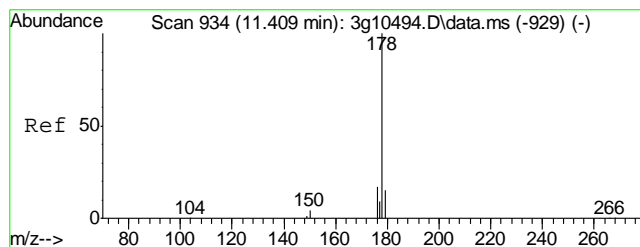
Tgt Ion:188	Resp:	156894
Ion Ratio	Lower	Upper
188 100		
94 11.8	0.0	33.4
80 12.3	0.0	28.9



#16
Phenanthrene
Concen: Below ug/mL
RT: 8.883 min Scan# 723
Delta R.T. -0.019 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

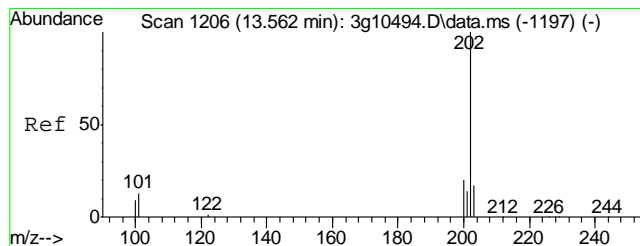
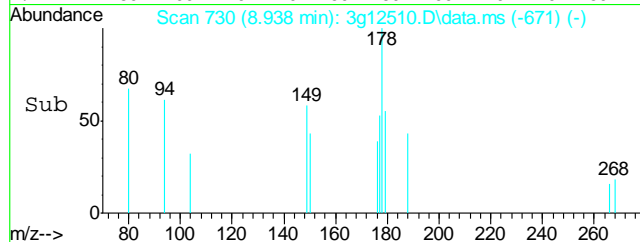
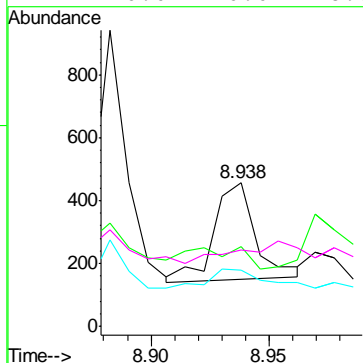
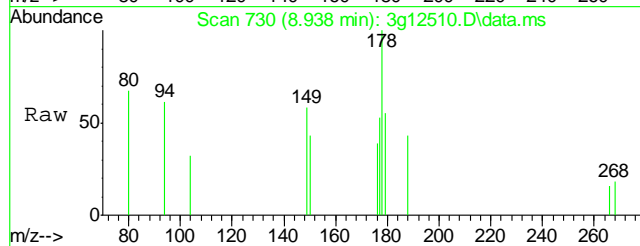
Tgt Ion:178	Resp:	967
Ion Ratio	Lower	Upper
178 100		
179 0.0	0.0	35.3
176 23.4	0.0	38.6
177 53.6	0.0	30.2#





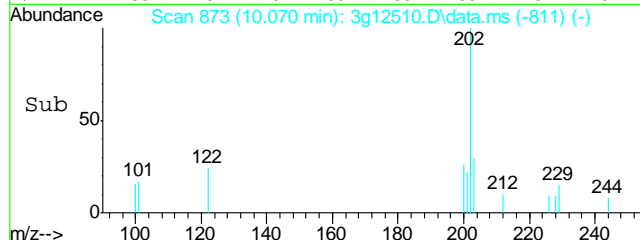
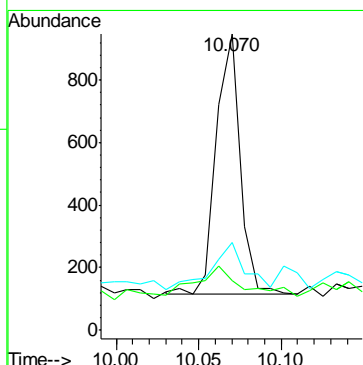
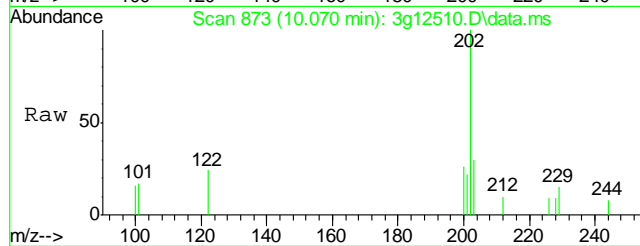
#17
 Anthracene
 Concen: Below ug/mL
 RT: 8.938 min Scan# 730
 Delta R.T. -0.012 min
 Lab File: 3g12510.D
 Acq: 10 Dec 12 12:39 pm

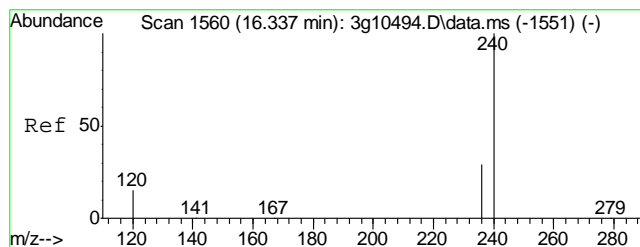
Tgt Ion:	178	Resp:	380
Ion Ratio	Lower	Upper	
178	100		
179	55.0	0.0	35.1#
176	43.2	0.0	38.2#
177	0.0	0.0	28.8



#18
 Fluoranthene
 Concen: Below ug/mL
 RT: 10.070 min Scan# 873
 Delta R.T. -0.012 min
 Lab File: 3g12510.D
 Acq: 10 Dec 12 12:39 pm

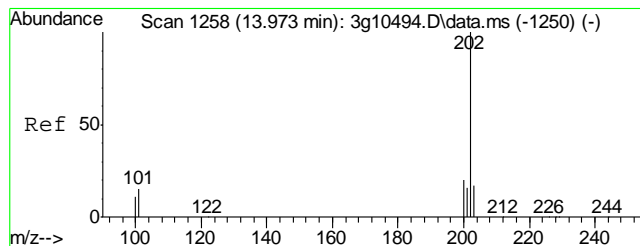
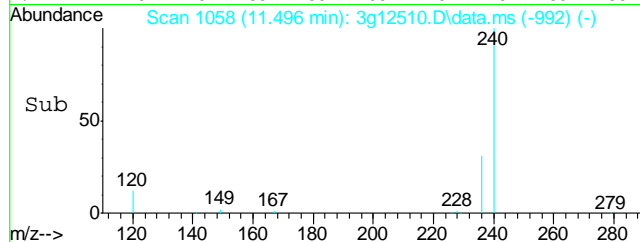
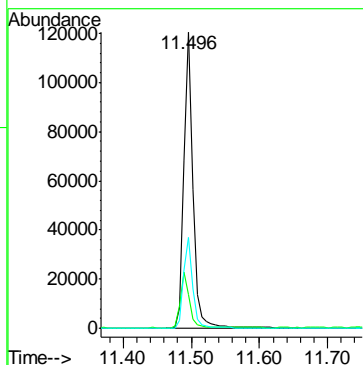
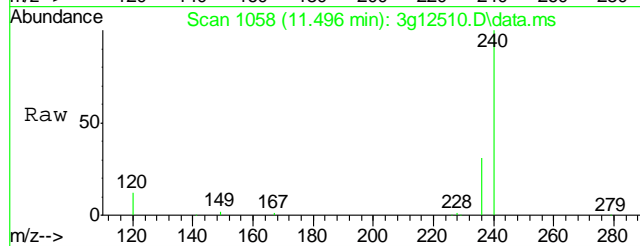
Tgt Ion:	202	Resp:	838
Ion Ratio	Lower	Upper	
202	100		
101	20.0	0.0	32.5
203	20.6	0.0	37.3





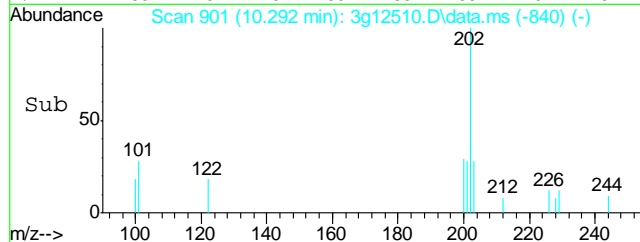
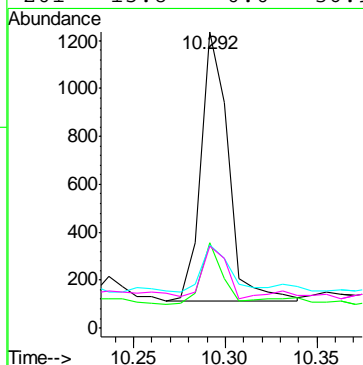
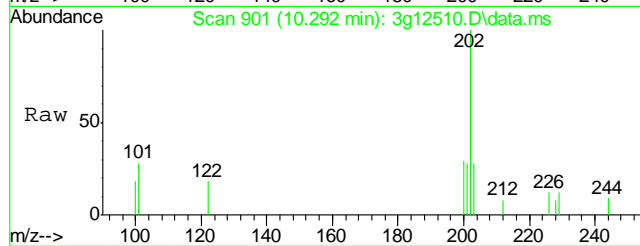
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.496 min Scan# 1058
Delta R.T. -0.019 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

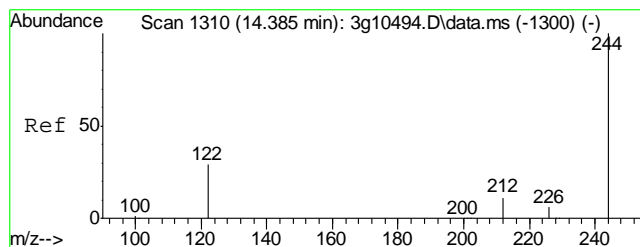
Tgt Ion	Ratio	Lower	Upper
240	100		
120	18.5	0.0	39.7
236	31.2	11.1	51.1



#20
Pyrene
Concen: Below ug/mL
RT: 10.292 min Scan# 901
Delta R.T. -0.019 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

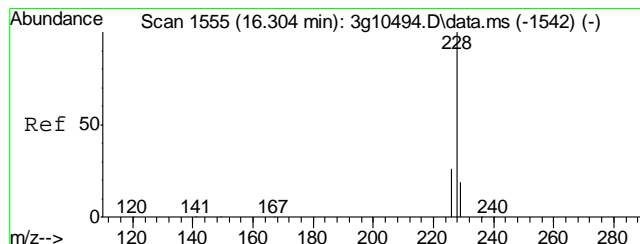
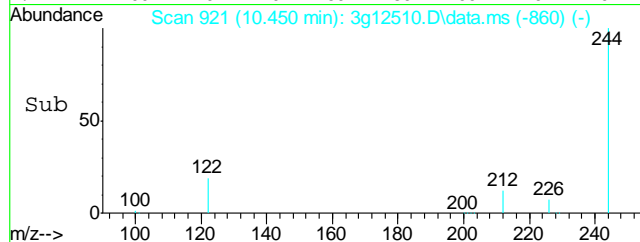
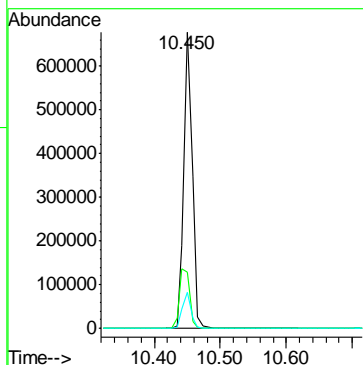
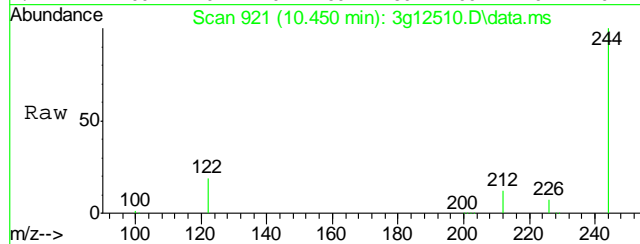
Tgt Ion	Ratio	Lower	Upper
202	100		
200	18.4	0.7	40.7
203	18.2	0.0	37.8
201	15.8	0.0	36.9





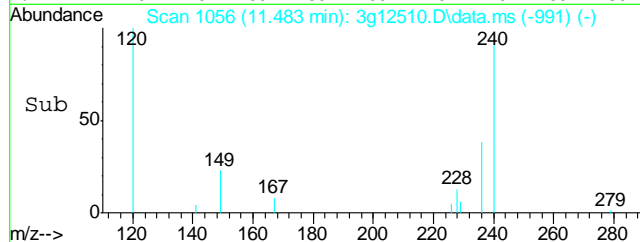
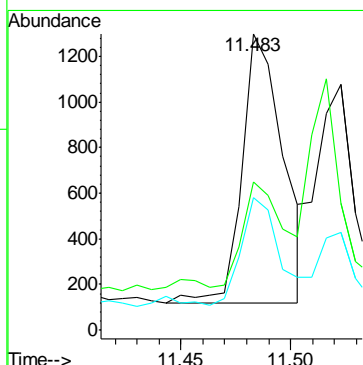
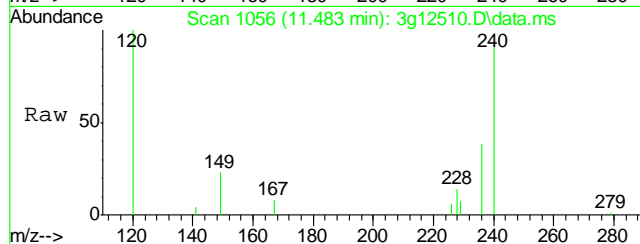
#21
Terphenyl-d14
Concen: 36.1741 ug/mL
RT: 10.450 min Scan# 921
Delta R.T. -0.020 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

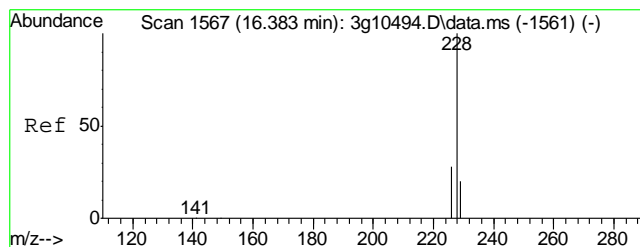
Tgt Ion:	244	Resp:	597395
Ion Ratio	Lower	Upper	
244	100		
122	24.4	6.8	46.8
212	12.4	0.0	32.3



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.483 min Scan# 1056
Delta R.T. -0.019 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

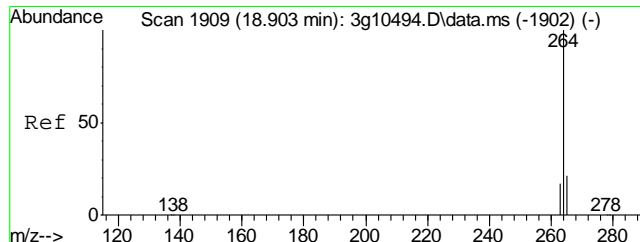
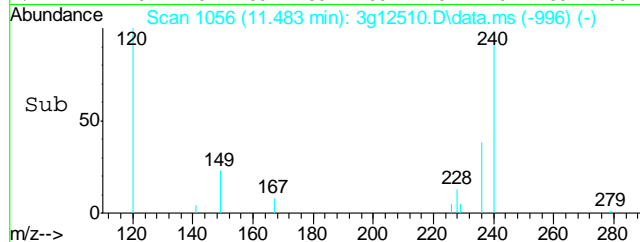
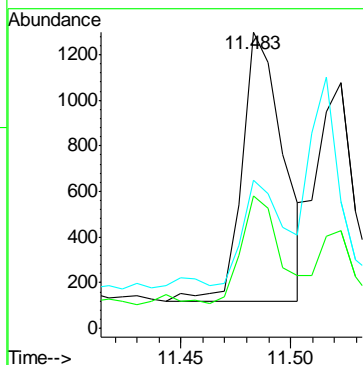
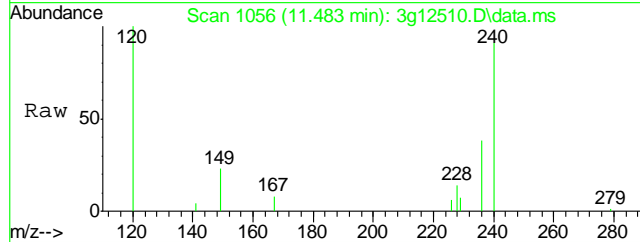
Tgt Ion:	228	Resp:	1536
Ion Ratio	Lower	Upper	
228	100		
229	39.4	0.0	39.4
226	36.3	6.8	46.8





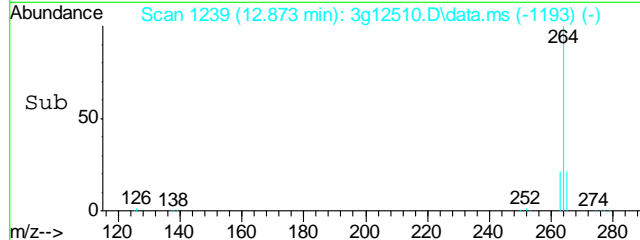
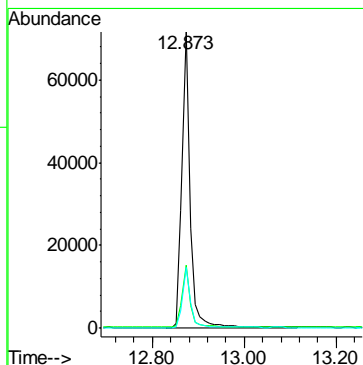
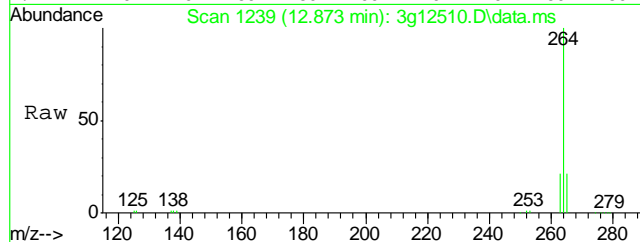
#23
Chrysene
Concen: Below ug/mL
RT: 11.483 min Scan# 1056
Delta R.T. -0.059 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

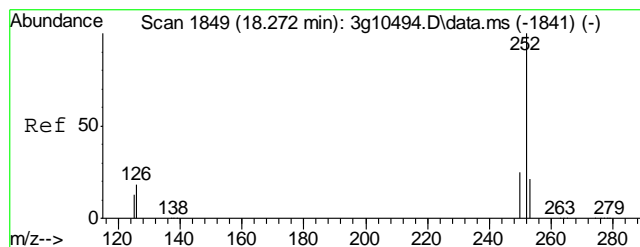
Tgt Ion:	228	Resp:	1536
Ion Ratio	100	Lower	Upper
228	100		
226	36.3	9.2	49.2
229	39.4	0.0	39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.873 min Scan# 1239
Delta R.T. -0.019 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

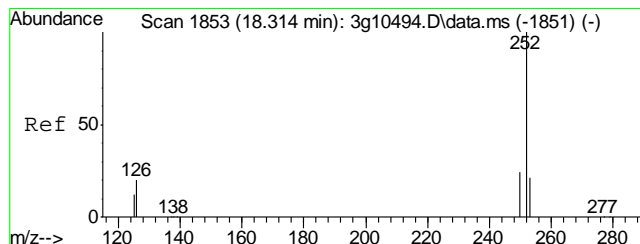
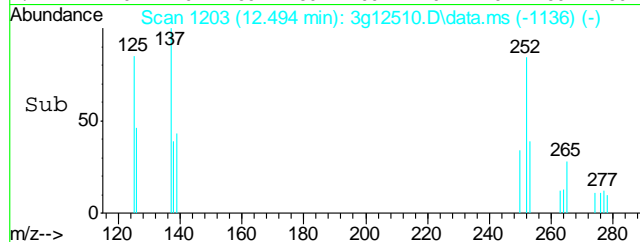
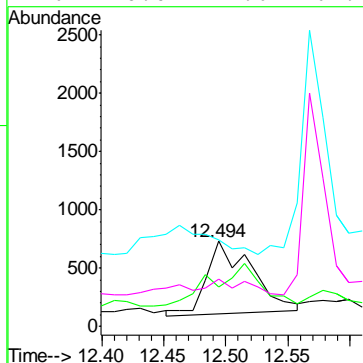
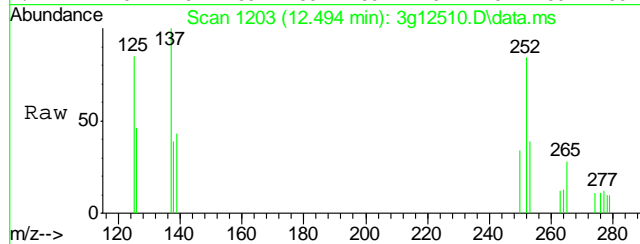
Tgt Ion:	264	Resp:	89434
Ion Ratio	100	Lower	Upper
264	100		
265	20.8	0.6	40.6
263	20.0	0.0	39.7





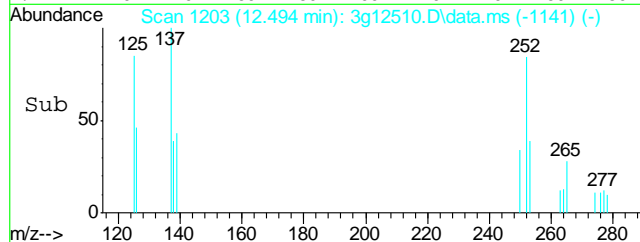
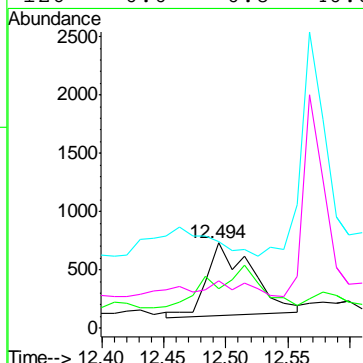
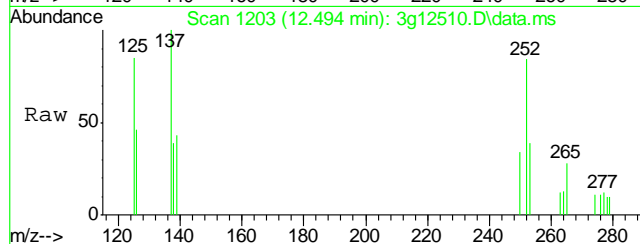
#25
Benzo(b)fluoranthene
Concen: Below ug/mL
RT: 12.494 min Scan# 1203
Delta R.T. -0.019 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

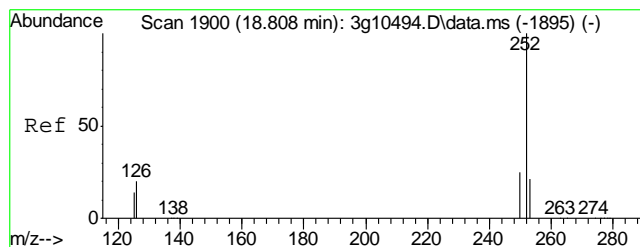
Tgt Ion:	252	Resp:	1583
Ion Ratio	Lower	Upper	
252	100		
253	97.2	7.0	47.0#
125	376.6	9.0	49.0#
126	0.0	21.6	61.6#



#26
Benzo(k)fluoranthene
Concen: Below ug/mL
RT: 12.494 min Scan# 1203
Delta R.T. -0.051 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

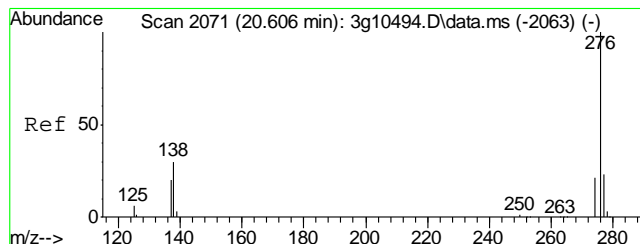
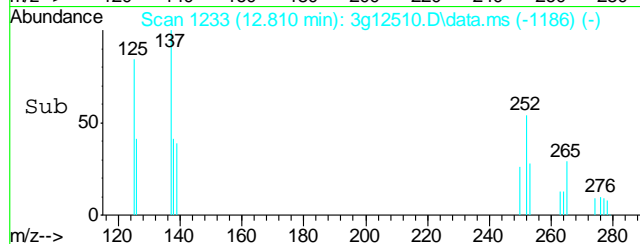
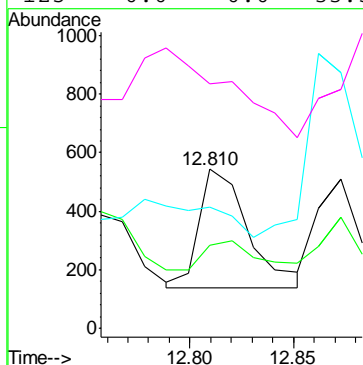
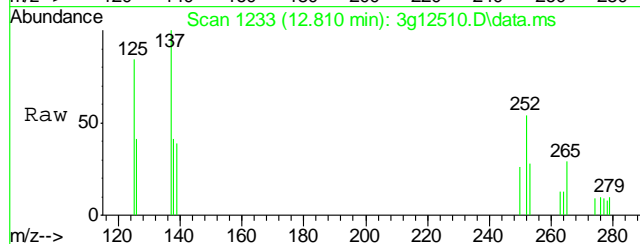
Tgt Ion:	252	Resp:	1583
Ion Ratio	Lower	Upper	
252	100		
253	97.2	4.0	44.0#
125	376.6	0.0	35.3#
126	0.0	0.8	40.8#





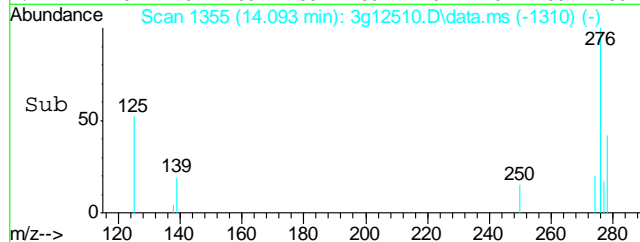
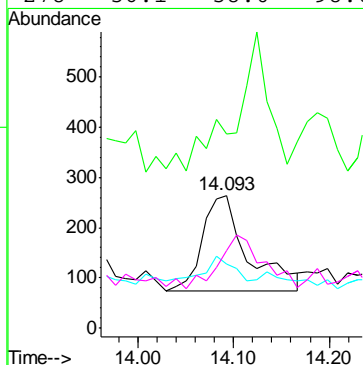
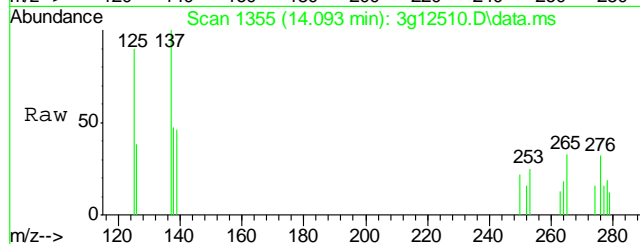
#27
Benzo(a)pyrene
Concen: Below ug/mL
RT: 12.810 min Scan# 1233
Delta R.T. -0.030 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

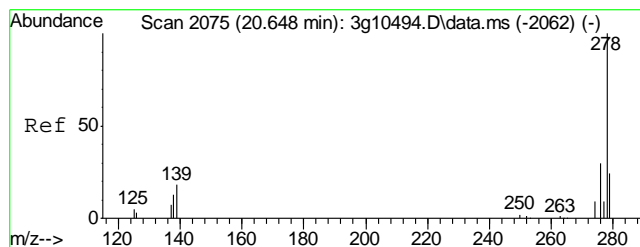
Tgt Ion:	252	Resp:	669
Ion Ratio	Lower	Upper	
252	100		
253	28.6	1.5	41.5
126	0.0	0.0	38.4
125	0.0	0.0	33.5



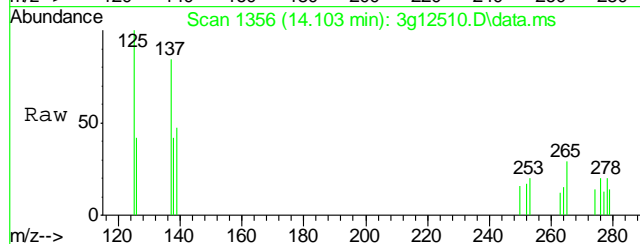
#28
Indeno(1,2,3-cd)pyrene
Concen: Below ug/mL
RT: 14.093 min Scan# 1355
Delta R.T. -0.030 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm

Tgt Ion:	276	Resp:	628
Ion Ratio	Lower	Upper	
276	100		
138	0.0	16.0	56.0#
277	21.2	4.9	44.9
278	56.1	58.0	98.0#

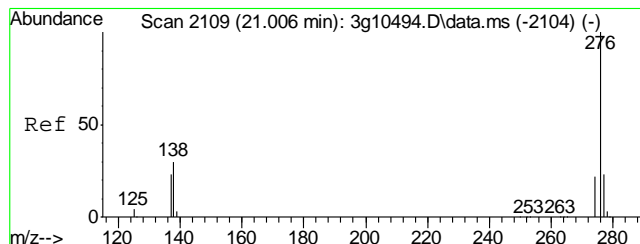
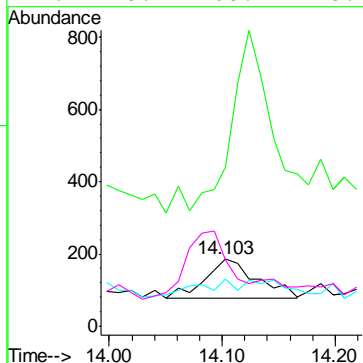
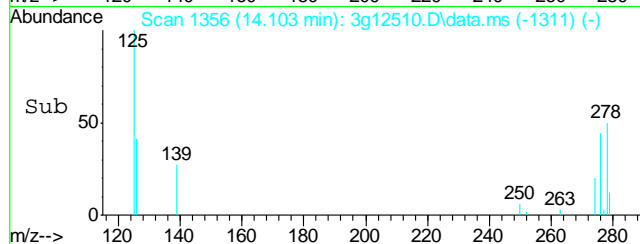




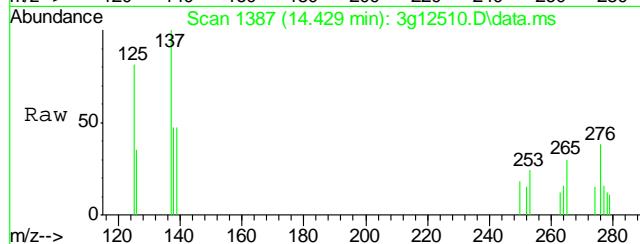
#29
Dibenz(a,h)anthracene
Concen: Below ug/mL
RT: 14.103 min Scan# 1356
Delta R.T. -0.030 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm



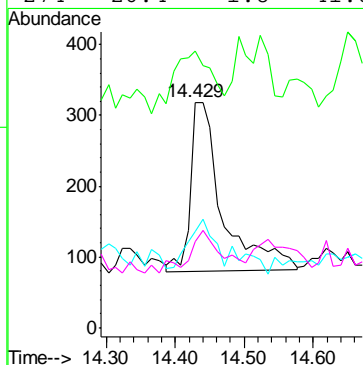
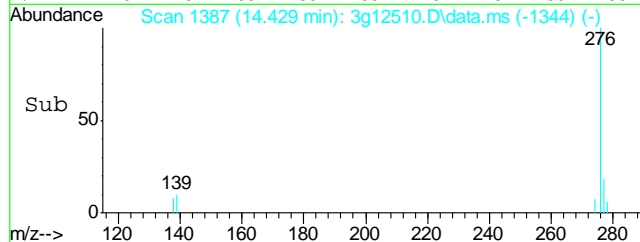
Tgt Ion: 278 Resp: 352
Ion Ratio Lower Upper
278 100
139 0.0 7.4 47.4#
279 6.0 2.8 42.8
276 178.4 108.1 148.1#



#30
Benzo(g,h,i)perylene
Concen: Below ug/mL
RT: 14.429 min Scan# 1387
Delta R.T. -0.051 min
Lab File: 3g12510.D
Acq: 10 Dec 12 12:39 pm



Tgt Ion: 276 Resp: 770
Ion Ratio Lower Upper
276 100
138 45.3 10.9 50.9
277 21.6 3.2 43.2
274 26.4 1.8 41.8



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121012\
 Data File : 3g12508.D
 Acq On : 10 Dec 2012 11:52 am
 Operator : DONC
 Sample : OP7075-MB
 Misc : OP7075,E3G593,30.00,,,1,1
 ALS Vial : 4 Sample Multiplier: 1

Quant Time: Dec 10 13:58:13 2012
 Quant Method : C:\msdchem\1\METHODS\SIMPE3G586.M
 Quant Title : PAHSIM BASE
 QLast Update : Tue Dec 04 08:50:28 2012
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Naphthalene-d8	5.670	136	153335	4.0000	ug/mL	-0.01
6) Acenaphthene-d10	7.385	164	92403	4.0000	ug/mL	0.00
15) Phenanthrene-d10	8.867	188	160356	4.0000	ug/mL	-0.01
19) Chrysene-d12	11.503	240	115791	4.0000	ug/mL	-0.01
24) Perylene-d12	12.883	264	94737	4.0000	ug/mL	0.00

System Monitoring Compounds

2) Nitrobenzene-d5	4.985	82	677706	44.2147	ug/mL	-0.01
Spiked Amount 50.000	Range 25 - 135		Recovery =	88.42%		
7) 2-Fluorobiphenyl	6.723	172	1592975	39.4888	ug/mL	0.00
Spiked Amount 50.000	Range 25 - 135		Recovery =	78.98%		
21) Terphenyl-d14	10.458	244	774374	45.4337	ug/mL	-0.01
Spiked Amount 50.000	Range 25 - 135		Recovery =	90.86%		

Target Compounds

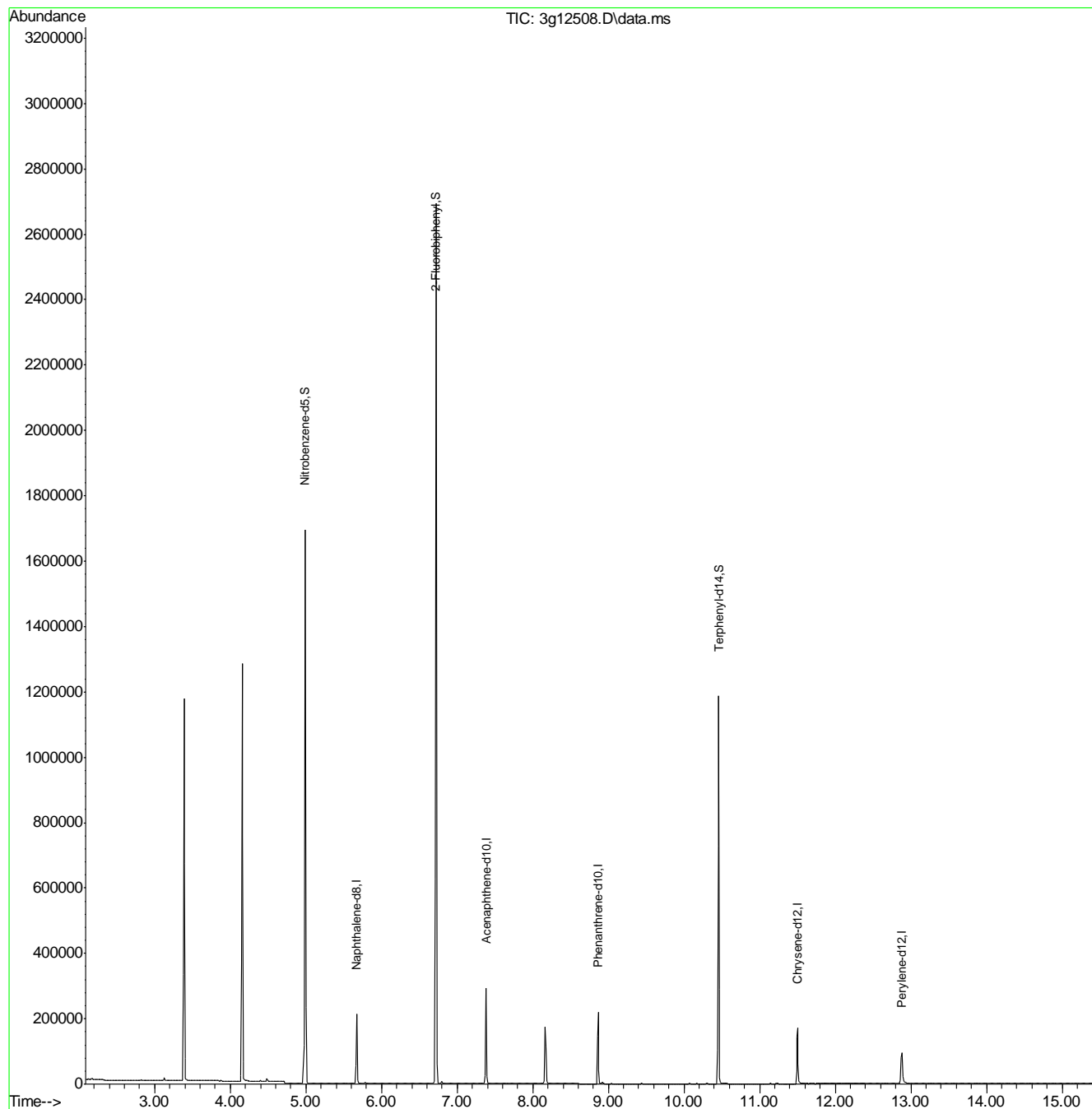
					Qvalue
3) N-Nitrosodimethylamine	2.334	74	50	N.D.	
4) N-Nitrosodi-propylamine	0.000	70	0	N.D.	d
5) Naphthalene	5.683	128	491	N.D.	
8) 2-Methylnaphthalene	6.356	142	179	N.D.	
9) 1-Methylnaphthalene	6.456	142	126	N.D.	
10) Acenaphthylene	7.243	152	198	N.D.	
11) Acenaphthene	7.113	154	75	Below Cal	87
12) Dibenzofuran	7.585	168	152	N.D.	
13) Fluorene	0.000	166	0	N.D.	d
14) Diphenylamine	0.000	169	0	N.D.	d
16) Phenanthrene	8.891	178	540	N.D.	
17) Anthracene	8.938	178	357	N.D.	
18) Fluoranthene	10.070	202	778	N.D.	
20) Pyrene	10.299	202	864	N.D.	
22) Benzo(a)anthracene	11.496	228	1148	N.D.	
23) Chrysene	11.523	228	724	N.D.	
25) Benzo(b)fluoranthene	12.494	252	1411	N.D.	
26) Benzo(k)fluoranthene	12.494	252	1411	N.D.	
27) Benzo(a)pyrene	12.820	252	509	N.D.	
28) Indeno(1,2,3-cd)pyrene	14.093	276	459	N.D.	
29) Dibenz(a,h)anthracene	14.114	278	376	N.D.	
30) Benzo(g,h,i)perylene	14.450	276	479	N.D.	

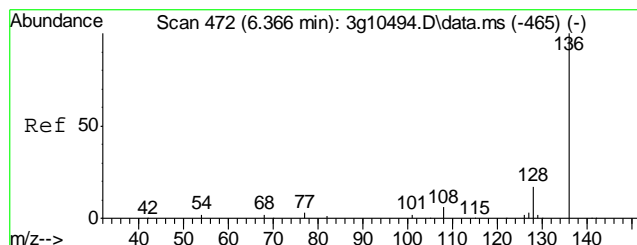
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\121012\
Data File : 3g12508.D
Acq On : 10 Dec 2012 11:52 am
Operator : DONC
Sample : OP7075-MB
Misc : OP7075,E3G593,30.00,,,1,1
ALS Vial : 4 Sample Multiplier: 1

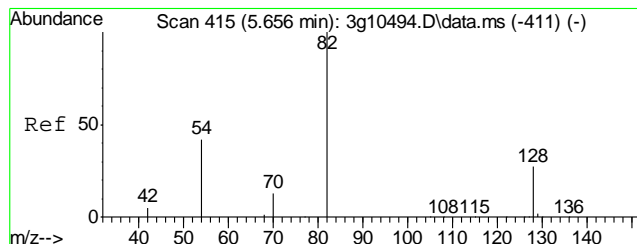
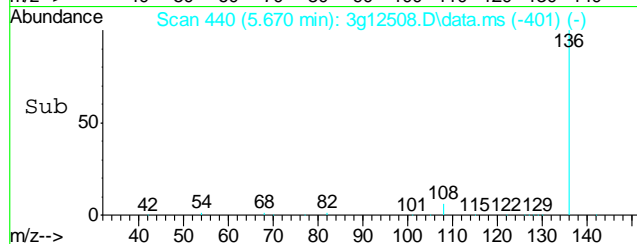
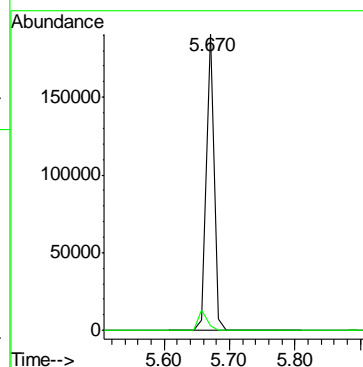
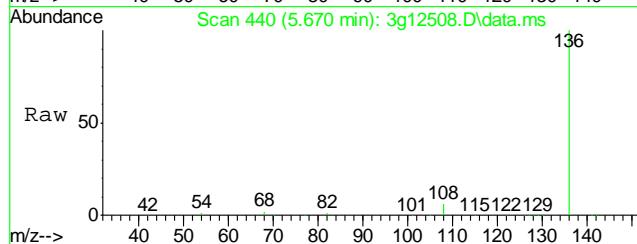
Quant Time: Dec 10 13:58:13 2012
Quant Method : C:\msdchem\1\METHODS\SIMPE3G586.M
Quant Title : PAHSIM BASE
QLast Update : Tue Dec 04 08:50:28 2012
Response via : Initial Calibration





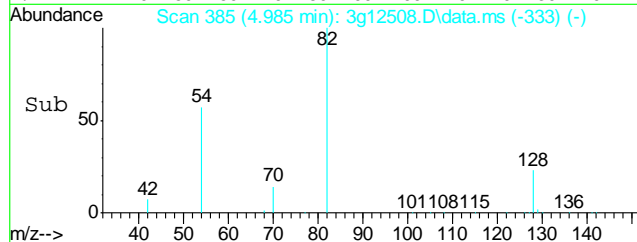
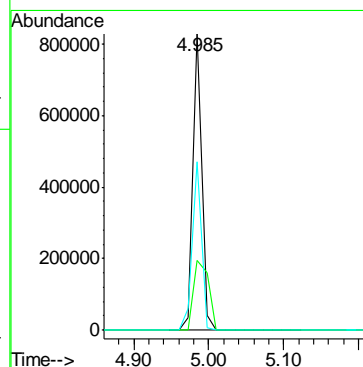
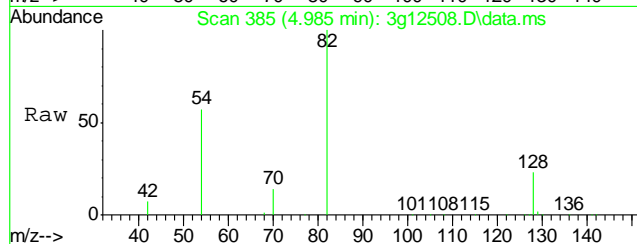
#1
Naphthalene-d8
Concen: 4.0000 ug/mL
RT: 5.670 min Scan# 440
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

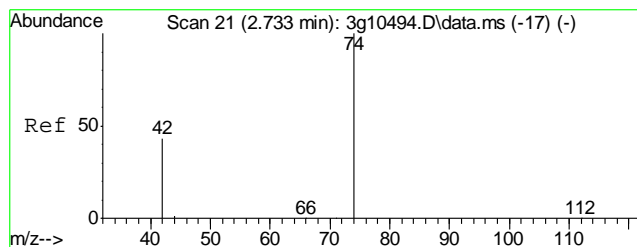
Tgt Ion:	136	Resp:	153335
Ion Ratio	Lower	Upper	
136	100		
68	7.6	0.0	28.4



#2
Nitrobenzene-d5
Concen: 44.2147 ug/mL
RT: 4.985 min Scan# 385
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

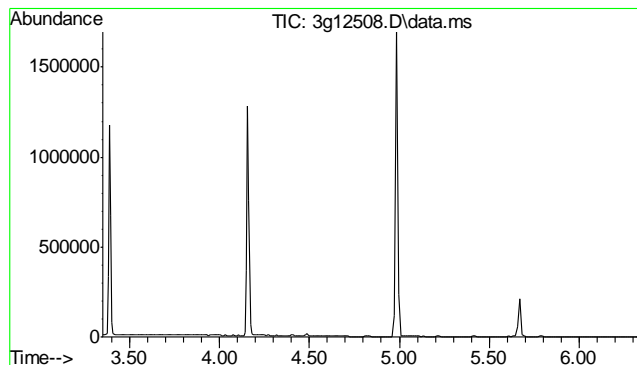
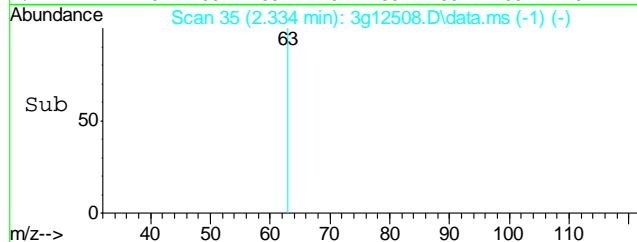
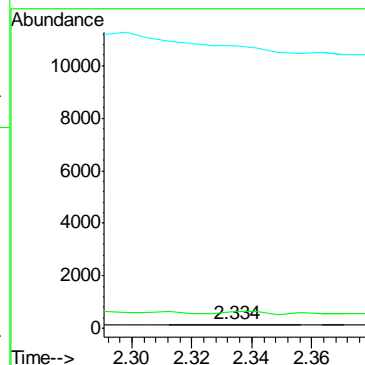
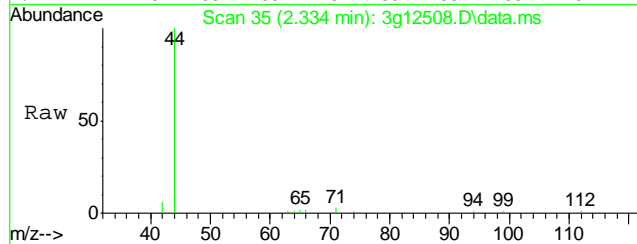
Tgt Ion:	82	Resp:	677706
Ion Ratio	Lower	Upper	
82	100		
128	39.2	31.8	71.8
54	59.4	29.2	69.2





#3
N-Nitrosodimethylamine
Concen: Below ug/mL
RT: 2.334 min Scan# 35
Delta R.T. -0.044 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

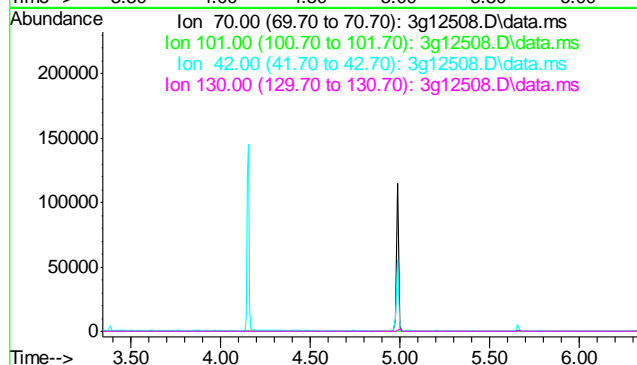
Tgt Ion: 74 Resp: 50
Ion Ratio Lower Upper
74 100
42 168.0 52.5 92.5#
44 0.0 0.0 24.1

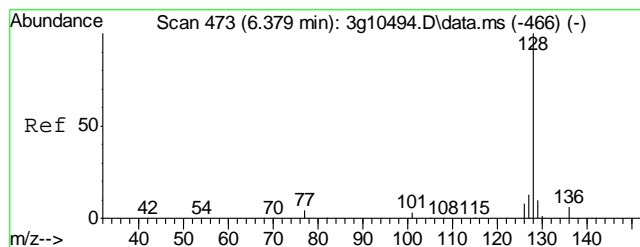


#4
N-Nitrosodi-propylamine
Concen: N.D. ug/mL
Expected RT: 4.85 min

Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

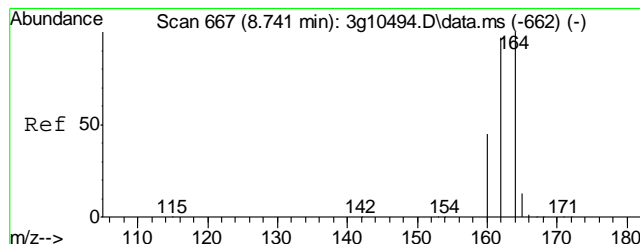
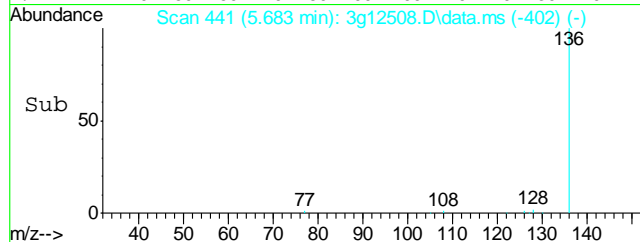
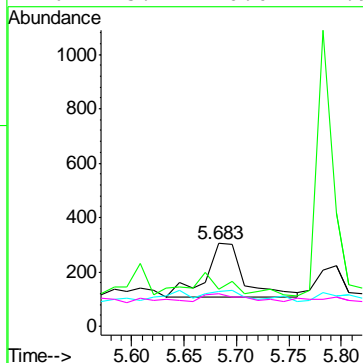
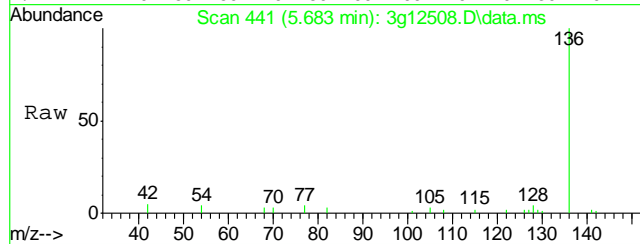
Tgt Ion: 70
Sig Exp Ratio
70 100
101 12.2
42 67.9
130 33.2





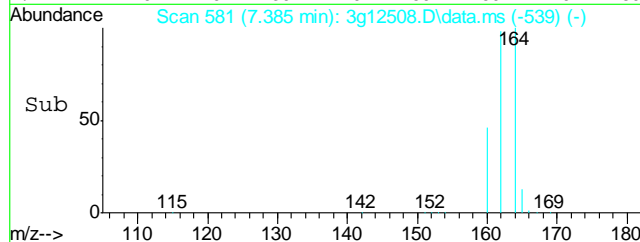
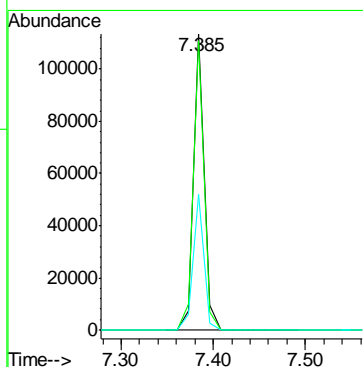
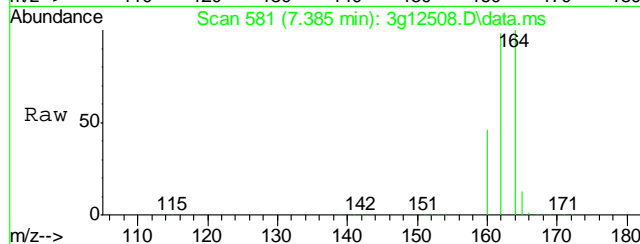
#5
Naphthalene
Concen: Below ug/mL
RT: 5.683 min Scan# 441
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

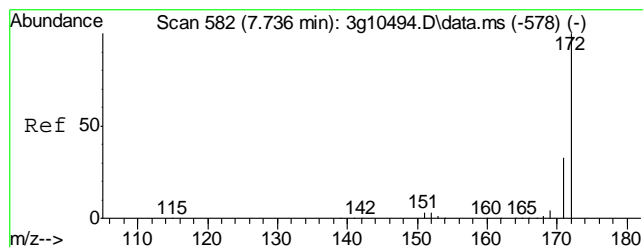
Tgt Ion	128	Ratio	100	Lower	Upper
Resp:	491				
129	43.2	0.0	30.7		
127	24.8	0.0	33.2		
126	15.1	0.0	27.9		



#6
Acenaphthene-d10
Concen: 4.0000 ug/mL
RT: 7.385 min Scan# 581
Delta R.T. -0.004 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

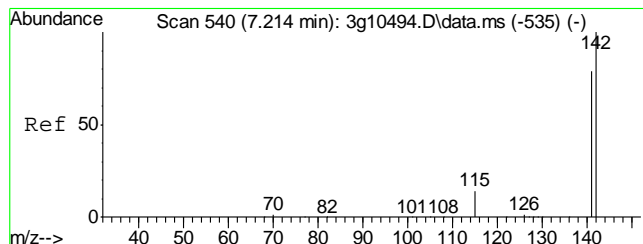
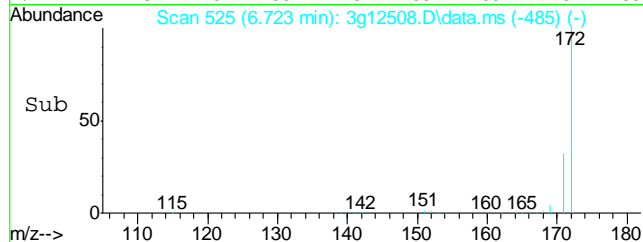
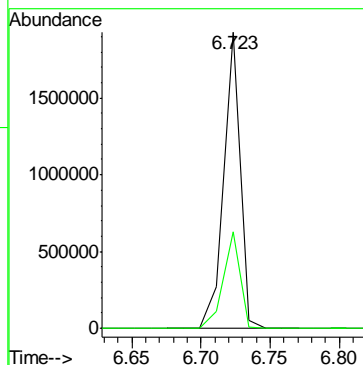
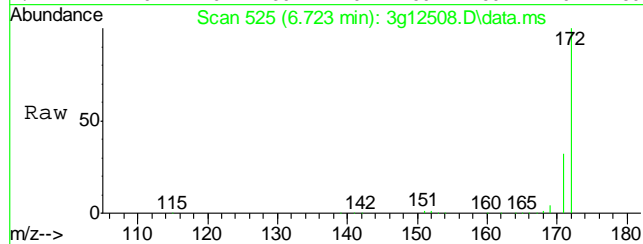
Tgt Ion	164	Ratio	100	Lower	Upper
Resp:	92403				
162	98.1	78.0	118.0		
160	46.6	27.3	67.3		





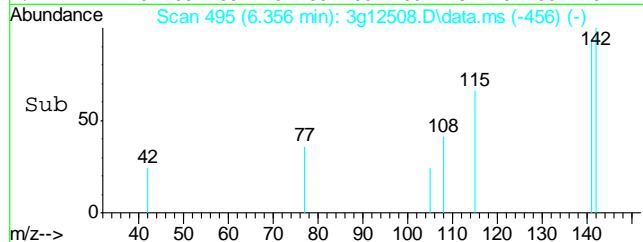
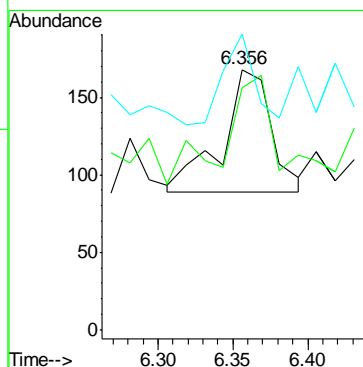
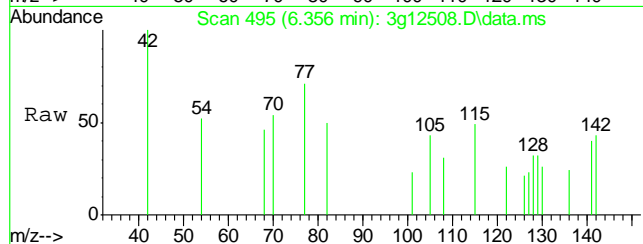
#7
2-Fluorobiphenyl
Concen: 39.4888 ug/mL
RT: 6.723 min Scan# 525
Delta R.T. -0.004 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

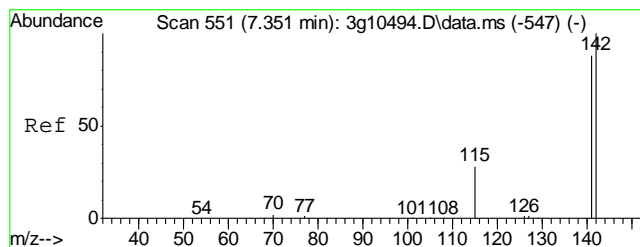
Tgt Ion:172 Resp: 1592975
Ion Ratio Lower Upper
172 100
171 33.4 13.7 53.7



#8
2-Methylnaphthalene
Concen: Below ug/mL
RT: 6.356 min Scan# 495
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

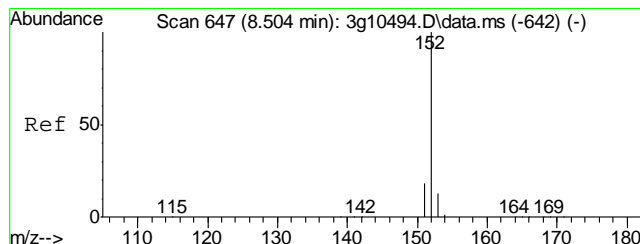
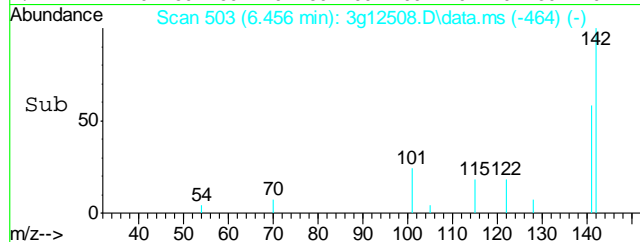
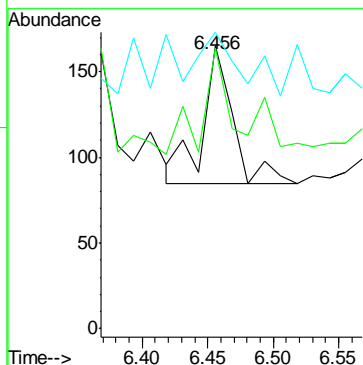
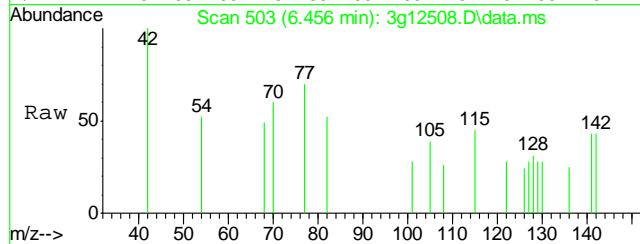
Tgt Ion:142 Resp: 179
Ion Ratio Lower Upper
142 100
141 40.2 65.6 105.6#
115 0.0 12.2 52.2#





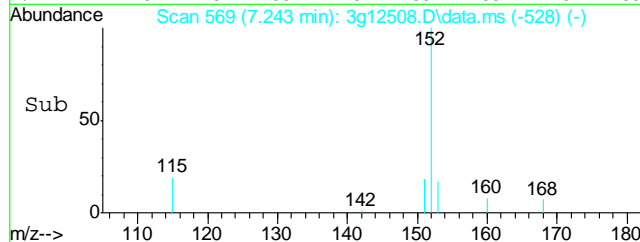
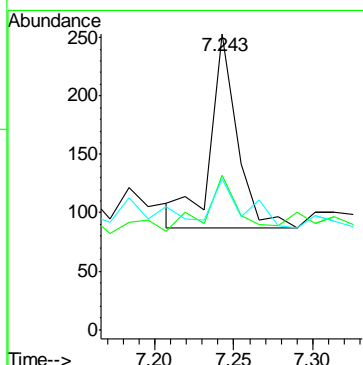
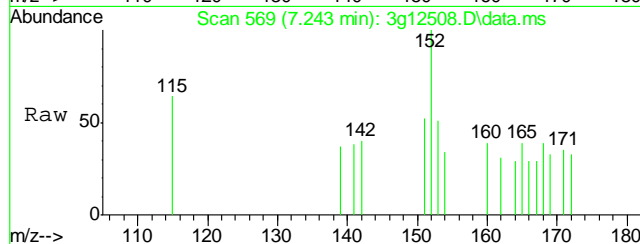
#9
1-Methylnaphthalene
Concen: Below ug/mL
RT: 6.456 min Scan# 503
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

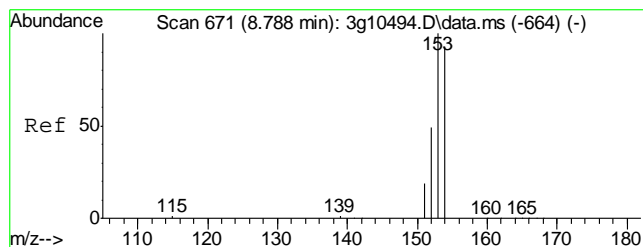
Tgt Ion:142 Resp: 126
Ion Ratio Lower Upper
142 100
141 69.8 67.0 107.0
115 0.0 9.3 49.3#



#10
Acenaphthylene
Concen: Below ug/mL
RT: 7.243 min Scan# 569
Delta R.T. -0.016 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

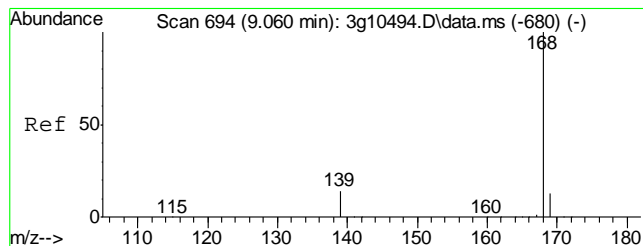
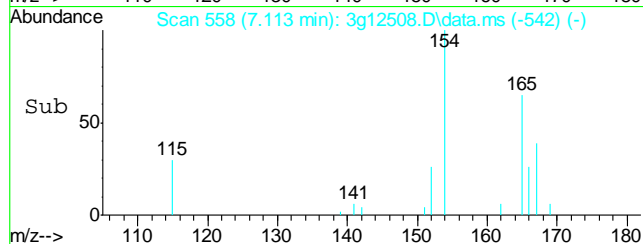
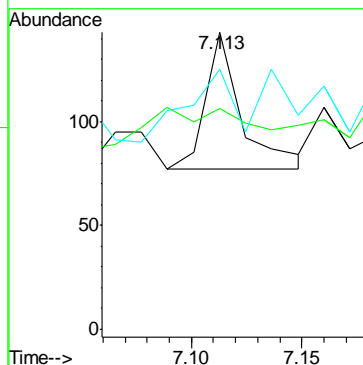
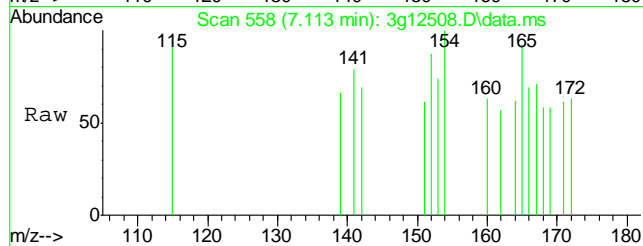
Tgt Ion:152 Resp: 198
Ion Ratio Lower Upper
152 100
151 34.3 0.0 39.5
153 27.8 0.0 33.0





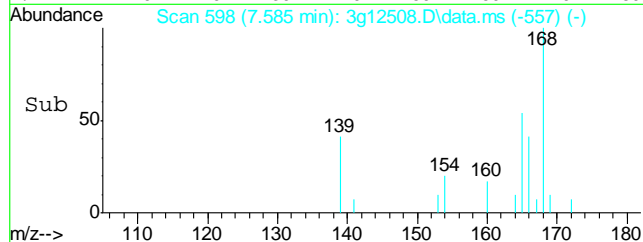
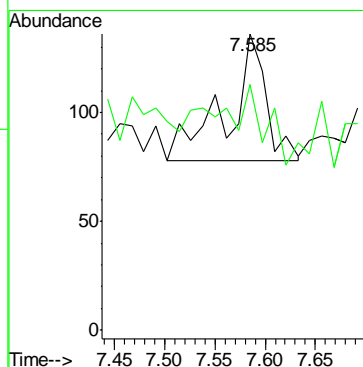
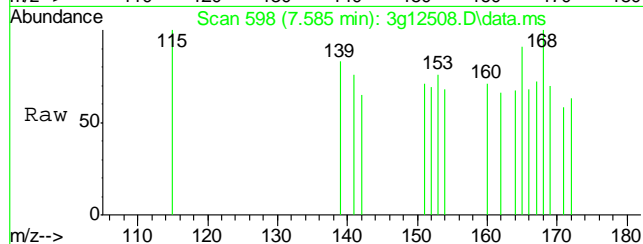
#11
Acenaphthene
Concen: Below ug/mL
RT: 7.113 min Scan# 558
Delta R.T. -0.311 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

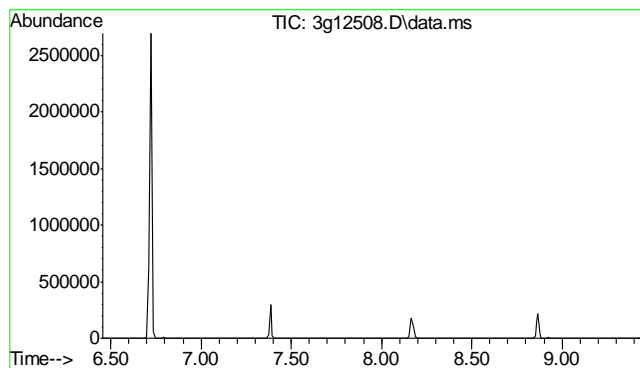
Tgt Ion:154 Resp: 75
Ion Ratio Lower Upper
154 100
153 98.7 84.7 124.7
152 69.3 30.2 70.2



#12
Dibenzofuran
Concen: Below ug/mL
RT: 7.585 min Scan# 598
Delta R.T. -0.016 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

Tgt Ion:168 Resp: 152
Ion Ratio Lower Upper
168 100
139 13.2 12.0 52.0

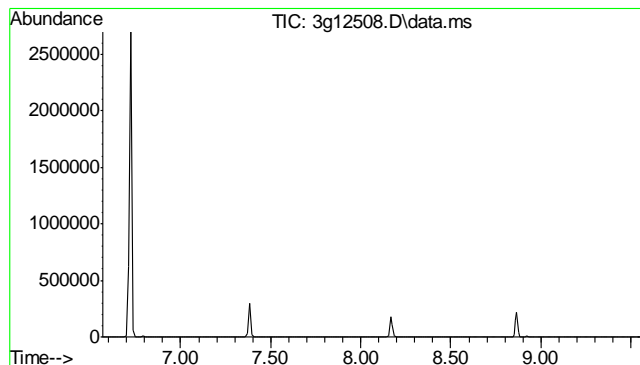
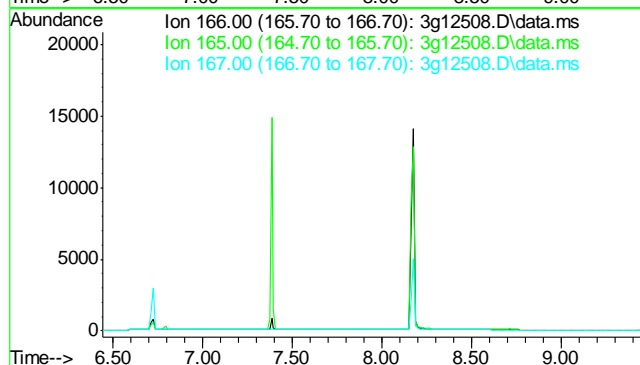




#13
Fluorene
Concen: N.D. ug/mL
Expected RT: 7.94 min

Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

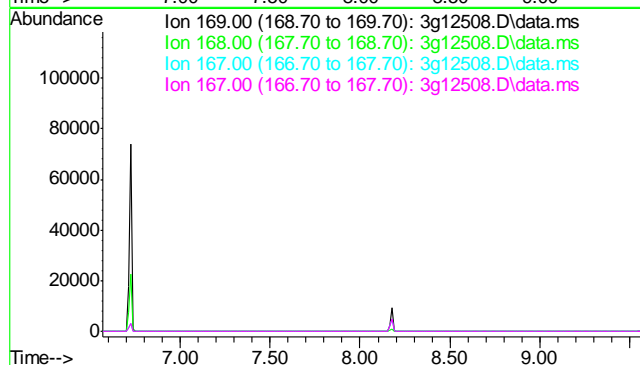
Tgt Ion:	166
Sig	Exp Ratio
166	100
165	90.1
167	13.4

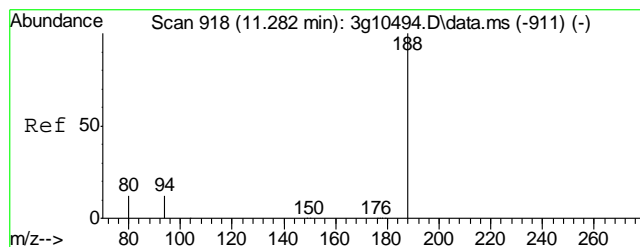


#14
Diphenylamine
Concen: N.D. ug/mL
Expected RT: 8.06 min

Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

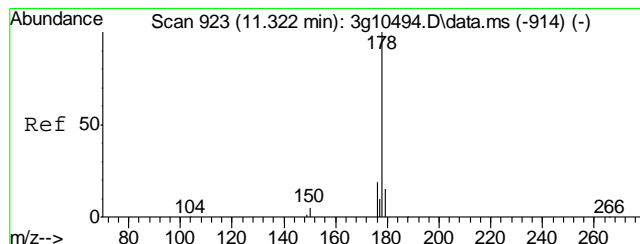
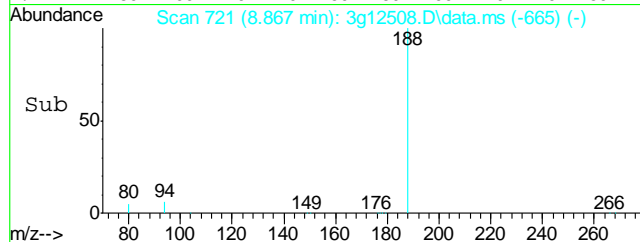
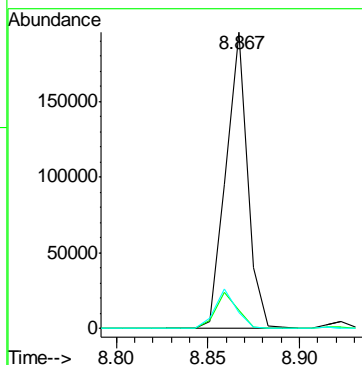
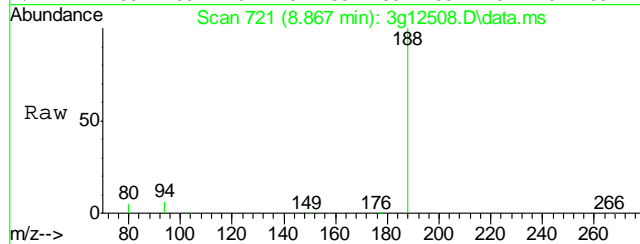
Tgt Ion:	169
Sig	Exp Ratio
169	100
168	60.1
167	32.1
167	32.1





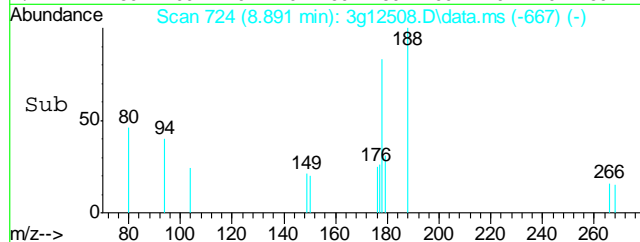
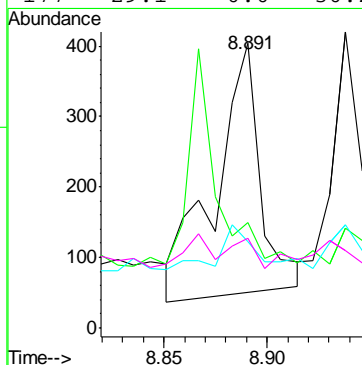
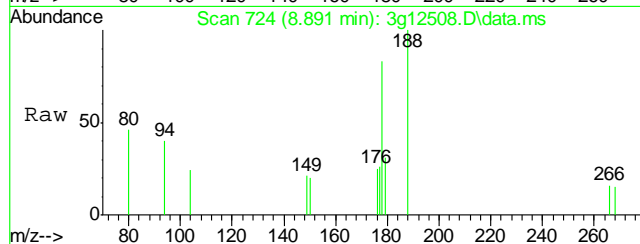
#15
Phenanthrene-d10
Concen: 4.0000 ug/mL
RT: 8.867 min Scan# 721
Delta R.T. -0.012 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

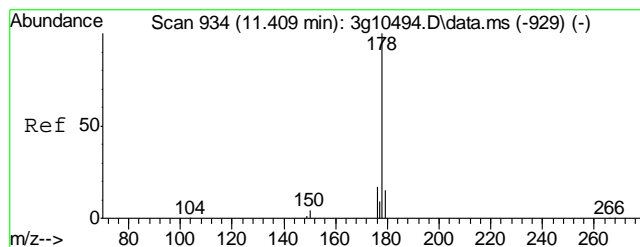
Tgt Ion:188	Resp:	160356
Ion Ratio	Lower	Upper
188	100	
94	12.2	0.0 33.4
80	12.9	0.0 28.9



#16
Phenanthrene
Concen: Below ug/mL
RT: 8.891 min Scan# 724
Delta R.T. -0.011 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

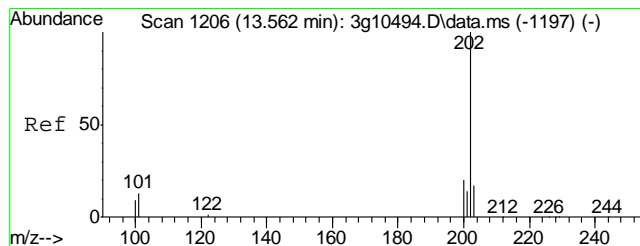
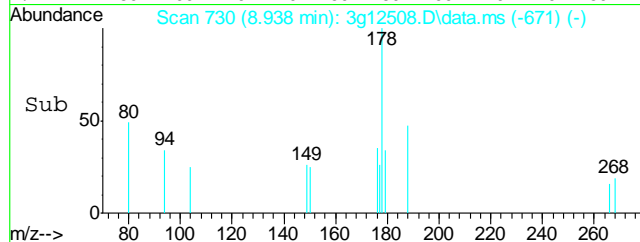
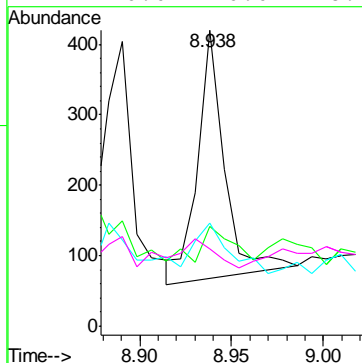
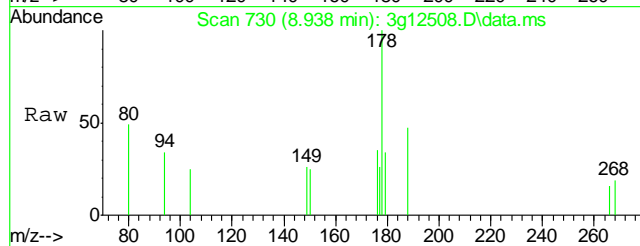
Tgt Ion:178	Resp:	540
Ion Ratio	Lower	Upper
178	100	
179	84.3	0.0 35.3#
176	9.6	0.0 38.6
177	29.1	0.0 30.2





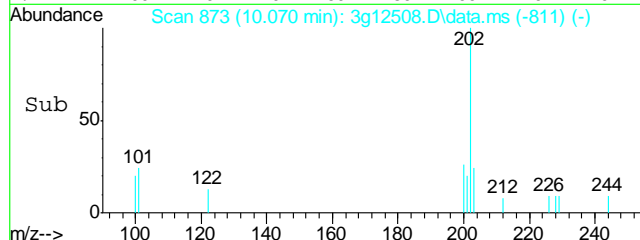
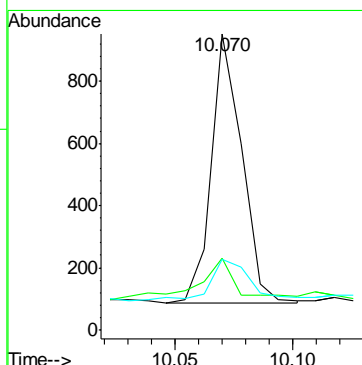
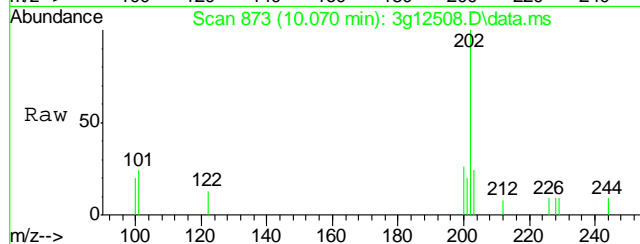
#17
Anthracene
Concen: Below ug/mL
RT: 8.938 min Scan# 730
Delta R.T. -0.012 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

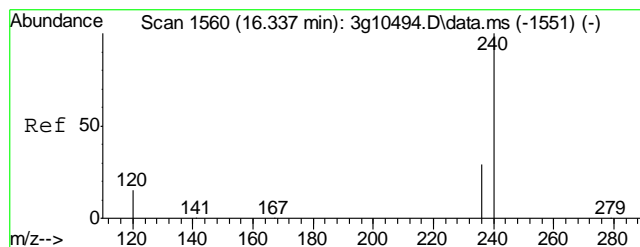
Tgt Ion:	178	Resp:	357
Ion Ratio	Lower	Upper	
178	100		
179	17.6	0.0	35.1
176	20.7	0.0	38.2
177	0.0	0.0	28.8



#18
Fluoranthene
Concen: Below ug/mL
RT: 10.070 min Scan# 873
Delta R.T. -0.012 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

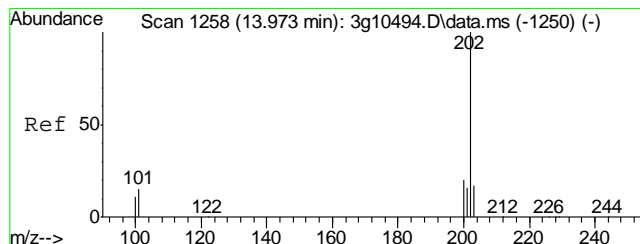
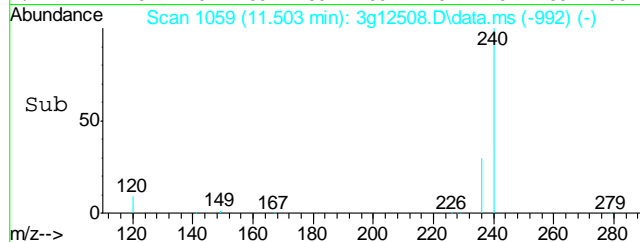
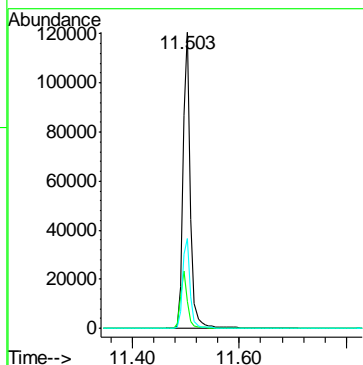
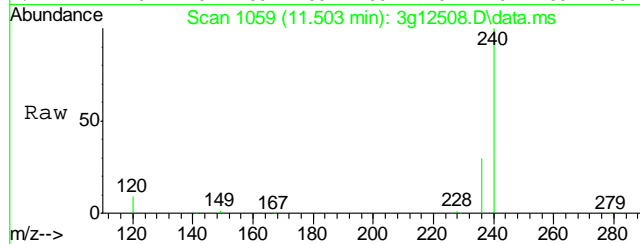
Tgt Ion:	202	Resp:	778
Ion Ratio	Lower	Upper	
202	100		
101	11.4	0.0	32.5
203	16.1	0.0	37.3





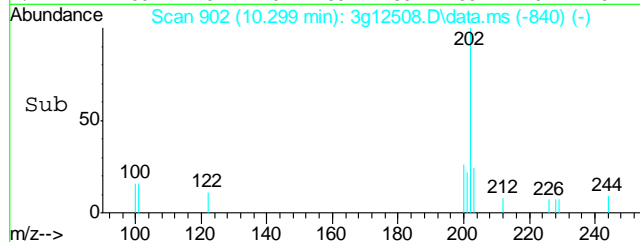
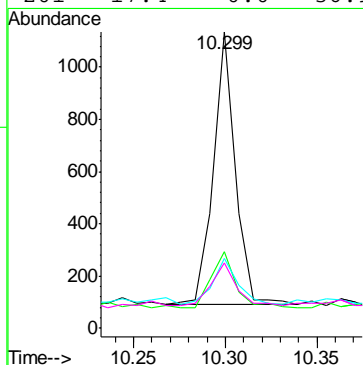
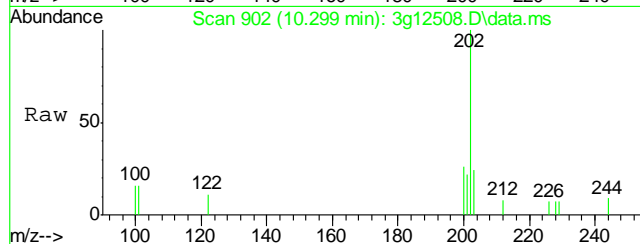
#19
Chrysene-d12
Concen: 4.0000 ug/mL
RT: 11.503 min Scan# 1059
Delta R.T. -0.013 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

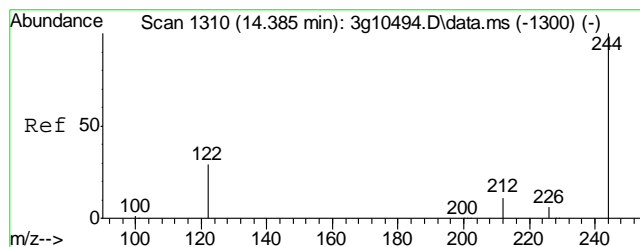
Tgt Ion:	240	Resp:	115791
Ion Ratio	Lower	Upper	
240	100		
120	18.3	0.0	39.7
236	31.8	11.1	51.1



#20
Pyrene
Concen: Below ug/mL
RT: 10.299 min Scan# 902
Delta R.T. -0.012 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

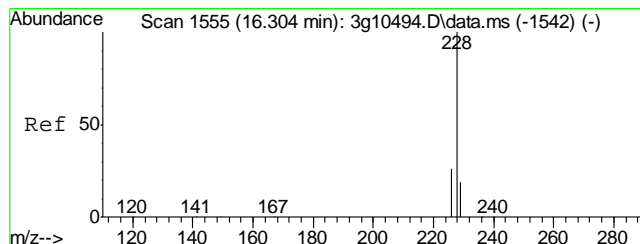
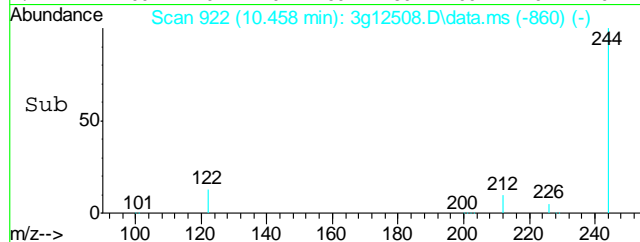
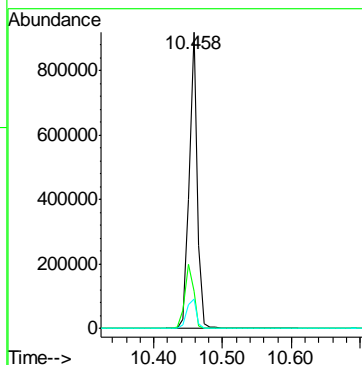
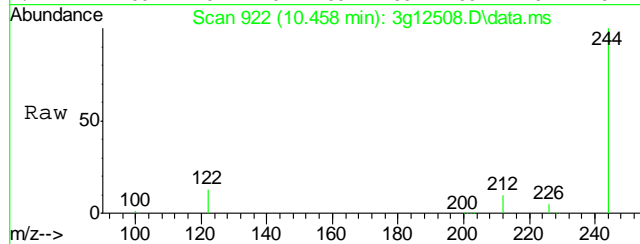
Tgt Ion:	202	Resp:	864
Ion Ratio	Lower	Upper	
202	100		
200	22.9	0.7	40.7
203	19.7	0.0	37.8
201	17.4	0.0	36.9





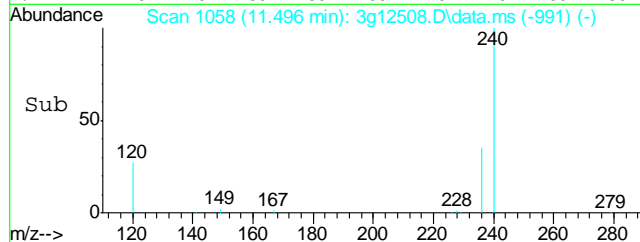
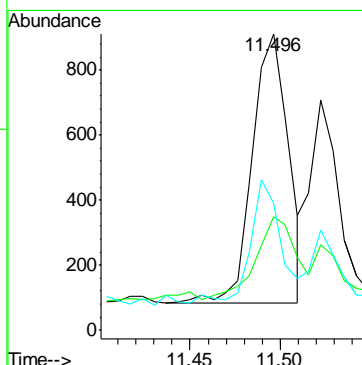
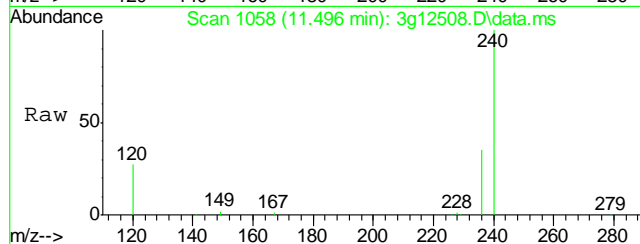
#21
Terphenyl-d14
Concen: 45.4337 ug/mL
RT: 10.458 min Scan# 922
Delta R.T. -0.012 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

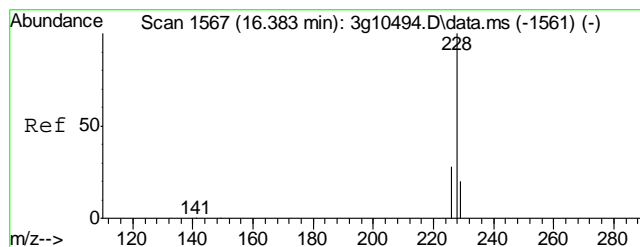
Tgt Ion:	244	Resp:	774374
Ion Ratio	Lower	Upper	
244	100		
122	23.6	6.8	46.8
212	11.7	0.0	32.3



#22
Benzo(a)anthracene
Concen: Below ug/mL
RT: 11.496 min Scan# 1058
Delta R.T. -0.006 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

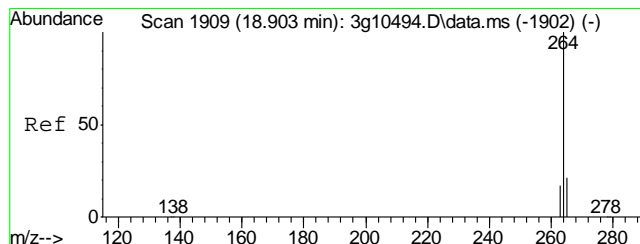
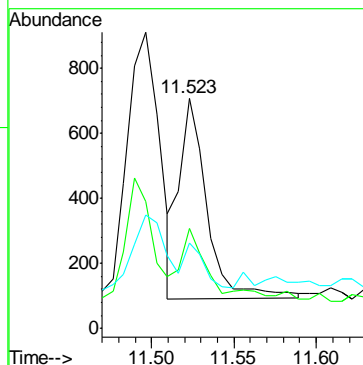
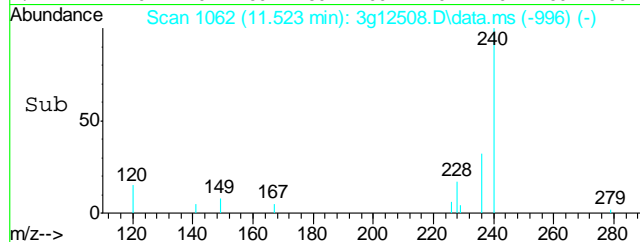
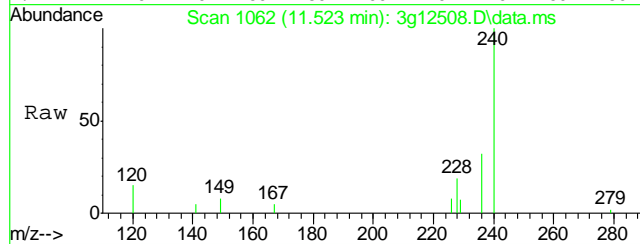
Tgt Ion:	228	Resp:	1148
Ion Ratio	Lower	Upper	
228	100		
229	34.7	0.0	39.4
226	38.0	6.8	46.8





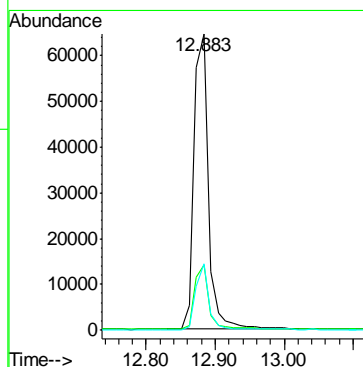
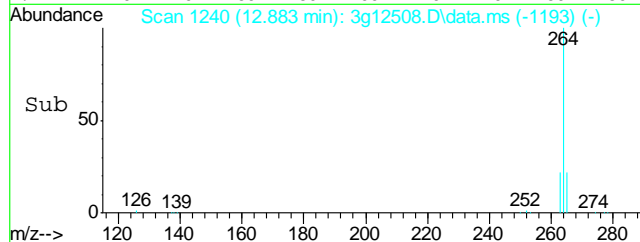
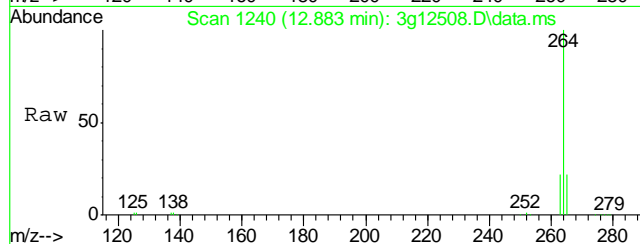
#23
Chrysene
Concen: Below ug/mL
RT: 11.523 min Scan# 1062
Delta R.T. -0.019 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

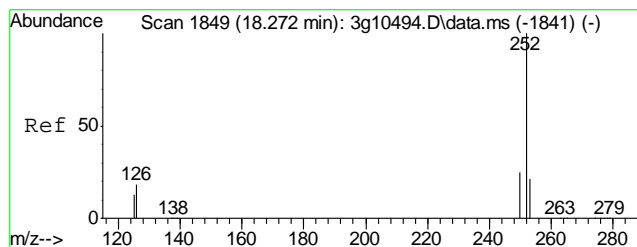
Tgt Ion: 228	Resp: 724
Ion Ratio	Lower Upper
228 100	
226 25.1	9.2 49.2
229 2.9	0.0 39.4



#24
Perylene-d12
Concen: 4.0000 ug/mL
RT: 12.883 min Scan# 1240
Delta R.T. -0.009 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

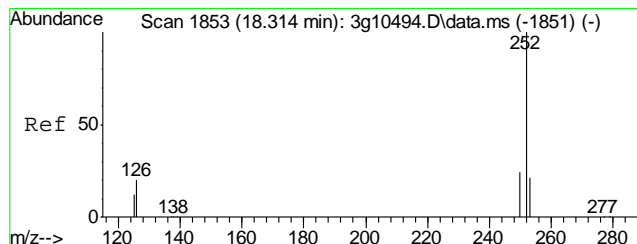
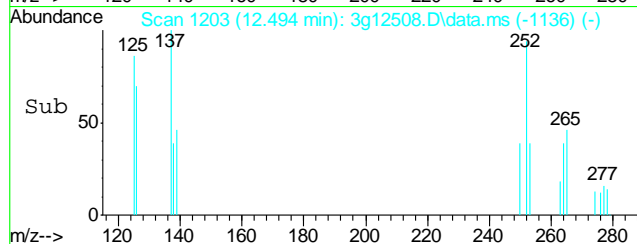
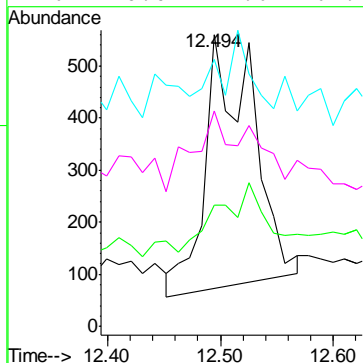
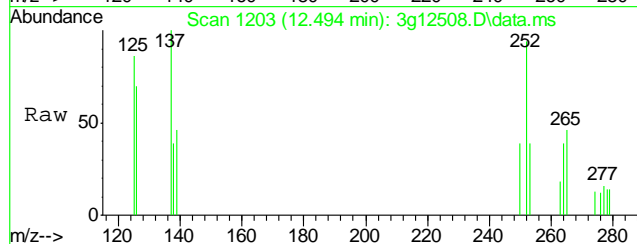
Tgt Ion: 264	Resp: 94737
Ion Ratio	Lower Upper
264 100	
265 20.6	0.6 40.6
263 20.3	0.0 39.7





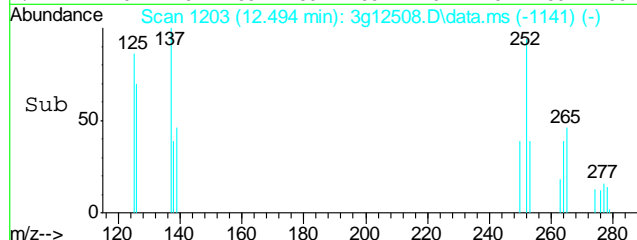
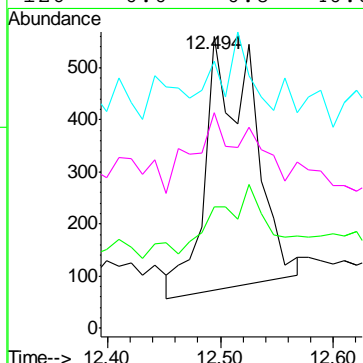
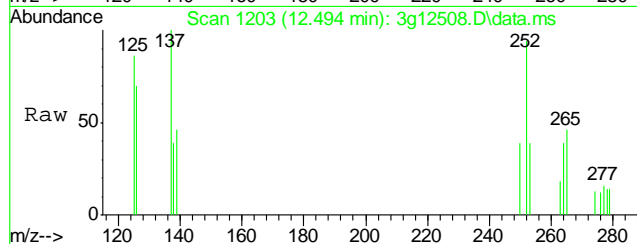
#25
Benzo(b)fluoranthene
Concen: Below ug/mL
RT: 12.494 min Scan# 1203
Delta R.T. -0.019 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

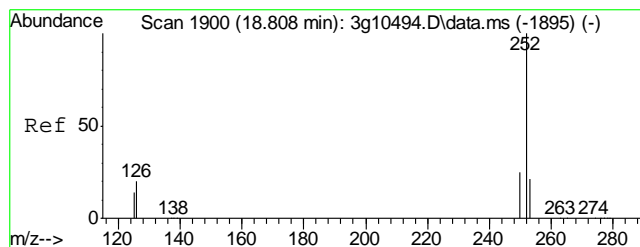
Tgt Ion: 252	Resp: 1411
Ion Ratio	Lower Upper
252	100
253	45.0 7.0 47.0
125	0.0 9.0 49.0#
126	0.0 21.6 61.6#



#26
Benzo(k)fluoranthene
Concen: Below ug/mL
RT: 12.494 min Scan# 1203
Delta R.T. -0.051 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

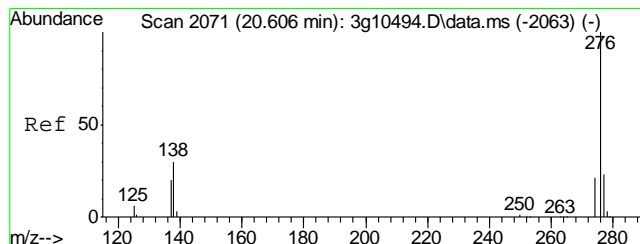
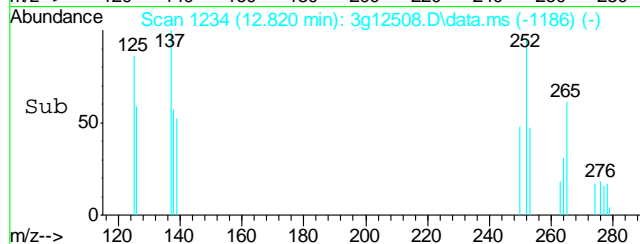
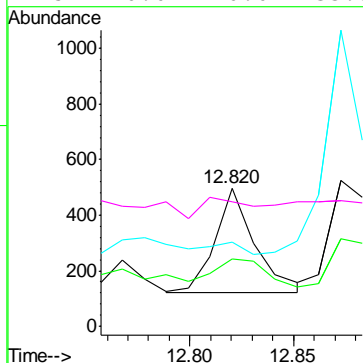
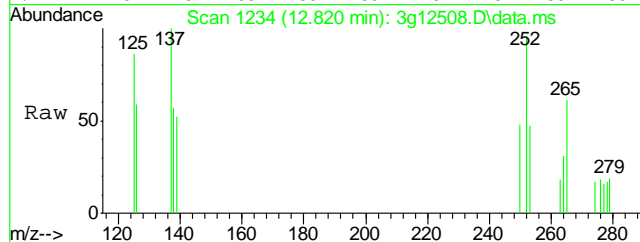
Tgt Ion: 252	Resp: 1411
Ion Ratio	Lower Upper
252	100
253	45.0 4.0 44.0#
125	0.0 0.0 35.3
126	0.0 0.8 40.8#





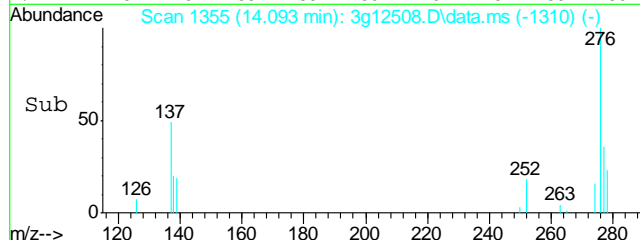
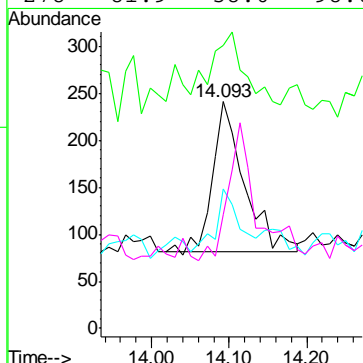
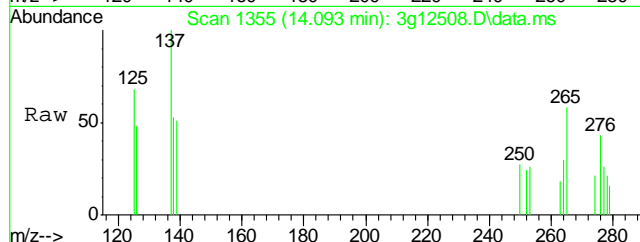
#27
Benzo(a)pyrene
Concen: Below ug/mL
RT: 12.820 min Scan# 1234
Delta R.T. -0.019 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

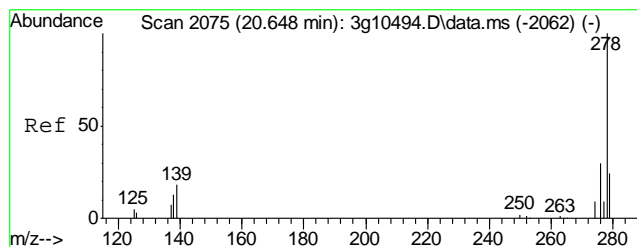
Tgt Ion:	252	Resp:	509
Ion Ratio	100	Lower	Upper
252	100		
253	34.4	1.5	41.5
126	0.0	0.0	38.4
125	0.0	0.0	33.5



#28
Indeno(1,2,3-cd)pyrene
Concen: Below ug/mL
RT: 14.093 min Scan# 1355
Delta R.T. -0.030 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

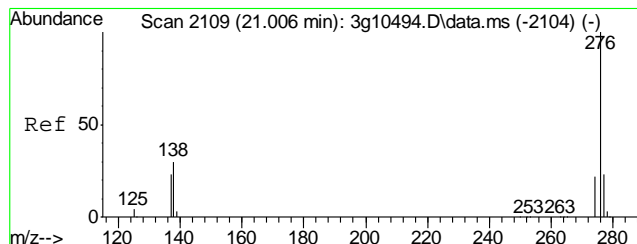
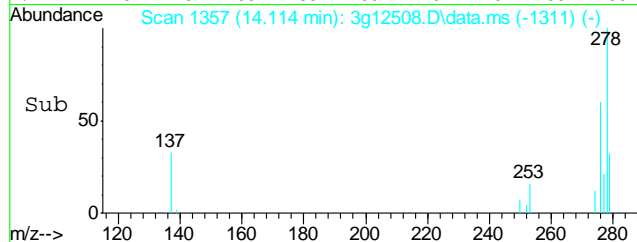
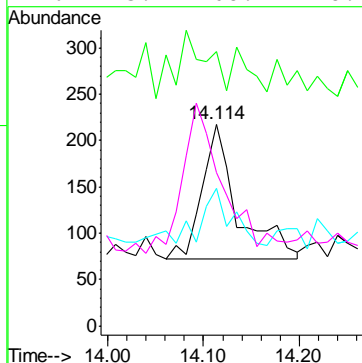
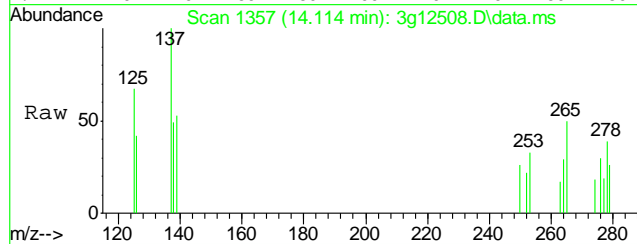
Tgt Ion:	276	Resp:	459
Ion Ratio	100	Lower	Upper
276	100		
138	66.2	16.0	56.0#
277	29.6	4.9	44.9
278	81.9	58.0	98.0





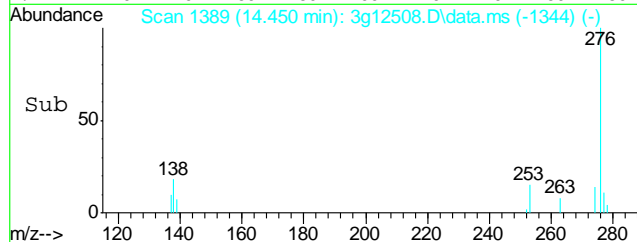
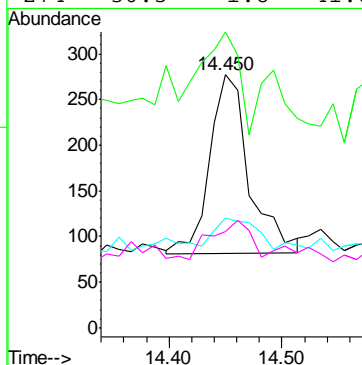
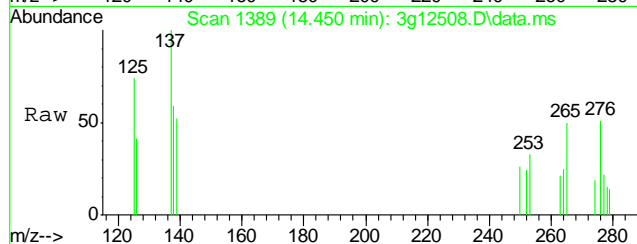
#29
Dibenzo(a,h)anthracene
Concen: Below ug/mL
RT: 14.114 min Scan# 1357
Delta R.T. -0.019 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

Tgt Ion: 278 Resp: 376
Ion Ratio Lower Upper
278 100
139 46.8 7.4 47.4
279 34.3 2.8 42.8
276 123.4 108.1 148.1



#30
Benzo(g,h,i)perylene
Concen: Below ug/mL
RT: 14.450 min Scan# 1389
Delta R.T. -0.030 min
Lab File: 3g12508.D
Acq: 10 Dec 12 11:52 am

Tgt Ion: 276 Resp: 479
Ion Ratio Lower Upper
276 100
138 56.8 10.9 50.9#
277 15.9 3.2 43.2
274 30.5 1.8 41.8



GC Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: D41381
Account: XTOKRWR XTO Energy
Project: PCU T18-13G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1018-MB	GB18690.D	1	12/01/12	SK	n/a	n/a	GGB1018

The QC reported here applies to the following samples:

Method: SW846 8015B

D41381-1

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	92% 60-140%

10.1.1
10

Blank Spike Summary

Job Number: D41381
Account: XTOKRWR XTO Energy
Project: PCU T18-13G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB1018-BS	GB18691.D	1	12/01/12	SK	n/a	n/a	GGB1018

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

D41381-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	126	115	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	103%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: D41381
Account: XTOKRWR XTO Energy
Project: PCU T18-13G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D41375-1MS	GB18693.D	1	12/01/12	SK	n/a	n/a	GGB1018
D41375-1MSD	GB18694.D	1	12/01/12	SK	n/a	n/a	GGB1018
D41375-1	GB18692.D	1	12/01/12	SK	n/a	n/a	GGB1018

The QC reported here applies to the following samples:

Method: SW846 8015B

D41381-1

CAS No.	Compound	D41375-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		134	157	117	153	114	3	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D41375-1	Limits
120-82-1	1,2,4-Trichlorobenzene	92%	95%	88%	60-140%

* = Outside of Control Limits.

GC Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\113012\GB18711.D\FID1A.CH Vial: 50
Signal #2 : Y:\1\DATA\113012\GB18711.D\FID2B.CH
Acq On : 2 Dec 2012 12:52 am Operator: StephK
Sample : D41381-1, 50X Inst : GC/MS Ins
Misc : GC3267,GGB1018,5.244,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Dec 03 08:31:46 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Mon Dec 03 08:30:52 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

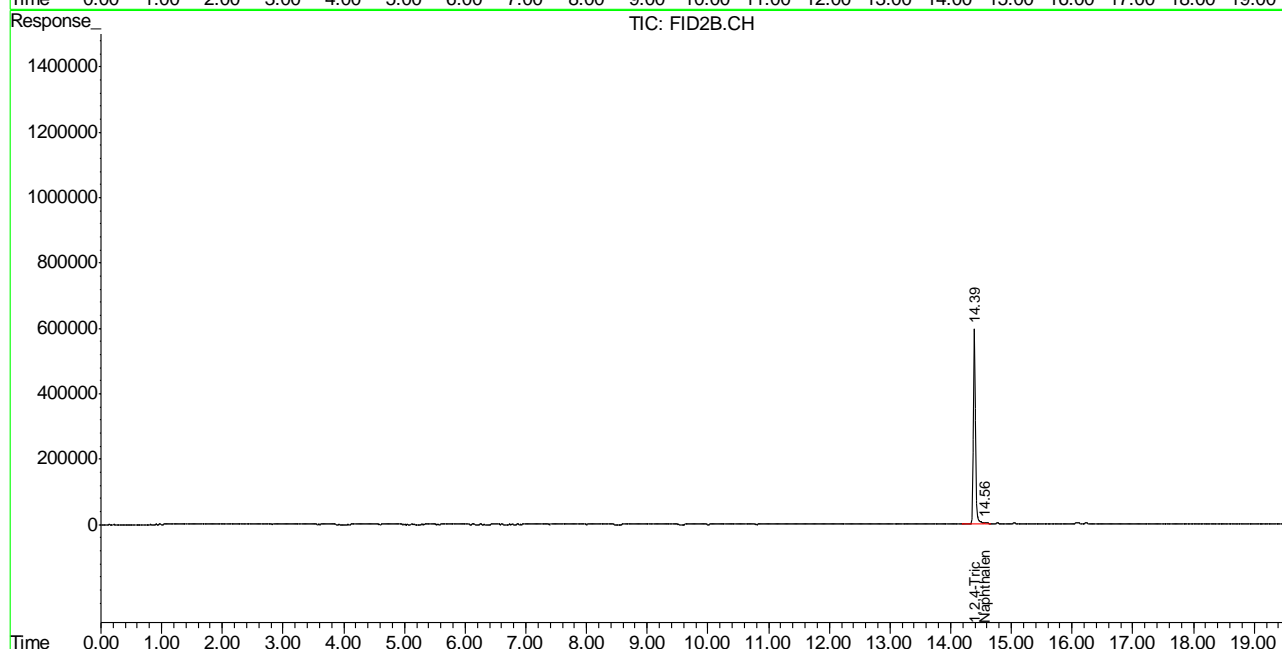
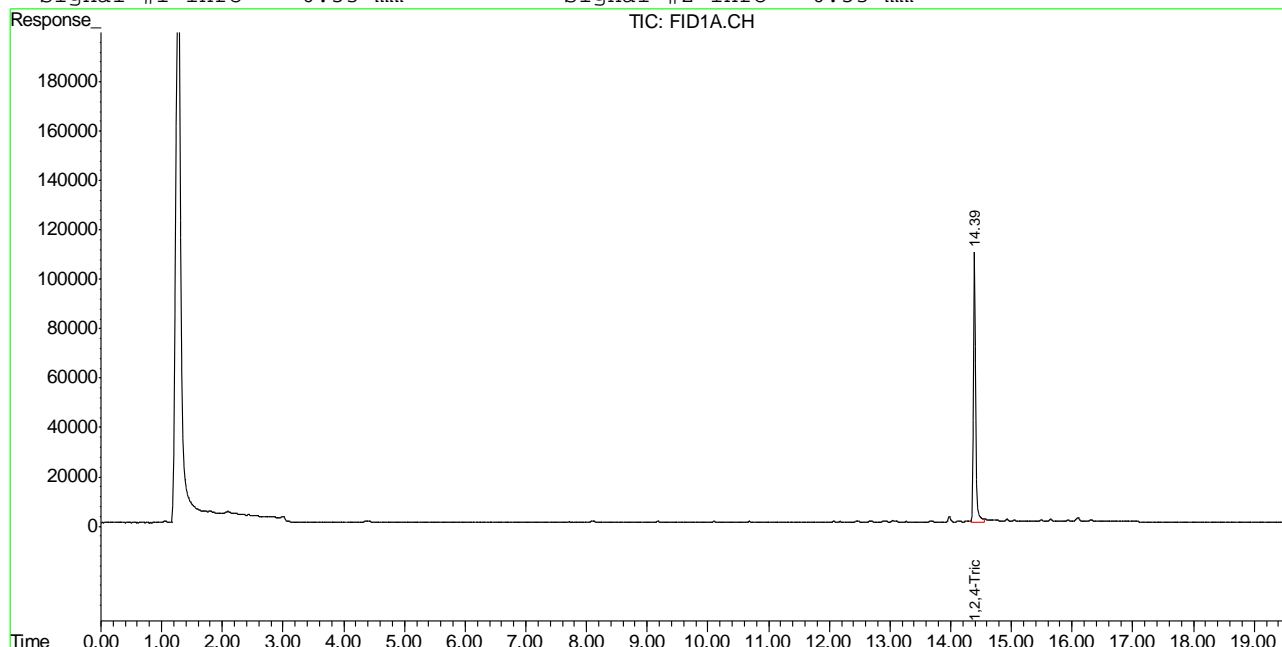
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.39	2740272	87.454 %	m
10) S	1,2,4-Trichlorobenzene (P)	14.39	14471166	89.038 %	
Target Compounds					
1) H	TVH-Gasoline	7.23	3008344	<MDL	mg/L
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T	Benzene	0.00	0	N.D.	ug/L d
6) T	Toluene	0.00	0	N.D.	ug/L d
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	0.00	0	N.D.	ug/L d
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.56	151971	0.770	ug/L

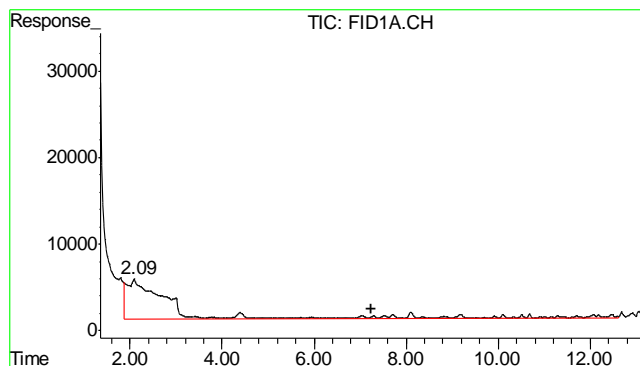
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\113012\GB18711.D\FID1A.CH Vial: 50
 Signal #2 : Y:\1\DATA\113012\GB18711.D\FID2B.CH
 Acq On : 2 Dec 2012 12:52 am Operator: StephK
 Sample : D41381-1, 50X Inst : GC/MS Ins
 Misc : GC3267,GGB1018,5.244,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Dec 3 8:55 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Mon Dec 03 08:30:52 2012
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

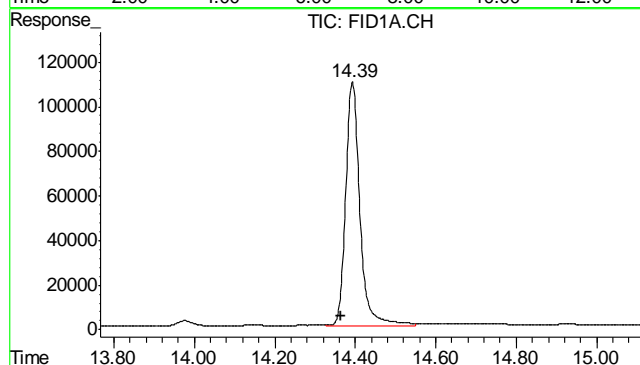
Volume Inj. :
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





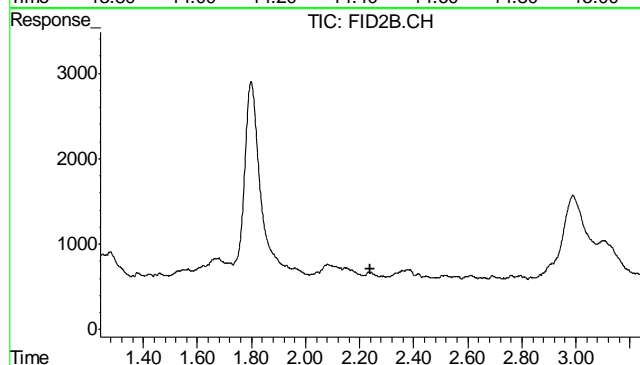
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 3008344
Conc: N.D.



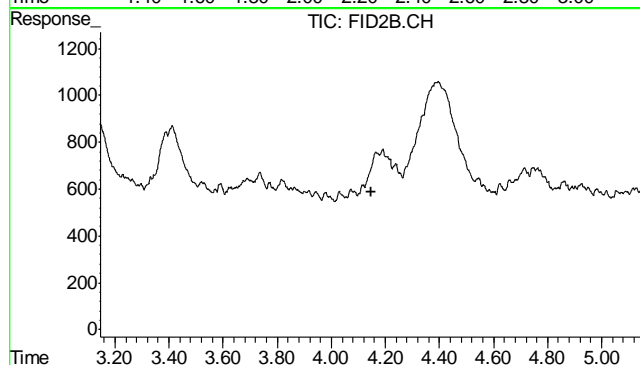
#2 1,2,4-Trichlorobenzene

R.T.: 14.393 min
Delta R.T.: 0.028 min
Response: 2740272
Conc: 87.45 % m



#4 Methyl-t-butyl-ether

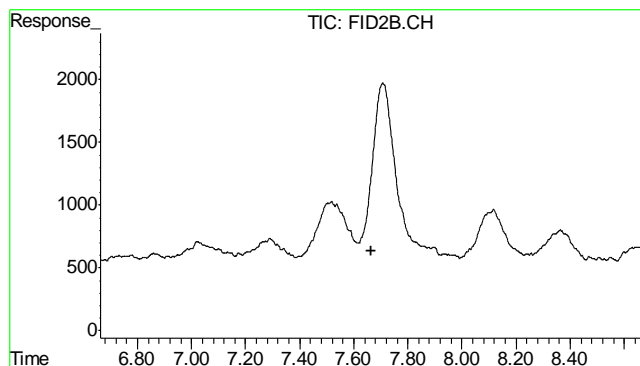
R.T.: 0.000 min
Exp R.T.: 2.240 min
Response: 0
Conc: N.D.



#5 Benzene

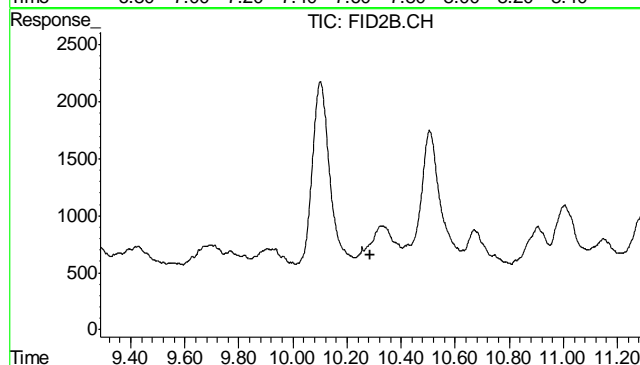
R.T.: 0.000 min
Exp R.T.: 4.147 min
Response: 0
Conc: N.D.

11.11
11



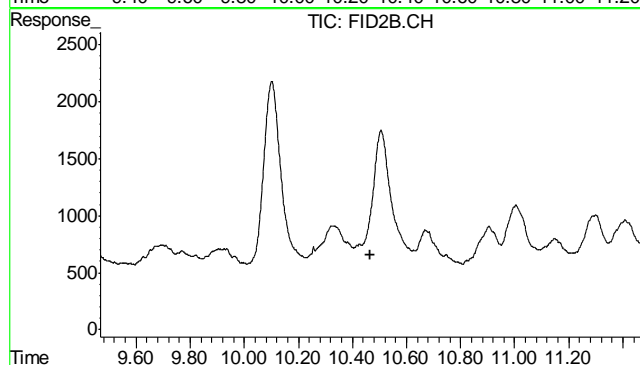
#6 Toluene

R.T.: 0.000 min
Exp R.T. : 7.663 min
Response: 0
Conc: N.D.



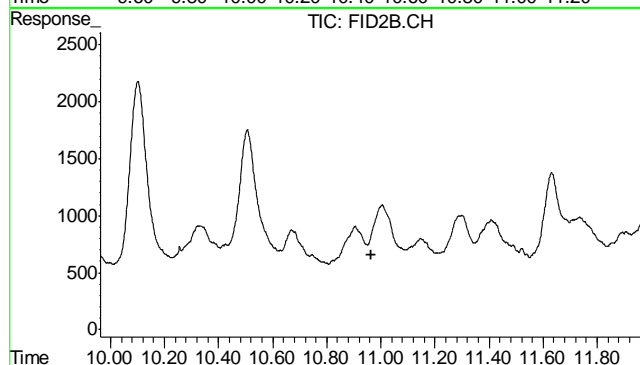
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T. : 10.287 min
Response: 0
Conc: N.D.



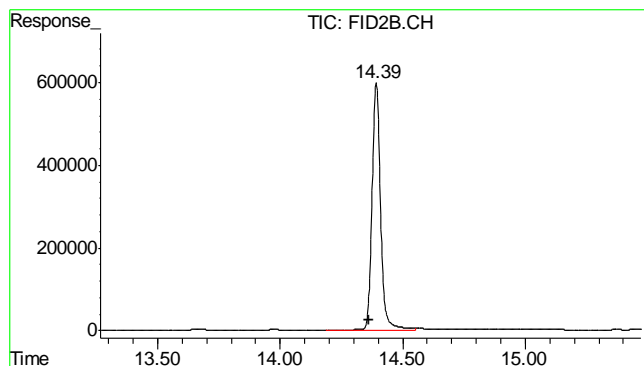
#8 m,p-Xylene

R.T.: 0.000 min
Exp R.T. : 10.467 min
Response: 0
Conc: N.D.



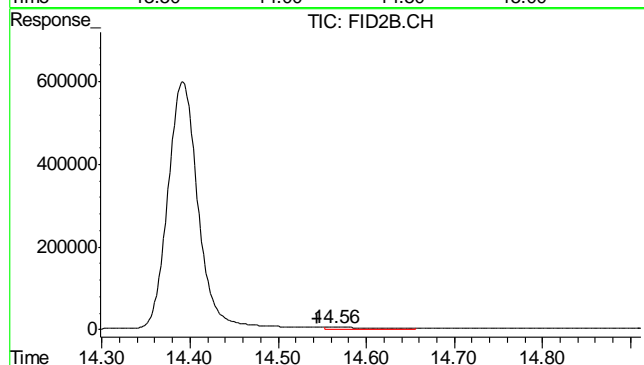
#9 o-Xylene

R.T.: 0.000 min
Exp R.T. : 10.963 min
Response: 0
Conc: N.D.



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

R.T.: 14.392 min
Delta R.T.: 0.029 min
Response: 14471166
Conc: 89.04 %



#11 Naphthalene

R.T.: 14.564 min
Delta R.T.: 0.019 min
Response: 151971
Conc: 0.77 ug/L

11.1.1

Judy Melson
12/04/12 12:34

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\113012\GB18690.D\FID1A.CH Vial: 29
Signal #2 : Y:\1\DATA\113012\GB18690.D\FID2B.CH
Acq On : 1 Dec 2012 12:23 pm Operator: StephK
Sample : MB, S Inst : GC/MS Ins
Misc : GC3267,GGB1018,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Dec 03 08:29:17 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Mon Dec 03 08:28:57 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	2894130	92.364 %	m
10) S 1,2,4-Trichlorobenzene (P)	14.39	15386089	94.668 %	
Target Compounds				
1) H TVH-Gasoline	7.23	1034137	N.D.	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	7.68	164607	0.415	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	0.00	0	N.D.	ug/L d

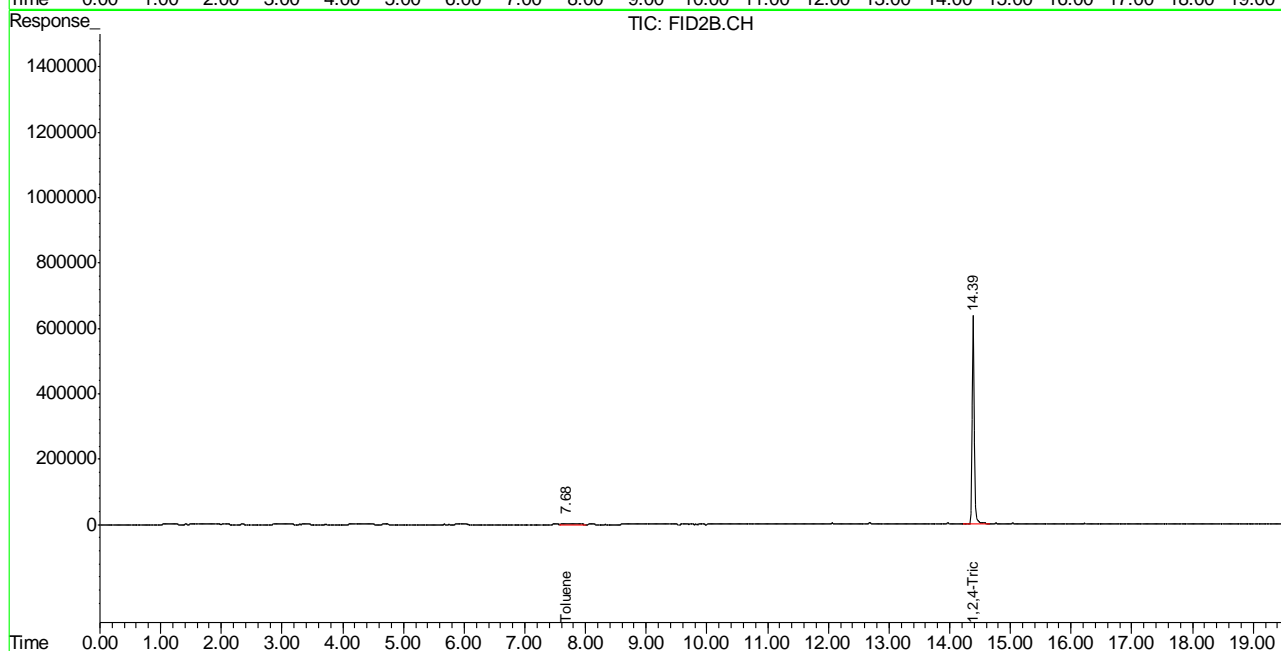
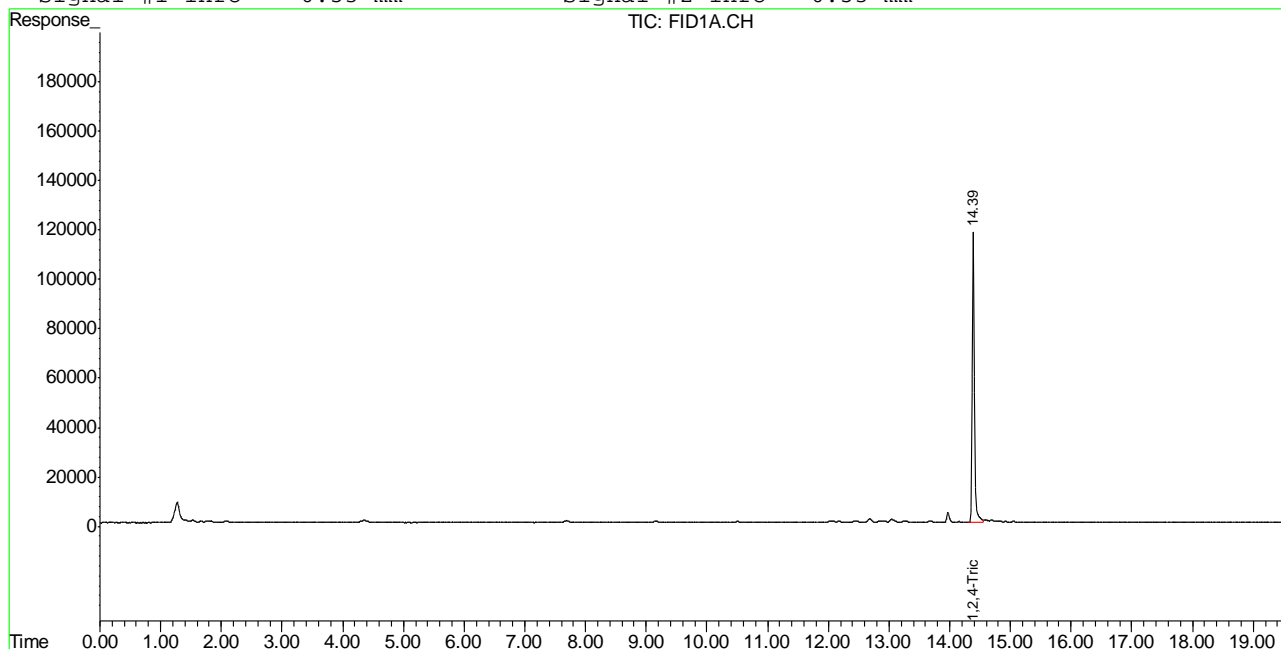
(f)=RT Delta > 1/2 Window (m)=manual int.
GB18690.D TB868GB868SOIL.M Mon Dec 03 08:57:00 2012 GC

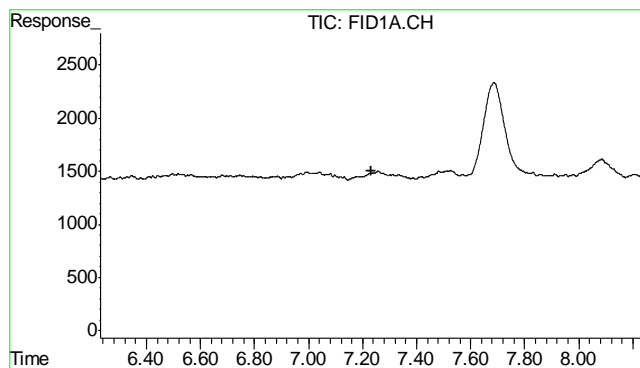
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\113012\GB18690.D\FID1A.CH Vial: 29
Signal #2 : Y:\1\DATA\113012\GB18690.D\FID2B.CH
Acq On : 1 Dec 2012 12:23 pm Operator: StephK
Sample : MB, S Inst : GC/MS Ins
Misc : GC3267,GGB1018,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: Dec 3 8:46 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Mon Dec 03 08:28:57 2012
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

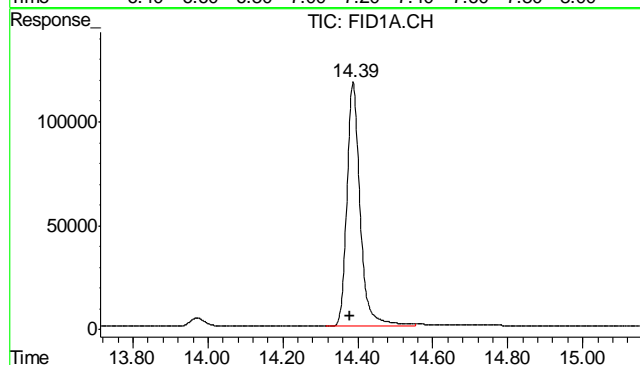
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





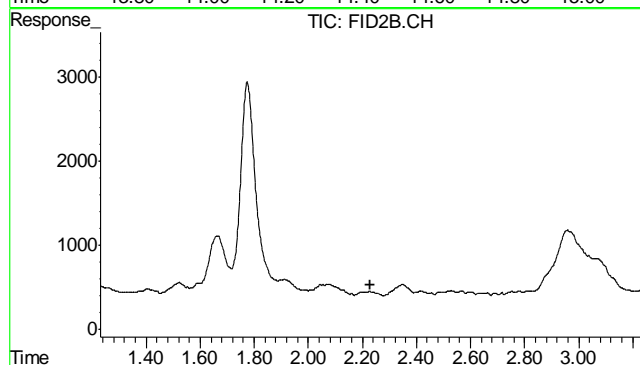
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 1034137
Conc: N.D.



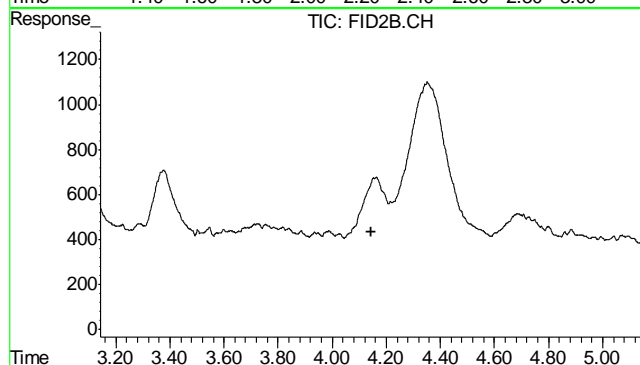
#2 1,2,4-Trichlorobenzene

R.T.: 14.387 min
Delta R.T.: 0.007 min
Response: 2894130
Conc: 92.36 % m



#4 Methyl-t-butyl-ether

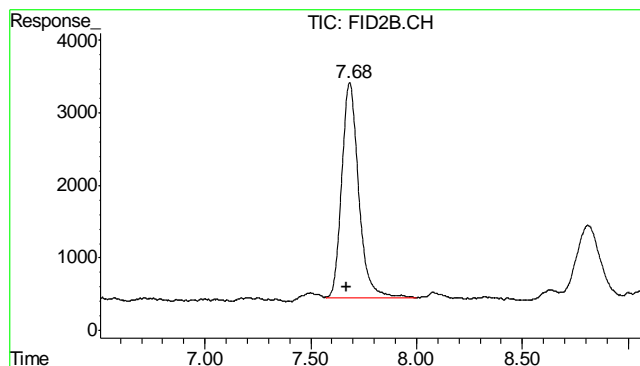
R.T.: 0.000 min
Exp R.T.: 2.231 min
Response: 0
Conc: N.D.



#5 Benzene

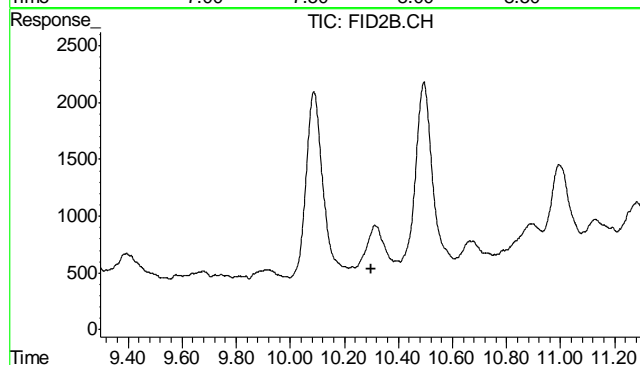
R.T.: 0.000 min
Exp R.T.: 4.143 min
Response: 0
Conc: N.D.

11.21
11



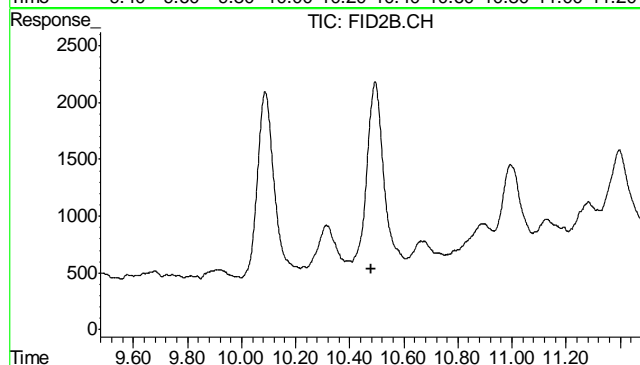
#6 Toluene

R.T.: 7.684 min
Delta R.T.: 0.015 min
Response: 164607
Conc: 0.42 ug/L



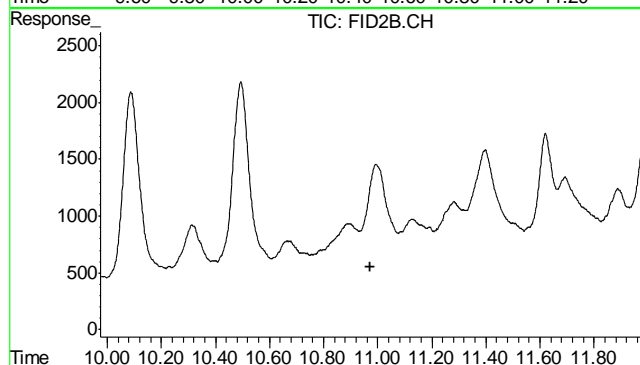
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T.: 10.298 min
Response: 0
Conc: N.D.



#8 m,p-Xylene

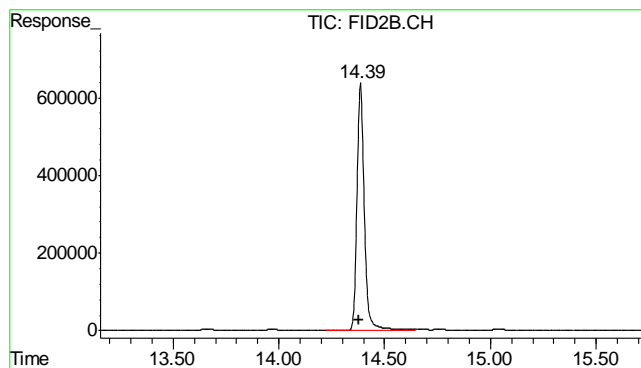
R.T.: 0.000 min
Exp R.T.: 10.478 min
Response: 0
Conc: N.D.



#9 o-Xylene

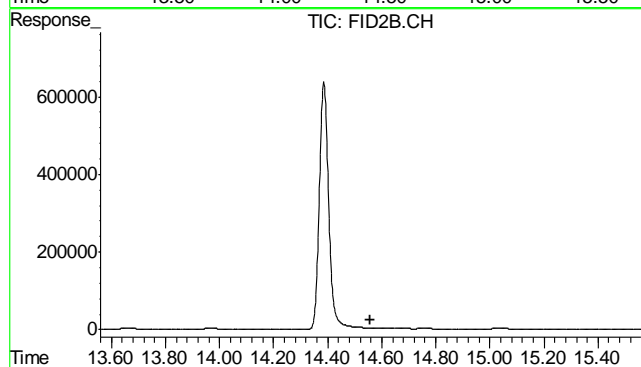
R.T.: 0.000 min
Exp R.T.: 10.974 min
Response: 0
Conc: N.D.

11.21
11



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

R.T.: 14.386 min
Delta R.T.: 0.009 min
Response: 15386089
Conc: 94.67 %



#11 Naphthalene

R.T.: 0.000 min
Exp R.T. : 14.559 min
Response: 0
Conc: N.D.

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

Page 1 of 1

Job Number: D41381
Account: XTOKRWR XTO Energy
Project: PCU T18-13G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7053-MB	FH008059.D	1	12/05/12	TR	12/05/12	OP7053	GFH446

The QC reported here applies to the following samples:

Method: SW846-8015B

D41381-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	6.7	4.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	78% 35-130%

12.1.1
12

Blank Spike Summary

Job Number: D41381
Account: XTOKRWR XTO Energy
Project: PCU T18-13G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7053-BS	FH008060.D	1	12/05/12	TR	12/05/12	OP7053	GFH446

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

D41381-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	528	79	48-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	74%	35-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D41381
Account: XTOKRWR XTO Energy
Project: PCU T18-13G

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP7053-MS	FH008061.D	1	12/05/12	TR	12/05/12	OP7053	GFH446
OP7053-MSD	FH008062.D	1	12/05/12	TR	12/05/12	OP7053	GFH446
D41381-1	FH008063.D	1	12/05/12	TR	12/05/12	OP7053	GFH446

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

D41381-1

CAS No.	Compound	D41381-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	18.0		752	534	69	478	61	11	20-168/30

CAS No.	Surrogate Recoveries	MS	MSD	D41381-1	Limits
84-15-1	o-Terphenyl	56%	54%	68%	35-130%

* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH120512\
Data File : FH008063.D
Signal(s) : FID1A.ch
Acq On : 5 Dec 2012 5:01 pm
Operator : TEDR
Sample : D41381-1
Misc : OP7053,GFH446,30.10,,,1,1
ALS Vial : 9 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Dec 06 08:31:22 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH439F.M
Quant Title : DRO-ORO FRONT
QLast Update : Fri Nov 30 09:29:08 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
2) s o-Terphenyl	12.743	1675854237	1369.788 ug/mlm
Target Compounds			
1) H TPH-DRO (C10-C28)	10.422	474650964	481.225 ug/ml

(f)=RT Delta > 1/2 Window

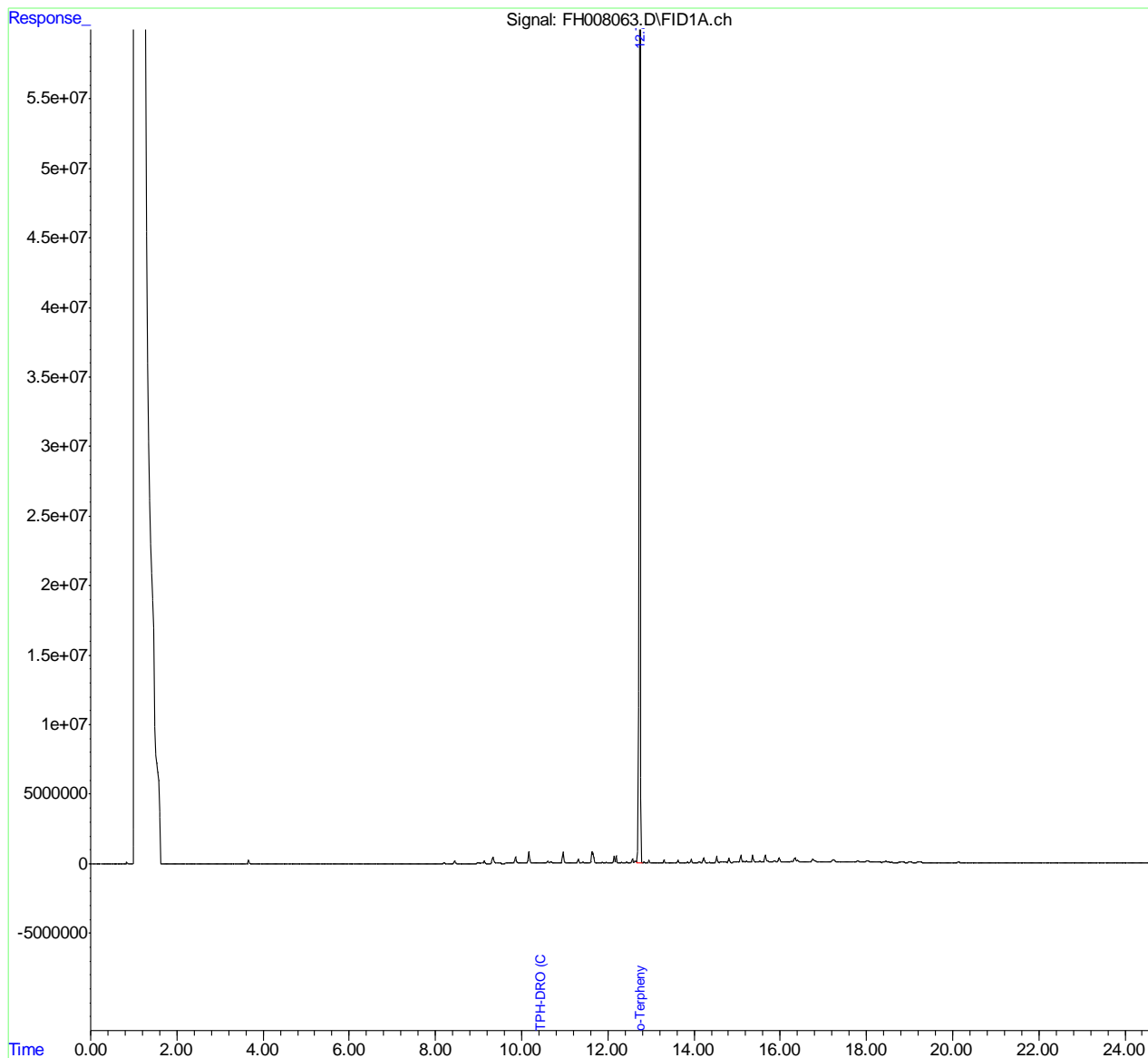
(m)=manual int.

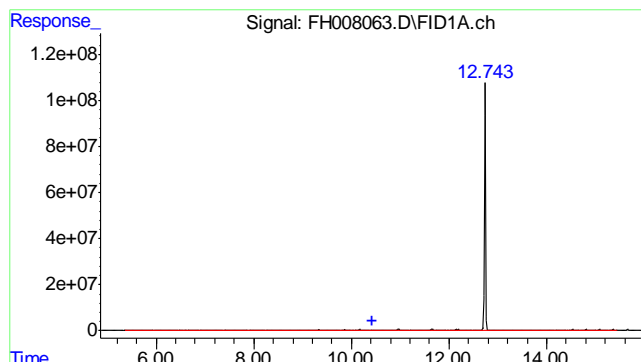
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH120512\
 Data File : FH008063.D
 Signal(s) : FID1A.ch
 Acq On : 5 Dec 2012 5:01 pm
 Operator : TEDR
 Sample : D41381-1
 Misc : OP7053,GFH446,30.10,,,1,1
 ALS Vial : 9 Sample Multiplier: 1

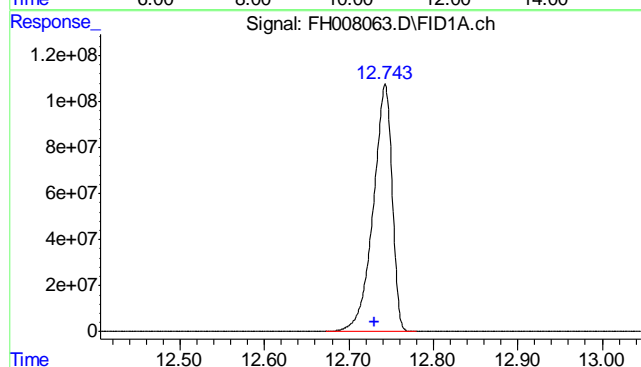
Integration File: autoint1.e
 Quant Time: Dec 06 08:31:22 2012
 Quant Method : C:\msdchem\1\METHODS\DRO-GFH439F.M
 Quant Title : DRO-ORO FRONT
 QLast Update : Fri Nov 30 09:29:08 2012
 Response via : Initial Calibration
 Integrator: ChemStation

Volume Inj. :
 Signal Phase :
 Signal Info :





#1 TPH-DRO (C10-C28)
 R.T.: 10.422 min
 Delta R.T.: 0.000 min
 Response: 474650964
 Conc: 481.22 ug/ml m



#2 o-Terphenyl
 R.T.: 12.743 min
 Delta R.T.: 0.012 min
 Response: 1675854237
 Conc: 1369.79 ug/ml m

13.1.1
13

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH120512\
Data File : FH008059.D
Signal(s) : FID1A.ch
Acq On : 5 Dec 2012 2:38 pm
Operator : TEDR
Sample : OP7053-MB
Misc : OP7053,GFH446,30.00,,,1,1
ALS Vial : 5 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Dec 05 15:04:35 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH439F.M
Quant Title : DRO-ORO FRONT
QLast Update : Fri Nov 30 09:29:08 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
2) s o-Terphenyl	12.746	1913998694	1564.439 ug/mlm
Target Compounds			
1) H TPH-DRO (C10-C28)	10.422	39324729	39.869 ug/ml

(f)=RT Delta > 1/2 Window

(m)=manual int.

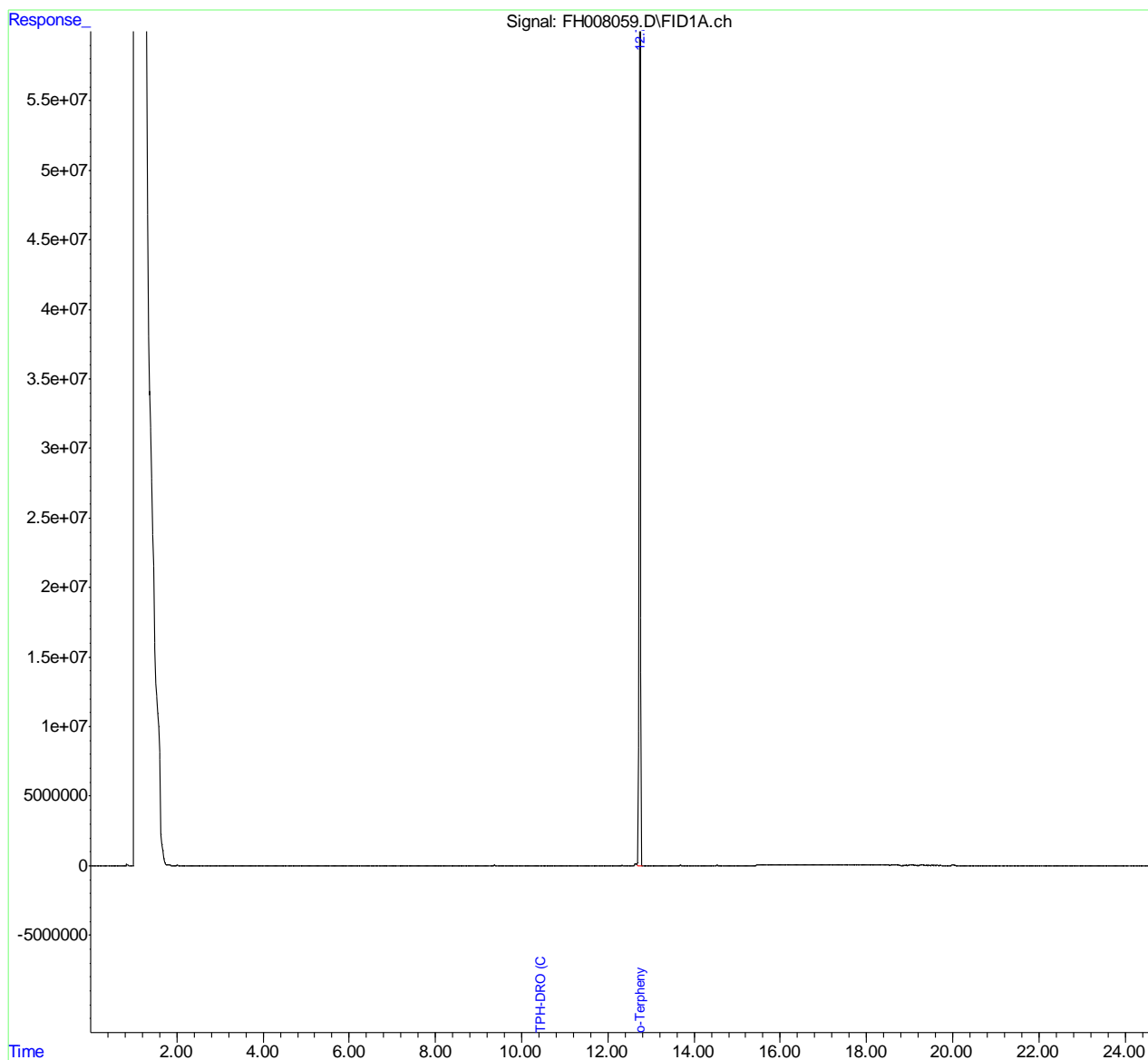
13.2.1
13

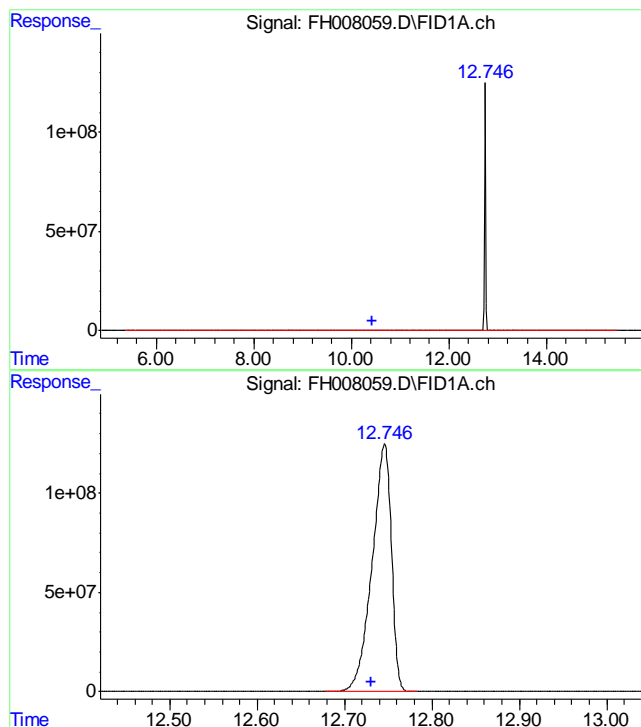
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\FH120512\
Data File : FH008059.D
Signal(s) : FID1A.ch
Acq On : 5 Dec 2012 2:38 pm
Operator : TEDR
Sample : OP7053-MB
Misc : OP7053,GFH446,30.00,,,1,1
ALS Vial : 5 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Dec 05 15:04:35 2012
Quant Method : C:\msdchem\1\METHODS\DRO-GFH439F.M
Quant Title : DRO-ORO FRONT
QLast Update : Fri Nov 30 09:29:08 2012
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :





#1 TPH-DRO (C10-C28)

R.T.: 10.422 min
Delta R.T.: 0.000 min
Response: 39324729
Conc: 39.87 ug/ml m

#2 o-Terphenyl

R.T.: 12.746 min
Delta R.T.: 0.015 min
Response: 1913998694
Conc: 1564.44 ug/ml 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: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP8991
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 12/04/12

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.0009	-0.0026	<0.10

Associated samples MP8991: D41381-1

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: D41381
 Account: XTOKRWR - XTO Energy
 Project: PCU T18-13G

QC Batch ID: MP8991
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 12/04/12

Metal	D41298-1		Spikelot		QC
	Original	MS	HGWSR1	% Rec	Limits
Mercury	0.044	2.5	2.53	97.1	75-125

Associated samples MP8991: D41381-1

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: D41381
 Account: XTOKRWR - XTO Energy
 Project: PCU T18-13G

QC Batch ID: MP8991
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 12/04/12

Metal	D41298-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.044	2.4	2.37	99.4	4.1	20

Associated samples MP8991: D41381-1

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: D41381
 Account: XTOKRWR - XTO Energy
 Project: PCU T18-13G

QC Batch ID: MP8991
 Matrix Type: SOLID

Methods: SW846 7471B
 Units: mg/kg

Prep Date: 12/04/12

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

Associated samples MP8991: D41381-1

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: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9006
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/05/12

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	0.66	* (a)
Beryllium	1.0	.13	.15		
Boron	5.0	.1	.06		
Cadmium	1.0	.06	.036	0.0	<1.0
Calcium	40	.54	9		
Chromium	1.0	.03	.03	0.080	<1.0
Cobalt	0.50	.04	.07		
Copper	1.0	.12	.15	0.010	<1.0
Iron	7.0	.12	.87		
Lead	5.0	.19	.24	0.070	<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	0.13	<3.0
Phosphorus	10	1.4	1.9		
Potassium	200	6.1	7		
Selenium	5.0	.48	.36	-0.12	<5.0
Silicon	5.0	.29	.37		
Silver	3.0	.04	.06	-0.070	<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	0.21	<3.0

Associated samples MP9006: D41381-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9006
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9006
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/05/12

Metal	D41381-1 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	228	294	113	58.5N(a)	75-125
Beryllium	anr				
Boron					
Cadmium	0.0	20.9	28.2	73.7N(b)	75-125
Calcium					
Chromium	29.7	46.6	28.2	75.8	75-125
Cobalt	anr				
Copper	15.5	37.5	28.2	80.1	75-125
Iron	anr				
Lead	12.5	53.2	56.4	72.1N(b)	75-125
Lithium					
Magnesium	anr				
Manganese	anr				
Molybdenum	anr				
Nickel	18.9	35.3	28.2	68.8N(b)	75-125
Phosphorus	anr				
Potassium					
Selenium	0.0	45.9	56.4	81.3	75-125
Silicon					
Silver	0.11	9.0	11.3	78.8	75-125
Sodium					
Strontium					
Thallium	anr				
Tin					
Titanium					
Uranium	anr				
Vanadium	anr				
Zinc	41.4	62.9	28.2	76.2	75-125

Associated samples MP9006: D41381-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9006
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 and/or sample nonhomogeneity.
- (b) Spike recovery indicates possible matrix interference.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9006
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date: 12/05/12

Metal	D41381-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	anr					
Barium	228	336	113	95.7	13.3	20
Beryllium	anr					
Boron						
Cadmium	0.0	20.8	28.2	73.3N(a)	0.5	20
Calcium						
Chromium	29.7	48.1	28.2	81.2	3.2	20
Cobalt	anr					
Copper	15.5	38.5	28.2	83.6	2.6	20
Iron	anr					
Lead	12.5	54.2	56.4	73.9N(a)	1.9	20
Lithium						
Magnesium	anr					
Manganese	anr					
Molybdenum	anr					
Nickel	18.9	35.5	28.2	69.5N(a)	0.6	20
Phosphorus	anr					
Potassium						
Selenium	0.0	45.6	56.4	80.8	0.7	20
Silicon						
Silver	0.11	9.0	11.3	78.8	0.0	20
Sodium						
Strontium						
Thallium	anr					
Tin						
Titanium						
Uranium	anr					
Vanadium	anr					
Zinc	41.4	65.2	28.2	84.3	3.6	20

Associated samples MP9006: D41381-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9006
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: D41381
 Account: XTOKRWR - XTO Energy
 Project: PCU T18-13G

QC Batch ID: MP9006
 Matrix Type: SOLID

Methods: SW846 6010C
 Units: mg/kg

Prep Date: 12/05/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	103	100	103.0	80-120
Beryllium	anr			
Boron				
Cadmium	21.9	25	87.6	80-120
Calcium				
Chromium	23.6	25	94.4	80-120
Cobalt	anr			
Copper	22.8	25	91.2	80-120
Iron	anr			
Lead	45.7	50	91.4	80-120
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	22.8	25	91.2	80-120
Phosphorus	anr			
Potassium				
Selenium	48.3	50	96.6	80-120
Silicon				
Silver	9.6	10	96.0	80-120
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium	anr			
Vanadium	anr			
Zinc	23.4	25	93.6	80-120

Associated samples MP9006: D41381-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9006
Matrix Type: SOLID

Methods: SW846 6010C
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9006
Matrix Type: SOLID

Methods: SW846 6010C
Units: ug/l

Prep Date: 12/05/12

Metal	D41381-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	2020	1950	3.7	0-10
Beryllium	anr			
Boron				
Cadmium	1.00	0.00	100.0(a)	0-10
Calcium				
Chromium	223	267	19.6*(b)	0-10
Cobalt	anr			
Copper	132	142	6.9	0-10
Iron	anr			
Lead	111	122	9.7	0-10
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	168	177	25.4*(b)	0-10
Phosphorus	anr			
Potassium				
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	4.00	0.00	100.0(a)	0-10
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium	anr			
Vanadium	anr			
Zinc	367	477	30.0*(b)	0-10

Associated samples MP9006: D41381-1

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

14.2.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9006
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.

14.2.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9007
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 12/05/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.006	.06	-0.0047	<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 MP9007: D41381-1

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: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9007
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 12/05/12

Metal	D41381-1 Original MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	4.8	51.6	56.4	82.9
Barium				75-125
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 MP9007: D41381-1

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

14.3.2
14

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9007
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 12/05/12

Metal	D41381-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	4.8	51.7	56.4	83.1	0.2	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 MP9007: D41381-1

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

14.3.2
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9007
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 12/05/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	46.7	50	93.4	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 MP9007: D41381-1

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

14.3.3
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9007
Matrix Type: SOLID

Methods: SW846 6020A
Units: ug/l

Prep Date: 12/05/12

Metal	D41381-1			QC
	Original	SDL 5:25	%DIF	Limits
Aluminum				
Antimony				
Arsenic	42.2	40.8	3.1	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 MP9007: D41381-1

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

14.3.4
14

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9015
Matrix Type: AQUEOUS

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

Prep Date: 12/06/12

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	9.5	<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	26.0	<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	103	<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 MP9015: D41381-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9015
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: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9015
Matrix Type: AQUEOUS

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

Prep Date: 12/06/12

Metal	D41381-1A Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	32600	168000	125000	108.3	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	8180	132000	125000	99.1	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	35000	161000	125000	100.8	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP9015: D41381-1A

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: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9015
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: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9015
Matrix Type: AQUEOUS

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

Prep Date: 12/06/12

Metal	D41381-1A Original	MSD	SpikeLot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	32600	169000	125000	109.1	0.6	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	8180	132000	125000	99.1	0.0	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	35000	161000	125000	100.8	0.0	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP9015: D41381-1A

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: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9015
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

14.4.2
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9015
Matrix Type: AQUEOUS

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

Prep Date: 12/06/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	135000	125000	108.0	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 MP9015: D41381-1A

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

14.4.3
14

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9015
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: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9015
Matrix Type: AQUEOUS

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

Prep Date: 12/06/12

Metal	D41381-1A Original SDL 1:5		%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	6510	6470	0.8	0-10
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	1640	1720	4.8	0-10
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	7000	7390	5.5	0-10
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP9015: D41381-1A

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

14.4.4
14

SERIAL DILUTION RESULTS SUMMARY

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

QC Batch ID: MP9015
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

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: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP8811/GN17932	1.0	0.0	mg/kg	176.0	171	97.0	80-120%
Specific Conductivity	GP8815/GN17934			umhos/cm	9992	9910	99.2	90-110%
pH	GN17928			su	8.00	7.95	99.4	99.3-100.7%

Associated Samples:
Batch GP8811: D41381-1
Batch GP8815: D41381-1
Batch GN17928: D41381-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP8811/GN17932	D41305-1	mg/kg	0.0	0.0	0.0	0-20%
Redox Potential Vs H2	GN17931	D41407-1	mv	37.1	40.3	8.3	0-20%

Associated Samples:
Batch GP8811: D41381-1
Batch GN17931: D41381-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP8811/GN17932	D41305-1	mg/kg	0.0	40.0	35.8	89.6	75-125%

Associated Samples:

Batch GP8811: D41381-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D41381
Account: XTOKRWR - XTO Energy
Project: PCU T18-13G

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Chromium, Hexavalent	GP8811/GN17932	D41305-1	mg/kg	0.0	40.0	37.1	3.5	20%

Associated Samples:
Batch GP8811: D41381-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits